



**Faculty of Graduate Studies for Educational
Department of Instructional Technology**

**The Effect of the Interaction between Structural Scaffolds and Learning
Style in the Provision of E-content on Developing The Achievement of
The Cognitive and Skills of Instructional Design of Students of
Instructional Technology**

A dissertation submitted in partial fulfillment of the requirements for the PHD
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Abstract

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Title of thesis: The Effect of the Interaction between Structural Scaffolds and Learning Style in the Provision of E-content on Developing The Achievement of The Cognitive and Skills of Instructional Design of Students of Instructional Technology.

Abstract:

This research aims to measure of the effect of difference of the Interaction between Structural Scaffolds and Learning Style in the Provision of E-content on Developing The Achievement of The Cognitive and Skills of Instructional Design of Students of Instructional Technology; The research sample has been composed (90) students of fourth year students Department of Educational Technology - Faculty of Specific Education - Fayoum University - The results revealed that there is a significant difference between the means scores of the students who studied the e-content by Simple Scaffolds, the students who studied the e-content by average Scaffolds, and the students who studied the e-content by heavy Scaffolds, in the post cognitive and practical skills, which returns to the main effect of the scaffolding Level; There is a significant difference between the means scores of the field independent students and the field dependent students in the post cognitive and practical skills, in favor of the independent students; There is a significant differences between the means scores of the students in the post cognitive and practical skills, which returns to the interaction effect between the scaffolds Level & the learning style.

Key words:

Structural Scaffolds - Structural Scaffolds Levels - Learning Style -Field Independence - Field Dependence - E-content

Research Summary

Introduction:

Under Learners deal with e-learning environment and change their roles and responsibilities that they do, Changed depending on their needs, And the role and importance of Scaffolding became clear, Where is Scaffolding a structural model of constructivist learning models, It is based on the principles of cognitive constructivist theory; The term scaffolding was used by Jerome Bruner to describe the process in which a novices could be assisted to achieve a task that they may not be able to achieve if unassisted, until they are able to perform the task on their own (Lajoie, S., 2005, 541). This term has evolved to describe a number of support learner mechanisms, that assistance provided by the teacher or learning environment, whether a program or learning module to enhance the learning process, helping these Scaffolding learner to complete the educational task, and help him as much as possible to obtain a high level of achievement, So is Scaffolding a paths used in the construction of what the learner knows to reach what he don't knows (Shapiro, A. M., 2008, 30).

The interactive learning based on Structural Scaffolds using e-learning environments is a useful tutorial entrance, where learners able to acquire knowledge from it, through cognitive methods and surveys that rely on self-acquisition of knowledge by the learner, and Pointed that Structural Scaffolds are the center of attention in any educational electronic media, E-learning environments equipped with Structural Scaffolds provide to the learner largest additional assistance from provided by the program without supports, Which Scaffolds Properties merge with e-learning environments properties, and become an integral part of it, and thus allow the learner to achieve tasks more profound and motivated (Simons, K. D. & Ertmer, 2006, 297).

Thus, Scaffolding provided for learners vary depending on the cognitive learning methods, So e-learning environments designers must consider cognitive features of learners, The Learning Styles are the source of Individual differences; The learning style is considered of the most important students' educational aptitudes, and that gained the attention of many researchers, especially field independence versus field dependence; Learning style associated with the way in which the individual realizes the situation or the subject and its details, it examines an individual's ability to isolate or extract the subject perceived separate and independent from the whole field, it examines an individual's ability to analytical perceive; And individuals who are characterized by independence from the cognitive domain called Analytic, which realize parts of field in the form of a separate or independent of his ground organization, they have the ability to analyze the elements of the situation and the information and the realization of these elements independently, also, they have an internal guide style, they do not need for an external reference frame; In contrast, individuals who

are characterized by depending on the field called Global, those who fail to analyze the components of the compound or complex stimulus, and then respond to it as a whole or as a single unit, and require an external reference for guidance in dealing with the information and acquisition of interaction tools, and they have less ability from independents to recover and remember a large amount of information, they also need feedback more than field independent.

Despite the critical importance of instructional design skills for Instructional Technology specialist, but the process of training students on these skills and pursue their works, need a lot of time and effort, because students need ongoing support and continuous follow-up in each step, the teacher needs to guide students to a variety of sources in each step, and considered this as Scaffolding for the students' learning, and the range and variety of sources that can be provided by the web and the potential for communication, it is an ideal environment to learn this skills; therefore researcher decided that there is an urgent need to detect the effect of using different levels of Scaffolding in the Provision of E-content on Developing The Achievement of The Cognitive and Skills of Design Instructional of Students of Instructional Technology.

The Research Problem:

Research Problem is determined by answering the following key question:

What is The Effect of the Interaction between Structural Scaffolds and Learning Style in the Provision of E-content on Developing The Achievement of The Cognitive and Skills of Instructional Design of Students of Instructional Technology?

To answer this key question requires answering the following sub- question:

1. What are standards of designing Structural Scaffolds in the Provision of E-content based on web?
2. What is the image of e-content designed by Structural Scaffolds Levels (Simple - average - heavy) in the light of Previous standards?
3. What is the effect of difference Structural Scaffolds (Simple - average - heavy) on cognitive skills for students of educational technology?
4. What is the effect of difference Structural Scaffolds (Simple - average - heavy) on instructional design skills for students of educational technology?
5. What is the effect of difference of learning style (independent - dependent) on cognitive skills for students of educational technology?
6. What is the effect of difference of learning style (independent - dependent) on instructional design skills for students of educational technology?
7. What is the effect of Interaction of Scaffolds (Simple - average - heavy) and learning style (independent – dependent) on cognitive skills for students of educational technology?

8. What is the effect of Interaction of Scaffolds (Simple - average - heavy) and learning style (independent – dependent) on instructional design skills for students of educational technology?

Research Objectives:

Current research aims to achieve the following:

1. Prepare a list of Standards of designing Structural Scaffolds in the Provision of E-content based on web?
2. Descriptions the image of e-content based on web, when design Structural Scaffolds Levels (Simple - average - heavy) in the light of Previous standards.
3. Detection of the effect of difference Scaffolds (Simple - average - heavy) on cognitive and practical skills for students of educational technology.
4. Detection of the effect of difference of learning style (independent - dependent) on (cognitive - practical) skills for students of educational technology.
5. Detection of the effect of Interaction of Scaffolds (Simple - average - heavy) and learning style (independent – dependent) (cognitive - practical) skills for students of educational technology.

The Research Importance:

The importance of Current research in that it may be useful as follows:

1. A source of supplying responsible of design and production of e-content based on Web with standards of Scaffolding inside the e-content.
2. This research helps those responsible of teaching instructional design, to determine the appropriate level of Scaffolding for students.
3. Considered a reflection of modern educational trends that emphasize the interest in development researches in the field of designing e-content based on Web.
4. This research is considered one of interactive researches concerned with the interaction between the treatment and Aptitude, Which align between learning styles and Individual differences among learners.

The Research Limits:

Current search limited to:

1. Objective limits: The research limited on the development of instructional design skills on educational technology students.
2. Spatial limits: Department of Educational Technology - Faculty of Specific Education - Fayoum University.
3. Time limits: The application of the study in the first semester of the academic year 2014/2015.

The Research Tools:

1. An achievement (pre/post) test developed by the researcher; to measure the cognitive aspects of instructional design skills.
2. Note Card developed by the researcher.
3. Witken's Group Embedded Figures Test.

The Research Sample:

The research sample has been composed (90) students of fourth year students Department of Educational Technology - Faculty of Specific Education - Fayoum University; Students were classified to (independent – dependent) by Witken's Group Embedded Figures Test, Then the researcher divided the independent students randomly into three equal number of experimental groups and the number of each of them (13) students, As well as dependent students randomly split into three equal number of experimental groups and the number of each of them (17) students, according to the experimental design of the search.

Research Methodology:

1. The researcher used the descriptive method in the theoretical framework, to describe the phenomenon under study, diagnose, and to shed light on different aspects, and collect data about it, as well as to reach out to determine the skills of instructional design.
2. The researcher used the semi - experimental method, to detect The Effect of the Interaction between Structural Scaffolds and Learning Style in the Provision of E-content on Developing The Achievement of The Cognitive and Skills of Design Instructional of Students of Instructional Technology.

The Research Hypotheses:

(A) The main effect of the scaffolding Level:

1. There are significant differences at level (0.05) between the means scores of the students who studied the e-content by Simple Scaffolds, the students who studied the e-content by average Scaffolds, and the students who studied the e-content by heavy Scaffolds, in the post cognitive skills, which returns to the main effect of the scaffolding Level.
2. There are significant differences at level (0.05) between the means scores of the students who studied the e-content by Simple Scaffolds, the students who studied the e-content by average Scaffolds, and the students who studied the e-content by heavy Scaffolds, in the post practical skills, which returns to the main effect of the scaffolding Level.

(B) The main effect of the learning style:

3. There is a significant difference at level (0.05) between the means scores of the field independent students and the field dependent students in the post cognitive skills , which returns to the main effect of the learning style.
4. There is a significant difference at level (0.05) between the means scores of the field independent students and the field dependent students in the post practical skills, which returns to the main effect of the learning style.

(C) The Interaction effect between the scaffolding Level and learning style:

5. There are significant differences at level (0.05) between the means scores of the students in the post cognitive skills, which returns to the interaction effect between the scaffolds Level & the learning style.
6. There are significant differences at level (0.05) between the means scores of the students in the post practical skills, which returns to the interaction effect between the scaffolds Level & the learning style.

Research Procedures:

To achieve the objectives of the research and answer its questions, researcher followed the steps and procedures of the following:

First: The preparation of the theoretical framework of the research through reviewing the research and studies related variables present research.

Second: Research Procedures and Building Tools:

1. Content analysis to the course of Design educational situations, For a list of instructional design skills (cognitive - practical).
2. Build a list of General educational goals to be achieved from e-content based on Web.
3. Presenting standards of designing Structural Scaffolds in the Provision of E-content based on web.
4. Preparation of Standards of designing Structural Scaffolds in the Provision of E-content based on web, Modification Standards in the light of experts views.
5. Determining the e-content based on Web with scaffolds levels (Simple - average – heavy).
6. Presenting e-content to instructional technology experts.
7. Modification e-content in the light of experts views.
8. Presenting Scenario to instructional technology experts.
9. Modification Scenario in the light of experts views.
10. Building an e-content in three scaffolds levels (Simple - average - heavy) in the light of the list of skills.
11. Preparation of the note card for instructional design skills.
12. Presenting the note card to instructional technology experts.
13. Build An achievement (pre/post) test for instructional design skills.
14. Presenting the achievement (pre/post) test to instructional technology experts.

Third, Make the search experience:

1. Application the Witken's Group Embedded Figures Test.
2. Divide the students into groups.
3. Application expeditionary experiment to search.
4. Application pre-measurement tools.
5. Application the experience.
6. Application post-measurement tools.
7. Collecting the results, and processing for statistical analysis.

Fourth: The statistical treatment of the results:

1. A statistical analysis of the results.

2. Interpret and discuss the results.
3. Results and recommendations and suggestions.

Research Results:

(A) The main effect of the scaffolding Level:

1. The 1st hypothesis was accepted, since there is a significant difference at level (0.01) between the means scores of the students who studied the e-content by Simple Scaffolds, the students who studied the e-content by average Scaffolds, and the students who studied the e-content by heavy Scaffolds, in the post cognitive skills, which returns to the main effect of the scaffolding Level.
2. The 2nd hypothesis was accepted, since there is a significant difference at level (0.01) between the means scores of the students who studied the e-content by Simple Scaffolds, the students who studied the e-content by average Scaffolds, and the students who studied the e-content by heavy Scaffolds, in the post practical skills, which returns to the main effect of the scaffolding Level.

(B) The main effect of the learning style:

3. The 3rd hypothesis was accepted, since there is a significant difference at level (0.05) between the means scores of the field independent students and the field dependent students in the post cognitive skills, in favor of the independent students.
4. The 4th hypothesis was accepted, since there is a significant difference at level (0.05) between the means scores of the field independent students and the field dependent students in the post practical skills, in favor of the independent students.

(C) The Interaction effect between the scaffolding Level and learning style:

5. The 5th hypothesis was accepted, since there is a significant differences at level (0.01) between the means scores of the students in the post cognitive skills, which returns to the interaction effect between the scaffolds Level & the learning style.
6. The 6th hypothesis was accepted, since there is a significant differences at level (0.01) between the means scores of the students in the post practical skills, which returns to the interaction effect between the scaffolds Level & the learning style.

Research Recommendation:

in the light of the results of the current research recommends the Following:

1. Consideration designing the e-content using the scaffolds levels (Simple - average - heavy), to suit the nature of the content and characteristics of the target group.
2. Consideration designing scaffolds in a variety of different forms, where being in suitable design and understandable to the students in order to achieve the maximum benefit of them.

3. Using the list of Standards reached by the current search when designing e-content based on web by Scaffolds, and developing it.
4. Exploit the technology offered by e-learning environments to provide Scaffolds with a variety of instruments and methods.
5. The need for further Arabic studies on Scaffolds, In terms of its forms, types, styles, and levels in e-content, , and variables affecting it.