



## The Possibility of Using the Cloud Computing in E-learning in Modern Libyan High School

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### Keywords:

Cloud Computing  
E-Learning  
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### ABSTRACT

Because of the explosive growth in the volume of data and information limits the ability of companies to manage these data, information and control effectively, and with continuing high storage costs companies face makes data retrieval and preparation of copies problems, As well as the high prevalence of advanced information technologies almost daily impact on the efficiency and productivity of the business. This paper investigates the potential of using cloud computing in self-learning skill development for Libyan Modern High School students (third level, IT department). The research explores the concept of cloud computing and its characteristics in the context of e-learning. It then highlights the benefits offered by cloud computing, such as easy access to applications and resources, cost savings, and improved efficiency. However, the paper also acknowledges potential obstacles, including internet availability and security concerns. A field study was conducted with 30 students using Microsoft Live@Edu, a cloud-based e-learning platform. The study evaluated the program's effectiveness in facilitating self-learning and assessed student perceptions of its importance, quality, and benefits. The analysis of the questionnaire results revealed that a majority of the students agreed on the program's value and positive impact on their learning experience. They highlighted the benefits of easy access, anytime and anywhere availability, and features that support collaboration and communication. The paper concludes by suggesting that cloud computing holds promise for enhancing e-learning in Libyan high schools. However, it emphasizes the need to address internet connectivity limitations and security considerations for successful implementation.

### إمكانية استخدام الحوسبة السحابية في المدرسة الليبية الحديثة

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### الكلمات المفتاحية:

الحوسبة السحابية  
التعليم الإلكتروني  
تكنولوجيا المعلومات والاتصالات.

### المخلص

نظرًا للنمو الهائل في حجم البيانات والمعلومات، فإن قدرة الشركات على إدارة هذه البيانات والمعلومات والتحكم فيها بشكل فعال تحد من ذلك، ومع استمرار ارتفاع تكاليف التخزين تواجه الشركات مشكلات في استرجاع البيانات وإعداد نسخ منها، فضلاً عن الانتشار الكبير لتقنيات المعلومات المتقدمة التي تؤثر بشكل شبه يومي على كفاءة وإنتاجية العمل. تبحث هذه الورقة في إمكانية استخدام الحوسبة السحابية في تطوير مهارات التعلم الذاتي لطلاب المدرسة الثانوية الليبية الحديثة (المستوى الثالث، قسم تكنولوجيا المعلومات). يستكشف البحث مفهوم الحوسبة السحابية وخصائصها في سياق التعلم الإلكتروني. ثم يسلط الضوء على الفوائد التي توفرها الحوسبة السحابية، مثل سهولة الوصول إلى التطبيقات والموارد، وتوفير التكاليف، وتحسين الكفاءة. ومع ذلك، تعترف الورقة أيضاً بالعقبات المحتملة، بما في ذلك توفر الإنترنت ومخاوف الأمان. أجريت دراسة ميدانية مع 30 طالباً باستخدام Microsoft Live@Edu، وهي منصة تعليم إلكتروني قائمة على السحابة. قامت الدراسة بتقييم فعالية البرنامج في تسهيل التعلم الذاتي وتقييم تصورات الطلاب لأهميته وجودته وفوائده. وكشف تحليل نتائج الاستبيان أن أغلبية الطلاب اتفقوا على قيمة البرنامج وتأثيره الإيجابي على تجربة التعلم لديهم. وسلطوا الضوء على فوائد سهولة الوصول إليه، وتوافره في أي وقت وفي أي مكان، والميزات التي تدعم التعاون والتواصل. ويختتم البحث بالإشارة إلى أن الحوسبة السحابية تحمل وعداً بتعزيز التعلم الإلكتروني في المدارس الثانوية الليبية. ومع

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## 1. Introduction

This research investigates the potential of cloud computing to revolutionize e-learning in Libyan high schools. The study aims to address the challenges posed by high IT costs and limited access to resources by exploring the feasibility of implementing cloud-based e-learning solutions. Recently, the concept of cloud computing spread to be one of the most interesting topics in the areas of technology, education, given that cloud computing does not reflect the concept only, but is a reality so that they are your own files and your software on the Internet.

As a result of educational institutions are currently facing many problems to keep up with the changes in information technology and rapid communications, where information requires the development of technologies used in the educational and training process, significant costs, In addition to the cost of new hardware and software. Because of the different whereabouts colleges in universities appeared the need to use modern information technologies, such a cloud computing technology, which represents a new solution to these problems. students can access applications from anywhere, at any time and from any devices connected to the Internet, access to systems and software development and develop their applications and stored in the infrastructure of universities, Access to self-learning tools, databases, applications and social networks through a variety of computing devices and mobile phones devices [3].

The following figure shows the structure of the e-learning through cloud computing:

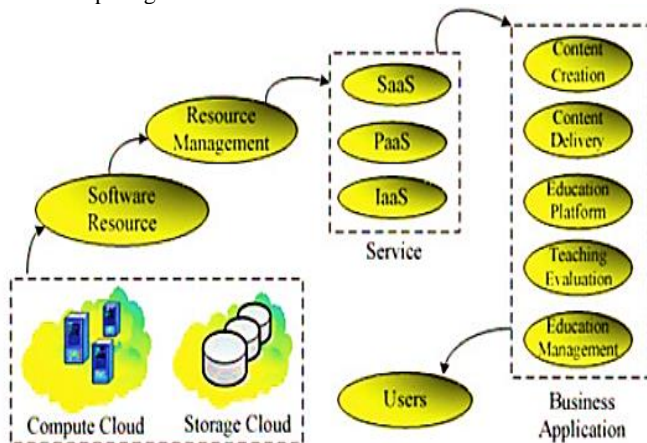


Fig. 1. Architecture of e-learning cloud [3]

This paper aims to find out the possibility of applying cloud computing in the self-learning students' skill development among Libyan Modern High School students. It will include research a procedure using the experimental method, using a single pilot is learning her by scheduled email, and will be used in this research a questionnaire to measure the trend of learning based on the Internet to measure self-learning skill of the student's measure in practice.

## 2. Research Sample

Students at the third level (up to 30 students).

A. MEASUREMENT TOOL: questionnaire.

B. RESEARCH PROCEDURES:

1. Choose the sample of third level students at Libyan Modern High School learn scheduled electronically through cloud computing technology.
2. Results and interpretation discussion, to make recommendations based on the results that have been reached.
3. The work of a survey of references associated with the search topic.
4. Identify educational goals to be achieved from the module.
5. Preparation of research tools: the preparation of the questionnaire to measure the cognitive aspects of the course.

C. RESEARCH OBJECTIVES

The specific research objectives are:

1. To assess the current state of e-learning infrastructure and resources in Libyan high schools.

2. To identify the potential benefits and challenges of implementing cloud-based e-learning in the Libyan educational context.
3. To evaluate students' perceptions and attitudes towards cloud-based learning tools and resources.
4. To develop recommendations for the effective integration of cloud computing into the Libyan education system.

## 3. Research Methodology

A mixed-methods research approach have employed, combining quantitative and qualitative data collection techniques.

## 4. Cloud Computing Technology Concepts in e-learning [2]

Cloud computing is an umbrella term used to refer to Internet based development and services. The cloud is a metaphor for the Internet. A number of characteristics define data cloud, applications services and infrastructure:

- **Remotely hosted:** Services or data are hosted on someone else's infrastructure.
- **Ubiquitous:** Services or data are available from anywhere.
- **Commoditized:** The result is a utility computing model similar to traditional that of traditional utilities, like gas and electricity. You pay for what you would like [2].

Also cloud computing known as a model to help access the resources and capabilities of Information Technology such as applications and infrastructure of servers, virtual machines, storage space, communications, social networking through the services provided by the suppliers of cloud computing, which provides cost and with minimal administrative effort for users of the service.

## 5. The Characteristics of Cloud Computing in E-learning

1. **Self-service:** the possibility of using the applications available in the cloud, such as Google Apps DOCS, data, databases, tables, any user can create and edit files and save them in a structure, The cloud using a web browser according to his needs [1].
2. **Availability:** Access to applications and resources available in the cloud from anywhere and at any time.
3. One place to devices, applications and communications tools, which helps to ease access to the data and information in the time required.
4. Multi-tenancy can share resources and costs across a large group of users.
5. Centralized infrastructure in sites with costs (such as real estate decline, electricity, etc).

## 6. THE BENEFITS AND OBSTACLES TO THE USE OF CLOUD COMPUTING IN E-LEARNING

### A. The Benefits of the Application of Cloud Computing in Educational Institutions [5]:

1. Easy user access to files and applications without the need for its existence on his machine, thus less security risks and resources required hardware.
2. Take advantage of the very large maids in conducting complex operations that may require hardware specifications above.
3. Save a lot of money to buy the software needed by the user, all the user needs is a device A computer connected to fast Internet line and be connected to one of the sites that offer software it needs.
4. Reduce costs through reducing the number of private infrastructure devices, and to provide the number of workers in maintenance Hardware and software in the enterprise.
5. The current architecture of the cloud computing availability and data centers that are able to provide the service for customers based on the level of the world as a whole.
6. The majority of distance education resources and infrastructure required institutions do not have to run the e-learning applications and the purchase of modern versions and evolving very quickly, so the use of cloud computing technology this helps institutions to use modern versions of hardware and software.

### A.1 Advantages of Cloud Computing Technical for Students [7]:

- a. feedback between students and teachers,
- b. Ease of communication between students.

- c. Help students and teachers to use applications without load on their servers and help them to access stored files from any computer with an Internet connection.
- d. Conduct tests online.
- e. Easy to send exercises and projects for students.
- f. Easy access to the tests, exercises, projects submitted by students.

**A.2 Obstacles to the Use of Cloud Computing [6]:**

The obstacles to the use of cloud computing environment in educational institutions in the following:

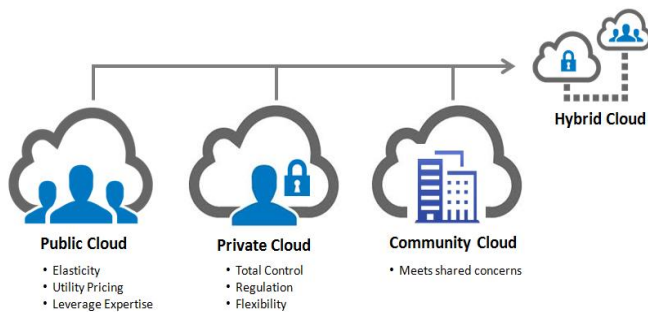
1. Lack of availability of the Internet is one of the main problems, which require service providers internet access in permanently while using that service.
2. Protection of intellectual property rights problem one of the problems that give rise to concerns of users of these services, there is no guarantee not to intellectual property rights violation for users.
3. Fully rely on other companies limit the technology used and reduce the flexibility of the lab or users, it also users cannot do anything outside the borders and powers permitted by the service provider cloud computing companies.

**A.2.1 The problem of security and privacy of information, are [5]:**

1. Universities lose a degree of control over their data, since this data is stored in computers devices when another party. Be responsible for protecting data from hackers and hackers of the systems in the hands of the suppliers of computing service and not the university.
2. Multi-leasing, re-use hardware and software between a large numbers of user's leads to high risk to delete important data for universities.
3. Post storage and networking resources among many users also represents a fundamental risk of computing.
4. Dependence on service providers: universities may find it difficult to access source data and the information technology team.

**7. TYPES OF CLOUD COMPUTING SERVICES**

The following figure illustrates the cloud computing technology which is the following services [5]:



**Fig. 3.** Cloud computing technology design models [4]

1. **Public Cloud:** This is a model of public access environment. Cloud infrastructure available to the public and owned by the organization selling cloud services.
2. **Private Cloud:** represents private networks and built for use by a specific destination, complete control of the data availability, ensure security and quality of the data.
3. **Hybrid Cloud:** consists of two clouds, or more General (or private or public and community) its components distinct but linked together certain technology that helps to access data and applications.
4. **Community Cloud:** the cloud environment shared by several organizations and supports a specific community, which has common interests, such as (the requirements of security, availability, ease of availability and data flow).

**9. CLOUD COMPUTING TECHNOLOGY IN THE APPLICATION OF E-LEARNING STUDENTS AT THIRD LEVEL IT DEPARTMENT AT LIBYAN MODERN HIGH SCHOOL**

This part aims to identify the possibility of using cloud computing technology in e-learning, including measures, the field study includes an e-learning by using ( Microsoft word , Power point programs), the third level, IT department of Libyan modern high school.

**1. The field study was conducted as follows:**

- Develop introduction scheduled supported the general guidelines.
- Identify and formulate the overall objectives, and the analysis and re-organization and presentation of the practical content of the course Introduction Computer.
- Before the start of the students using the Internet was made clear to them the nature of the website you want to access it and how to use location to learn from it and to provide general guidelines for dealing with him.
- Teach students how to take advantage of applications available in the cloud computing in the course Introduction to learn the computer.
- It has been directing students study, the need to link the theoretical side and the practical side of the course, which leads to understanding, and consolidate topics scheduled and thus achieve the desired educational goals.
- Implementation of the self-learning process to study all units (Microsoft word and Power point programs) through e-learning applications available free in cloud computing.
- Encourage students to cooperate among themselves for the implementation of learning tasks or implement tough exercises through cooperative education, where the student can work and manage their own groups.
- Through self-learning students can not only gain knowledge, but also to achieve the spirit of competition and coordination among them, dealing with improving the skills of each other.

**2. How to conduct a field study:**

Choose the number of students in the experimental group (30) student to do a self-learning through computing applications public cloud, has been prepared (2) lectures using cloud computing for e-learning application using the program (Microsoft Edo Live).

The following table shows a comparison between the two well-known properties of e-learning through cloud computing:

**Table 1. A comparison between Google Apps and Live @ Edu for cloud computing [5]:**

The Application	Google Application	Microsoft Live@Edu
<b>Email and calendar</b>	Google mail Gmail: 7 GB space Storage for each user, instant conversation, the possibilities of providing free rations for email, sharing Calendar.	Outlook Live program: an e-mail program built in exchange 2010, 10 Giga bytes of free mail, e-mail service for mobile devices and iPhone, availability of sharing Calendar
<b>Telecommunications</b>	Google Talk: Instant conversation from the desktop, send and receive files using a personal computer.	Windows Live Messaging program: Instant conversation online audio and video from personal computers and communication devices mobile
<b>Web sites</b>	Google sites: provide web sites design tools, images, video, calendars.	Spaces: the availability of work space free on-line for cooperation in the design blogs and websites
<b>Work and participation documents</b>	Google Docs: Cooperation Immediate online for documents Microsoft excel , Power point programs , drawing and models.	Office Live 365: Microsoft excel , Microsoft word , Power point programs
<b>Default hard disk</b>	Nothing	Provide access and sharing files up to 25 GB storage and sharing files free on-line through the windows live sky Drive program
<b>The groups</b>	Organize favourites and catalogues and e- mail selection	Users help to the work of social groups to participate and discussion and cooperation
<b>Types of files</b>	To Google Docs: can import and	All types of files from Microsoft Office to

<b>Learning Management System</b>	export many formats.	Office Live, and Sky Drive program
	Nothing	Learning Management System Moodle

Seen from the above table provides more benefits for the (MS Live @ Edu) program available through cloud computing different from Google applications available through cloud computing for e-learning, where is no possibility of having hard drives default through Google Apps to share and store files, also there is no supporting for learning management systems programs are:

**The steps are as follows:**

1. Provide a lap contains a number of 30 computers connected together through a local area network, the main computer (Server Network) connected to the Internet through a modem. All network devices have access to programs and the Internet and use of all the services and programs available on the network through the LAN server laboratory.

2. Needed to run cloud computing applications, such as :

- Windows 7 operating system software.
- Internet Explorer 8.
- Download MS Live @ Edu program, which includes a free Live Office 365 program for one-month through Microsoft's site on the Internet to conduct a required field study , It has been extended throughout the duration of the download , Application MS Live @ Edu program , as a tool for self e-learning, for about 30 students at the Institute .

3- Application procedures include all of the technical procedures (the timetable for the introduction of computer study and characterization of its contents), and the detailed presentation of the functioning of self-learning-mail.

4- Student intern using MS Live @ Edu program from its dedicated computer device has been taken into account in employment the following:

- Create E-mail specific to each student in order to ease post. Files and exercises between students and each other.
- Student writes personal information to create e-mail and the special account to use the service from the supplier, Such as student name, e-mail, geographic location, mobile number with a request to introduce them as a user, after entering the password is placed and sent to the mobile number and ID which is used to work register. When the it corrected, the content supplier for Office Live program carries in a public cloud to use e-content for this program.
- The students start to Apply self-learning program on the lecture topic, where Office Live program includes possibilities create, tables and diagrams text documents in each of Microsoft word, Power point programs.
- Cooperation during the work between students and share documents using the integrated office applications.
- instruct students on the possibility of instant messaging between students and each other remotely at anytime and anywhere through their accounts registered on the site.
- The access of students to their files from virtual drives of personal home or any other place, where they do not need To carry the storage media.
- After the end of the lecture, the exercises are carried out by the students during the lecture trainees to be repeated this store in the following lecture.
- Dimensional test by answering the questionnaire and processing of grades using appropriate statistical methods.

**9. THE FINAL EVALUATION**

The evaluation aims to measuring the total amount of goals which students achieved by understanding for Introduction to the computer. The evaluation will achieve by answering the questionnaire to

**Table 4. the analysis of the answers to the second item (benefits derived from cloud computing applications)**

Evaluation items	Strongly Disagree		Disagree		Natural		Agree		Strongly agree		Evaluation degree
	Repetition	%	Repetition	%	Repetition	%	Repetition	%	Repetition	%	

determine the possibility of using cloud computing environment in e-learning, I will discuss with the 30 students the importance, advantages, quality in training, cooperation and participation, the capabilities, the resources available for the use of the program ( MS Live @ Edu) and why we had chosen this program and finally the benefits that the institutes gained from using of this application of e-learning (to know more details about the questionnaire.

**1. The First Item:** an analysis of the answers to the importance of the program and its quality, degrees have been.

large on the use of cloud computing applications in e-learning for the ease and availability at anytime, anywhere.

The following table shows an analysis of the answers to the first item (the importance of the program and quality) (to know more details about the questionnaire.

Table 2. The analysis of the answer to the first item (the importance of program and quality)

The following table shows the summary of the survey results:

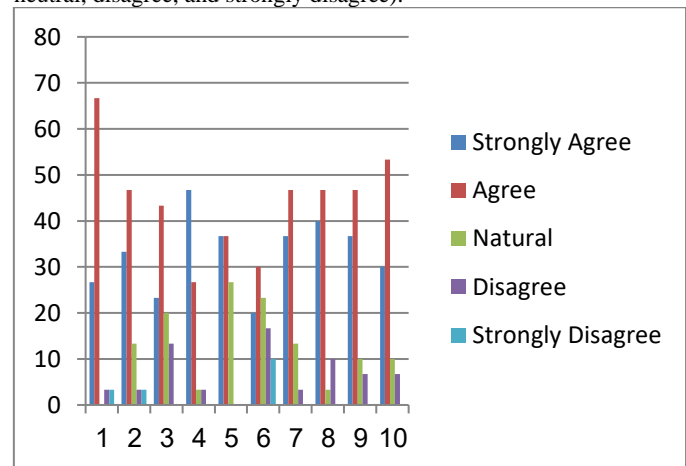
**Table 3. The summary of survey results**

Samples	Strongly agree	Agree	Natural	Disagree	Strongly Disagree
Students	26.3%	52.7%	7.7%	12.3%	1%

Comment: the responses indicate that the majority of the students approvals on the importance and quality **The First Item:** an analysis of the answers to the importance Of the program by (52.7%), and this is clear from getting a degree (4) in all the answers to the questionnaire shown in the last column. And 26% of students strongly agree, a large proportion of the students indicate the turnout is very large on the use of cloud computing applications in e-learning for the ease and availability at anytime, anywhere.

The following table shows an analysis of the answers to the first item (the importance of the program and quality) (to know more details about the questionnaire.

The following figure illustrates answer questions first item ratios in accordance with the terms of evaluation (strongly agree, agree, neutral, disagree, and strongly disagree).



**Fig. 4.** The answer of questions of the first item ratios with the terms of evaluation

**2. The second item:** Analysis of the answers to the benefits derived from cloud computing applications.

The following table shows an analysis of the answers to the second item ( benefits derived from cloud computing applications ) ( to know more details about the questionnaire:

1	E-learning through cloud computing available for the student in the system anytime, anywhere.	1	3.3	5	16.7	2	6.7	18	60	4	13.3	3.6
2	E-learning system through cloud computing is easy to use for students	1	3.3	5	16.7	2	6.7	18	60	4	13.3	3.8
3	E- Learning system through cloud computing offers the appropriate and safe use environment for students.	1	3.3	5	16.7	0	0	11	36.7	13	43.3	4
4	E-learning system through cloud computing offers features interaction and cooperation between the students and each other.	0	0	6	20	0	0	13	43.3	11	36.7	4
5	E-learning system through the cloud computing offers the possibility of central storage for applications and information.	0	0	1	3.3	1	3.3	21	70	7	23.3	4.1
6	The possibility of creating and sharing documents and collaborative work on it in real-time	0	0	5	16.7	4	13.3	13	43.3	8	26.6	3.8
7	The possibility of using all Services without having to Download software on devices User.	0	0	3	10	1	3.3	15	50	11	36.6	4.1
8	The possibility of using communication, collaboration and publishing tools including e-mail accounts in the field of the Institute.	0	0	5	16.7	6	20	12	40	7	23.3	3.7
9	The possibility of managing user accounts easily through the control panel to manage the scale and user accounts on the Internet.	0	0	5	16.7	3	10	18	60	4	13.3	3.7
10	The possibility of e-learning through cloud computing using mobile devices.	1	3.3	0	0	2	6.7	18	60	9	30	4.1
<b>Total</b>		<b>4</b>	<b>1</b>	<b>37</b>	<b>12.3</b>	<b>23</b>	<b>7.7</b>	<b>158</b>	<b>52.7</b>	<b>78</b>	<b>26.3</b>	<b>3.9</b>

Table 5 shows the summary results of the questionnaire:

Evaluation Items	Strongly agree		Agree		Natural		Disagree		Strongly Disagree		Evaluation Degree	
	%	Repetition	%	Repetition	%	Repetition	%	Repetition	%	Repetition		
1	E-learning through cloud computing system that provides an appropriate level of technical support during the 24-day and seven days a week.	26.7	8	66.7	20	0	0	3.3	1	3.3	1	4
2	The expected benefit of using e-learning system through a large cloud computing compared to traditional learning.	33.3	10	46.7	14	13.3	4	3.3	1	3.3	1	2.8
3	Self e-learning through cloud computing helps in performance and cooperation skills development.	23.3	7	43.3	13	20	6	13.3	4	0	0	2.6
4	E-learning through cloud computing technology system reduces the academic problems faced by students, such as congestion, And the lack of sufficient hardware number to the student	46.7	14	26.7	14	3.3	1	3.3	1	0	0	2.8
5	E-learning through cloud computing technology system makes institutes respond to change faster.	36.7	11	36.7	11	26.7	8	0	0	0	0	2.2
6	E-learning through cloud computing technology system that helps institutions in the provision of information and knowledge better.	20	6	30	9	23.3	7	16.7	5	10	3	1.8
7	E-learning through cloud computing technology system that helps in the overall development of the new curriculum and subjects.	36.7	11	46.7	14	13.3	4	3.3	1	0	0	2.8
8	E-learning through cloud computing technology system helps institutes in save costs compared to the traditional system.	40	12	46.7	14	3.3	1	10	3	0	0	2.8
9	E-learning through cloud computing technology system helps institutes in easy of management and control of users of the system.	36.7	11	46.7	14	10	3	6.7	2	0	0	2.8
10	E-learning through cloud computing technology system helps institutes in achieving quality of the educational process.	30	9	53.3	16	10	3	6.7	2	0	0	3.2
<b>Total</b>		<b>33</b>	<b>99</b>	<b>46.3</b>	<b>139</b>	<b>12.3</b>	<b>37</b>	<b>6.7</b>	<b>20</b>	<b>1.7</b>	<b>5</b>	<b>3</b>

Table 5. The summary results of the questionnaire

Answers

Samples	Strongly agree	Agree	Natural	Disagree	Strongly Disagree
Students	33%	46.3%	12.3%	6.7%	1.7%

Comment: The results showed that the highest percentages were 46.3% for the approval of the benefits derived from the application of experience high for the students, and the percentage of 1.7% indicates that there is a very small number of students (strongly disagree) on this Group of questions.

The following figure shows the answer to the second item questions ratios in accordance with the terms of the evaluation (strongly agree, Agree, Neutral, Disagree, Strongly Disagree):

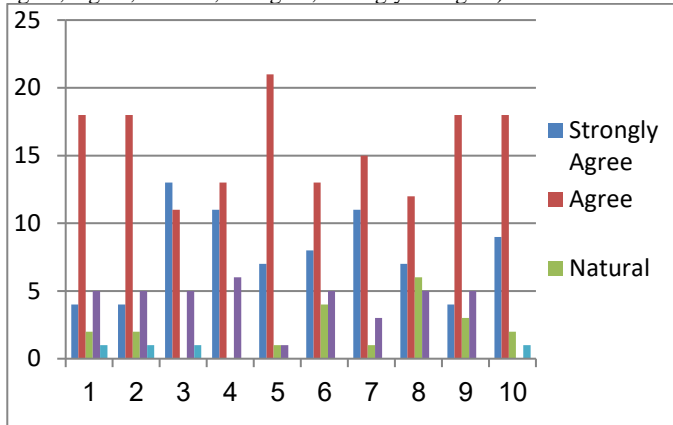


Fig. 5. The answer of questions of the second item ratios with the terms of evaluation

## 10. CONCLUSION AND RECOMMENDATIONS

This research aims to provide valuable insights into the potential of cloud computing to transform e-learning in Libyan high schools. By addressing the challenges of high IT costs and limited resources, cloud-based solutions offer the promise of improving access to quality education and enhancing student learning outcomes.

All universities and institutes seeking to prosecute the rapid technological development in the educational field, and is considered computing Cloud is a new and important alternative to the educational aspects. Find accept the possibility of using technology (Microsoft Aideo Live Office) to educate students, Introduction Computer Science through self-learning, The research found the need to mainstream the use of cloud computing in e-learning techniques in order to give the opportunity For students and teachers to quick access to various applications, systems and resources through the Internet, Share files, documents, duties and exchange projects between the students.

The search explained that cloud computing techniques help universities and institutes to solve many problems of management and maintenance of information technology resources and also improve the education process and self-learning. The results and recommendations that have been reached in the following:

### 1. Results

1. Approval by a majority of the sample (60%) on the ease of use of e-learning applications through cloud computing and availability of technology for the students at any time and from anywhere (Table.2).  
2. Approval of the majority of the research sample by 43% and the proportion (36%) of the sample strongly agree on the availability of many advantages in e-learning applications in computational computing environment (Table.2).

3. approval of the majority of the research sample by 46% and the proportion (33%) of the sample strongly agree on the availability of many advantages in e-learning applications in cloud computing environment, such as interaction and cooperation Features between students and each other, the possibility of using communication, collaboration and publishing tools including e-mail accounts in the field of the Institute and the possibility of establishing cooperative and share documents and work in real time and the possibility of creating and sharing documents, and collaborative work in real-time (Table.5).

4. Derived from answers to the first item analysis that the majority of students agree increased by 52.7%, the importance of the program Microsoft's MS Edu@ Live and quality and this is clear from the get

a degree (4) in all the answers to the questionnaire. And a medium rate of 26% of students strongly agree, a large proportion of students indicate the turnout on the use of cloud computing applications in e-learning for the ease and availability at anytime, anywhere (Table.2).  
5. The approval of a majority of the research sample to achieve many of the benefits and advantages for universities and Institutes to use applications in e-Learning through cloud computing, such as reducing the academic problems faced by students, Such as congestion, lack of equipment for the number of students, curriculum development of new subjects, provide expenses compared to the traditional system, achieve quality of the educational process.

6. Concluded from answers to the second item analysis that the highest percentage was 46.3% agree that the benefits concluded from the application of e-learning system experience through cloud computing was high for the students, and that the proportion (33%) Strongly agree to this set of questions. And that the percentage of 1.7% indicates that there is a very small number of students (strongly disagree) on this set of questions (Table.4).

7. We conclude from this research that both Microsoft and Google Companies offer many services and programs to the education sector through e-learning applications in a cloud computing environment, such as free e-mail and messaging and collaboration tools and office applications) document storage, and share the document (and the ability to set up web sites and learning management systems.

The most prominent recommendations that resulted from the research include:

- Urge the students, and self-education and continuing education through various electronic learning environments, especially applications based on cloud computing technology.
- Employ cloud computing as a technology education strategy that allows self-learning and cooperative education also through collective participation between students and each other.
- Must specialists in curriculum and teaching methods and teaching techniques employ teaching strategy employs methods cooperative education, and must use learning management software in e-learning environments compatible with cloud computing technology.
- Add curriculum in higher education depends on the creation of collective self-learning skills and education, which relies on the Internet environments.
- The need to provide training courses for teachers to develop their skills in the design of e-courses and dissemination via the Internet to be available at any time and from anywhere.
- The necessity of activating the role of e-courses and e-learning environments in higher education, and take the advantages from the services offered by the internet.
- Need to take advantage of cloud computing and its applications for the development of self-learning skills and knowledge of different aspects of the students.

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