



**The Relationship between Gamification Patterns and  
Guidance in An E–Learning Environment Based on Crowd  
Sourcing of Some Digital Security Skills and Academic  
Engagement among Students of Educational Technology**

ADissertation Proposal for PhD Degree in Educational Technology

Submitted by

**Aml Elsayed Elsayed Mohamed**

Under the Supervision of

**Prof. Dr.Walid Youssef Mohamed Ibrahim**

Professor of Educational Technology

Faculty of Education

Helwan University

**Dr.Hany Mohamed Al–sheikh**

Associate Professor of Educational Technology

Faculty of Specific Education

Fayoum University

**Dr.Sally Ahmed Ali Salah**

Lecturer in Educational Technology

Faculty of Specific Education

Fayoum University

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## **Summary of the Study**

### **Introduction**

The current research seeks to investigate the relationship between the patterns of gamification (competitive - cooperative) and guidance (free - guided) in an e-learning environment based on crowdsourcing, in terms of their impact on the development of digital security skills and academic integration among educational technology students.

### **Problem of the Study**

The current study pays great attention to employing the crowd-sourcing approach to solve the problem of weak digital security skills and academic integration among educational technology students, as well as identifying the relationship between training and guidance patterns in an e-learning environment based on crowd-sourcing. Therefore, the current research attempts to answer the following question:

What is the relationship between gamification and guidance patterns in an e-learning environment based on crowdsourced resources in developing some digital security skills and academic integration among educational technology students?

The following sub-questions branch out from this question:

-What are the educational design standards for the e-learning environment based on the relationship between gamification patterns and crowdsourcing guidance on developing digital security skills and academic integration among educational technology students?

-What is the educational design of an e-learning environment based on the relationship between gamification patterns and crowdsourcing guidance, following the Abdul Latif Al-Jazzar 2014 design model?

-What is the impact of different types of gamification in an e-learning environment based on crowdsourcing on the development of both cognitive and skill performance related to digital security skills, academic integration?

-What is the impact of different guidance in an e-learning environment based on crowdsourced resources in developing both the cognitive and skill performance aspect related to digital security skills, academic integration?

- What is the effect of the interaction between gamification and guidance patterns in an e-learning environment based on crowdsourced resources in developing both the cognitive and skill performance aspect related to digital security skills? Academic Integration

### **Objectives of then Study**

The current research aims to:

- Measure the effect of the interaction between gamification and guidance patterns in an e-learning environment based on crowdsourced resources in developing some digital security skills and academic integration among educational technology students.

### **Significance of the Study**

The current research dealt with the patterns of gamification (cooperative-competitive) and guidance (free-directed) in an e-learning environment based on crowdsourced resources, which were noted for the scarcity of studies and research that dealt with them, which adds new research results that benefit the educational designer in developing this type of technological innovations.

### **Limitations of then Study**

The research was limited to the following:

- Using the two types of gamification (cooperation-competition), and two types of directing crowdsourcing (free-directed), because they may have a connection that leads to different results from previous research.

- The following dependent variables: the aspect of cognitive and skill performance related to digital security skills. The research also included the academic integration variable as a dependent variable.

- Experimental treatment materials: An e-learning environment based on crowdsourcing and gamification for the practical aspect of the computer problems course for third-year students in the Department of Educational Technology, Fayoum University, where the application was carried out in the first semester of the academic year 2023-2024.

### **Methodology of then Study**

Since this research is considered a developmental research in educational technology, the researcher used the following three approaches successively as defined by Abdel Latif El Gazzar (Elgazzar, 2014):

-Descriptive approach: to identify the main features of e-learning based on integrating crowdsourcing guidance, gamification patterns, and the theoretical foundations and principles on which both crowdsourcing and gamification are based, through analysis of studies, research, global trends, and the experiences of others in this field.

- The semi-experimental approach: to reveal the effect of gamification patterns on guidance, as well as to reveal the effect of the interaction between the two variables in the e-learning environment among educational technology students in terms of the cognitive and skill performance aspect of digital security skills.

- Systems development approach: The researcher used it when developing an e-learning environment based on crowdsourced resources with two modes of gamification (cooperation-competition) and a mode of guidance (free-directed) to develop digital security skills and academic integration, following the model of Abdul Latif Al-Jazzar 2014.

### **Hypotheses of the Study**

**First: Hypotheses related to the post-cognitive performance aspect related to digital security skills:**

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the achievement test for the cognitive aspect of digital security skills due to the difference in gamification patterns (cooperative - competitive)

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the achievement test for the cognitive aspect of digital security skills due to the difference in direction (free-directed).

There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the achievement test for the cognitive aspect of digital security skills due to the difference in the types of gamification (cooperative - competitive) and guidance (free - guided).

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the note card for digital security skills due to the difference in gamification styles (cooperative - competitive)

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the observation card for digital security skills due to the difference in direction (free-directed).

### **Second: Hypotheses related to academic integration:**

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the academic engagement scale due to the difference in gamification patterns (cooperative - competitive)

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the academic integration scale due to the difference in guidance (free-directed).

-There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental groups in the post-application of the academic engagement scale due to the difference in the types of gamification (cooperative - competitive) and guidance (free - directed).

### **Tools of the Study**

First: Data collection tools:

-A survey form to determine the digital security skills of educational technology students.

-List of e-learning environment design standards

Second: The experimental treatment material, namely:

-Competitive gamification environment with free-form crowd-sourcing

-A collaborative gamification environment with free-form crowd-sourcing

Third: Measurement tools:

-Academic integration scale

-Achievement test

-Note card

### Sample of the Study

The research sample consisted of (68) male and female students in the third year of educational technology students, Faculty of Specific Education - Fayoum University, in the first semester of the academic year 2023, where the students were distributed into four groups with (17) students for each group. The equality of the groups was ensured before conducting the basic research experiment by applying a pre-test of cognitive performance, before conducting the experimental treatment on all groups. They were chosen intentionally and distributed randomly.

Experimental design: Given that the current research relies on two independent variables, the first variable is gamification patterns and the second variable is crowdsourcing guidance patterns, so the four-group experimental design known as the 2x2 factorial design and the posttest application was chosen, as Table (1) shows.

Table (1)

Experimental treatment				
Experimental Treatment			Post-measuring tools	
		Crowdsourcing guidance		• Note card • Academic integration
		Free	Directed	
Gamification Patterns	Cooperative	Group 1	Group 3	
	Competitive	Group 2	Group 4	

				scale Academic Engagement
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### **Procedures of the Study**

The researcher will follow the following steps and procedures:

- Accessing previous Arab and foreign research and studies related to the field of study and benefiting from them in preparing the theoretical framework for the research and using it as evidence in directing its hypotheses and discussing its results.

-Determine a list of digital security skills

-Determining standards for designing the environment and educational content

-Preparing experimental treatments for research.

-Preparing search tools.

Choosing a research sample from third-year students at the Faculty of Specific Education, Fayoum University, Department of Educational Technology, and dividing them into four experimental groups.

-Conducting a pilot experiment for experimental treatment materials and research tools.

Conduct a basic experiment that includes:

\*Conduct introductory sessions with the research sample.

\*Applying search tools in advance.

\*Application of experimental treatment

\*Application of research tools is a post-application.

-Performing statistical processing of the results using the SPSS program.

-Presentation, interpretation and discussion of results.

- Providing recommendations in light of the results reached and suggestions for future research

### **Results of the Study**

The current research revealed the following results:

- There is no statistically significant difference between the experimental groups due to the difference in the style of gamification on the dependent variables.
- The absence of a statistically significant difference between the experimental groups is due to the difference in sourcing mobilization on the dependent variables.
- The lack of a statistically significant difference between the experimental groups is due to the interaction between the gamification style and crowd-sourced orientation on the cognitive and performance performance of digital security skills, while there is an effect of the interaction between the gamification style and crowd-sourced orientation on academic integration.

### **Recommendations of then Study**

- Employing the crowdsourced approach in building courses, especially university ones.
- Emphasizing the importance of combining gamification and crowdsourcing.
- Taking into account the design principles of both types of gamification (cooperation - competition).
- The need to pay attention to measuring the academic integration of learners.
- Include guidance on crowd sourcing environments

### **Suggestions of the Study**

In light of the current research, the following research suggestions can be presented:

- The interaction between gamification and guidance patterns in an e-learning environment based on crowdsourcing based on technological acceptance



- The impact of the difference in (dynamics and mechanics) of gamification in an e-learning environment based on crowdsourcing on technological acceptance
- Different types of crowdsourcing (competitive-participatory) on academic integration
- Different types of leaderboards in a crowdsourced e-learning environment