Effects of webquest on the achievement and motivation of Jordanian University students of (independent & dependent) cognitive style

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Abstract

The purpose of this study was to investigate the effects of Webquest on the Jordanian students of different cognitive style. The independent variables were the instruction (conventional & Webquest). The dependent variables were the students' achievement and motivation. The instruction rating variable is cognitive style (independent & dependent). The study sample consisted of 72 undergraduate educational technology students, information and communication technology students and graphic design students. Inferential statistics were conducted to analyze the data. An analysis of covariance (ANCOVA) and T-TEST was carried out to examine the main effects of the independent variables on the dependent variables. The findings of this study showed that students using the Webquest instruction performed significantly better in achievement and motivation than students using the conventional instruction. Independent cognitive style students performed significantly better in achievement and motivation than dependent cognitive style students. Webquest instruction was found to help students with dependent cognitive style in achievement and motivation.

Keywords: webquest, cognitive style, achievement, motivation.

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1. Introduction

WebQuest is considered one of e-learning methods that is based on the utilization of video clips, audio, images, motions and texts in their various processes in terms of colors, sizes and shapes… etc. which leads to successful educational practices (Gulbahar, Madran & Kalelioglu, 2010). Webcasts interrelate both education and learning, and planning by using computer and internet (Jouda, 2009). This method depends on surveying the internet through the authenticated and trusted, accessible websites in the interests of getting the required information. In this way, each student shall bear the responsibility of teaching themselves and be able to be more responsive in critical and creative thinking, defining problems, exploring ideas and presenting effective solutions (Juma & Ahmed, 2012). This shall increase students' motivation to access to more knowledge resources, which will lead to high quality learning and will encourage traveler learners to perform better with teamwork and subsequently contribute to constructive discussions and knowledge exchange with each other. This makes educators more aware of their individual and collective roles and responsibilities (Saleh, 2012).

In addition to its focus on individual learning (individualized instruction), WebQuest is linked to several other strategies as stated, which include surveying, constructive theory, learning and cooperation, critical thinking and analytical skills (Ahmmad, 2013). Also, using such strategies in multi-media format to achieve the multiple intelligences theory on the one hand and on the other hand the continuous assessment of the integration of the internet with educational practice (Samara, 2013).

WebQuest was mainly designed on hyperlinks within one web page or multiple pages. Therefore, the teacher has the chance to select, amend or add new links of supported sources that can enrich the information in a WebQuest (Abu kharma, 2013). The teacher also works carefully to select the purposes / subjects of the WebQuest with consideration of a proper timeline plan that suits the number of the WebQuest and the aims that expected to be achieved (Ikpeze & Boyd, 2007). The teacher also should focus on the clarity and accuracy of selecting the educational objectives to be easy to achieve by the educator (Sabri & Al-Juhani, 2013). In this context, the teacher must pay attention to the differences of the individual's capabilities on researching and extracting the necessary information. To do that, the teacher should have the characteristics that enable giving correct directives, guidelines and the ability to plan for education processes and organize its resources; the teacher must also be responsible for all technical issues that relate to computer connections and the way methodology of Doug (1997) differentiates between the two types of WebQuest which are short-term that need one to four sessions, where they aim to obtain a type of information that does not need a high level of mental skills mainly for beginners to use search engine techniques. The other type is long term which requires some weeks to a month, and which achieve aims that require an advanced level of mental processing such as analyzing, assembling and evaluation…etc. The results of the WebQuest are to be submitted in the form of a worksheet or research inside the classroom. Yami (2014) added that WebQuest types differ according to the differences in objectives that need to be achieved, they might be simple and require a short research period, while sometimes they may be complex and require a lengthy search. Dodge (2004) added that WebQuests are designed by a professional website designer and consist in: a homepage that has the main interface with the web address and the links to the other webpages. The introduction here mainly contains a brief about the objectives that attract the student to the WebQuest (Lara & Reparaz, 2007). The activities are the practices that contain the questions that need to be answered by the student while the questions are divided into different groups. Implementation: this page determines student assignments and mechanisms to accomplish these tasks - the main part of the educational activity. The types of tasks that can be included: Retelling Tasks, Compilation Tasks, Mystery Tasks, Journalistic Tasks, Design Tasks, Creative Product Tasks, Consensus Building Tasks, Persuasion Tasks, Analytical Tasks and Judgment Tasks (Zlatkovska, 2010). Evaluation: the conventional evaluation methods were not present in this evaluation. In these evaluations students evaluate what they learn and perform, also, they evaluate themselves, according to suitable criteria such as observation lists, and all the evidence which based on three performance levels, which are: unacceptable, acceptable, excellent and the difference between those three levels must be large in order to encourage students towards excellence in

performance (Kundu & Bain, 2006). Recourses dependence on webquest partly or entirely on the electronic resources chosen previously by the teacher to his students. The importance of this step in guiding the learner in usage of the electronic sites through giving him a determined goal that he must carry out (Alfar, 2011). The teacher: the information on this page may target teachers or students, so activity program and assessment measures and even the execution time plan may be shown (Sabri & Al-Juhani, 2013). The conclusion: include a summary for a core idea of the subject, and the set of findings and recommendations and how to apply them, and make use of them; also, it may include encouraging words for students to encourage them towards greater effort in future (Leibold & Schwarz, 2014).

The criteria of designing a webquest that must be decided when designed, which are mentioned by Tulbah (2012) in the following steps: to be designed as real tasks. Questions and problems relating to the student's interests conducted through distributing them to students in the groups. To focus on collecting data that solves problems and summarizes information to produce new reasoning and to be framed as questions enabling students to think, and that the lecturer chooses the resources of information and electronic sites accurately in order to be designed as tasks and questions. The parallels of applying webquest in school semesters as mentioned by Al-far (2011) and Jouda (2009) suggests that they are not suitable for the primary grades, because of their weak skills in searching the internet and the undeveloped ability of their reading. Also, they are not suitable for all school subjects, which require a longer period to be designed.

1.1. Cognitive styles:

With the appearance of cognitive psychology, the individual differences between students met with increased attention due to the exchange of information. This caused a focus on describing the method of mental processes within the individual (Alsayd, 2008). The cognitive styles as (Sha'abeth, 2013) indicated are the organizer for the human environment, and there is a strong relation between cognitive styles and education. Al-Dahdouh (2010) mentioned that cognitive style responds to the method in which the human thinks, and expresses the methods preferred by humans to receive and end information.

In general, cognitive styles are defined as the differences between individuals, not just in the recognition domain, and the other cognitive domains such remembering, thinking, forming concepts and investigating information, but also in the differences between them in the social domain and personality type (Al-Dairi, 2011). The cognitive styles as the processes used by the individual in categorizing his awareness of the environment and organizing them, that the methods in which he responds and guides the motives (Fathalla, 2006). Al-Ghamdi (2013) and Abdullah (2013) added that, the cognitive manner may lock at as stable personal manner which expresses on the methods in which the individual receives, prepares the information, and how to think, imagine, rehearsal the information and resolve the problems. The cognitive style is considered evidence for revealing personal features among individuals.

In the early 1970s, attention to studying, and categorizing cognitive style increased, which caused the appearance of a number of manners which were and still are the focus of researchers, such as the independence rather than dependence style (Alsheakh, 2012). The style of independence was so named because of the existence of a clear feature that represents the different ability of the individuals to recognize the domain parts separately, so it links the method in which the individual recognizes the situation (Al-Ghamdi, 2013). The style of the independence domain is considered the best method for the individual in organizing his cognitive and motional activities, (Eunjoo & Doohun, 2005). There are some individuals who have the ability to separate the subject from what surrounds it in the domain (recognizing the parts of domain as separated and independence elements means the ability to differentiate the image from the background through the ability of recognition analysis so that the situational elements are clear and determined to facilitate achieving this independence),

those are called the cognition independent subject (Alsheakh, 2012). While there are some individuals who can't deal with the motives of environment in analytical image (that means, that they have a tendency to recognize the situation and motives as whole so they consider them a guidance that enables them to process information without analyzing it, so they focus on the whole and ignore the partial elements), they are called the cognition dependent subject (Abdullah, 2013). The dependent style is considered a measure of the degree to which the individual can separate the subject from what surrounds in the recognition domain. Through what is mentioned, it is important to determine the learning and thinking styles which the individual has because of their link with human behavior and their role in preparing learners (Willin, et al., 1977; Ayash, 2009).

A person of the independence group tends towards isolation and anger, and has the ability to make recognition processes and face different problems and situations individually, without depending on an external frame of reference, also his individual work is characterized by competency (Yuliang & Dean, 1999). Independence person as above doesn't care with respond to emotional expressions on the faces of others, and recognizes the elements of a domain in an analytical way - as isolated and independent elements, so he analyzes the recognition situations and rebuilds them in a new way (Rezaeia & Katzb, 2004). The individuals who depend on the domain need external help in the social domain while because they experience ambiguous situations, they have attention with the social domain and social evidences and interaction with others, and depend on their attitudes in their relationships with others and they recognize the elements as whole depending on organizing the domain, they have less ability than the independence ones to organize the information related to the tasks with recognition nature (Al-Dhawad, 2007).

By looking at Abdulla (2013) and Sha'abeth (2013) and Al-Outoum (2010) we can summarize the most important characteristics that differentiate the independence and dependence persons based on the recognition domain as follows: the independence person has the ability to solve problems through analyzing the situation and rebuilding and organizing it, he tends towards isolation and is self-centered, doesn't care about human relationships, has high aspirations, doesn't feel with others attention, his needs and emotions are clear, he has a high level of performance in scientific and technological courses such as computer, science, maths, engineering, and arts. The dependence person recognizes the domain parts within his self-image and forms total reflections, tends to make relationships with others, and needs their approval, he is less self-centered and has normal aspirations, is influenced by emotional changes, and he has high performance levels in group work, so he prefers the jobs that require group work.

As a result of increased attention among research and studies on cognitive styles, we were able to reach into the most important features of the recognition procedures by researchers such as Grebenev, Ludmila & Ekaterina, (2014); Al-Ghamdi, (2013); Al-Dahdouh, (2010):

- Recognition procedures related to individual differences among individuals in how to practice the recognition processes such as thinking, awareness, problem solving, and forming and investigating information.

- Recognition procedures have the feature of generalization and they pass the limits between both recognition and emotional sides in the personality.

- Recognition procedures characterize with proportional stability for the individual, and they are modifiable and changeable, but not easy and fast, so it can be used in predicting the individual behaviors.

- Recognition procedures considered as acquired features through the individual reaction to his external environment, more than they are inherited.

- Recognition procedures pass in growth stages similar to the stages of recognition growth, so, the individual tends to be independent from the recognition domain of the stage of twentieths, while they tend to depend on the domain at late ages.

- Recognition procedures interact with each other in their effect on behavior.

- Recognition procedures may be modified through certain programs which allows for modifying the individual behavior in a patient, risk [?] and careful manner.

1.2. Motivation

The subject of motivation has become the focus of educational research over the last two decades of the 20th century; it reflects on caring with designing motivation theories because they are important in interpreting human behavior and forming and modifying it, and their strong link with the process of learning and teaching (Salem, Qambeel & Al-Khalifa, 2012). Motivation is considered evidence for learner success, and failure in learning (Al-Khawldeh, Al-Jarrah & Al-Rabeae, 2014). There is a general agreement among psychologists on the importance of the role of motivation in influencing human behavior in general and on leaving in particular (Dudin & Jarwan, 2012). Salem, Qambeel and Al-Kalifa (2012) and Buqaiei (2004) suggest that motivation is an internal cause that motivates individual behaviour and directs it to achieve a certain purpose. Also, moving the motivation among learners increases their attention to the desired recognition, emotional and motor activities so that their performance is improved. Also, Almasaeed and Altah (2014) mentioned that motivation as the power and the motive that enable the individual to conduct their behaviour that brings about the achievement of a need or a purpose. Touq, Qatami and Ades (2003) defined learning motivation as "an internal status within the learner that motivates him to take care with the instructional situation, and tend to it with guided activity, and going on this activity until the learning is achieved". Maso'd (2012) shows that learning motivation is a student tendency to take academic activities that their benefits may be touched.

Learning motivation requires increased efforts and powers to achieve purposes, and determines whether the student goes about achieving a certain task hardly or he will conduct the work carelessly (Zidane & Wegval, 2008). There are differences between those who have high or low motivation, those with high motivation are more successful in school, and get promotions and have successes in their jobs more often than those who have low motivation and tend to select middle difficulty tasks that include challenge, and avoid easy tasks because they don't have any challenge, also, they avoid the more difficult tasks because the probability of failure is high in them (Ibraheem, 2007). The motives aim at decreasing the conflict statues within the individual and preventing him from unbalance into a new balance, and from the factors that contribute in building learning motivation, such as: planning focusing on purposes, match cognitive awareness to what is to be learned, and searching for new information, and a clear awareness of giving feedback and satisfying the achievement level, and not being fearful or anxious about failure learning (Al-shehry, 2010). Motivation has two sources: internal which source is the learner himself, because he learns with an internal desire to satisfy himself, and to acquire knowledge and skills he desired, the internal motivation is considered one of the psychological needs that enable individuals to achieve his purpose, so it represents the natural growth of the individual interest in a certain subject and increases self-confidence and self self-dependence (Abu-Awwad, 2009). The external motivations have external resources such as a teacher, school administration, parents, and peers. So, the learner may accept learning to satisfy his teacher, administrators or to acquire the material; also, the learner is influenced by his peers likes or dislikes which relates to learning in unnatural (industrial) learning. The external motives aren't considered part of the learning process, which means the desire for success and conducting the risk with satisfying from at the determined time, which cawed satisfying to the individual (Hadah, 2013). The factors that increase learning motivation are: planning, focusing on purposes, met cognitive a weakness to what the learner want to learn, researching for new information, clear a wariness for feeding back, satisfying about achievement level, don't fear or anxious failure (Al Nassar, Salem & Abu Hashem, 2006). There are many reasons that decrease motivation which differ according to school stage, that means each stage has special status, the source may be the student himself, teacher, family, and the surrounded environment (Mojammami, 2006).

2. Problem Statement

The problem to be investigated in this study stems from literature studies and the researcher's previous experience in teaching educational technology. The researchers found that Jadara university students cannot understand practical courses in depth because they were taught using conventional methods which did not take the different aptitudes of the students into consideration. Several reasons pertaining to this problem have been cited. These reasons are listed as follows:

- Practical courses are held by some lecturers in order to fulfill their job requirement .

- Teaching practical courses faces some restrictions arising from the examination system. Usually, there is not enough time to teach practical courses in detail.

- Many Lecturers still use conventional teaching methods which can be tedious and boring with no motivation for students to learn.

From the pre-motivation scale conducted by the researchers it was found that 59% of the students indicated that they faced problems in motivation to learn in practical courses. And through access to the lists of student results in the previous semester, it was found that 66% of the students have low achievement. The researchers contend that learning in practical courses can be improved if the web quests are taken into account.

Thus, this study attempts to answer the following broad research questions, namely:

1. Will students using the web quest instruction attain significantly higher achievement and motivation than students using the conventional instruction?

2. Will students with independent cognitive style attain significantly higher achievement and motivation than dependent cognitive style students?

3. Will students with dependent cognitive style using the web quest instruction attain significantly higher achievement and motivation than dependent cognitive style using conventional instruction?

4. Will students with independent cognitive style using the web quest instruction attain significantly higher achievement and motivation than independent cognitive style using conventional instruction?

3. Research Framework

The research framework in Figure 1 shows the relationships between the different variables under investigation.
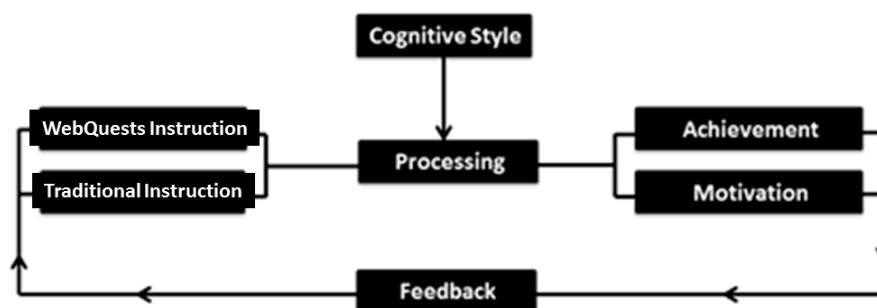

Figure 1. Research Framework

The research framework depicts three variables. The independent variables are the webquest's instruction and conventional instruction. The dependent variables are achievement and Motivation. The instruction rating variable is cognitive style. The instruction rating variable is present in this study and has a strong contingent effect on the relationships between the independent and dependent variables. The effect of using the web quests on learning will be identified by measuring achievement and motivation in practical courses.

There are three main objectives of this study:

1. Evaluating the effect of web quests on learning in practical courses through web quest-based learning.

2. Identifying the Motivation of the Jadara students with regards to learning from web quest-based learning.

3. Conducting an aptitude treatment (cognitive style) to investigate the possible interaction effects on the aptitude of the students in the web quests.

4. Study Sample

The population of the study included all students of Educational Technology, Information and Communication Technology and Graphic Design Departments which consisted of (305) students enrolled in Jadara University in the second semester during the academic year 2014/2015. A random sample of 94 students was chosen for the study. A total of 72 students completed the survey.

5. Study Instruments

5.1. Motivation Scale

This scale is used to measure the learning Motivation of Jadara University students. The scale of Motivation consists of statements asking about feelings. Generally, the scale consists of 28 items. These items were rated using a 5 point Likert scale with the following anchors: 1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; and 5 = Strongly Disagree. This instrument is adopted and adapted from Hedah (2013). The students were encouraged to answer each statement. The instrument is designed in the Arabic language. The total score of the Motivation scale is 140. Motivation of the students was divided into two levels: Low, and High. The pilot study consisted of 27 participants. The researchers used Test-Retest to check the reliability of the instrument. The reliability coefficient of this instrument (The Arabic version) was computed by the implementation of Cronbach Alpha whereby it was 0.78 for the whole scale. The internal consistency in this instrument (Arabic version) was 0.82.

5.2. Embedded Figures Tests (EFT)

Based on the literature review, the researcher adopted Embedded Figures Tests from Alcharkaoui Alsheikh (1989). The test requires the participant to spot a simple form within a more complex figure. (EFT) was designed by Witkin in 1971 to assess his concept of "field dependence – independence". This test consists of three sections as follows:

- Training, and do not count in the grade estimation of sampled, this section consisting of seven easy paragraphs.

- It consists of nine paragraphs of progressive difficulty.

- It also consists of nine paragraphs of progressive difficulty. This section is equivalent to the second section of the test.

The reliability of the test questions was calculated using the Cronbach Alpha procedure to calculate the internal consistency. The Cronbach Alpha of the test was 0.79. All of them were found to be reliable. The internal consistency of the test was 0.84.

5.3. Instrument Validity

Validity consists of two different aspects, that is face and content validity. According to Gay and Airasian (2000) "face validity relates to the degree to which a test appears to measure what it claims to measure, and Content validity refers to the "degree to which a test measures an intended content area". Face validity was judged by an education list panel of experts. The feedback and comments received from them and were employed to establish the necessary clarifications, changes, and modifications before and after piloting the study.

6. Results

ANCOVA and T-test was used to analyze the collected data.

6.1. Question 1

- Will students using the web quest instruction attain significantly higher achievement and motivation than students using the conventional instruction?

6.1.1 The result of students' achievement

Table 1. Students' Achievement in two Instructions Groups

Groups	Mean	Std. Deviation	N
Control	67.25	8.85	43
Expeirmental	75.06	10.71	29
Total	72.87	10.32	72

Table 1 showed that the experimental group taught by webcast scored higher than the control group. The results were (75.06) for the experimental and (67.25) for the control group. Comparison was made between the groups (Conventional & Webquest) using the T-test procedure (Table 2).

Table 2. T-Test for Students' Achievement

					95 %Confidence Interval of the Difference	
Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Instructions	24.100	71	.000	1.40278	1.2867	1.5188
Achievement	57.880	71	.000	70.40278	67.9774	72.8281

Table 2 showed that there was a significant difference between the groups for the favor of the experimental group.

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6.1.2 The Result of Students' Motivation

A comparison was made between conventional and webquest instruction based upon the mean of the motivation.

Table 3. Motivation of Students

Groups	Mean	Std. Deviation	N
Conventional	92.25	19.51	43
Webquest	121.00	19.96	29
Total	103.83	24.16	72

(Table 3) showed a difference between the mean of motivation for groups using the webquest for which the mean was (121.00) higher than the mean of motivation for the group using the conventional instruction (92.25). Table 4 shows the degree of relationship between the pre-motivation scale and post-motivation scale. A correlation coefficient of R= 0.635** indicates a high positive relationship between the pre- and post-motivation scale.

Table 4. Correlation Between Pre-motivation Scale And Post-motivation Scale

		Pre-test	Post-test
Pre-test	Pearson Correlation	1	0.635**
	Sig. (2-tailed)		0.000
	N	72	72
Post-test	Pearson Correlation	0.635**	1
	Sig. (2-tailed)	0.000	
	N	72	72

**. Correlation is significant at the 0.01 level (2-tailed).

In order to reduce the statistical error, the pre-motivation scale was used as the covariate variable and a comparison was made between the groups (Conventional & Webquest) using the ANCOVA procedure (Table 5).

Table 5. Ancova of The Motivation Post-scale [IS THIS CORRECT?]

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Instruction	24173.273(a)	2	12086.637	48.238	.000
Intercept	4453.851	1	4453.851	17.775	.000
Pre-Motivation	9863.459	1	9863.459	39.365	.000
Instructions	7431.112	1	7431.112	29.658	.000
Error	17288.727	69	250.561		
Total	817720.000	72			
Corrected Total	41462.000	71			

a. R Squared = .583 (Adjusted R Squared = .571)

Table 5 indicated that there were significanct differences between conventional and Webquest groups in the mean score of the post-motivation scale with F (1.69) = 29.658, Mean Square = 7431.112 and p = 0.000.

The findings showed that there is a statistical difference between the mean of both the experimental and the control groups in favor of the experimental group, that means there is an effect

on learning by using webquest that caused an increase in student achievement compared with conventional learning method outcomes. That may be due to instructional activities that were presented through computer (self-instruction) because it is based on multiple media. Learning through webquest is considered one of the procedures in which the learner is protected from feelings of guilt caused by his fear of making mistakes in responses to questions asked in front of his colleagues and which also pays attention to individual differences so the student can repeat learning more than once and can move in the instructional material as he wants and in a suitable time and place. Webquest presents continuous and direct feedback and that increases student learning and motivation; in addition, Webquest increases the communication between students and teacher. The findings show that there were statistical differences between the mean of student achievement in both control and experience groups on the motivation scale in favor of the experimental group. That means students who were taught through webquest were motivated for learning, because the computed activities presented in the webquest and multiple media used methods which weren't used in the traditional teaching, which students interaction was noticed through the lectures. Also, their attention to the following activities and solving exercises and the discipline of teachers is due to the serious element in presenting the instructional material in an unfamiliar way through computer and that increases motivation and decreases the feeling of boredom, also the learner is in control of the time and place in the conventional method. In addition the webquest gives the students a feeling of challenge and competency, which increases the learners' desire to advance. The effect of webquest on the learners' internal motivation is considered a basic tendency of learning because of self-satisfaction and self-education, so he will learn without any guilt from peers and teachers, and self-assessment has a motivation that guides the learner to continue learning and stay with the computer method. The relationship between motivation and achievement may be interpreted as the learner who has motivation for learning has a higher level of achievement than the learner with low motivation, so motivation increases the learner challenge and interest and active participation in different instructional activities. It was found that the learner with higher motivation chooses the more difficult tasks because he/she has more feeling of patience in comparison to students with low motivation who feels bored by conventional instruction.

6.2. Question 2

- Will students with independent cognitive style attain significantly higher achievement and motivation than dependent cognitive style students?

6.2.1 The Result of Students' Achievement

Table 6. Mean and Standard Deviation of Students' Achievement With Different Levels of Cognitive Style (Independent & Dependent)

Cognitive style	Mean	Std. Deviation	N
Independent	77.28	8.35	28
Dependent	66.02	9.03	44
Total	72.87	10.32	72

Table (6) shows that independent cognitive style group has a higher mean than the dependent cognitive style group. A comparison was made between the groups (independent & dependent) using the T-test procedure (Table 7).

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Table 7. T-Test for Achievement of Cognitive Style (Independent & Dependent)

	t	df	Sig. (2-tailed)	Mean Difference	95 %Confidence Interval of the Difference	
					Lower	Upper
Cognitive style [PLEASE ALTER FORMATTING] Achievement	24. 00 57.880	71 71	.000 .000	1.38889 70.40278	1.2735 67.9774	1.5042 72.8281

Test Value = 0

A comparison was made between the two groups - students with independent cognitive style and students with dependent cognitive style based on the means of achievement

6.2.2. The Result of Students' Motivation

Table 8. Motivation of Cognitive Style (Independent & Dependent)

Cognitive style	Mean	Std. Deviation	N
Independent	117.96	15.39	28
Dependent	94.84	24.54	44
Total	103.83	24.16	72

Table (8) showed that the mean of motivation for independent cognitive style level (117.96) was higher than the mean of motivation for the dependent cognitive style level (94.84). In order to reduce the statistical error, the pre-motivation scale was used as the covariate, and a comparison was made among students with different levels of cognitive style (independent & dependent) Table 9.

Table 9. Ancova Of The Post- Motivation Scale Of Students With Different Levels Of Cognitive Style (Independent & Dependent)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Instructionl	22919.421(a)	2	11459.711	42.643	.000
Intercept	3018.908	1	3018.908	11.234	.000
Pre-Motivation	13770.272	1	13770.272	51.241	.000
Cognitive style	6177.260	1	6177.260	22.987	.000
Error	18542.579	69	268.733		
Total	817720.000	72			
Corrected Total	41462.000	71			

a. R Squared = . 553 (Adjusted R Squared = . 540)

Table 9 indicated the results of ANCOVA test of statistical significance on the differences observed in the mean of the post-motivation scale for the Instructions with F (1.69) = 22.987, Mean Square = 6177.260 and p = 0.000. Therefore, these differences in the post-motivation scale among the students with different levels of cognitive style (independent & dependent) were significant.

Table (9) indicated that the achievement and motivation for students with an independent cognitive style is higher in achievement and motivation than the dependent cognitive style which could be due to the fact that the independent style individual based it on himself, and focused his activity on achieving purpose and it's difficult to spread his attention, because he pays attention to details formed by the situation and the subject of its purpose. Also, the independent style person recognizes the elements of domain in an analytical method, and recognize its parts as separate elements, so they have the ability to analyze the recognition situations and rebuild the theme in new ways because the independence person tends toward individual values related to work such as competence performance and excellence, and doesn't concern himself with emotional expressions on the face of others, in addition, they focus their attention on learning. They were found to have a high level of skill in investigating the facts from the surrounding environment and storing them regularly. Finally, they have the ability to order categorize the situation and deal with symbols.

On the other hand, the dependent persons have ambiguous recognition, so they can't analyze cognitive situations, and fail at analyzing situations that distract them. Also, they have less motivation so they can't reformulate the real things and analyze them and put them in different frames. They don't have the ability to analyze cognitive situations, and rebuild them in a new way, and they don't have ability to carry out the cognitive processes, and recognize the elements of the domain in compressive way.

7.3. Question 3

- Will students with dependent cognitive style using the web quest instruction attain significantly higher achievement and motivation than dependent cognitive style using conventional instruction?

7.3.1. The Result of Students' Achievement

Table 10. Achievement of Dependent Cognitive Style Students For The Two Groups

Groups	Mean	Std. Deviation	N
Conventional [FORMATTING]	63.23	7.15	26
Webquest	70.05	10.09	18
Total	66.02	9.03	44

Table (10) shows a difference in the means of achievement between two groups. The achievement mean of the group with webquest instruction (70.05) was higher than the achievement mean of the group with conventional instruction (63.23). Comparison was made between the groups (Conventional & Webquest) using the T-test procedure (Table 11).

Table 11. T-Test of Post-Test Achievement of Dependent Cognitive Style

					95 %Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Test Value = 0						
Achievement	48.494	43	.000	66.02273	63.2771	68.7684
Instructions	18.793	43	.000	1.40909	1.2579	1.5603

7.3.2. The Result Of Students' Motivation

Table 12. Mean And Standard Deviation of The Motivation of Dependent Cognitive Style Students

Groups	Mean	Std. Deviation	N
Conventional	81.84	16.35	26
Webquest	113.61	22.35	18
Total	94.84	24.54	44

Table (12) showed that the Webquest group has a higher mean than the Conventional group. The pre-motivation scale was used as the covariate variable and a comparison was made between the groups (Conventional & Webquest) using the ANCOVA (Table 13).

Table 13. Ancova of The Post- Motivation Scale of Dependent Cognitive Style Students

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Instructional	17433.529(a)	2	8716.764	42.153	.000
Intercept	2223.715	1	2223.715	10.754	.002
Pre-motivation	6701.305	1	6701.305	32.406	.000
Instructions	6054.134	1	6054.134	29.277	.000
Error	8478.358	41	206.789		
Total	421683.000	44			
Corrected Total	25911.886	43			

a. R Squared = . 673 (Adjusted R Squared = . 657)

Table 13 indicated the results of the ANCOVA test of statistical significance on the differences observed in the mean score of the post-motivation scale for the Instructions with $F (1.41) = 29.277$, Mean Square = 6054.134 and p = 0.000. Therefore, these differences in the post-motivation scale among dependent cognitive style Students in Various Instructions Groups [SHOULD THIS BE CAPITALISED?] were significant.

The results indicated that the webquest group scored higher in achievement than the conventional group which may be due to the effectiveness of the procedures in which the webquests were designed: according to studied scientific, psychological and psycho-motor plans, theories suitable with students levels and taking into consideration their individual differences in receiving knowledge. This was achieved by presenting more than one resource for receiving knowledge according to different symbol systems which allow the student guilt-free self-education in accordance with his ability and his own speed, in order to increase his self-confidence. Demonstrating that he is able to learn and reach higher mental levels and thinking skills which is represented by analyzing and evaluating so the learner uses the higher thinking skills in his learning based on himself and on constructive communication that increases his ability to predict, interpret, interfere and rediscover, so self-educating may cause a deep understanding and an ability to deal with new situations, and continuous feedback plays a large role in student learning and increasing achievement. It was noticed that there is a high degree of satisfaction and relaxation and enjoyment and a feeling of ease in learning.

8.4. Question 4

- Will students with independent cognitive style using the webquest instruction attain significantly higher achievement and motivation than those of independent cognitive style using conventional instruction?

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8.4.1. The Result of Students' Achievement

Table 14. Achievement of Independent Cognitive Style Students

Groups	Mean	Std. Deviation	N
Conventional[F]	73.41	7.68	17
Webquest	83.27	5.40	11
Total	77.27	8.35	28

Table 14 shows a difference between the means of achievement for groups with conventional instruction and the groups with webquest instruction. The achievement mean of the group with webquest instruction (83.27) was higher than the achievement mean of the group with the conventional instruction (73.41). In order to reduce the statistical error, a comparison was made between the groups (Conventional & Webquest) using the T-test procedure (Table 15)

Table 15. T-Test of Post-Test Achievement of Independent Cognitive Style Students

Test Value = 0

	t	df	Sig. (2-tailed)	Mean Difference	95 %Confidence Interval of the Difference	
					Lower	Upper
Achievement	48.935	27	.000	77.28571	74.0452	80.5263
Instructions	14.819	27	.000	1.39286	1.2000	1.5857

8.4.2. The Result of Students' Motivation

Table 16. Mean And Standard Deviation of The Motivation of Independent Cognitive Style Students

Groups	Mean	Std. Deviation	N
Conventional[F]	108.17	11.68	17
Webquest	133.09	2.62	11
Total	117.96	15.39	28

Table (16) showed that Webquest group has a higher mean than the Conventional group. The pre-motivation scale was used as the covariate variable and a comparison was made between the groups (Conventional & Webquest) using the ANCOVA (Table 17).

Table 17. Ancova of The Post-motivation Scale of Independent Cognitive Style Students

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Instructional	4298.678(a)	2	2149.339	25.560	.000
Intercept	6784.470	1	6784.470	80.680	.000
Premotivation	153.093	1	153.093	1.821	.189
Instructions	3744.912	1	3744.912	44.534	.000
Error	2102.287	25	84.091		
Total	396037.000	28			
Corrected Total	6400.964	27			

a. R Squared = .672 (Adjusted R Squared = .645)

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Table 17 indicated that there is a statistical difference between the mean of the experimental and the control groups in favor of the experimental group; that means there is an effect on learning of using webquest that caused an increase in independent student achievement compared with conventional learning method outcomes. F (1.25) = 44.534, Mean Square = 3744.912 and p = 0.000. Therefore, these differences in the post- motivation scale among independent cognitive style students in Various Instructions Groups were significant.

Learners' attitudes, experience with webquest instruction, and their competency in computer technology, affect their motivation. WebQuest is an alternative assessment tool in higher education, providing a base that makes it possible to implement a project-based instruction method and helps teachers to integrate technology into the curriculum which effects students in relation to their motivation at a significant level.

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