

## The Effect of different Electronic support systems through cloud computing on developing 3<sup>rd</sup> year students' Computer knowledge

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**Abstract:** The following study aims at exploring the effect of using different ways or forms of e-support (flexible-fixed) throughout cloud computing on developing 3<sup>rd</sup> year prep students' understanding to computer subjects. The methodology of the study is experimental. The educational content designed with mechanism to cope with learner's need of support and help. The survey includes 60 students of the third year prep school; students divided into two groups in a haphazard way with 30 students each. The first group submitted to flexible technical support, and the second one submitted to fixed technical support. The researcher concluded that there are no statistical differences at 0.05 levels between students of the two experimental groups. The researcher also noticed that post-average results of the two groups have developed. Hence, the researcher recommends using technical support both (flexible-fixed) to provide better and active environment that helps students and learners to develop understanding to keep in touch with modern technical environment surrounding learners.

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**Key Words:** E-Support, E-Support Forms, Clouding Computing

### 1. Introduction:

Due to the great importance of Electronic Education, we can notice that using technology is very important to all scholars especially nowadays as we live in the age of information technology. "Cloud-Computing" is considered one of those technological requirements that we can define as information technology used to transfer stored and computer processing to server that we can connect through internet. So, it conveys products into services.

The rapid development in information technology field as well as high speed of internet participated in spreading "Cloud-Computing" that becomes necessary due to high expenses and cost required for infrastructure. Also, the limited storage of personal computers has become an economical choice. It is widely noticed that the great desire of all Educational institutes to use interesting ways of teaching gives the way to "Cloud-computing" technique to be used as it makes information last for a long time.

Electronic Education started to take place all over the world due to rapid progress and huge number of information available in all fields. It is completely clear that traditional Educational institutes are unable to cope with the revolution of information and applying social needs. (Halafawi 2001, 23).

The Information revolution forced knowledge to be up to date in all fields continuously. Also, knowledge is digitally doubled. Hence, we can merge

Cloud-Computing as an important element of Electronic- Education; it could be used to show content to educators.

Moreover, in the same scope and with the fibers technique and web 2.0 and 3.0, Educational institutes started to use Cloud-Computing to reduce expenses keeping their educational effect on learners and educators. (Khafaga2010, 4).

Generally, Cloud-Computing as an idea started in 60s with its owner John McCarthy who stated "Cloud-Computing may be used to be public service one day" this was actually the case in year 2000 as Microsoft started to apply cloud-computing. But GOOGLE surpassed Microsoft and they developed the service in 2009 establishing a complete system that uses cloud-computing. (khafaga 2010, 5).

With great progress in Educational theories it becomes so important to connect learning methods with educational treatment to overcome all causalities in both learning and teaching processes. Among those developing steps we have interest in students' ability to treat information to make education with great benefit to cope with students' educational abilities. Last years, the researchers have noticed that technological support studies, like Ahmed's and Elgendy's (2004, 691) aims at determining students' needs to success or fail. Teacher's ability to deduct the suitable teaching method appropriate to his students increases students' desire to learn and study.

(Entwistle, 2000, p.4) emphasizes that to have the right way of teaching, you have to know student's requirements and the best way to teach him. He asserts that the way students learn affects their education later on; students who learn in a surface way understand superficially, while others who learn deeply understand better than the first ones.

In the same scope all previous studies refer to the difference between surface and deep learning as connected to acquire knowledge. Surface learning is known with negative processes and disconnected way of thinking that has no meditation at all. This kind of learning depends mainly on outside elements stopping thinking skills. On the other side, deep learning is connected with positive processes supporting what is beyond thinking skills that leads to finding out new and distinctive connections into the frame of learner.

E-learning, appeared in 1976, is one of the strategies that supports deep learning skills from different nationalities in a study aims at making teacher able to develop learner's skills able to solve the problem that he cannot self by himself (Katami, 2005, 368). E-supporting theory is considered direct application to Vygotsky's theory of social learning that is closely connected with zone of proximal development. It means what learner can do by him and what he can do with other surrounding him (family and teachers). This depends on connection between aimed stage and current stage of the learner. This theory indicates that learning needs others participation who affect learner's way of thinking, especially when they are experienced. The theory emphasizes that knowledge increase and learning process are in clear connection with social activities of learner. It states that learners learn from each other socially on one hand, and on the other hand, and from acquired knowledge on the other hand. This means that ZAD progresses to ZAD (Zone of Actual Development) where learner can achieve his missions without any help from outside. For example, if a kid has an electronic game, he does not know what to do with it and he can destroy it and take out its buttons, but if the kid has an adult besides him, he will be able to know how he can use the game and he will imitate the adult. The following diagram illustrates what near progress and indeed progress mean (Khamees 2013, pp.27-28).

E-supporting idea cope with constructional theory and it is considered one of its applications, but it concentrates on learner as mentioned before. Constructional theory is one of the theories through which scientists tried to understand learning philosophy by developing thinking technique through knowledge. Khamees (2013, 23) refers to constructional theory as a knowledgeable and depends on knowledge as learning and it is not statistical

theory as anything else in universe, but it is built by situational analysis through his choices and analysis. The theory states that learning is an activated process and that knowledge is something does not come from outside. The theory states that learners are active not negatives as they are improving the knowledge through self-learning and experience. Learner is the center of learning and teacher only directs him. Khames (2013, 27) says that E-supporting aims at fulfilling educational aims and directing it to the right way as it is learner's right to learn without being trapped in many faults. Khamees determines two forms of E-Supporting:

1- Technological support that means helping the learner to learn and use the system.

2- Educational support that means directing learner with contents, activities, and trainings that cannot continue without support.

Azmy and Almardany (2010, 256) classified E-Supporting into two kinds:

Fixed: it is fixed and unchangeable showing itself all along without any control by the teacher. It could be called obligatory.

Flexible: it is not fixed and flexible, it could be removed and the learner can control it determining the time of its appearance due to his own desire.

Applying the concept of E-supporting with its two kinds lead to the change of E-supporting concept as it no longer depends on interaction between learner and teacher. It helps learner to acquire knowledge besides some strategies that help learner to organize his understanding to complex issues to get to aims efficiently. (Alsalamy and khamees 2009, 11).

At the same point there are many researches that deal with E-Supporting, but Sulami and Khamees's Study (2009, 13) summarized E-supporting's characteristics and formed them as follows:

1- Modeling: E-supporting provides necessary educational behavior for learning.

2- Support: learner is completely supported to perform his job depending only on himself.

3- Fading: is considered one of the most important characteristics. The more learners' ability increases, the less help he needs from others.

4- Diagnosis: evaluating learner's ability to provide suitable strategies of help and support.

5- Temporary help: used to help learner to achieve complicated mission, but it is stopped when learner feels that he no longer in need to it.

Despite the great importance of E-supporting strategy in achieving objectives of educational content of all scholarly years, but the researchers has noticed the following:

- As the researches works in prep schools, he has notices that most of Computer teachers are using traditional ways of teaching depending on keeping

and instructing that never allow them to use media or activities during teaching process. Besides they do not apply what they teach.

- The Researchers examined prep schools computer curricula, and he has noticed that they have no exercises necessary for learners. Those exercises provide solutions for questions that need thinking skills.

Despite of several positive points of E-supporting curricula, but examining previous researches, the researchers has noticed the following:

1- The necessity of employing cloud-Computing with its applications to keep in touch with modern generation to be interesting.

2- The Role of E-learning (Fixed-Flexible) in the process of keeping information inside learner's brains.

## 2. Research Problem:

The researchers has examined several studies in the field of E-supporting like (Alsulamy and Khamees 2003, Hafez 2014), but the researchers has noticed that all studies did not deal with E-supporting into Cloud-Computing. This research is considered a study to determine required suitable support of the cloud.

Objectives of the Study:

This research answers the following question:

What is the effect of (Fixed-Flexible) E-learning of Cloud-Computing on developing collection of knowledge?

Importance of the study:

The research is important to:

1- Interested people in employing E-supporting in cloud computing

2- The research is considered a model to employ scientific content in educational computing.

## Research Suppositions:

There is no clear statistical difference at 0.05 between the average marks of two educational groups in exams due to the difference of E-supporting effect (Fixed- Flexible).

## 3. Research Limits:

1- Human limits: 3rd year prep school students.

2- Time Limits: the research will be applied on the number of students by the second semester of 1436-1437 H scholarly year.

3- Spatial limits: the research will be applied at Mecca Almukaramah

4- Objective limits: the research will be applied on two units:

Unit Six: internet and its applications.

Unit Seven: Internet and search skills.

## 4. Research idioms:

### **Fixed Electronic Support:**

It is a kind of support that is quite clear and fixed to learners all the time either it needs support or not. The learner is supported during his progress in content (Alsayed 2013, 87).

### **Flexible Electronic Support:**

It is a kind of variable support and it is available or not according to learner's response. The learner can control support's availability or not. The learner also is able to determine to what extent he can use this kind of support (Alsayed 2013, 87).

### **Cloud Computing:**

Defines as digital technique that conveys storage and processing area of computer to what is called Cloud. It is a server can be contacted by internet. Hence, technological programs change into application or service developing its programs and its maintenance through its established nets (Alshaya 2015, 193). The researchers adopts this definition.

## 5. Research Theoretical Frame:

First Pivot: Cloud Computing

- Cloud Computing definition:

This term is borrowed to cross the narrow frame of E-Learning referring to available infrastructure if cloud computing as it is going to be available to all users. It will have service centers with all resources and services available to any one ((pocatilu, 2009, 54-55; Goyal & Javata, 2011)

Cloud-Computing Importance:

It is one of the most modern techniques use to get information and data regardless of time and place, besides no cost on general or educational learners. This technique enables users and learners to convey their energy into active attitude affecting the possibility of achieving works throughout co-operation with colleagues (Alahmady 2012, 16)

Mansour's study (2015, 129) emphasized that: Cloud-computing concentrates on building society. It indicates that Educational institutes have to illustrate the role of cloud-computing to learners as the third scientific revolution in technology field. It is also not widely spread among teachers, so educational system needs electronic environment that is able to transfer from traditional into electronic education.

Educational importance of Cloud-Computing:

Anywhere in the world where internet is, the user can use Cloud-Computing with its applications. Miller (2008) explains that cloud-computing has great and important role in developing electronic learning as it eases the way of giving and receiving information. Generally, the research of Abdulhafez (2013, Zaky 2012, Goyal & Javata 2011) assert that cloud- computing has a lot of positives:

1- Providing easy and available ways to use it.

2- Collecting and saving data through internet servers that make information available at any time and any place.

3- Safe server connections even if the process is complicated.

4- Providing "Hosting" to support and maintain learner.

5- Flexibility and options that make it easier.

6- Co-operative technology that is considered one of the best solutions by Cloud-Computing. It enables co-operation among learners at the suitable time.

7- Classified as a modern technique that respects environment as it is regularly maintained and it reduces loss.

8- No compulsory system is required for Cloud-computing.

9- Easy movement and treatment of infrastructure resources.

10- Complete independence of computer as it works without any need to special tools or programs.

11- Many users are able to use the same program.

12- The Program is dependable, if a certain sector stopped, it never affects the whole cloud and it could be used.

13- It is completely safe as all data are central.

Cloud-Computing Educational Applications:

Technicians refer to cloud-computing system as they are resources and available services regardless of resources. This aims at make it easier for learners. Throughout this technique user will be able to control resources without programming complications or internal computing processes (Zaki 2012, 26).

E-Supporting

The researchers aims at defining E-Supporting, and throughout previous researches including (Hannafin, et al. 2001) illustrates that E-Supporting is the process through which the learner can direct his learning efforts (Raiser, 2002, pp. 258) as a strategy that can help learner to arrange the complicated scientific content of educational environment.

On another side, (Fernando & Luis 2000) emphasize that E-Supporting is a process of directing learner that happens during learning to motivate him to develop his skills to participate in self-learning process.

Also, (Zayton 2003, 95) defines E-Supporting as a step required to direct learner and teaches him to depend him/herself.

E-Supporting Forms:

E-supporting is used generally to provide suitable and easy educational environment that helps learner to fulfill his goals. Khamees (2007, 34-52) emphasizes that learner can get this through support. There are many studies concerning this topic like (Alsulamy & Khamees, 2009, 12, Abdulhameed,

2011, 76, Algendy & Ahmed, 2004, 700) that classified forms of E-supporting according to their types, their uses, and their presentation. Among E-Supporting forms we mention (Alsulamy & Khamees 2009, 12, Alsayed 2013, 87, Safaan, 2008, 77, Shahinaz, 2009, 46).

Fixed E-Supporting:

Defined as Electronic support to the learner whether he needs it or not. It is an obligatory learning presented in an educational way related to objectives of the subject. It can be useful in some educational situations and vice versa.

Flexible (adaptive) E-Supporting:

Defined as E-Supporting that disappears and adapts according to learners' response and its need or it. The learner will be able to use it or abandon it and he can determine to what extent he is in bad need of it or not. This form of support imposes on all learners to guess and look for all ways and lanes expected to be used by learner during learning.

Flexible E-Supporting with learning changes:

It changes automatically according to learner's learning and educational criteria during his learning and the progress he achieves like (his knowledge selection level, his efficiency, his intelligence, his repeated request to have certain information...etc) So, we have a lot of educational criteria aims at filling the gap between what learner knows and what he needs to know.

Adaptive E-Supporting:

It is presented at the beginning of data and it is optional, but learners can notice disappeared support and they can demand it whenever they want. As for beginners, it is still disappeared and they can proceed without support. This type of support tempts designers to think deeply to get to the best way of support that can help learners. Zidan et. al 's study (2015,11) refers to E-Supporting either individual or social as informative group of contents presented to learners by mobile phones and Tablets to guide them to the right way of learning. This is through direct contact between the learner and the teacher or socially through number of learners through discussion between teachers.

E-Supporting forms in Cloud-Computing:

There are several studies that deal with cloud-computing as (Safan 2008, Alsulamy and Khamees 2008, hafez, 2014, Alsayed 2013). Those studies deal with several kinds of E-supporting to be used in educational processes aiming at helping learners to depend on himself while he deals with scientific content.

Due to the great importance of E-supporting in any educational system, it becomes a necessity in any new educational system that depends on new technique, Khamees (2009). The researchers has

chosen two E-supporting systems (Fixed and Flexible) to apply this study. Safan's study (2008, 77) emphasized that E-supporting for learner needs the right way or attitude to provide learner E-Supporting. The following is E-Supporting forms and systems that will be used in this research (Alsulamy and Khamees 2008, 12):

1- Fixed E-Supporting:

This kind of support is quite clear to the learner during the whole time of learning as he is provided with help and support in every step during the process of learning. The designer feels that he needs them every time. This makes them clear whether needed by the learner or not. This type of support suits some needs of learners and does not suit others, as it depends mainly on learner's response from help and guidance provided not to behave in a haphazard way.

2- Fixed E-Supporting

It is distinguished by its ability to disappear, change and removed. The learner is the main controller of it, as it is optional to learner either to use it or not. The learner must realize support and determine all routes and lanes required through the process of learning. The learner can choose this kind of support depending on his performance and his need to be guided and controlled

**The Role of E-Supporting in Cloud- Computing:**

Cloud- Computing is considered one of the modern learning ways. E-learning is considered new and contemporary ways to achieve educational goals through support on time and with suitable way. Learner may. Achieve progress through content and he may get away from his objectives. Cloud computing aims at delivering content at the best time, and by the best way, besides the support available through cloud-computing that evaluates teachers to evaluate and measure students' performance. 20th century technical revolution made knowledge, culture and technology melt in one crucial. (Alahmady 2012, 2- Khamees 2009, 1).

In conclusion, cloud-computing provided many services including E-Support which is one of Educational strategies basements. Using traditional ways of support have become so weak compared to modern ways of E-supporting as learner's characteristics are considered basics that cloud-computing considers. Learner's characteristics affect widely the relationship between teacher and student to get the best results. E-supporting in cloud-computing aims at getting the best results and outputs based on Educational system considering different levels (Ahmad 2014, 367-368).

The researchers elaborates that merging E-Support with its two divisions (Fixed- Flexible) and its use in an educational way in cloud-computing is very suitable.

Depending on the previous studies in the same field, this study comes in the same field of using modern technology determined by cloud-computing; some of them are connected with learners' characteristics and the way they learn, and others are related to cloud-computing and navigation in its content (Mansour, 2015, Zaki 2012, Ahmed 2014), besides the possibility of E-supporting strategy with its two divisions (Fixed- Flexible) as one of the most important Educational strategies in Educational System approved and recommended by many studies (Alsulamy & Khamees, 2008, Alsayed 2013, Hafez 2014).

**6. Methodology of Research:**

Used Method:

The research depends on the following methodologies:

1- Experimental Methodology: studying changing effect in E-Supporting (Fixed-Flexible) on Academic understanding and evaluating the impact of Learning Affect.

2- Independent Variable

a. E-Supporting (Fixed-Flexible)

3- Dependent Variable

a. Gaining Knowledge

**Research Sample:**

Sample of the research are students of Prep schools at makka AlMukaramah City. The sample includes students of 3rd year Prep school of ALIMAM NAFEA School. They are 60 students and they are divided into two groups: the first group of 30 students using Fixed E-Supporting, and the second group of 30 Students using Flexible E-Supporting.

**The Educational Design of (fixed-flexible) Electronic Support through Cloud Computing**

To educationally develop electronic support in cloud computing, the researchers has recognized a number of models of educational designs, namely the Al Gazzar model (2002, 60), the Mohamed Atya Khamis model (2003, 81) and the Ibrahim al-Far model (2005, 16). The Mohamed Atya Khamis model was chosen due to its simplicity, clear procedural steps, easy field-application and, finally, because the model is appropriate for the current research. We can sum up the model as follows:

**Firstly: Analysis stage:** This stage includes the following steps:

**1- Analyzing the problem and assessing needs**

The researchers, through practical working as an IT teacher, has noted the existence of some obstacles related to teaching the curriculum, particularly on the part of students, such as delayed understanding, far too many students in comparison to the limited time

given for teaching subjects, students being hesitant and shy to ask the teacher about the points they have not understood and the individual differences among teachers. In the meantime, the researchers surveyed the opinions of some teachers and analyzed their comments to discover that there are common difficulties that are similar and which teachers face while teaching IT. When the researchers became acquainted with the studies that integrated cloud computing into the educational process, such as the studies of Zaki (2012), Mansour (2014), Ahmed (2014), he realized that this process is very effective in teaching and learning because it uses the web application 2.0. We can, hence, conclude that using cloud computing is a matter of urgency because there are services that use important techniques such as "Google Docs", plans, questionnaires and presentations that I use in this study and which contribute in attracting students and breaking the common conventional learning routine.

#### **2- Analyzing educational tasks:**

This step, as pointed out in the Khamis model (2003), relies on partitioning the task (the goal) into detailed levels of sub tasks, something that helps teachers achieve the educational goals effectively and efficiently. The topics and tasks of the computer curriculum of the third intermediate grade were defined as follows: the Internet and its affiliations, emails, web site design and searching the Internet.

#### **3- Analyzing the characteristics of teachers and their introductory behavior:**

The current research sample focuses on the students of the third intermediate grade at Imam Naf'a School. A fact-finding study was made on the sample consisting of 20 students who have never studied the Internet, email, website design and searching the Internet. The tasks entrusted to learners focused on recognizing the Internet, its kinds and how to connect with, sending and receiving electronic mails with or without attachments, along with conducting advanced research using search engines on the Internet.

Analyzing the characteristics of the learners of the above tasks included (The End-The Goal), as already described in the Mohamed Atya Khamis model (2003), in which he referred to the necessity of partitioning the tasks into detailed sub-levels to facilitate its achievement for the learner.

#### **4- Analyzing resources and restrictions in the educational environment:**

The research experience depended on using personal computers, which are available to most learners, and a router device connected to the Internet that was also available in the school computer lab. The researchers took into consideration directing and planning the time of teaching students in a way that

suits the class-timetable. After analyzing the resources and restrictions of the educational environment, the researchers found it suitable and supportive for research and the learners were able to successfully interact with the experience. In light of the above, it was discovered that the storage capacity resources in computers have greatly contributed in their effective practical application inside the school environment for several reasons, namely easy access at anytime and anywhere, the backup of data, auto-synchronization of cloud computing, program-processing and sending electronic mails, besides remote printing.

**Secondly, Design stage:** This stage included the following steps:

#### **1- Designing the educational goals, analyzing and classifying them:**

The general goal of the research is to know the impact of the diversified electronic support (the fixed and the flexible) in cloud computing on the cognitive experience. Hence, the procedural goals prepared have taken into consideration formulating the principles and conditions necessary for outlining the educational goals. The issue was also presented to a specialized panel and all notes were made.

#### **2- Designing reference measure tools:**

These tools will be previewed in detail in the fifth part related to research tools.

#### **3- Designing the content and strategies of organizing it:**

The current research depends on the two kinds of electronic support (fixed-flexible) in cloud computing and the nature of this electronic support has been defined in light of the experimental processing as follows:

##### **\*3-1: The Fixed Electronic Support Type:**

The electronic support has been provided directly for the learner through this type, whether he demanded it or not. In such a type, the electronic support is provided in the form of "help and direction" in every step directly, specifically and clearly. In this regard, the designer or educational developer of the program knows what the learner needs.

The fixed support is used, for example, when we reach a specific idea about a certain goal. After that, we ask the student to make sure he has realized the content before moving to the following point. In light of his interaction and response, the electronic support is provided to the student, regardless of his desire.

##### **\*3-2: The Flexible Electronic Support Type**

In this type, support, direction and help are provided to the learner on his desire, so the support is changeable and liable to disappear or vanish because the one who controls the process is the learner himself, who assesses whether he needs support and direction or not?

For example, when a unit about content is finished, the learner is asked about his desire for support and direction regarding what he has learnt. Support buttons can also be showed to him and he has the choice either to press them and read the directions or move to the second part. According to his wishes, support is presented or overcome to move to a new content.

\*3-3: Designing strategy of teaching and learning:

The research experience will be presented through cloud computing by using the two types of electronic support (the Fixed and the Flexible). The strategy to be used by the researchers depends on training and practice, something that means favoring the practical side of the content and the strategy of brain storming, besides solving problems suitable for the presentation nature and ensuring that the learner is always active and positively effective in fulfilling the entrusted tasks to benefit from the types of support available during the education process.

\*3-4: Designing the scenario and strategies of educational interactions:

The researchers thinks that in light of processing and the current experience of the research designed, it is based on the self-interaction of the learner individually and consecutively and his interaction with the group, too. The scenario of the support is designed according to the style of the learner himself and the way he fulfills his tasks.

\*3-5: Defining the pattern of education and its styles:

The researchers depended in this research on the support-backed education pattern and this grants learner independence while achieving progress in the educational content and he can also be supported if he needed that.

\*3-6 Designing the strategies of public education:

The researchers designed strategies of public education on the basis of stirring motivation on the part of the learner and readiness to learn through attracting the attention of the student to the content and through his interaction with it individually and independently, besides using the electronic support types that suit learning content in order to activate their individual response.

\*3-7: Choosing multiplied sources of learning:

Several multimedia means have been chosen and defined and these means must be suitable to the characteristics of the learners and express directly the content presented to the learners, including (audio-text-picture-video). The researchers employed these elements in a way that achieves the goals of the unit and the learner is supported and directed through a link of the video shot, through an audio attached to the

content or supported by pictures that can be shown if needed. There is also a text for the learner to show him the point to be supported.

\*3-8 Describing the sources:

The researchers laid the specifications of the two types of electronic support (the fixed and the Flexible) in cloud computer as follows:

- 1) Following a timely defined strategy.
- 2) Appropriate to the defined age-category.
- 3) Appropriate educationally.
- 4) Integrated and un-divided.
- 5) The content is connected to the electronic support in cloud computing.
- 6) Permanent and well-defined maintenance.

\*3-9: Taking the decision related to getting the support or producing it locally:

The researchers took a decision to use the (Fixed and the Flexible) electronic support in cloud computing of the educational content and some of them have been modified after judging it by specialists and some of them recommended making changes or modifications while others recommended deleting.

**Thirdly: Development:**

1- Preparing scenarios:

The researchers accredited the scenario related to the educational content as the content related to the goals has been turned into a multimedia educational source, besides defining the interactive activities and the tasks that should be done by the student through these activities.

2- Planning for production:

The researchers chose the two types of electronic support (the Fixed and the Flexible), which are of close relation to the scientific content and its characteristics and the machinery of integrating it into the content. Moreover, the machinery of the electronic support provided to the learners has been planned to appear while moving from one point to another.

3- Development (Real production):

In this stage, some types of electronic support have been revised according to the educational goal to be achieved and these types were tested to make sure of their accuracy during the progress of the learner in the educational content.

4- The structural assessment process:

The educational content was submitted to the panel and specialists to make sure of its suitability to achieve the goals prepared and they recommended some changes and revisions.

5- The final production of the educational product:

This stage is reached after finishing the last step of the two types of electronic support, making sure it is free of any faults and educationally and technically

suitable, after carrying out the changes and necessary notes recommended by the specialized panel to follow the model of educational design and development used for preparing this study. Hence, the two types of electronic support were integrated in cloud computing and we made sure of its effectiveness, efficiency, accuracy and easy usage.

**The research tool:** The tool used in this study is the achievement-test and it is prepared as follows:

**1- Defining the goal of the test**

The achievement-test aims at measuring the achievement of the students of the third intermediate grade at Imam Naf'a School to the content of the computer curriculum of the second term, which included the topics Internet network and its applications, and the Internet and search skills.

**2- Setting the specifications-table of the test**

The specifications-table of the test has been set, pointing out the content included in the test:

**Table (6): Test Specifications**

No	Unit	Goal-Standards				Total	Percentage %
		Memory	Understanding	Application	Analysis		
1	Internet network and its application	10	6	5	1	22	74
2	Internet and research skill	3	3	2	-	8	26
	<b>Total</b>	<b>13</b>	<b>9</b>	<b>8</b>	<b>1</b>	<b>30</b>	<b>100</b>

**3- Formulating the items of the test**

The test was set, using two types of objective tests; the first one is a multiple choice (20 questions), the second is a "True/False" choice (10 questions) and the two types were chosen as the best objective option.

**4- Assessing the marks of the test questions**

A correct answer of each question deserves one mark while a wrong answer gets zero and the total marks of the test is 30.

**5- Test instructions**

The instructions of answering the test were direct, clear and easily understood by every learner to support, direct and help him recognize and understand the nature of the test.

**6- The pilot experience of the test includes:**

**A) The consistency of the test**

Consistency of the test has been measured through using the Split Half Method. The test is divided into two sections; the first includes odd questions for every student and the second includes even questions dedicated for every student in the pilot experience group. The test consistency rate amounted to 0.83 and this rate is acceptable and indicates consistency.

As for self-credibility (i.e. the rate of pilot marks to the real marks, after counting the square root of consistency rate) this was at 0.91.

**b) The logic credibility of the test**

The logical credibility of the test has been measured by specialists to understand their opinions and the suitability of questions to the defined goals, in addition to measure the scientific accuracy of the questions, the appropriate wording of questions to the targeted age-group and any other points that may arise.

Some members of the panel demanded rewording some questions to be similar to alternative questions, shortening them. Changes have been made after revision to develop the final form of the accredited test, consisting of 30 questions that were divided into 20 multiplied choice questions and 10 true/false questions.

**7- The Difficulty/Easiness rate of each word:**

The Difficulty/Easiness rate of each word was measured and it wavered between 0.27 and 0.77; this means it falls within the defined scope 0.2 and 0.8, i.e. when the Easiness rate is over 80%, the questions are very easy and when the Easiness rate is less than 20%, the questions are very difficult. This, in general, means that the questions are acceptable; they are neither very easy nor very difficult.

**8- The overall easiness of the test**

The Easiness rate of the overall test amounted to 0.83, a matter that brands the test "Easy".

**9- Defining the test-duration**

The test-duration was measured on the basis of the time taken by the student who finished the test first and the time taken by his colleague who finished the test last, divided on 2 and the result was 31 minutes.

**The main experience of the research**

This experience passed several steps as follows:

**1- Choosing the research sample and dividing it into two groups:**

A research sample was chosen from the students of the third intermediate grade at Imam Naf'a Intermediate School. The experiment-sample consisted of 15 students. After that, the first 30-student-experiment group was chosen and the second 30-student-experiment group was chosen.



**2- Making sure of the parity of groups:**

The pre-test was applied on the first and second groups and the aim is to make sure of their parity before starting the research experiment. The results

were analyzed using "Independent Samples T Test" to know how far the two groups are harmonic and to know the difference indication between the two groups in the pre- and post application test as follows:

**Table (7) The Pre-application achievement Test**

The Group	Number	MEAN	STD. DEVIATION	SIG
Fixed Support	30	20.67	4.1	0.49
Flexible Support	30	19.86	3.5	

In light of the above table, Sign=0.49 means the absence of differences in terms of statistic sign between the two groups and this means there is harmony in the cognitive level among students. This also means there is parity between the two groups before carrying out the experiment because the two groups didn't experience before the educational content experiences.

**3- Applying the experimental processing:**

The two experimental processes were applied on the students as follows:

**1) The Fixed Electronic Support Type**

The content is presented to the learner and the support is integrated into the content to be provided to the learner regardless of his need or desire to recognize it.

**2) The Flexible Electronic Support Type**

The content is presented to the learner and the support option is available to him according to his desire and he has the choice to remove it or continue without.

The researchers continued applying the field-experiment during the second term of the school year (1436-1437 Hijri) as the application started on 21/6/1437H until 2/8/1437H.

**4- The post-application of research tools**

After applying the two experimental processes, the post-achievement test was repeated for the

students on Sunday 1/8/1437H to decide the impact of the different electronic support types and its suitability to students' cognitive achievement.

**Research results and the proposed recommendations:****Firstly: Statistical techniques applied in this research:**

The statistical processing technique was concluded by means of the SPSS program to test the validity of the hypothesis, the INDEPENDENT SAMPLES T TEST was also used, which is the proper statistical method available within the program to calculate difference indication in the pre-application and post-application of the two experimental groups, also to answer the research queries.

**Secondly: Testing the first hypothesis:**

The first hypothesis stipulates that "There is no statistically significant difference at 0.05 level between the average experimental groups-marks in the post-test due to the different effect of using the (fixed-flexible) electronic support in cloud computing."

To statistically verify the validity of the hypothesis, the INDEPENDENT SAMPLES T TEST was chosen to define the difference indications between the means of the two experimental groups. The following results, detailed in the hereunder table, were reached:

**Table (8) - The Post-application Achievement Test**

Group	Number (N)	MEAN	STD. DEVIATION	F	T	SIG	Indication
Fixed Support	30	22.43	4.6	1.7	0.56	0.19	Non significant
Flexible Support	30	21.80	3.9				

From the above table, we conclude that (Sig) value = 0.19 and (T) value = 0.56. We also notice that its value is bigger than 0.05, which means a non-significant statistical difference at such a level on the Post-Application Achievement Test among the mean marks of the individual sample under study, using fixed electronic support type amounting to 22.43 and

the mean marks of the sample using the flexible electronic support type amounting to 21.80. Such a result indicates the effectiveness of the two types of school achievement groups is identical with no difference among them; this is because the cognitive achievement development of the learners and the effectiveness of such approaches were semi-identical.

By means of statistical induction or statistical inference, the zero hypothesis is accepted which states: "There is no statistically significant difference at the 0.05 level among the mean marks of the experimental two groups in the post-application test due to the different effect of using (Fixed-Flexible) electronic support types and this is attributed to the educational content on the Internet and its applications plus search skills."

### **Thirdly: Results of the research hypothesis and discussion:**

By reviewing the above-mentioned results, we find that the two types of electronic support (Fixed and Flexible) are effective in the development of the student's cognitive achievement, however, with no noticed disparity or excellence of one of the two groups over the other. There is also no statistically significant difference between learners' mark means using the flexible electronic support type on one side and the student marks means using the fixed electronic support type in the post-application achievement test on the other side.

Such a result is compatible with Al Salamy (2008) who stressed the parity effect of the two electronic support types (Fixed and Flexible). Regardless of the electronic support type used in the educational standing, and whatever the support type used in the content, the effect on the student scientific achievement was more or less close.

Moreover, the Abd El Halim (2010) study also agrees with that result, which affirms that the effect of electronic support levels – regardless of whether it is brief, medial and detailed or according to what was applied in the educational content – will be equal as to what has been achieved cognition-wise among learners.

Those results agree also with the study of Reisslein et al. (2006) which concluded the parity between student results in the post-application after providing them with different electronic support types within the educational standing. The effect was visible only in an increase in the cognitive achievement of the post-application test of the two groups compared with the pre-application test.

These results contradict with Abd El Hamid's (2011) study which affirmed the effectiveness of the synchronized diversified electronic support types and the non-synchronized electronic support types among the mean marks of the two experimental groups and the presence of a statistically significant difference.

The results differed also from the Shahinaz (2009) study which showed the effectiveness of the fixed support in providing a better educational environment in comparison with the procedural one. It also helped in creating motives and attracting students towards the educational content.

In the same context, we find that the results of such a study differed from Janet (2004), as it verified the effect of various types of electronic support, where it reviewed the fixed electronic support versus the cognitive electronic one that helps learners in merging and organizing their knowledge with a rated content support.

### **These results can be explained, attributed to and summed up in the following points:**

1-Adoption of the (Flexible-Fixed) electronic support types, in a rated way within the educational content, represents a great attracting factor for learners, as a modern learning style that provides them with help and support that is needed during content presentation and it also stirs their learning motives due to avoiding the traditional and familiar way.

2-The two types of electronic support (Fixed-Flexible) provided for learners within cloud computing considerably helped in increasing their cognitive achievement. Moreover, they filled the gap between what the learner has from skills and information and what he wishes to learn, the point previously referred to in the imminent development field.

3-Though there is no statistically significant difference between the two groups that may not belittle the electronic support in the field of learning... There are, hence, differences in the post-application achievement results for the two groups, where there is a hike compared to the pre-application test, a matter that indicates more content assimilation for the learners.

4-According to Vygotsky's Social Learning Theory, we can say that (Fixed-Flexible) electronic support types made the learning process possible through help and support from the more experienced and capable party. Such a fact had social positive effects on the students, as the learner was confined to the reaction between the content itself and the provider of the electronic support content, whether it was a book, teacher, sound, text, etc. That theory says that the learner gets better and quicker information than in the individual learning environment because he exchanges information and data that activate his thinking in a more attractive and appeasing way than letting him learn on his own.

### **Fourth: Research Recommendations:**

In light of the discussions on the research results and conclusion, the researchers recommends:

1- This study refers to the effectiveness of adopting the two types of electronic support (Fixed-Flexible) in cloud computing according to post-application achievement tests. As a result, the researchers recommends the usage of the two within the educational context.

2- Encouraging both teachers and students to benefit from site services resources available that provide cloud-computing services in the educational process to achieve the desired targets.

3- Training teachers and academics, before and during their professional career, on utilizing and employing electronic support skills in the educational process through cloud computing.

4- Compiling school curricula in which electronic support is integrated to serve the educational process.

5- Utilizing the web second-generation services 2.0, namely cloud computing, to develop learning and promote the educational targets.

#### **Fifth: Research Proposals:**

In light of the research targets and results, the researchers recommends performing the following studies:

1- Application of a research study on the difference in electronic difference over third generation web applications.

2- Studying the effect of electronic support type differences (before, during and after) along with multi-dimension cognitive techniques.

3- Studying the effectiveness of the procedural and conceptional electronic support adoption on learning persistence.

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