



Research Article

Assessing the impact of active learning on learning theory module outcomes: a case study at the arabian gulf university distance teaching and training program

Dr. Alajab M. Alajab Ismail

Arabian Gulf University, Kingdom of Bahrain

Author E-mail: alagabm@agu.edu.bh

Abstract

Learning theory (DE0501) is a 3 Cr hour course required for all diploma and masters students, the module aimed at providing an overview of the main theories of education and learning strategies in the context of distance learning, it also aims to emphasize the importance of the formulation of the courses aims and objectives. The course used to be taught at the beginning of the program using a blended learning approach combining face-to-face sessions, online learning activities, and mini-discussions. The current paper aims at assessing the impact of active learning on the module teaching outcomes. Teaching outcomes under investigation included academic achievement covering cognitive sub-domains represented in: knowledge, comprehension, application, analysis, synthesis and evaluation (Bloom, 1956), as quantitative components and satisfaction with learning as a qualitative component. A developmental research approach was used on a sample consisted of 26 male and female (10 male and 16 female) master and diploma students who studying learning theory at the Arabian Gulf University distance teaching and training program, their age range from 24 to 45 years i.e. (M= 31.80 and SD=5. 60). The study used 4 instruments for collecting the needed data students registration records for collecting subjects` demographic information Honey and Mumford learning style inventory which administrated at the beginning of the course was used for assessing subjects` prefer learning styles, three assignments, and final test in learning theory was administrated to collect data related to subjects learning outcomes Bloom (1956), and satisfaction with learning scale which used for collecting data related to subjects satisfaction with learning experience and learning devices. Data analysis reveals that the active learning approach is very effective for teaching learning theory, this approach motives participant for learning and leads to a high degree of satisfaction with the learning experience and helps them to better grades.

Keywords: Activity-based learning, learning theory module, distance teaching and training program, learning outcomes, stratification with learning and motivation for learning.

INTRODUCTION

The Arabian Gulf University located in Manama city, the capital of Bahrain, aims to be an exemplary regional Gulf university striving to focus its efforts on fundamental regional issues of the Gulf Cooperation Council in health, human

development, environment, science and technology and aims to contribute effectively to spread the culture of knowledge and education in Arabian Gulf society. The university composed of two colleges, the college of medicine and medical sciences and college of graduate studies.

The College of Graduate Studies, in which the current study took place was established in 1994, includes programs that existed under the two previous faculties: the Faculty of Applied Science and the Faculty of Education. This College currently includes a wide range of scientific disciplines that are unique and unavailable in other universities of the Arab Gulf states. The College of Graduate Studies in the Arabian Gulf University's administrative structure is totally different from the other units, as it depends on organizing graduate studies between various faculties of the university. It is an academic institution that offers integrated courses for students specializing in various disciplines that are given elsewhere.

The College has programs in special education, through which it creates able educators that are capable of nurturing the talented students, those with learning difficulties, (including students with mental disabilities and autism), as well as preparing specialists to be able to plan and implement distance educational and training programs.

Distance Teaching and Training Program (DTTP) – where the current study took place - is a post graduate program leading to the postgraduate diploma and master degree in distance teaching & training. The program was established in the university year 2004/2005 and aims to develop the human abilities and powers to develop academic and research structures that form a reference in the theoretical and application fields of Distance Teaching and Training to serve the educational and training development plans locally and regionally.

The program was developed to meet the following goals:

1. Develop specialized cadres who acquire the knowledge, ability, educational and technical skills that are required to design, develop, execute, manage, assess and maintain educational and training programs that are suitable for different Distance Teaching media.

2. Energize the scientific research movement in Distance Teaching and Training topics that are related to the Arabian Gulf societies.

3. Develop a scientific and consultant referential that provides Distance Teaching and Training structure with the expertise to help in choosing, developing, managing and assessing distance learning systems.

4. Provide training alternatives for school teachers while working, that enables them to acquire effective teaching skills by learning specific courses that cover theoretical and practical Distance Teaching topics in order to apply them in their classrooms.

5. Provide different forms of Distance Teaching and Training researches that benefits pre-college, college, governmental and private sector educational institutes.

6. Develop learners' abilities to lead Distance Teaching and Training movements and participate in the fields of managing Distance Teaching and Training programs and organizations in the Arabian Gulf countries specifically and in the Arabian countries generally, in order to go along with the new directions of the digital economics and the knowledge management.

Learning theory (DE 0501) is a 3 Cr hour course (module) required for both diploma and master students taught at the beginning of each program with no prerequisites. The aim of this module is to provide an overview of the main theories of education and learning strategies in the context of distance learning, it also aims to emphasize the importance of the formulation of the courses' aims and objectives. The module used to cover the following topics: the basic learning theories including behaviorism, cognitive, social and constructive learning theories; Learning strategies in the context of open and distance education; learning styles and their different classifications; Motivation & motivation theory; Aims and objectives; Bloom's taxonomy of objectives, both Cognitive (Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation) and Affective (Receiving, Responding, Valuing, Organizing and Conceptualizing).

Distance education has created a strong foothold in Arab States university programs. The variety of these programs and departments delivery methods incorporate differing technologies and media that respond to an individual learner needs, and provide alternate methods for obtaining training and certificates.

Goodwin (1993) told us that; distance education has become an attractive complement to the traditional educational systems when conventional methods cannot be used to resolve the problem of reaching the students. The challenge to educational administrators and curriculum developers of the distance education is to design the instruction that will provide adequate information and content of courses. The Arabian Gulf University Distance Teaching and Training Program is mainly established to train espedalized persons in the field of designing, developing, implementing, administrating and evaluating such distance teaching and training activity.

The current study is mainly intended to investigate the impact of active learning approach on learning theory outcomes. Learning outcomes under investigation are academic achievement in learning theory according Blooms (1956), as a quantitative indicator of learning, and satisfaction with learning as a qualitative indicator.

Review of the related literature

The term active learning means different things to different people, while for some the very concept is redundant since it is impossible to learn anything passively. It is an umbrella term that refers to several models of instruction that focus the responsibility of learning on learners. Active learning refers to the process whereby students engage in a learning activity, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of presenting learning's material or class content. Bonwell and Eison (1991) popularized this approach to instruction (Bonwell and Ellison, 1991). This "buzz word" of the 1980s became their 1990s report to the Association for the Study of Higher Education (ASHE). In this report they discuss a variety of methodologies for promoting "active learning". While there has been much enthusiasm for active learning, a variety of research studies since the 1990s, has been promoted an important principle: Guidance early, and then practice later is suggested for the best results (Rankl, 2002).

Many studies have shown evidence to support active learning, Bonwell and Eison (1991) told us that active learning strategies are comparable to lectures for achieving content mastery, but superior to lectures for developing thinking and writing skills. According to Armstrong (1983), students who receive a formal education learn better when they are actively engaged in the learning process as opposed to those who do not partake in the learning process. Actively engaging students motivates deeper thinking about course content, brings additional energy to a classroom, and helps an instructor pinpoint problem areas. On their topic about active learning in the college classroom, Paulson and Faust (1998) presented a wide variety of active learning techniques that can increase student learning in a lecture course. These activities include listening, group, and writing exercises that foster student engagement. The Center for Faculty Excellence presents at the University of North Carolina at Chapel Hill (2009) summarized the current practices of active learning and gives practical suggestions for implementing active learning in a variety of disciplines. Their suggested topics include: questioning techniques, small groups, whole class involvement, and reading and writing exercises. Armstrong (2012) also provided some examples of active tasks as writing papers, problem-based projects, and experiential exercises (e.g., Role-playing).

Prince (2004) examines the evidence for the effectiveness of active learning, provides a definition of active learning and explores the different types of active learning most frequently discussed in engineering education literature. The results include enhanced academic achievement and a number of attitudinal outcomes. In addition, cooperative learning found to provide a natural environment in which to enhance interpersonal skills and there are rational arguments and evidence to show the effectiveness of cooperation in this regard.

Shaw, Ruey-Shiang (2012), investigated the relationships among learning styles, participation types, and learning performance in programming language learning supported by an online forum. Kolb's learning style inventory was used in this study to determine a learner's learning type: "Diverger", "Assimilator", "Converger", and "Accommodator". Social Learning Theory was also used to define four participation types. These types in turn were used to describe the learning associated with the use of online forums: "Replier", "Asker", "Watcher", and "No activity". A total of 144 students participated in this experiment as part of a half semester ASP.NET programming language learning courses. The course contained an online forum for supporting the students' social activities and participation. In this study, "learning score" and "satisfaction" were used to measure learning performance. The results of this study were the following: (1) different learning styles were associated with significantly different learning scores and that the "Accommodator" style was associated with superior learning scores; (2) participation types were also associated with significantly different learning scores and that the "Replier" type is associated with superior learning scores; (3) learning satisfaction is not significantly different among the different learning styles or different participation types, but the average is significantly higher than average values (3.5) of 7-point Likert scale; (4) there is no significant association between learning styles and participation types. Explanations and discussions of these results are offered. Based on the results of this study, we propose that programming language learning, supported with online forums and students' active participation, increases learning performance as measured by student learning scores.

Drake, John R. (2012), critically examined active learning research and reported on a misplaced emphasis leading to paradoxical findings in four areas. First, creating activities for cognitive engagement is not unique to active learning. Second, the amount of instructor led control and direction is often glossed over, leaving a vague impression as to how much is necessary. Third, out of class activities are often ignored when they also accomplish the same effects for the same reasons. Fourth, an over-emphasis on techniques rather than outcomes renders active learning bound to means and not to the ends. Moreover he stated that: in order to achieve meaningful learning of new concepts, an instructor must accomplish four things: (1) clearly define the concepts, (2) provides a proto-typical examples, (3) integrate the concepts within the students' knowledge, and (4) motivate the students to want to learn.

Madyarov and Taef (2012), explored six cases of non-native English speaking students engaged in a distant English-medium course in critical thinking at a university in Iran, framed within activity theory. Their study investigated students' course-related activity systems with a particular focus on the contradictions that underlie any human activity. The

findings indicated that all participants had multiple activity systems within the course environment. Most participants had primary, secondary, and quaternary contradictions that had positive and negative consequences of the expansion of their activity systems. Discussion also includes practical implications for the distance university under study that could potentially be applied to similar distance schools.

The present study is mainly intended to examine the effectiveness of active learning on teaching a graduate course in learning theory at the Arabian Gulf University Distance Teaching and Training Program. The study will provide a definition of active learning and explore the different types of active learning most frequently used for teaching learning theory at AGU as well as the teaching strategy used for delivering the course material.

Planning and developing active strategy for teaching learning theory

Teaching activities based on electronic and digital communication has become an essential way to activate learning and training and to break time and place restrictions to fulfill learning and training constantly growing demands; Whether the targeted population was public schools' students, higher education institutes or old or new governmental or private sector employees.

When planning an active learning activity, University of Minnesota center for teaching and learning (2012) suggested many questions that will help the learning developer to clarify his goals and structure. Their suggestion includes the following:

1. What are the objectives for the activity?
2. Who will be interacting? Will students pair up with someone beside them or someone sitting behind/in front of them? Should they pair up with someone with a different background? Someone they don't know yet?
3. When does the activity occur during the class? Beginning? Middle? End? How much time are you willing to spend on it?
4. Will students write down their answers/ideas/questions or just discuss them?
5. Will students turn in the responses or not? If they are asked to turn them in, should they put their names on them?
6. Will you give individuals a minute or so to reflect on the answer before discussing it or will they just jump right into a discussion?
7. Will you grade their responses or not?
8. How will students share the paired work with the whole class? Will you call on individuals randomly or will you solicit volunteers?
9. If students are responding to a question you pose, how are you going to ensure that they leave with confidence in their understanding? (Often, if various student answers are discussed without the instructor explicitly indicating which ones are "right," students become frustrated. Even with a question that has no absolute "right" answer, students want to know what the instructor's stand on the question is.)
10. What preparation do you need to use the activity? What preparation do the students need in order to participate fully?

Bloom's (1956) Taxonomy of Knowledge

Bloom's (1956) taxonomy, or classification, of learning objectives, organized the objectives into three domains or groups:

- Cognitive, referring to knowledge
- Affective, referring to feelings
- Motor, referring to physical skill.

Cognitive Domain

The cognitive domain involves the development of intellectual abilities and problem-solving tasks. According to Bloom (1956). This domain can be analyzed into six levels, each of which has associated with it a group of verbs that allow us to define appropriate learning objectives for that level. These levels in ascending order are:

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation.

It is important to remember that when you prepare ODL materials you should ensure that you are phrasing objectives at the correct level of this taxonomy. For example, it would be unusual in Higher Education to have objectives using verbs from the lowest two levels of the taxonomy, except at the very beginning of a program of study.

Affective and Motor Domains

The affective domain is concerned with values and the perception of value issues. It ranges from awareness to being able to distinguish implicit values through analysis, (Kratwohl, Bloom and Masia, 1964). The hierarchy is as follows:

- Receiving
- Responding
- Valuing
- Conceptualizing
- Characterizing by value.

This would give rise to objectives that could not be articulated or assessed easily, so ODL design tends to focus on the cognitive objectives. It is worth mentioning that the affective domain has included here for completion but it is important to remember that they have less significance than the cognitive domain in the context of ODL design

THE STUDY

Purpose of the study

The purpose of the current study is to describe the content of the learning theory graduate course taught at the Arabian Gulf University Distance Teaching and Training Program, the active learning strategy used for teaching a graduate course in learning theory (DE0501) and assess its impact on the participants' learning outcomes. Teaching outcomes under investigation in this study included academic achievement covering cognitive sub-domains represented in: knowledge, comprehension, application, analysis, synthesis and evaluation (Bloom, 1956), as quantitative components and satisfaction with learning as a qualitative component.

Question of the study

The following study guided the active learning investigation:

- 1) What are the characteristics of the Arabian Gulf University Distance Teaching and Training Program learning theory participants like?
- 2) What is the Arabian Gulf University Distance Teaching and Training Program learning theory graduate course like?
- 3) What are the main components of the active learning strategy used for teaching learning theory graduate course at the Arabian Gulf University?
- 4) What is the impact of the utilized learning strategy on learning theory participants quantitative learning outcomes related to Blooms' cognitive domains?
- 5) What is the impact of the utilized learning strategy on learning theory participants' qualitative learning outcomes represented in subjects satisfaction with the learning experience?

The importance of the study

The present study hoped to provide evidence on the effectiveness of active learning for teaching graduate students who are under training in the field of the distance teaching and training development and expected to develop active learning for distance and online context and learning environments. It is also hoped that the used active learning strategy will positively contribute in improving the quantitative and qualitative learning outcomes of the course. The results of the study expected to highlight the strength of active learning and drive some reconditions that may encourage educational faculties at the Arabian Gulf University and institutions with similar education context to move from traditional teaching strategies based on faculty presentation with passive receiving from the student to more interactive learning situation in which students actively participated and build their own learning.

Keywords

For the purpose of this study, the following keywords are defined in order to provide clarity.

Active learning:

Refers to the process whereby students engage in activities, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of class content. Cooperative learning, problem-based learning, and the use of methods and case simulations are some approaches that promote active learning.

Learning theory module :

Module refers to an instructional package with a single theme that provides the information needed to develop mastery of specific knowledge and skills and serves as one component of a total course or curriculum (Dick et al., 2009). Learning theory module (DE0501) is a 3 Cr hour course required for all diploma and masters students at the Arabian Gulf University. The module aimed at providing an overview of the main theories of education and learning strategies in the context of distance learning, it also aims to emphasize the importance of the formulation of the courses aims and objectives.

Distance Teaching and Training Program (DTTP):

One of the graduate educational programs at the Arabian Gulf University leading to postgraduate diploma and master degree in distance teaching & training. It is a module based approach post graduate program and mainly intended to train the practice in developing face-to-face , blended and electronic solutions for all problems facing education and training.

Learning outcomes:

In some educational organizations the term learning outcome is used in the part of a course description where the aims are normally found. One can equate aims to intended learning outcomes and objectives to measured learning outcomes. A third category of learning outcome is the unintended learning outcome which would include beneficial outcomes that were neither planned nor sought but are simply observed.

Satisfaction with learning:

Lim, Morris and Kupritz (2006) define the students' satisfaction with instructional components such as the unit delivery, instructor, learning activities, group work and learning support. In this study, it meant measuring the student satisfaction with the learning theory module components represented in: *Module objectives, Prerequisite. Components, Learning, Learning activities, Self assessment, Language, Level , Presentation pace, Time, and Motivation.*

All these components were assessed by a satisfactory instrument (yardstick) administered to the students at the end of the course.

Motivation for learning.

Motivation is a psychological feature that arouses an organism to act towards a desired goal and elicits, controls, and sustains certain goal directed behaviors. It can be considered a driving force; a psychological drive that compels or reinforces an action toward a desired goal. For example, hunger is a motivation that elicits a desire to eat. Motivation has been shown to have roots in physiological, behavioral, cognitive, and social areas.

In this study, motivation for learning refers to the force that drive a learner for acquiring new, or modifying existing, knowledge, behaviors, skills, values, or preferences and may involve synthesizing different types of information to fulfill the goal of his learning.

METHOD AND PROCEDURE

Twenty six (26) students who registered for the postgraduate diploma and master degree in distance teaching and training at the Arabian Gulf University were participated in the active learning experiment. To assess the impact of active learning on subjects` learning outcomes, the study utilized a developmental research methodology. Developmental research, as opposed to simple instructional development, has been defined as the systematic study of designing, developing, and evaluating instructional programs, processes, and products that must meet criteria of internal consistency and effectiveness (Rita and Richey, 1994).

The two major types of design and development research are (1) product and tool research and (2) model research.

The two categories of design and development research have been previously called **Type 1** and **Type 2** (Richey et al., 2004), but it may be easier to grasp the breadth of these types by looking at their general outcomes. The first type of research pertains primarily to studies of the design and development of products and tools, such as Preese and Foshay's (1999) research on the development and impact of a set of object-oriented authoring tools. Often the entire design and development process is documented. Some research, however, concentrates on one aspect of design and development only (such as production) or deemphasizes some phases (such as needs assessment).

Many recent studies focus on the design and development of technology-based instruction. This type of research has a tendency to combine the task of doing design and development and studying the processes. The second type of design and development research pertains to studies of the development, validation, and use of design and development models, such as Adamski's (1998) research on models for designing job aids used in high-risk situations. These studies focus on the models and processes themselves, rather than their demonstration. So the present study is a design and development research type 1 which intended to develop a systematic solution for an educational problem and to test the impact of this proposed solution in reality.

Instruments and validity of instrument

To collect data needed for the study, four instruments were in use. Includes are: [1] Students Rgersteration Records for collecting subjects` demographic information, [2] Honey and Momford learning Style Inventory which administrated at the beginning of the course and used for assessing subjects` prefer learning styles, [3] three assignments and post test in learning theory were administrated to collect data related to subjects learning outcomes according to Bloom Taxonomy of learning (1956), and [4] satisfaction with learning instrument which used for collecting data related subjects satisfaction with learning experience and learning devices.

Procedures

The activities of this study took place during the first semester of the academic year 2012/2013 at the Arabian Gulf University Distance Teaching and Training Program with the students who studying learning theory module. The face-to-face sessions were taught at the Arabian Gulf University Smart Lab. Smart Lab is a well established learning environment, and well equipped with computer and internet facilities as well as the needed multimedia software. The lab environment fit for around 35 students at a time, they can easily access the course online component through the university Blackboard LMS, download the course materials and handouts, upload their assignments and participate in discussion with their tutors and their colleagues using the Blackboard communication tools.

It is worth mentioning that, the intensive face to face sessions were administrated at the first week of the learning theory module for around 30 contact hours. The learning style questionnaire was administrated at the beginning of the course, while, course assignments, course final exam and satisfaction with learning instrument were administrated at the end of the course.

Data analysis

The Statistical Package for Social Sciences (**SPSS**) Version 18 was used for analyzing the collected data. The Cronbach's alpha test was used to analysis item's reliability for the satisfaction with learning questionnaire. T- test for independent variables and the Analysis of Covariance (ANCOVA) test were used to test the impact of active learning on subjects learning outcomes. One sample t-test was used to test the level of subjects1 satisfaction with learning variables. Descriptive statistics (mean, standard deviations, and percentage) were used for analyzing subjects` demographic data and learning style. Results were analyzed, tabled as shown in the results section.

RESULTS

Results related to question1: *What are the demographic chartatestivcs of the learning theory participants?*

One objective of the present study is to describe the demographic characteristics of distance teaching and training program participants who studying the learning theory course in the first semester of the academic year 2012/2012. The results of the demographic data analysis were shown in Table 1. As seen in Table 1, around 16 (63%) of the sample are female and 10 (37 %) are male, 33.3 % (9) of the sample from Bahrain, 11.1 % (3) from Saudia Arabia and more fifty percent 15 (55.6%) from Kuwait State. Around 44.4 % (12) of the sample graduated with an education and science education university degree, 11.1% (3) with a university degree in computer science and engineering, 1 (3.7 %) with a

university degree in science, and 11 (40.7 %) with a university degree in humanities and languages. Concerning the program of the study , 14 (51.9%) registered for the post graduate diploma in distance teaching and training, and 12 (48.1) for the master degree.

Table 1. Charatrestics of the participants

Variable	%
<u>Gender</u>	
Male	37.0
Female	63.0
<u>Age</u>	
Mean	31.81
Std. Deviation	05.60
Maximum	45.00
Minimum	24.00
<u>Nationality</u>	
Bahrain	33.3
Saudi Arabia	11.1
Kuwait State	55.6
<u>University degree</u>	
Educational sciences	44.4
Computer science & engineering	11.1
Sciences	03.7
Humanaties& Languages	40.8
<u>Learning style</u>	
Theoristit	33.4
Activist	11.1
Pragmatist	14.8
Reflector	40.7
<u>Program of study</u>	
Postgraduate diploma	51.9
Master	48.1

Results related to the research question 2: *What is the Arabian Gulf University Distance Teaching and Training Program learning theory graduate course like?*

Learning theory (DE 0501) is a 3 Cr hour course (module) required for both diploma and master students taught at the beginning of each program with no prerequisites. The aim of this module is to provide an overview of the main theories of education and learning strategies in the context of distance learning, it also aims to emphasize the importance of the formulation of the courses' aims and objectives. The module used to cover the following topics: the basic learning theories including behaviorism, cognitive, social and constructive learning theories; Learning strategies in the context of open and distance education; learning styles and their different classifications; Motivation and motivation theory; Aims and objectives; Bloom's taxonomy of objectives, both Cognitive (Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation) and Affective (Receiving, Responding, Valuing, Organizing and Conceptualizing). The module five units Table (2) shows the module unit, the topics and the learning objectives for each unit.

Table 2. Learning theory units, topics and learning objectives

Unit	Main topics	Learning objectives
Introduction	<ul style="list-style-type: none"> - Learning theory – an introduction - How the module works - Assessment - Diagnosing learning needs 	Aims: to introduce DTT diploma and masters' student to the learning theory module, how the module work, the module assessment strategy and help him to diagnose his learning needs.
Unit 1: Theories of learning	<ul style="list-style-type: none"> - Introduction - What is learning? - Learning as a noun - Learning as a process - Behaviorist learning theory - Cognitive learning theory - Experience and social learning - Andragogy - Experiential learning - Social learning theory - Some final topics 	<p>After completing this unit you should be able to:</p> <ol style="list-style-type: none"> 1. Compare and contrast the principles of behaviorist, cognitive and social theories of learning 2. Apply relevant ideas from these theories to the design of ODL materials. 3. Apply the cycle of experience developed by Kolb to your own teaching.
Unit 2: Constructivism	<ul style="list-style-type: none"> - What is constructivism? - Constructivist theory 	<p>After completing this unit you should be able to:</p> <ol style="list-style-type: none"> 1. Explain the central ideas of constructivist theory 2. Distinguish between cognitive and social constructivism 3. Apply the principles of constructivism to the writing of ODL materials
Unit 3: Learning styles and Motivation	<ul style="list-style-type: none"> - Introduction: the need to understand learning styles - Honey and Mumford's LSI (1992) - Learning styles and Kolb's (1984) cycle - Motivation - Maslow's Hierarchy of needs - Vroom's expectancy theory - Motivation & learning - Deep and surface learning 	<p>After completing this unit you should be able to:</p> <ol style="list-style-type: none"> 1. Explain the purpose of classifying learning styles 2. Determine your own learning style profile 3. Compare Kolb's (1984) cycle of experiential learning with Honey and Mumford's (1992) classification of learning styles 4. Explain Maslow's (1943) hierarchy of motivational needs and 5. Compare it with other theories of motivation 6. Distinguish between deep and surface learning.
Unit 4: Active learning	<ul style="list-style-type: none"> - Successful learning. - The principles of good open learning writing 	<p>After completing this unit you should be able to:</p> <ol style="list-style-type: none"> 1. Identify and apply the principles of successful learning. 2. Identify and apply the principles of good ODL writing
Unit 5: Aims and Objectives	<ul style="list-style-type: none"> - Hierarchies of learning process - Bloom's (1956) Taxonomy - Cognitive domain - Affective and motor domain - Aims, outcomes and objectives - Objectives and assessment 	<p>After completing this unit you should be able to:</p> <ol style="list-style-type: none"> 1. Explain is learning as a process 1. Classify objectives using Bloom's taxonomy of objectives in the Cognitive domain 2. Explain why Bloom's taxonomy of objectives in the affective domain is less useful for ODL writers 3. Distinguish between aims and objectives 4. Align learning objectives with assessment
Unit 6: Terminology	<ul style="list-style-type: none"> - Open learning - Distance learning - Flexible learning - Independent learning - Resources based learning - Online learning 	<p>After completing this unit you should be able to:</p> <ol style="list-style-type: none"> 1. Distinguish between terms such as 'open', 'distance' and 'flexible' learning 2. Explain what is meant by 'e-learning' and 'online learning'

Results related to question3: *What are the main components of the active learning strategy used for teaching learning theory graduate course at the Arabian Gulf University?*

The main components of the active learning strategy used were composed of the three parts:

Learning Material

A workbook in learning theory written based on the learning devices that fit for distance and open learning and support

self learning approach. The workbook contained 6 learning units (see table2) and around 50 learning activities with the needed feedback. The learning structure of the units was developed based on Gagne's theoretical framework appears to belong to the behaviorist group of theories. Although it has been applied in many domains, its original application was in military training settings. Each learning unit has:

- Gained the learner attention by means of an opening paragraph
- Informed him the objectives for each unit.
- Ask him to recall prior learning by referring back to previous units, for example, to the theories in unit 1.
- Presented the stimulus of a number of theories and ideas to him
- Provided learning guidance in his explanations
- Elicited performance by asking him to complete activities.
- Provided feedback to the activities
- Asked him to assess his own performance by providing self-assessment questions and answers .
- Enabled retention and transfer by providing a variety of examples

Online Environment

The online learning environment component of the module was systematically developed to meet the participant's needs of having a platform to communicate following to leaving the college campus. The home page of the online environment provided through Blackboard was made up of needed study and communication tools to facilitate the needed learning interactions. The screen shot displayed in figure (1) shows learning theory home page.

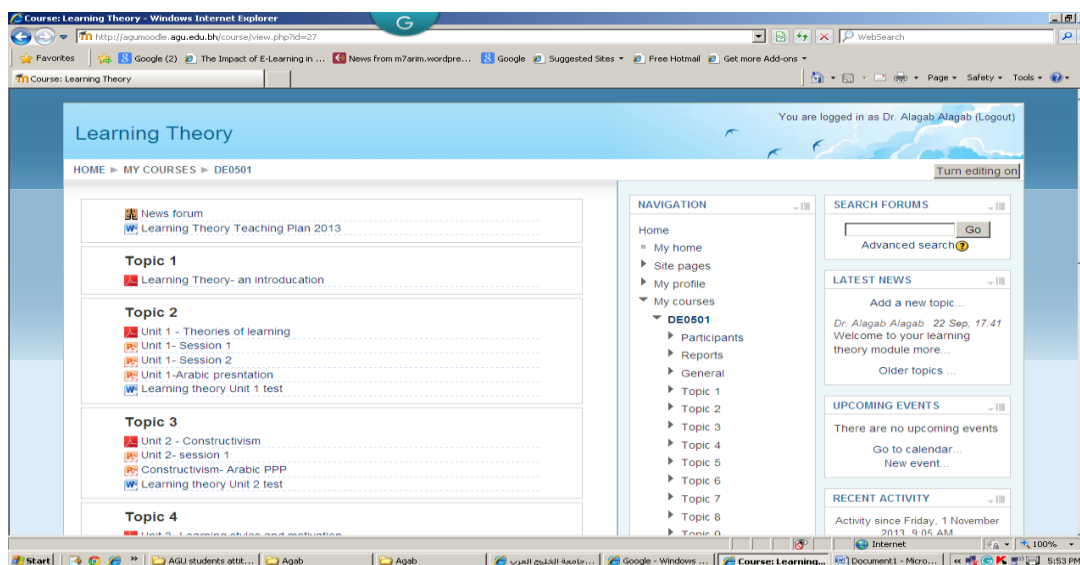


Figure 2. learning theory homepage

Test Material

Test material in this study is: three assignment in learning theory; the first on how to motivate a distance learning, the second is a review topic on an educational psychologist and his contributions of his thought in developing the distance education field, and a third assignment in writing aims and objectives for a learning unit.

A final closed book exam as well as a learning satisfaction questionnaire was administrated at the end of the module so as to assess the impact of the proposed active learning strategy for subjects mastery of the course objectives, their performance, their achievement and satisfaction with the active learning experience.

Delivery Models

For the purpose of the study, a blended learning delivery was used. This includes intensive face-to-face sessions (around 30 contact hours), mini lectures, class discussions, collaborative learning, online discussions and tests. The delivery modes used in this study mixed between conventional teaching and online learning via the Arabian Gulf University Blackboard LMS.

Results related to question4: *What is the impact of the utilized learning strategy on learning theory participants quantitative learning outcomes related to Blooms` cognitive domains?*

To test the impact of the utilized learning strategy on subjects` learning outcomes according to Bloom`s (1956), one sample t-test was administrated. Table 3 shows summarized results of data analysis related to subjects achievement in learning theory module.

Table 3. learning theory descriptive statistics (achievement)

Sub-domain	N	Mean	Std. Deviation
Knowledge	26	9.4231	.70274
Comprehension	26	8.4615	2.13973
Application	26	8.9231	1.09263
Analysis	26	8.3462	1.12933
Theynsis	26	8.6731	.34474
Evaluation	26	8.7308	.43797
Total achievement	26	89.8846	3.44473

Table 3 showed that, the overall average of subjects achievement in learning theory is (M=89.88, SD=3.44).

Concerning subjects` achievement classified in Bloom sub-domains, knowledge scored the highest mean (M=9. 42, SD=. 70), the application came second and scored (M=8. 92, SD=1. 09), evaluation (M= 8.73, SD .438), thenysis third and (M= 8.6731, SD=. 34474) , and last came analysis (M=8. 35, SD=1. 13) out of 10.

To test the impact of active learning on learning theory outcomes related to the gender of the subject (male , female), and the program of study (diploma, master), independent samples t-test was used (see table 4).

Table 4. learning theory independent t-tested to boost results (Gender)

Sub- domain	Sex	N	Mean	Std. Deviation	Sig.(2-tailed)
Knowledge	Male	10	8.9000	.73786	.001
	Female	16	9.7500	.44721	
Comprehension	Male	10	8.2000	2.20101	.632
	Female	16	8.6250	2.15639	
Application	Male	10	8.8000	1.13529	.659
	Female	16	9.0000	1.09545	
Analysis	Male	10	8.5000	1.35401	593
	Female	16	8.2500	1.00000	
Theynsis	Male	10	8.6000	.31623	.404
	Female	16	8.7188	.36372	
Evaluation	Male	10	8.5500	.39511	.097
	Female	16	8.8438	.43661	
Total achievement	Male	10	88.1000	2.55821	.034
	Female	16	91.0000	3.52136	

Table 4, shows that there is a significant difference between the overall means of achievement according to the sex of the student . Female students overall mean is greater than the male students overall mean i.e. (Females overall mean=91. 00, SD=3. 52; Males overall mean=88. 256 and up (0.5) = .034).

Table 5. learning theory independent t-test results (Program of study)

Sub-domain	Program	N	Mean	Std. Deviation	Sigh. (2-tailed)
Knowledge	Postgraduate diploma	14	9.5000	.65044	.557
	Master	12	9.3333	.77850	
Comprehension	Postgraduate diploma	14	8.5714	2.27746	.784
	Master	12	8.3333	2.05971	
Application	Postgraduate diploma	14	9.2143	1.12171	.145
	Master	12	8.5833	.99620	
Analysis	Postgraduate diploma	14	8.4286	1.28388	.696
	Master	12	8.2500	.96531	
Theynsis	Postgraduate diploma	14	8.7500	.32522	.226
	Master	12	8.5833	.35887	

Continuation of Table 5

Evaluation	Postgraduate diploma	14	8.7143	.42582	.841
	Master	12	8.7500	.47001	
Total achievement	Postgraduate diploma	14	90.5714	3.43543	.281
	Master	12	89.0833	3.42340	

Results related question 5: *What is the impact of the utilized learning strategy on learning theory participants' qualitative learning outcomes represented in subjects satisfaction with the learning experience?*

To test the impact of the proposed active learning strategy on subjects satisfaction with learning, Cronbach's Alpha, descriptive statics as well as an independent samples (t-test) was used. Table 6 show results related to scale reliability test results.

Table 6. Satisfaction with learning scale reliability test

Mean	Variance	Std. Deviation	N of Items	Cronbach's Alpha
123.9600	80.707	8.98369	28	.845

The results in table 6 , displayed Cronbach's Alpha coefficient for the satisfaction with learning an instrument which found to be (. 845); subjects` overall mean (123.96), the variance (80.707), and the standard deviation of (8.983) for an instrument of 28 items. While table 8, displayed subjects` satisfaction with learning one samle-test results as well as the degree of confidence for (a mean of test value =3).

Table 7. Learning Theory Satisfaction with Learning Sub-domains means and Std. Deviations

Sub -domain	N	Mean	Std. Deviation
Module objectives	25	4.5500	.51539
Prerequisite	25	4.2000	.66144
Components	25	4.3733	.59566
Learning	25	4.3800	.58238
Learningactivities	25	4.3600	.65383
Selfassessment	25	4.7800	.32532
Language	25	4.2200	.75111
Level	25	4.4133	.59535
Presntationpace	25	4.1200	.65884
Time	25	4.4667	.50000
Motivation	25	4.8800	.29861
Total	24	4.4165	.32331

Table 7 , reports subjects` overall means, and standard deviations on satisfaction with learning instrument.

✓ Results reveal that subjects are highly satisfied with the learning theory module i.e. The overall satisfaction mean is (m=4. 41, SD=. 323).

✓ All satisfaction components scored between (high to very high) level of satisfaction with the learning experience, i.e. (All means ranged between 4.00-5.00).

✓ The role of learning theory module in **motivation** reported as the highest satisfied component of the module (m=4. 88, SD=. 29) then come, the self assessment questions **SAQs** (m=4. 78, SD=. 59) and the module learning objectives (m=4. 55, SD=. 51) .

✓ The presentation pace (m=4. 12, SD=. 65), and the language of the module (m=4. 22, SD= .75) scored the lowest level of satisfaction compared to others satisfaction components.

To test the impact of active learning on subject satisfaction with learning, a one-sample t-test was run to determine whether subjects scores in satification with learning scale was different to normal, defined as a satification level score of 3.0 on a likert 5 level scale. Table 8 shows one sample statistics results concering subject's response on learning theory module satification with learning questionnaire.

Table 8. learning theory satisfaction one sample-test results with a confidence interval of 95%

Sub -domain	Test Value = 3				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Module objectives	15.037	24	.000	1.55000	1.3373	1.7627
Prerequisite	9.071	24	.000	1.20000	.9270	1.4730
Components	11.528	24	.000	1.37333	1.1275	1.6192
Learning	11.848	24	.000	1.38000	1.1396	1.6204
Learning activities	10.400	24	.000	1.36000	1.0901	1.6299
Selfassessment	27.358	24	.000	1.78000	1.6457	1.9143
Language	8.121	24	.000	1.22000	.9100	1.5300
Level	11.870	24	.000	1.41333	1.1676	1.6591
Presntationpace	8.500	24	.000	1.12000	.8480	1.3920
Time	14.667	24	.000	1.46667	1.2603	1.6731
Motivation	31.479	24	.000	1.88000	1.7567	2.0033
Total	21.465	23	.000	1.41655	1.2800	1.5531

Satisfaction with learning scores were normally distributed, as assessed by Shapiro-Wilk's test ($p > .05$) and there were no outliers in the data, as assessed by inspection of a boxplot. All satisfaction with learning sub-domain means; were greater than the normal satisfaction with learning score of 3.0, and are statistically significant difference of 0.000 (95% CI).

To test the differences in the impact of active learning on subjects' satisfaction with learning related to the sex of the participant (male, female), paired sample T-test was used. Table 9, shows the results of the paired sample statistics based on participant gender (male, female).

Table 9. Satisfaction with Learning independent sample t-test results (Gender factor)

Sub -domain	Sex	N	Mean	Std. Deviation	Sig.(2-tailed)
Module objectives	Male	10	4.5750	.55340	.848
	Female	15	4.5333	.50768	
Prerequisite	Male	10	4.4000	.65828	.224
	Female	15	4.0667	.65101	
Components	Male	10	4.5000	.36004	.397
	Female	15	4.2889	.71121	
Learning	Male	10	4.4000	.51640	.892
	Female	15	4.3667	.63994	
Learning activities	Male	10	4.1500	.70907	.196
	Female	15	4.5000	.59761	
Self assessment	Male	10	4.8000	.25820	.808
	Female	15	4.7667	.37161	
Language	Male	10	4.2500	.67700	.875
	Female	15	4.2000	.81941	
Level	Male	10	4.5000	.61363	.564
	Female	15	4.3556	.59717	
Presntationpace	Male	10	4.1333	.63246	.936
	Female	15	4.1111	.69769	
Time	Male	10	4.5000	.54997	.792
	Female	15	4.4444	.48250	
Motivation	Male	10	5.0000	.00000	.102
	Female	15	4.8000	.36839	
Total	Male	9	4.4484	.33269	.719
	Female	15	4.3974	.32776	

✓ Data analysis reveals that there is no statically significance differences in subjects satisfaction level related to their gender (male-female).

✓ Both male and female students who registered for the learning theory are highly satisfied with the active learning experience.

Testing the impact of active learning on subjects' satisfaction with learning according to their program of study.

Table 10 displayed subjects satisfaction with learning 2-sample t-test results according to program of study (master, postgraduate diploma).

Table 10. Satisfaction with Learning independent sample t-test results (Program Factor)

Sub -domain	Program	N	Mean	Std. Deviation	Sig.(2-tailed)
Module objectives	Postgraduate diploma	13	4.6154	.42836	.521
	Master	12	4.4792	.60733	
Prerequisite	Postgraduate diploma	13	4.1154	.65044	.517
	Master	12	4.2917	.68948	
Components	Postgraduate diploma	13	4.3846	.38118	.924
	Master	12	4.3611	.78442	
Learning	Postgraduate diploma	13	4.4231	.40032	.709
	Master	12	4.3333	.74874	
Learning activities	Postgraduate diploma	13	4.5769	.44936	.084
	Master	12	4.1250	.77239	
Self assessment	Postgraduate diploma	13	4.8077	.25318	.667
	Master	12	4.7500	.39886	
Language	Postgraduate diploma	13	4.1923	.77831	.853
	Master	12	4.2500	.75378	
Level	Postgraduate diploma	13	4.2821	.60624	.260
	Master	12	4.5556	.57443	
Presentation pace	Postgraduate diploma	13	4.2308	.71213	.393
	Master	12	4.0000	.60302	
Time	Postgraduate diploma	13	4.4359	.55083	.756
	Master	12	4.5000	.46057	
Motivation	Postgraduate diploma	13	4.9231	.18777	.465
	Master	12	4.8333	.38925	
Total	Postgraduate diploma	12	4.4283	.22109	.865
	Master	12	4.4048	.41155	

- ✓ Data analysis reveals no statically significance differences in subjects satisfaction level related to the program of the study (diploma- master).
- ✓ Both diploma and the masters` in distance education and training participants are highly satisfied with the active learning experience.

LEARNING THEORY COURSE REPORT SUMMARY

Table 11. Learning Theory Course Summary

Credit Hours	# Instructors	# Lectures Hrs.	# Labs	# Quizzes	# Assignments	# Exams
3.0	1	30	6	6	3	1

The learning theory module (course) used to be taught at the beginning of the first semester of Arabian Gulf University academic year since 2005/2006 in a blended learning (mini-lecture/case studies, discussion, laboratory and online learning) format. Dr. Alajab Mohammed Alajab has been coordinating and administrating the course since October 2005. There is one session for DTTP diploma and master students, i.e. Learning theory is a required course for both diploma and master candidates. The course traditionally represents a strong foundation content related to principles of learning that underpin distance and open learning, and continues to be strong in those areas put theory into practice. Also, the course has been strong in the areas of enhancing social communication skills and involving students in active learning and online discussion.

In 2012, the course generally went well and taught for around 26 candidates. There were some concerns over the module final examination, which was a closed book exam formulated by the course tutor. The grades were above average this year than in the past 2 years. A notable remark was that; learning theory candidates score lower marks in exam items assessing their synthesis component of the course (Blooms, 1956) i.e. (Adding further examples and particles will help learning theory candidate to apply theory into practice is highly recommended). Because learning theory is the first module in the higher diploma and master program study plan, in class power point presentations (ppt)

sessions need to be translated into Arabic so as to help subjects` mastery of the course objectives related knowledge component, especially in the 3rd unit of the course covering learning styles and motivation. Adding online quizzes and take home make-up exams covering the whole module topics in order to ensure the principles of learning driven from the different learning schools were required and recommended for better learning outcomes. Table 12 displayed learning theory grade distributions, while figure 1 displays a bar graph of learning grade distribution.

Table 12. Learning Theory Grade distribution

Grade	A	A-	B+	B	Total
Frequency	13	10	2	1	26
%	50%	38.46%	7.69%	3.85 %	100%

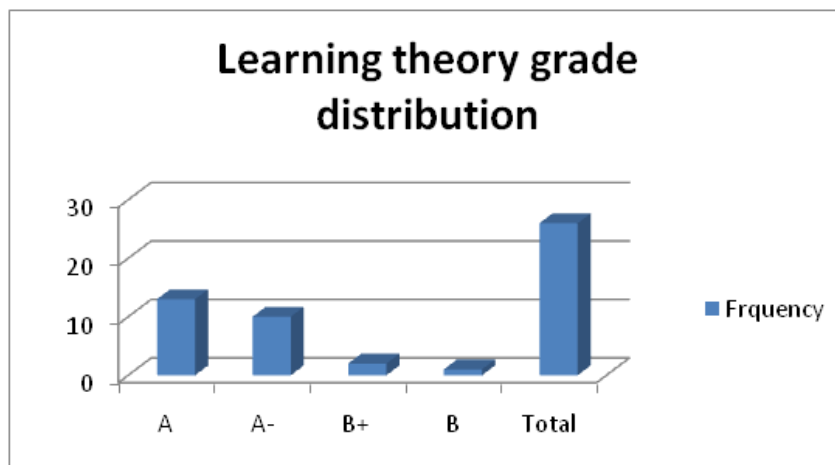


Figure 2. learning theory grade distribution

In the free response session of the course evaluation instrument, learning theory participants reported the following points:

1. Learning theory is well organized and fundamental for open and distance learning.
2. The material was written in English and thus need to learn the language first and then aster the content.
3. It is recommended for the student to read the material before the class.
4. The duration for studying the course is short so extra time is needed.
5. The activities and self assessment questions (SAQs).
6. The learning activities and its application in ODL.
7. The active learning approach used by the course tutor is highly interesting and help in disgust the course contents and topics and accelerate the learning process.

Plans for 2013/2014

In 2013, the course format will not change significantly. However, course instructions will be re-evaluated and some topics will be added due to changes in media and ODL changes and needs. The instructor has planned to add a 7th unit in the learning theory module to cover past modernism theories of learning in general, and explore connetivisim as a theory for the digital age that explains the nature of social network learning like Web.2.0 and Facebook . We also plan to translate the power point presentation (ppt) component of the course into Arabic so as to help the participants who faced language difficulties, and help transferring from theory into its practice in read educational situations. A significant revision of the course notes and content plans for this section.

CONCLUSION AND RECOMMENDATIONS

The distance teaching and training program at the Arabian Gulf University has succeeded in establishing strong theoretical and empirical experiences in blending and integrating elctornic and virtual learning environments such as WebCT, Blackboard and Moodle into varieties of interactive learning approaches in teaching for the diploma and master

students. Active learning found to be a successful approach for teaching learning theory and lead to high level of performance and achievement within Bloom's (1956) taxonomy of learning. Knowledge was the most component affected by the proposed approach, then come application. On the other hand this is the least learning component affected by the treatment. The most benefit that derived from developing and evaluating active learning strategies for learning theory AGU distance teaching and training program was the transforming of the learning experience from a teacher-centered a learner-centered philosophy. However, this is the most accepted trend by distance education and instructional designers.

The active learning strategy used in this study proved to be a successful in helping the participant who engaged in learning theory module activities to master the learning objectives within a relevant context of ODL. It enabled the students to share their individual learning experiences with each other through Blackboard communication tools and discussion board, and helped them to conduct an online search for extra websites to expand their experiences in the field and its current applications for learning and training purposes.

Although the active learning experience at the Arabian Gulf University was limited to the distance teaching and the training program curriculum, the results are promising and far-reaching. The results of the study indicated that active learning proved to enhance learning theory participants' achievement in all Cognitive domain components occurring to Blooms (1956), their satisfaction with the active learning experience as well as enforcing their motivation to learn about learning theory and its applications in ODL. The findings of this study represent a valuable tool to help college of graduate studies to make the transfer from a **Teacher- centered** approach of teaching to an active learning task that concentrated on the learners and help them construct their own learning.

References

- Bloom B S (Ed.) (1956). *Taxonomy of Educational Objectives, the classification of educational goals Handbook I: Cognitive Domain*, New York: McKay
- Bonwell C, Eison J(1991). *Active Learning: Creating Excitement in the Classroom* AEHE-ERIC Higher Education Report No. 1. Washington, D.C.: Jossey-Bass. ISBN 1-878380-08-7.
- Bonwell C and Eison J (1991). *Active Learning: Creating Excitement in the Classroom*. ERIC Digest,
- Center for Teaching and Learning, University of Minnesota (2012). *What is active learning?*. Retrieved April 7, 2013 from <http://www1.umn.edu/ohr/teachlearn/tutorials/active/what/index.html>
- Dick W, Carey L, Carey J O (2009) .*The Systematic Design of Instruction* (7th Ed.). Pearson publishing company, Upper Saddle River, New Jersey. Pp. 382.
- Drake JR (2012). *A Critical Analysis of Active Learning and an Alternative Pedagogical Framework for Introductory Information Systems Courses* (EJ971759). J. Info. Technol. Edu. Innovations in Practice. 11: 39-52.
- Goodwin B(1993). *Perceptions and attitudes of faculty and students in two distance learning modes of delivery: Online computer and telecourse*. Unpublished doctoral dissertation, University of Arizona, USA.
- Joel Michael(2012). "Where's the evidence that active learning works?". Advan.physiology.org. <http://advan.physiology.org/cgi/content/short/30/4/159>. Retrieved 2012-11-17.
- Scott J A (1983). "Learner Responsibility in Management Education, or Ventures into Forbidden Research (with Comments)". *Interfaces* 13. <http://marketing.wharton.upenn.edu/documents/research/Learner%20Responsibility.pdf>.
- Scott J A (2012). "Natural Learning in Higher Education". *Encyclopedia of the Sciences of Learning*.
- Renkl A, Atkinson RK, Maier UH, Staley R(2002). *From example study to problem solving: Smooth transitions help learning*. J. Exp. Edu. 70 (4): 293–315.
- Madyarov I, Taef A(2012). *Contradictions in a Distance Course for a Marginalized Population at a Middle Eastern University* (EJ983274). *International Review of Research in Open and Distance Learning*, 13(2):77-100.
- McKeachie WJ, Svinicki M(2006). *Teaching Tips: Strategies, Research, and Theory for College and University Teachers*. Belmont, CA. Wadsworth.
- Shaw Ruy-Shiang (2012). *A Study of the Relationships among Learning Styles, Participation Types, and Performance in Programming Language Learning Supported by Online Forums* (EJ947424). *Computers and Education*, 58(1):111-120.
- The Center for Faculty Excellence presents at the University of North Carolina at Chapel Hill (2009). *Classroom Activities for Active Learning*. Available online at : <http://cfe.unc.edu/pdfs/FYC2.pdf>
- Paulson D R, Faust JL(1998). *Active Learning for the College Classroom* . California State University, Los Angeles. Available online at: <http://www.calstatela.edu/dept/chem/chem2/Active/>
- Prince M(2004). *Does Active Learning Work? A Review of the Research* . *Journal of Engineering Education*. Available online at: http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/Prince_AL.pdf
- Siegfried TL(2000). *Determine the effectiveness of distance education methods in providing instruction in rehabilitation counseling /communicable skills in a graduate course of study*. Unpublished doctoral dissertation, University of Northern Colorado, USA.
- Lim DH, Morris ML, Kupritz VW(2006). *Online vs. Blended learning: differences in instructional outcomes and learner satisfaction*. Paper presented at the Academy of Human Resource Development International Conference. Retrieved from the ERIC Document Reproduction Service (ED492755).