

**Faculty of Specific Education**

**Department of Education Technology**

The interaction between the two modules of adaptive content display and Learning style on developing the skills of hiring(recruiting) Google applications in the educational attitudes for educational technology students

**Research submitted to complete the requirements for obtaining a master's degree in the Specific Education, Education Technology specialty.**

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Introduction:

In recent years, the world has witnessed an amazing development in modern teaching and learning methods, and despite the advantages offered by learning through electronic learning environments, there are some problems that students face in learning through these environments, including providing information and links in the same way without taking into consideration the different characteristics of students, their level of knowledge and their learning styles, therefore, an adaptive learning environment should be available to provide suitable paths for each student separately, as it creates for each learner a special teacher who deals with him according to his speed in learning, his various abilities and skills.

The benefit of adapting the learning environment is that it takes into consideration individual variations among students. Adaptation is the creation of new educational experiences that are tuned based on several factors, including (student's personal characteristics, learning results and analyzes, student interactions with the system) during a specific period of time in order to improve performance indicators such as (Student Satisfaction, Teaching Efficiency, Results).

On the other hand, learning methods are the ideal way for an individual to use his abilities, and it is based on the idea that students differ in the way in which they learn, as well as in the way in which they receive and process information, as it describes the different processes done by the student during his interaction with different learning situations, as well as adaptive processes that make the student responds to different situations aligned with his educational characteristics and preferences, and each student has his own preferred method for presenting content during the learning process, as the learning style has a great impact on the student’s choice of his preferred content presentation style, so the content should take into consideration the learning style for each student when designing an adaptive learning environment.

Research problem:

The current research, as one of the readiness and treatment interaction researches and studies, sought to investigate some specifications of the design and construction of adaptive content display environments, whether by dimming fragments or inserting and removing fragments through their interaction with the learning style (sensory / intuitive) with regard to its effect on both achievement and skill development Google apps in educational situations.

Research questions:

The current research tried to resolve the research problem by answering the following question:

How to design an adaptive learning environment according to the way adaptive content is presented (dimming fragments / inserting and removing fragments) and its interaction with the learning style (sensory / intuitive) in developing Google applications skills among educational technology students.

This question is divided into the following sub-questions:

1- What are the Google applications skills to be developed for students of the Faculty of Specific Education, Department of Educational Technology?

2- What are the standards for designing and building an adaptive learning environment that includes the two types of presentation (dimming fragments / inserting and removing fragments) and learning style (sensory / intuitive) in developing Google applications skills among educational technology students?

3- What is the effect of the interaction of the adaptive display pattern, the dimming fragments, and the perceptual learning style, on developing the skills of Google applications for educational technology students?

4- What is the effect of the interaction of the adaptive display pattern, the dimming fragments, and the intuitive learning style, on the development of Google applications skills for educational technology students?

5- What is the effect of the interaction of the adaptive presentation pattern, the insertion and removal fragments, and the style of sensory learning on developing the skills of Google applications for educational technology students?

6- What is the effect of the interaction of the adaptive display pattern, the insertion and removal of parts, and the intuitive learning style, on the development of Google applications skills for educational technology students?

7- What is the effect of the interaction of the two types of adaptive presentation (dimming fragments / inserting and removing fragments) and the learning style (sensory / intuitive) in an adaptive learning environment on the development of the knowledge aspect of Google applications skills for educational technology students?

8- What is the effect of the interaction of the patterns of adaptive presentation (dimming fragments / inserting and removing fragments) and the learning style (sensory / intuitive) in an adaptive learning environment on the development of the performance side of Google applications skills for educational technology students?

Research Aims:

The research aims to:

1- Knowing the Google applications skills that should be available to students of educational technology.

2- Developing a list of standards for designing an adaptive learning environment.

3- Measuring the effect of the interaction of the adaptive display pattern, the dimming fragments, and the perceptual learning style, in developing the skills of Google applications among educational technology students.

4- Measuring the effect of the interaction of the adaptive display pattern, the dimming fragments, and the intuitive learning style, in developing the skills of Google applications for educational technology students.

5- Measuring the effect of the interaction of the adaptive display pattern, the insertion and removal fragments, and the perceptual learning style in developing the Google applications skills of educational technology students.

6- Measuring the effect of the interaction of the adaptive display pattern, the insertion and removal of parts, and the intuitive learning style, on the development of Google applications skills for educational technology students.

7 - Measuring the effect of the interaction of two types of adaptive presentation (dimming fragments / inserting and removing fragments) and the learning style (sensory / intuitive) in an adaptive learning environment on the development of the knowledge aspect of Google applications skills for educational technology students.

8- Measuring the effect of the interaction of the patterns of adaptive presentation (dimming fragments / inserting and removing fragments) and the learning style (sensory / intuitive) in an adaptive learning environment on the development of the performance side of Google applications skills for educational technology students.

Research importance:

The importance of the current research stems in:

* Providing the designers and developers of electronic environments based on displaying adaptive content with a set of principles and scientific foundations when designing these environments, in relation to the use of adaptive content display patterns appropriate for the development of the cognitive and performance aspects of Google applications skills in educational situations.
* Providing educational staff members and their associate with strategies, patterns and tools for designing adaptive learning environments and using them in the learning process because of their effective impact on improving students' learning outcomes.
* Emphasizing the importance of taking into account the learning style when building adaptive learning environments.
* Emphasizing the importance of defining an adaptive presentation style commensurate with students' learning styles.
* Providing an adaptive learning environment that increases positive interaction between students and works to develop their teaching skills by making use of Google applications and employing them in the educational process.

Search limits:

The current search is limited to the following parameters:

1- Human limit: A sample of the fourth year students, Department of Educational Technology, Faculty of Specific Education, Benha University.

2- Objective limit: The current research was limited to the skills of Google applications in the e-learning technology course and its applications.

3- Time limit: The research experience was implemented in the first semester of the academic year 2020/2021.

Research methodology:

This research belongs to the category of researches that use some methods of descriptive studies (descriptive survey, and development of systems) in the stage of study, analysis and design, and the quasi-experimental approach when measuring the effect of the two independent variables for research on its dependent variables in the evaluation stage.

Research hypotheses:

The research sought to verify the validity of the following hypotheses:

* There is no statistically significant difference between the mean scores of the experimental group with adaptive display (dimming fragments) and the experimental group with adaptive display (inserting and removing fragments) in the cognitive aspect of Google applications skills in educational situations.
* There is no statistically significant difference between the mean scores of the experimental group with the learning style (sensory) and the experimental group with the (intuitive) learning style in the cognitive aspect of Google applications skills in educational situations.
* There are no statistically significant differences between the mean scores of the experimental group students in the cognitive aspect of Google applications skills in educational situations due to the interaction between the two adaptive display patterns (dimming fragments / inserting and removing fragments) and the learning style (sensory, intuitive).
* There is no statistically significant difference between the mean scores of the experimental group with adaptive display (dimming fragments) and the experimental group with adaptive display (insertion and removal fragments) in the performance aspect of Google applications skills in educational situations.
* There is no statistically significant difference between the mean scores of the experimental group with the learning style (sensory) and the experimental group with the (intuitive) learning style in the performance aspect of Google applications skills in educational situations.
* There are no statistically significant differences between the mean scores of the experimental groups in the performance aspect of Google Apps skills in educational situations due to the interaction between the two adaptive display patterns (dimming fragments / inserting and removing fragments) and the learning style (sensory, intuitive).

search tools:

1- Achievement test to measure the cognitive aspect of Google Apps skills (prepared by the researcher).

2- A note card to measure the performance aspect of Google Apps skills (prepared by the researcher).

3- The Learning Style Scale prepared by Felder-Silverman, the Arabization of Mr. Abu Hashim (2012).

Research methodology:

This research belongs to the category of researches that use some methods of descriptive studies (descriptive survey, and development of systems) in the stage of the study, analysis, design and semi-experimental approach in measuring the impact of the independent variable of research on its dependent variables in the application and evaluation stage, and the research proceeded according to its procedures.

Search procedures:

1. Conducting a survey of the literature related to the subject of the research (adaptive environments, presentation patterns and learning styles).

2. Analyzing the content of the e-learning technology course material and its applications in order to extract the educational objectives and the list of skills for the course and present it to a group of referees in the field of educational technology and amendment according to their opinions.

3. Prepare a list of Google applications skills to be achieved with the help of the list specified for the decision and present it to a group of arbitrators and amend according to their opinions.

4. Designing the adaptive environment according to a specific model that the researcher chooses (the general model for educational design, and the researcher modifies it in accordance with the nature of the current research).

5. Designing the measurement tools for the study, including a cognitive measure test and a note card.

6. Applying the tools to an exploratory sample to determine the degree of its validity, stability and applicability.

7. Selecting the research sample and distributing it to the experimental samples according to the outcome of the learning style scale.

8. Pre-application of research tools to the study sample.

9. Executing the basic research experiment according to a time plan determined by the researcher.

10. Post application of research tools to the study sample.

11. Conducting statistical treatment of the results.

12. Analyzing and discussing the results in light of the research’s questions and hypotheses.

13. Formulating recommendations and proposals for future research in light of the research results.

Search variables:

**1- Independent variable:**

• Two adaptive display modes (dimming fragments / inserting and removing fragments).

2- **The classification variable:**

• Learning style (sensory / intuitive).

3- **Dependent variable:**

• The knowledge aspect of Google Applications skills for educational technology students.

• The performance aspect of Google Apps skills for educational technology students.

Experimental design:

 In the light of dependent variables, this research used the experimental group design that known as Factorial Design ( 2 x 2 ). The following table shows the experimental design of the research.

**Table (1) Experimental Design for Research**

|  |  |  |
| --- | --- | --- |
|  Display styleLearning Style | Dimming Fragments | Inserting, Removing Fragments |
| **Sensetive** | Sensory students studying in an adaptive environment using the dimming fragments display mode. | Sensory students study in an adaptive environment using the presentation pattern insert and remove fragments. |
| **Intutive** | Intuitive students studying in an adaptive environment using the dimming fragments display mode. | Intuitive students study in an adaptive environment using a presentation pattern inserting and removing fragments. |

research results:

• There is a statistically significant difference between the mean scores of the students of the experimental group with adaptive display, the dimming fragments, and the experimental group with the adaptive offer the insertion and removal fragments in the cognitive aspect of Google applications skills in educational situations in favor of the experimental group, the adaptive presentation, the insertion and removal fragments.

• There is a statistically significant difference between the mean scores of the experimental group with the sensory learning style and the experimental group with the intuitive learning method in the cognitive aspect of Google applications skills in the educational situations in favor of the experimental group with the intuitive learning style.

• There are statistically significant differences between the mean scores of the experimental groups students in the dimensional measurement of the cognitive aspect of Google Apps skills in educational situations due to the interaction between the two modes of adaptive presentation (dimming fragments / inserting and removing fragments) and the learning style (sensory, intuitive) in favor of:

* Experimental group with intuitive insertion and removal fragments.
* The experimental group with intuitive dimming fragments.

• There is a statistically significant difference between the mean scores of the students of the experimental group with adaptive display, the dimming fragments, and the experimental group with the adaptive offer. The insertion and removal fragments in the performance aspect of Google applications skills in the educational situations in favor of the experimental group.

• There is a statistically significant difference between the mean scores of the experimental group with the sensory learning method and the experimental group with the intuitive learning style in the performance aspect of Google applications skills in the educational situations in favor of the experimental group with the intuitive learning style.

. • There are statistically significant differences between the mean scores of the experimental groups students in the post-measurement of the performance aspect of Google Apps skills in educational situations due to the interaction between the two modes of adaptive presentation (Dimming fragments, inserting and removing fragments) and the learning style (sensory, intuitive) in favor of:

* Experimental group with intuitive insertion and removal fragments.
* The experimental group with intuitive dimming fragments.

Research Recommendations:

Through the results of the current research, the researcher recommends the following:

• The trend towards the use of adaptive learning environments based on the use of different types of adaptive content display because of their good impact on the cognitive achievement and skill performance of students.

• The necessity to take into consideration the individual variations for students with regard to their preferences and needs, their learning styles and their level of knowledge.

• The necessity to take into consideration the criteria for designing adaptive presentation patterns commensurate with the learning styles to increase the cognitive achievement and the skills performance of students.

• The necessity to take into consideration the foundations and considerations related to the different learning theories when constructing adaptive display patterns.

• Interest in using adaptive learning environments based on adaptive display patterns in different stages of education.

Proposals for future research.

1. The effect of using other types of adaptive presentation with learning styles.
2. The interaction between two types of adaptive display (dimming fragments, and insertion and removal fragments) with cognitive methods.
3. Conducting more research on the adaptation of displaying educational content within electronic learning environments.
4. Conducting a study similar to the current one on students of different educational stages.
5. The use of adaptive learning environments in developing university courses.