



RESEARCH ARTICLE

THE EFFECTIVENESS OF USING COGNITIVE TRIPS VIA WEB (WEB QUEST) IN TEACHING INTRODUCTION TO MATHEMATICS ON THE MENTAL MOTIVATION DEVELOPMENT AMONG FEMALE EDUCATION STUDENTS AT AFIF

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ABSTRACT

The researcher of this study aims to identify the effectiveness of using cognitive trips via web (Web Quest) in teaching Introduction to Mathematics on the mental motivation development among education female students at Afif. The study tool is represented in the design and construction site in the light of cognitive trips tasks strategy "Web Quest" using Dreamweaver program. The author of this paper adopts the reference model (ADDIE) in Web design tasks. The study sample consists of 40 female students, selected to represent the community. The validity of measure is ratified through the validity of internal consistency as the measure is applied on a pilot sample consisting of (28) students, and all the correlations between measure dimensions and scale as a whole are statistically significant at the level of significance (0.01) and this confirms that the measure is highly consistent internally. To ensure the stability of measurements, the two researchers have applied a pilot sample consisting of 28 sophomore female students at the Faculty of Education in Afif. The measurement has been applied on the selected sample twice with 2 week time between the two applications. The internal consistency coefficient Cronbach's alpha of the scale has been measured as a whole as well as for each area of the scale, which expresses the reliability and validity of the scale of construction and the study has the following results: There are statistically significant differences at the level of 0.05 between the mean scores of female students before and after the measurement in the dimensional application to measure mental motivation development (orientation toward learning, solving problems creatively, integration of knowledge, and mental focus) in favor of the grades of students after the measurement, which means the effectiveness of cognitive trips strategy in the development of mental motivation (orientation toward learning, solving problems creatively, integration of knowledge, and mental focus).

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INTRODUCTION

Education system with all its components is a sub-system of the major community systems. Due to the many successive changes in all institutions and systems community is facing, it is necessary to reconsider the educational system of all its inputs, processes and outputs, especially after failing the current system to meet individual requirements in the modern society in which we live. This has led to the need to find modern approaches and methods to develop and update learning. These approaches have focused on the role of the student and made him/her the focus of the educational process. The activities the teacher plans with his/her students are the most important form of interaction, and it is the best way to

achieve the educational objectives. These activities can educational carried out by the teacher, or learning carried out by the learner, or both types together, (UNESCO: 2008, pp. 92-93) Teaching and learning environment has witnesses knowledge-based and technological explosion. The appearance of computers has clearly indicated that the traditional school system is inadequate to respond to the needs of the educational community. There is a necessity to search for new mechanisms and systems to meet these needs, and to develop teaching strategies, means and methods (Harith: 2007, p. 33-34). The educational institutions teach students skills, expand their knowledge and information, and make them better able to cope with scientific problem solving at school and in their future life. They seek for integrated growth in mental, physical and social aspects to the fullest extent to enable them benefit from their abilities and aptitudes (Abdul Rahim: 1998, 47). One of the latest strategies that rely on the use of educational

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technology to bring digital learning is cognitive trips strategy (Web Quest) that has been first proposed in 1995. This strategy depends on the style of the survey, where most or all data go to the students through Web, a design that focuses on the use of the information, rather than searching for it (Hasan and Motawe': 2015, 276). As the educational environment misses stimuli and incentives for attracting learners' attention and concentration, and misses the use of coercive methods in education, it impacts directly or indirectly the student's personality development, and the launch of his/her energies and abilities.

KSen & Nenfeld (2006, p20) define a cognitive trip as a journey of knowledge via the Web or web navigation on the Internet to achieve correct and direct access to information with the least possible effort to develop thinking. This method helps turn the learning process into an enjoyable process, increases motivation and makes them more involved in the classroom. The cognitive trips strategy via Web (Web Quest Technique) is one of the strategies that can provide the attitudes and experiences required of them to use multiple profiles, many educational options. This approach is attributed to the researcher Bernie Dodge, and Professor Tom Marsh has cooperated with him at the University of San Diego in the United States in 1995. The strategy is about educational activities based on research and investigation in the internet aiming at mental motivation for learners. It relies partly or entirely on electronic sources on the Web and that have been identified and selected in advance. The cognitive trips via Web are considered a new educational model that can be used in all grade levels and in all disciplines and courses of study by employing the Internet in the educational process (Halat: 2008, p109-112). Mental motivation state entitles its owner to accomplish serious creations. There are many ways to stimulate this state, which pushes the owner to doing things or to solve problems raised in different ways that sometimes seem illogical. The traditional ways are not the only ones to solve problems. The opposite of creative motivation is mental inertia. For instance, De Bono Wan confirms that mental motivation makes learners interested in the work they do, gives hope to find new valuable meaningful ideas, and makes life enjoyable and more fun. Mental motivation is based on a main hypothesis that all individuals have the capacity for creative thinking and stimulation mental capacity within man till used (De Bono, 1998: 117). Students will be motivated in learning situations and activities when they are challenged because they integrate personally and effectively in learning. Their motivation for learning is linked to their interests and goals directly or indirectly with the abilities, needs and chances of success which increase their learning in the following situations, and increase the motivation to learn (Kitami and Naifeh 2000, 274).

Cognitive trips contribute to achieving the educational advantages (Dodge: 1995, 10-13) sums it as follows:

1. Cognitive trips are a structural educational pattern, which is centered about the traveler and explorer learner. As a result, it stimulates learners to learn and raises their motivation.
2. Help to achieve carefully pre-planned learning objectives.
3. Encourage teamwork, and the exchange of views and ideas among students, so as to prevent any individual action, of course.

4. Strengthen dealing with the sources of information efficiently and with high quality.
5. Aim to develop the thinking capacity of the learner and build an educated researcher who investigates and discovers his own information and can evaluate himself.
6. Use modern techniques, including internet to achieve the educational objectives, so it puts all internet capabilities as a remarkable background to this educational approach.
7. Grant the learners the possibility to search in specific points deeply through limits chosen by the teacher. This helps to keep students concentrated, intensify their efforts toward the required activity. Therefore, it makes cognitive trips effective and perfect for classes that suffer from big individual differences in the student's thinking level.
8. Has safe access to internet through learning activities and searching for information process.
9. Enhance student's communication skills.
10. Encourage the learner to bear responsibility, and participate positively in the activity.
11. Help students acquire online searching skills with moral and productive way, and this exceeds them being internet surfers only.

#### **Problem of the study**

There are many fallouts in the educational process, that prevent mental motivation, for example, inculcation methods followed in teaching, and the weakness of responding the curricula to the late developments. The current education is limited in teaching and exams. Based on the previous reasons, the researcher feels the necessity to develop mental motivation for Education students in Afif for its significance, and the need to apply new methods and strategies to help enrich the educational process. As few researches have conducted their researches on the strategies of cognitive trips via Web, especially for the Education students at Afif, the researcher of this paper has decided to conduct a study on the effectiveness of cognitive trips via Web on academic progress, and mental motivation development for Education female students at Afif. Based on this, the problem of the study is determined in the following question: What is the effectiveness of using cognitive trips via Web (Web Quest) in teaching Introduction to Mathematics course in mental motivation development for female Education students in Afif?

#### **Questions of the Study**

1. What is the effectiveness of cognitive trips strategy (Web Quest) in developing mental focus for female Education students at Afif?
2. What is the effectiveness of using cognitive trips strategy (Web Quest) in developing creative problem solving for female Education students at Afif?
3. What is the effectiveness of using cognitive trips strategy (Web Quest) in developing cognitive integration for female Education students at Afif?

#### **Objectives of the Study:**

1. Identify the effectiveness of cognitive trips strategy (Web Quest) in developing mental focus for female Education students at Afif.

2. Determine the effectiveness of cognitive trips strategy (Web Quest) in developing direction toward learning for female Education students at Afif.
3. Identify the effectiveness of cognitive trips strategy (Web Quest) in developing creative problem solving for female Education students at Afif.
4. Recognize the effectiveness of cognitive trips strategy (Web Quest) in developing cognitive integration for female Education students at Afif.

### The Significance of the Study

1. Use of effective teaching strategies that combine between teaching approach and digital technology
2. The researcher studies the effectiveness of using any modern strategy (Web Quest) in teaching and its effectiveness in developing mental motivation
3. The researcher contributes to developing the abilities of female students in computer and internet use.
4. achievement of integration between data technique and education to change and renew learning and teaching
5. The author of this paper discusses a recent important subject of electronic learning, which is cognitive trips strategy via Web leading to improving scientific research, and pushing the researchers to discuss it.

### Limitations of the Study

The current study has the following limitations:

1. Subject limitation: this paper is limited to the effectiveness of using cognitive trips Via Web (Web Quest) in teaching Introduction to Mathematics on the mental motivation development among female Education students at Afif- Shaqra University.
2. Locative limitation: this study is applied on a sample of Education female students at Afif\_ Shaqra University
3. Time limitation: the implementation of this study is limited to the second semester of 1437\_1438 A.H.

### Definitions of the Study

#### Effectiveness

The extent of achieving the objectives. In other words, it measures the improvement the student achieves through studying a specific unit (Al Qala and Naser, 2001). Procedurally, it is a standard to measure to what extent the student masters the academic objective in Mathematics course by using cognitive trips via Web (Web Quest).

#### Cognitive Trips via Web (Web Quest)

The cognitive trips are procedurally defined as "A teaching strategy that depends on investigatory educational activities based on merging internet in the educational process where the teacher's role is to plan and organize the resources of information previously selected by him/her after identifying the tasks related to it, and the activities based on it. The teacher also estimates the guidelines to the female students to help them investigate the required information in order to improve the mental motivation for female Education students at Afif.

#### Mental Motivation

De Bono (1998, 82) defines it as: a state that enables its owner to accomplish serious creations or different methods to

stimulate the state or solve problems raised in different ways that sometimes seem illogical. The traditional ways are not the only ones to solve problems. The researcher procedurally defines the mental motivation as a state that entitles its owner to accomplish serious creations and it is represented by the students' response to the paragraphs of the scale adopted in the current research.

### Introduction to Mathematics Course

Procedurally, it is: a course for the sophomore students of the Faculty of Education in Afif at scientific departments (Mathematics - Physics - Chemistry – Biology).

### Theoretical Framework

#### Cognitive Trips via Web

Cognitive trips via Web depend the education, which is student-centered. Indeed, they consist of cognitive building tasks that help the student carry out various operations of research and exploration of information and find a cognitive structure of his/her own creativity, so the student can deal with knowledge in a beneficial process more than conservation and memorization of this information (Jouda: 2009, 36).

#### Pioneers of cognitive trips

##### Dr. Bernie Dodge

He works in the state of (San Diego) as a professor of educational technology at the University of San Diego, California, United States of America. He is best known for being one of the best educators who have an impact on the activation of teach students using Internet, and the use of technology at schools. Dodge is an innovative who has created the idea of cognitive trips via Web in 1995, and spread it widely by delivering presentations and workshops all over the world and through his website. (Jouda:2006, 36)

##### Tom Marsh

(Tom Marsh) is a lecturer at the State University (San Diego) in California. He has participated in creating the idea of the cognitive trips via Web in 1995. Tom Marsh has many contributions to activating the use of technology in education and teachers training at schools and universities to use cognitive trips via Web (Jouda:2009, 36). Cognitive trips via Web have many titles in the field of education: cognitive trips via Web (Web Quest), as well as learning expeditions, navigations and the net survey.

#### The concept of cognitive trips

Dodge (1997, 1) defines cognitive trips as "educational activities based on the (research and investigation and they work on developing various mental capabilities (comprehension, analysis, structuring, ...) for learners. They entirely or partially depend on electronic resources previously selected and available on Web, and they can be grafted with other sources such as books, magazines and CDs. Marsh (2004, 42) defines cognitive trips as a "model that combines between educational planning and rational use of computers, with the effective use of Internet to enhance teaching practices. "Hassanein (2006, 42) also thinks that cognitive trips are an

innovative way to deliver theoretical and research knowledge to learners, based on providing support for learners through information obtained from Web. The two researchers agree that the concept of cognitive trips via Web can be drafted in accordance with this study as a way of teaching Introduction to Mathematics course for the development of mental motivation. They depend on the research and investigation through which the learner Log in specific Web pages and some communication and interaction tools where multimedia is used through a website the student logs in while studying under the supervision of the teacher.

### **Elements of Cognitive Trips via Web**

Saleh (2014, 134-145) states that Cognitive trips via Web consist of the following elements (introduction, tasks, processes, resources, evaluation, Conclusion).

#### **First Element: Introduction**

The cognitive trip begins with an introduction designed to illustrate the idea of the lesson and the overall outline of the tasks to be undertaken by the students. It also offers preparation for the lesson with an interesting attractive way and with motivating words for the students such as calling them explorers or scientists of tomorrow. In addition, it displays exciting images related to the lesson to draw the attention of students.

#### **Second Element: Tasks**

After clarifying the idea of cognitive journey and introducing preparation for the lesson, the teacher raises a set of fundamental questions related to the objectives of the lesson in the form of activities and tasks required to be done by the students in their cognitive trip as their accomplishment will enable the students to learn the scientific material, and they must be applicable for the students.

#### **Third Element: Processes**

The teacher describes the steps and actions that students should accomplish during the activity. It is possible that it comes with instructions or tips or timelines or cooperative roles carried out by the students as the teacher divides the students into cooperative groups and distributes roles among them, namely, (writer, time manager, coordinator, speaker). The activities required of students are listed to be implemented with the need to stick to the roles and specific time for each activity.

#### **Fourth Element: Resources**

The teacher selects the relevant sites to the subject of the researches and activities in which sites must be reliable and meaningful taking into account selecting them carefully in advance. The sources of information must be varied; they can be books or modes of learning the students visit to complete their tasks and these sites should be related to the central questions in each activity.

#### **Fifth Element: Evaluation**

The teacher makes evaluation lists in accordance with the educational standards in order to measure what female students acquire in the cognitive journey. Then he/she clarifies process

of evaluation well for students before the start of the cognitive trip. This is enough to give an opportunity for students to inquire about any item from the evaluation items. He/she also answers the students discussion before starting the trip in all evaluation levels (excellent, very good, good, acceptable). Evaluation in this trip has many axes:

- **First:** the extent to which the behavioral goals, represented by information collection analysis, re-connection, and then reformulation, are achieved.
- **Second:** the extent to which the cooperative skills by working as one team and one group are acquired.
- **Third:** The extent to which technological objectives and online research skills are achieved through final output which will be submitted by the end of the cognitive trip via Web on the theme of the trip. In addition, students are evaluated through questions which are raised by the tutor (test yourself), and the student will answer them individually through private Web pages of the cognitive trips, where students are strengthened immediately after the response to the questions.

#### **Sixth Element: conclusions**

They are the result of cognitive trips as the summary of cognitive trips' idea is displayed. The teacher also presents explanation to the most important points students have identified, reminds them of information and skills they have acquired at the end of the cognitive trip via Web, and encourages them to complete the levels of the trip and to continue obtaining knowledge other times.

### **Concept of Mental Motivation**

De Bono confirms that mental motivation makes learners interested in the work they do, gives hope to find new valuable meaningful ideas, and make life enjoyable and more fun. Mental motivation is based on a primary hypothesis that all individuals are capable of creative thinking and able to provoke the mental motivation. If that is the case, this state is to stimulate mental abilities within humans till used. If a person has a state of motivation, he/she is encouraged to look for more alternatives while others are satisfied with what is there. Some of the important manifestations to achieve mental motivation are the desire to stop, and look at things he/she never thought of. This kind of concentration is an additional source for creativity in time of the absence of systematic strategies (Abu Jad and Nofal: 2007, 467). Motivation is related to the student's interest, so he/she pays attention to some activities without others. It is also related to his/her needs, so some incentives affect his/her behavior pushing him/her to persevere an work actively and effectively (Nashwati: 2002, 257). Depending on Jashtalt theory, Cohen sees that mental motivation is a tendency to build environment. It is a hypothesis that nervousness and deprivation appear due to the depression of the need to learn resulting in allowing for active attempts to build situations and increase understanding for the learner (Cohen: 1995, 291).

### **De Bono had assumed four fields of mental motivation are**

#### **1- Mental Focus**

The learner who has an ability to focus is a regular persistent individual. He pays a great attention to finish his works on

time. His mental image is clear. Once he integrates in an activity, he focuses strongly to finish his duties in a perfect way. Also; he tries to find suitable solutions for any problem. (Abu-Rayash, Abd el-Haq, 2007:463).

## 2- Learning Orientation

It is the learner's ability to increase his knowledge base. Learning orientation could be known through taking into consideration the psychological factors of the learner which affect on both the learner and his performance. These factors are as the following:

- A. The learner emotional investment in learning and performance.
- B. Self-orientation.
- C. The learner independence (Nofal, Meri: 2008, 263).

These factors are the characteristics of successful learning, where they describe how the learner is trying to get closer to learning, as well as that these characteristics provide a model of leadership and orientate the teacher to strengthen learning. Moreover; they help the learner to improve the learning ability by the time.

## 3-Creative Problems Solving

The learners are proud of themselves since they solve problems creatively.

## 4-Cognitive Integrity

It is characterized by the learners' ability to use neutral analytical objective skills, where they are neutral towards all ideas. The learners should be interested in thinking through interaction with others who have divergent views. (Abu-Rayash, Abd el-Haq, 2007:464).

## Some previous studies

### The study of Meri and Nofal (2008)

(A Disclosure of the initial image of how California measures the mental motivation of the students at the Faculty of Educational Sciences in Jordan): This study was conducted in Jordan, aimed at detecting the factorial structure of the image of Jordan of the scale of California for mental motivation at the faculty of Educational Sciences. This scale addressed 450 students of both genders at three academic majors including: a classroom teacher, an Arabic language teacher and an Islamic Studies teacher. Those students are aged from 19 to 22 years old. The resulting from this scale data was treated by using axes perpendicular (Varimax). As a result, there were four main factors which each one of them explained the respective proportion of the total variation of the scale, and these factors are: the trend towards learning has been interpreted (12.75%), solving problems creatively interpreted (5.53%), the integration of knowledge has been interpreted (5.14%), and mental focus has been interpreted (4.99%). The results pointed out that there are no significant differences depending on the variable sexes and the academic major.

### The study of Audito & Roleda, 2014

The study aimed to identify the effectiveness of cognitive trips through web at the development of critical thinking skills, the

academic performance, the current point views of the students regarding to learning physics. The systematic study depended on the use of mixed research methodology (quantitative research and qualitative research). Both of those researchers collected needed data by using a random sample of a high school student among 20 students in Muntinlup (Philippines) during the first semester of the school year (2010-2011 AD). It was necessary to study the data collection by using three tools through the use of a various group of quantitative qualitative tools, from a pre- psychological measurement perspective on the sample study members before and after teaching them the cognitive trips via the Web Quest in physics. The results of the study revealed for the effectiveness of using cognitive trips via the web in the development of critical thinking skills, the academic performance, and the current point views of the students regarding to learning physics, in particular with respect, upgrading the ability of students to hone logical conclusion, sentencing and guessing skills. As well as, improving the academic performance levels to acquire knowledge which associated with the curriculums of physics to create new tendencies and attitudes towards learning science.

## Benefiting from previous studies:\*

The previous studies are an integral part of the research, as they highlight the involved issues in the study and reveal the importance of the research project by recognizing the results of those studies and how much they contributed in scientific research. Also; some of those studies had been reviewed in order to give an idea about the efforts. These studies helped to apply the scale of mental motivation through having a look on the previous measures for this variable.

## The material of the experimental treatment

It was to design and create a light trekking cognitive tasks strategy" Web Quest" by using Dreamweaver software. The current study adopted the reference model (ADDIE) in Web designing according to the following stages:

**A) The analysis stage in which the needs of students had been identified through the exploratory study**, which included the use of the female students of Internet to obtain information claiming that Internet wastes time and makes them bored from the continuous searching.

**B) Identifying and analyzing the learning content to determine the general objective, which was to discover the impact of cognitive trips strategy** of mental motivation and keep this impact available for those students through the oriented research about information via the Internet. The tasks of the cognitive trips Web Quest depended on e-learning sources by compiling and classifying them to obtain the needed information.

**C) Design stage:** Both of the researchers had prepared the scenarios of the cognitive trips Web Quest. Those scenarios included the elements of learning such as text, images, drawings, videos and designing the overall structure of the functions of the web by using Dreamweaver included ( the title page, the introduction, the processes, the resources, the rating, and the conclusion).

**D) The development stage:** In this stage, the Web content of the cognitive trips are created by using some programs such as Microsoft Word for to edit word processing and Adobe

Photoshop for designing images in line with the terms of the Web and Dreamweaver to create the site.

**E) The implementation stage:** The female students had been trained to work on the style of the cognitive trips Web Quest.

**F) Rating stage:**

1. Cognitive rating: it includes some questions for the female students before and after the implementation of the cognitive trips Web Quest.
2. Rating the mental motivation skills and identifying the impact of the cognitive trips on these skills.

The scale of mental motivation:\*

After reviewing the Arab and foreign studies and literature, the two researchers studied all of the previous standards as well as prepared a suitable scale for the current research which included 55 standards were been distributed into four dimensions:

- A) Trend towards learning: it points out how the learner is able to focus and organize his works.
- B) Creative problems solving: it is related to the learner's ability to increase his knowledge base.
- C) Cognitive integration: the learners are proud of themselves since they are able to solve problems creatively.
- D) Mental Focus: it is related to the learners' abilities to use neutral subjective skills.

**Analyzing**

The scale truth through internal consistency truth, where the scale was applied on a sample which consists of 28 students. Singulars were analyzed and correlation coefficients tally between the scale dimensions and the scale itself were analyzed as a static function at level of (0.01) which confirms that the scale characterized with a high consistency, as shown in the table.

**Table 1. The level of high consistency**

Consistency dimensions	Learning Orientation	Creative problem solving	Cognitive Integration	Mental focus	The scale as whole
Learning Orientation	1	** 0.965	** 0.986	**	**
Creative problems solving	** 0.965	1	** 0.964	0.9125	0.995
Cognitive Integration	** 0.986	** 0.964	1	**	**
Mental focus	0.925**	** 0.882	** 0.884	0.884	0.982
The scale as whole	**0.995	** 0.969	** 0.982	**	0.936

\*function at significance level (0.01).

**Mental motivation scale stability**

To make sure of scale stability two of the researchers has applied it on a sample which consists of (28) students who are in the second level at Faculty of Education, and it was applied twice on the chosen sample with a two weeks difference between the first and the second, where the internal correlation

coefficient was computed as a..... for the whole scale. Also for every factor of scale which is express the stability and honesty of the scale and the next table shows values variables of Cronbach's Alpha

**Table 2. The correlation coefficient..... For factors and the tool as a whole**

Factor	Internal Consistency
Learning Orientation	0814
Creative Problems Solving	0677
Cognitive Integration	0683
Mental Focus	0.493
Whole scale	0927

From the following table we notice that correlation coefficient Cronbach alpha for the scale has reached(0.81) for eager to learn, (0.68) for creative problem solving, (0.68) for knowledge integration, and (0.49) for mental abilities, where Cronbach Alpha coefficient has reached (0.93) which means that the scale has high stability which make it suitable and acceptable for such study.

**Experimental study**

**The Pre- implantation for measuring tools**

The two researchers has applied the studying tools (measuring mental development) on the students of the group before the process of teaching, in order to get the pre class which is required for processing the study, that's for making equality between the groups. Table (3) shows the results of the pre implementation.

**Table 3. The means and standard deviations values for pre implementation for the study on the groups**

Tool	group	N	Mean	Standard Deviation	(t) value	Function
Mental motivation	Before	40	2.1075	0.51	0.306	Not function
	after	40	2.1140	0.52		

It's obvious from the table that there is no difference with statistical relation between the mean of the group grades before and after the scale at mental motivation scale at pre implementation which leads to equality between the grades of the students at the variables related to the study.

**The post implementation for study tools**

After finishing studying the units (functions, limits) at the introduction if mathematics with the strategy of knowledge trips through web for students. Mental motivation scale has been implemented on the students, and the grades were taken, and they were processed statically in order to make sure from the assumptions, show the results and analyze them.

**Results, discussing and analyzing**

In the following is shown the most important result has been reached in order to answer the questions of the study and make sure of its assumption. The results related to the first assumption and the first question. What is the effectiveness of the knowledge trips at developing the mental motivation in the faculty of education? The main question: There is no difference with statistical relation on level of 0.05 between two means of the students grades before and after at after

implementation for the mental motivation scale, in order to answer the first question and make sure from the syntax of the first assumption two researchers used the statistical program (SPSS) and applied a test on the students grades at the after implementation to measure the mental motivation and the results were as shown in the Table (4).

**Table 4. 't' value for the difference between the two means of the students grades before and after the scale at the after implementation in order to measure mental motivation**

Group	N	Mean	Standard Deviation	't' value	Function
Before scale	40	2.1	0.50	0.000	Function at level 0.05
After scale	40	2.8	0.31		

Table (4) shows the reject of the zero assumption, which means that there is a difference with statistical level 0.05 between the means of students grades before and after the after implementation on the mental motivation of students after scale. That points to the mean of the grades after teaching with strategy of knowledge trips through web are higher than the mean of the grades before.

#### The results of the first, second, third and the fourth

- 1- What is the effectiveness of the strategy of knowledge trips at developing mental of the faculty of education students?
- 2- What is the effectiveness of the strategy of knowledge trips at developing mental of eager to learn of faculty of education students?
- 3- What is the effectiveness of the strategy of knowledge trips at developing mental of creative problem solving of faculty of education students?
- 4- What is the effectiveness of the strategy of knowledge trips at knowledge integration of education students?

To answer the question mentioned up there the two researchers had used the statistical program (SPSS) and to test the difference between the mean of the grades of the students before and after the scale in the after implementation for mental development for all dimension and the results as in table (5).

**Table 5. 't' value the difference between the mean of the grades of the students before and after the scale of after implementation for mental motivation**

Scale Dimension	Group	N.	Mean	Standard deviation	't' Value	Function
Learning Orientation	Before	40	1.20	0.53	0.04	Function at level 0.05
	After	40	2.6	0.95		
Creative Problems Solving	Before	40	2.19	0.31	0.01	Function at level 0.05
	After	40	3.74	0.80		
Cognitive Integration	Before	40	2.22	0.41	0.00	Function at level 0.05
	After	40	3.91	0.88		
Mental Focus	Before	40	1.8	0.44	0.02	Function at level 0.05
	after	40	2.8	0.72		

It is obvious from the above table that there were no significant statistical differences at the level of 0.05 between the mean scores of students before and after the scale of the development of the mental motivation (learning orientation, creative problems solving, cognitive integration, and mental focus) In

benefits of the grades of students after the scale, which means that the cognitive trips are effective in the development of the mental motivation strategy. To be ensured of those questions; Spearman's rank correlation coefficient was used to calculate the bilateral correlation coefficients between the scores of students before and after the scale of the development of the mental motivation.

The Table (6) shows the correlation coefficients

**Table 6. The correlation between the scores of students before and after the scale of the development of the mental motivation (n = 40)**

Dependent Variables	Link Value	Significance
Pre- scale	0.28	0.07
Post- scale	0.28	0.07

## DISCUSSION OF THE RESULTS

The results are interpreted quizzed on the search as follows:

A)The results proved the first imposition to significant statistically differences (0.05) between the mean scores of the female students before and after the measure of the development mental motivation, which showed that the use of trekking cognitive trips of learning mathematics had led to the development of post-orientation for the female students. Both researchers attributed this result to the use of trekking cognitive trips strategies which contributed to the mental motivation and confirmed information for girls. In addition, those strategies enhanced self-learning which helped to take into consideration the individual differences and thus led to the enthusiasm of the female students to learn. The combination between technology and the scientific material is more effective in teaching than the traditional method since it helped the female students to develop mental motivation. Also; it supported them after the completion of online cognitive trips. The cognitive trips strategies helped at the development of the mental motivation helped through the participation of the female students in the contemplative research critical activities of information by discussing their findings through research sites and references that contributed to the awareness of both types of thinking that they are doing, as well as knowing the used strategy during thinking and rating their effectiveness since looking for information has an important role in increasing the understanding of the female students. As cognitive trips strategy allowed the students to go according to their abilities and their self- speed to get to the higher levels of thinking during the searching and scanning. Moreover, electronic lessons helped to increase the confidence of the students, which led to increase their ability to deal with the higher levels of thinking, as well as, contributed to the development of the mental motivation.

B) The results showed no significant statistically differences at (0.05) between the average scores of students before and after the scale in the development of creative problems solving for the benefit of the students' grades after the scale. Therefore, both of the researchers attribute the mean scores of the female students after the implementation of this scale of the development of the mental motivation to the effectiveness of the cognitive trips strategy in teaching mathematics.

C) The results showed no significant statistically differences at (0.05) between the average scores of students before and after the scale in cognitive integration. The traditional teaching method which depended on the conservation and

indoctrination, had led to intellectual stagnation as well as negative learning for the female students. And therefore information retain in memory only for a short-term, which led to the loss of many elements of the academic topics.

D) The results showed no significant statistically differences at (0.05) between the average scores of students before and after the scale in mental focus. The use of the cognitive trips helped the students to memorize information for a long time. Moreover, this is due to the following:

- 1- The female students behaved positively during the cognitive trips and its effectiveness in reaching to the required information by browsing, summarizing and discussing web pages with their colleagues and mentor, as well as the diversity of presenting the educational material. In addition, it contributed to rely on themselves and be very responsible, which led to the consolidation of the information for a long time.
- 2- This can be explained that the used stages in the Web Quest strategy (cognitive trips) led to the removal of students for the intellectual stagnation, through debate and criticism of ideas by commenting on every aspect of the subject. This boosted to have self-confidence and accept the others' opinions. Also; the cognitive trips strategy provided an opportunity to exchange roles in the leadership of the group, which contributed to assume all responsibility for each single student.

### Recommendations

In results of the current research, we recommend the tow researchers the following:

- 1- It is necessary to make training courses for teachers in schools to train them on designing and using cognitive trips in teaching.
- 2- To be interested in changing traditional teaching methods that rely on conservation and indoctrination into modern and developed methods in which the learner is active and positive. Also; he will be able to deal with electronic devices and new technologies in to obtain information.
- 3- To train and qualify teachers in schools on how to give students the skills of the development of the mental motivation through the curriculum or teaching tools, by organizing training programs for teachers.
- 4- To be interest in the development of different thinking skills, because thinking helps person integrate his personality, and prepares a person who is able to keep with the times changing.
- 5- To design cognitive trips in other educational subjects and train the students on how to prepare and produce them .
- 6- The importance of awareness of providing technical materials in schools which significantly help to implement the cognitive trips strategy, because of its significant impact on learning.
- 7- In the light of the outcome of the current study, the researchers suggest conducting these studies to complement the current study.
- 8- Studying the effectiveness of using cognitive trips via the (Web Quest) on many educational levels and in different courses.
- 9- Preparing a program based on cognitive trips strategy to develop mind habits and scientific trends of college students in all courses.

10- The impact of the use of the Quest Web on other variables in development such as (self-efficacy – academic compatibility – different thinking patterns) for the students at preparatory level.

11- Studying the effect of acquisition of the high cognitive skills on teachers in the primary school and their impact on requiring it.

12- Preparing a program based on cognitive trips strategy to develop active and self-learning skills to the students of the preparatory level through home economics course.

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