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Use of ICT in Education: How Effective It is for Students at Higher Education

Mohammad Osman Farhan Al Harun
Department of English, Green University of Bangladesh
Dhaka, Bangladesh
mrprofessor16@gmail.com

Abstract

The term 'ICT' is now very common in this age of globalization. Information and Communication Technology (ICT) is, in fact, an integral part of our life, especially for the students, teachers and researchers in the education sector. Nowadays, the teachers are getting interested about the use of ICT in delivering lectures, creating favorable learning environment and applying it for facilitating complex ideas comfortably. As a result, the trend of teaching in the traditional lecture method has been changing rapidly for the popularity of ICT - regardless it is a language or science class. To the contrary, too much dependence on technology may hamper the performance of teaching to some extent. In a developing country like Bangladesh, teaching with the assistance of audio-visual aid has become popular at tertiary level with the rapid growth of higher education sector. Here, some teachers prefer to teach in the class using ICT facilities and prepare their lectures accordingly while others are still stick to the traditional lecture method to deliver their lecture in the class. The current study is an in-depth analysis of the fact regarding the effectiveness of ICT in teaching at tertiary education in the context of a developing country. To investigate the fact on this issue, the researcher of this paper has conducted a systematic survey, FGD at various levels, and interviewed both the teachers and students of Science and Arts faculties of a renowned private university of Bangladesh. The findings of this research can be useful for the educators and practitioners at any discipline to comprehend the pros and cons of technology while presenting their ideas in formal occasions. The difference between traditional and non-traditional method of teaching as well as the perspective of both educators and learners have been portrayed here regarding the effectiveness of ICT in higher education.

Keywords: ICT, technology, learners, teachers, lecture, tertiary level, higher education

Introduction

In general, 'ICT' refers to the Information and Communication Technologies while 'ICT in Education' is related to 'Teaching and Learning with ICT'. As stated by Noor-Ul-Amin (2013), ICT "may be regarded as the combination of 'Informatics technology' with other related technology, specifically communication technology according to UNESCO (2002)". To say precisely, the "ICT in education involves the adoption of general components of information and communication technologies in the teaching learning process. ICT increases the flexibility of delivery of education". It can also influence the way learners are taught and how they learn as in the 21st century the modern classes are actually learner driven rather than by teachers. "This in turn would better prepare the learners for lifelong learning as well as to improve the quality of learning," Noor-Ul-Amin (2013).

One of the most significant contributions of ICT in education is the easy access to teaching and learning. Apart from learning conveniently, educators are also finding the capabilities of teaching at any time utilizing the advantage of technology. Mobile technologies and seamless communications technologies are getting popular nowadays to support instant teaching and

learning round the clock. Application of ICT is also essential in the classroom teaching for the learners can learn quickly without much effort with audio-visual support. The classes are more enjoyable by the usage of ample images, graphics, audio and video clips by the course instructors. As a result, ICT is rapidly getting popular in the developing countries like Bangladesh with the improvement of literacy rate.

Again, the issue of ICT is hazardous to many teachers and facilitators in this country due to inexperience, lack of necessary equipment and electricity supply in many rural areas. The application of ICT becomes ineffective to some extent because of less interaction between the instructor and the learners in the class. Therefore, lots of information can be demonstrated by the support of ICT within short time, but sometimes active participation of learners makes the session even fruitful for better learning as found in many class observations at tertiary level.

In the current study, the researcher tries to focus the two contrasting aspects of ICT, esp. its application at higher education in Bangladesh. Practical teaching experience at secondary and tertiary level has contributed significantly in preparing this paper. Here, the comparison between lecture-based and learner-centered class supported by ICT can be easily assessed from the findings of the study.

Background of the Study

With the advancement of technology, the concept of digitalization is getting popular in Bangladesh at all spheres of life. In the field of education, Bangladeshi teachers mostly get the privileges to utilize ICT properly at tertiary education in order to create favorable learning environment. Visiting some well-known public and private universities in the country, it was found that maximum classrooms are well-equipped with multimedia system to facilitate learning and create a congenial atmosphere for learners. However, all the facilitators are not utilizing these facilities equally in practicing classroom teaching. It has been observed that many Bangladeshi teachers like to follow traditional lecture-method in the class esp. in the rural areas at secondary and higher secondary level in Bangladesh. This situation exists due to inadequate modern facilities such as essential technological devices, internet connection and inadequate training on ICT. As a result, Bangladeshi students are mostly habituated with teacher-centered and exam-based education where the requisite ICT facilities are not possible to provide at maximum schools and colleges. Budget allocation for ICT in education is also a crucial factor even for some educational institutions in urban areas.

Again, very few private schools and colleges in the major cities of Bangladesh can provide ICT facilities for the students. It has been investigated that 24 projectors were installed in a private school of the capital city in Bangladesh to facilitate learning, but found less implementation of the existing ICT resources at the end. To the contrary, though ICT facilities are available in few government institutions, proper utilization of these resources are not observed due to lack of training and also less interest in using ICT by the respective teachers in the class. From the practical teaching experience for over ages, it has been observed that educators of this millennium vary a lot with their senior colleagues in a developing country like Bangladesh for applying contrasting teaching methods where uses of technology make the difference to some extent.

Apart from these facts, the current study aims to investigate the choices and preferences of the adult learners who are mostly introduced with the ICT facilities at tertiary level, esp. when they get admitted in a university or higher studies in Bangladeshi education system. In the undergrad programs, these learners get the privileges to enjoy the classes supported by ICT facilities, and thus can compare the pros and cons of teacher-centered and learner-centered classes easily. So, the application of ICT in these completely different types of classes can be well-perceived by the learners at this stage. The researcher of this study tries to

find out the facts regarding these issues, mainly on the effectiveness of ICT in higher education in a systematic process

Significance of the Study (Objectives)

In this age of information and technology, both public and private universities in Bangladesh are providing modern facilities for which teachers can get the opportunity to apply ICT in teaching conveniently. Some university teachers prepare PowerPoint documents for the students in their respective courses to deliver their lectures in the class. These educators are much comfortable with the uses of technology to facilitate their task and create a favorable learning atmosphere. To the contrary, there are some facilitators who are still comfortable with delivering their class lecture with the use of marker and white board in the class. They like to conduct their classes in lecture method and from real life examples which is basically teacher-centered class, opposite to learner-centered trend of modern age.

The current study highlights the preferences and valuable opinions of the learners at tertiary level regarding their likings and disliking about ICT-based class in higher education. Though the participants of this study are particularly English language learners, their views reflect the reality of the usage of technology as far as suitable and easy learning process are concerned. This paper sets out to evaluate the usefulness of ICT in education with regard to the teaching learning process in the context of Bangladeshi education system at tertiary level. This study can be useful for practitioners, especially the teachers who prefer to teach their students in the class depending on technology as has been observed in some renowned private universities of Bangladesh.

Research Questions

The researcher of this study tries to investigate the facts of the following questions:

1. Is application of ICT suitable at tertiary level for better learning in the class?
2. What are the pros and cons of lecture-based and technology-based interactive teaching in higher education?
3. How do facilitators consider ICT in education from classroom experience?

Methodology

Following the objectives of this study, the researcher has collected data from various sources, esp. from different universities in the capital and analyzed the data systematically. The opinions of the learners have been given the top most priority to assess the effectiveness of learning in various teaching approaches. Data was collected from English language courses offered in different semesters where interactive teaching method was applied with the support of ICT tools. However, maximum learners participated in the formal survey belong to three faculties- Arts, Business & Engineering of Green University of Bangladesh. Apart from that data was collected through FGD and interviews with learners and experienced teachers of different disciplines who shared their views from real life scenario i.e. classroom practices. The researcher also compared the data collected from the freshers with that of outgoing undergrad students at tertiary level.

More specifically, in two different semesters of the university mentioned above, formal survey and FGD have been conducted among the learners who belong to the departments such as Law, Sociology, English, Business School, Computer Science & Engineering, Electrical and Electronics Engineering and Textile Engineering. More than 100 students of different semesters participated in the data collection process. These students were enrolled in two academic courses in the university titled ‘English for Academic Purposes (EAP)’ and ‘Professional Life Skills Development (PLSD)’.

To find the facts deeply, some experienced teachers of different disciplines belonging to renowned universities were also interviewed separately. Class observation is one of the most effective approaches applied in this study by which the researcher could easily compare the impacts of teaching supported by ICT with the traditional lecture-based class. However, the participants of this study can be divided into two major categories- learners from different semesters and teachers from multiple disciplines at tertiary level. It is, therefore, a qualitative research where the perspective of both educators and learners have been portrayed regarding the use of ICT in higher education.

Besides that, data have been collected from different journals and websites for conceptual framework related to the theme of the current study.

Literature Review

To discuss the effects of ICT in education for teaching learning process, the theory of multiple intelligence by Dr. Howard Gardner can be mentioned. This theory suggests that the traditional notion of human intelligence is very limited. Instead, it suggests eight different types of intelligences to account for a broader range of human potential in children and adult learners. Every learner is different from one another; consequently, some learn better by visual support while others might learn effectively by listening, writing or just reading. The theory of multiple intelligences proposes a major transformation in teaching strategies. It suggests that teachers be trained to present their lessons in a wide variety of ways using music, cooperative learning, art activities, multimedia, and much more. It is just the opposite to the traditional method of teaching in the same old, dull way through boring lectures, formatted worksheets and textbooks (http://www.institute4learning.com/resources/articles/multiple-intelligences/). So, by utilizing the advantages of ICT, a teacher can easily apply the theory of multiple intelligence to facilitate learning in the classroom.

Application of ICT in Teaching

In the past, the conventional method of teaching was revolved around teachers' planning and leading students through a series of instructional sequences to achieve a desired learning outcome (Noor-Ul-Amin, 2013). But "ICTs by their very nature are tools that encourage and support independent learning. Students taught by the support of ICT are immersed in the process of learning (Jonassen & Reeves 1996)," Truly speaking, inclusion of ICT in education has brought a kind of revolution in the traditional method of teaching. According to Noor-Ul-Amin (2013), "conventional teaching has emphasized content. For many years courses have been written around textbooks. Teachers have taught through lectures and presentations interspersed with tutorials and learning activities designed to consolidate and rehearse the content. Contemporary ICTs are able to provide strong support for all these requirements (Oliver, 2000). The integration of information and communication technologies can help revitalize teachers and students. This can help to improve and develop the quality of education."

Therefore, "the major advantages of using ICT in the teaching include gaining students' interest, giving positive interactivity within the teaching and learning, motivating students to apply knowledge in any content area, engaging students in different activities, allowing the utilization of new technology to communicate and collaborate in an educational context, providing a platform for active and meaningful learning to occur. "(www.ccsenet.org/ies).

Advantages of ICT for Better Education

As stated by Noor-Ul-Amin (2013), "ICT can affect the delivery of education and enable wider access to the same. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers. These possibilities can have an impact on student performance and achievement. ICT has the potential to remove the barriers that are causing some specific problems in education sector. It can be used as a tool to overcome the issues of poor quality of education as well as to overcome time and distance barriers" (McGorry, 2002).

As a matter of fact, the use of ICT in education lends itself to more learner-centered learning settings. Therefore, application of ICT by any facilitator enhances leaners' motivation successfully. As has been experienced practically, use of technology can enhance the quality of education magically. By the proper utilization of computer resources and multimedia, it is possible to combine text, sound, and colorful moving images to grab the attention of the audience i.e. learners. Consequently, teaching by the support of ICT is useful for applying the appropriate content in the class that effectively engage the learners in the learning process. It is more applicable than the stereotype lecture for long time without much activities.

Noor-Ul-Amin (2013) has also opined that both teachers and learners are benefitted by the application of ICT in the class. "Learning approaches using contemporary ICTs provide many opportunities for constructivist learning through their support for resource-based, student centered settings and by enabling learning to be related to context (Berge, 1998; Barron, 1998). Any use of ICT in learning settings can act to support various aspects of knowledge construction. Teachers generate meaningful and engaging learning experiences for their students, strategically using ICT to enhance learning. Students enjoy learning, and the independent enquiry which innovative and appropriate use of ICT can foster. They begin to acquire the important 21st century skills which they will need in their future lives."

Negative Impacts of ICT in Classroom Practices

> Besides having a number of advantages, there are some drawbacks too while using ICT in education. As Ward (2004) has pointed out, "although learners could be exposed to a variety of resources by technology, there is also a challenge in acquiring knowledge properly. The skills that are developed from scrolling the computer screen lead to an accelerated but superficial, and often inaccurate understanding of the content discussed in the class." (www.ccsenet.org/ies)

Again, setting up the devices can be troublesome to some extent. It was observed that for some authorities in colleges and universities, it is not possible to afford the huge expense of equipment and operations. Lack of experts and technical staff are also obstacles for utilizing ICT in education at all levels (http://www.elmoglobal.com/en/html/ict/01.aspx) It is also noteworthy that all the teachers and educators are not equally comfortable with the practical uses of ICT resources. Lack of interest, training and experience in using technology are other striking barriers for utilizing ICT in education at tertiary level.

The current study focuses on the perception of both students and teachers regarding the actual effect of ICT at higher education from classroom practices. Researches have been conducted on the effects of ICT at junior schools i.e. primary education. This paper, however, highlights the learning experience of the adult learners who have attended classes in both systems- with the support of ICT as well as with lecture method. The perception of the educators at undergrad level added value in this regard.

Findings and Discussions

Learners' Perception on the Application of ICT at Tertiary Education

As mentioned earlier, Bangladeshi learners at undergrad level has the experience of attending classes both in traditional and latest trend. Findings from the Focused Group Discussion (FGD) in different classes reflect the mixed opinions of the learners. As a matter of fact, the learners who participated in the FGD and survey are divided in their preference regarding the effectiveness of ICT applied by the course instructors in the class.

Some freshers i.e. students of the first semester in English Course preferred classes where the instructors use technology, more specifically, PowerPoint documents, internet and demonstrate the lesson using projector. They have opined that about 60% instructors teach them using ICT where 40% teachers like to instruct naturally i.e. following the traditional lecture method without the support of technology. According to these students, classes conducted by the support of ICT is, to some extent, well-organised, sequentially ordered, therefore, easy to understand within short time. These learners prefer classes where teachers use technology to facilitate learning related to their disciplines. As found by Noor-Ul-Amin (2013), " …this type of learning process is much more effective than the monotonous monologue classroom situation where the teacher just lectures from a raised platform and the students just listen to the teacher."

In the findings of another FGD it was found that 80% students consider the traditional lecture method less interesting and demotivating. They perceive that while teaching in the conventional method, teachers take much time to lecture and write on the board for further clarification; sometimes their handwriting cannot be guessed easily, so the learners fail to note down information within limited class hour. These are some of the common factors for disliking the lecture method in teaching at higher education as found in the discussion with the learners of Science disciplines.

To the contrary, many students also supported lecture-based classes for particular reasons in another finding. In their opinion, these types of classes are more interactive compared to the classes where course teachers rely on ICT facilities; here the students listen to the lecture of the course instructor attentively, write the points discussed by the instructor and use their brain instantly to exercise the lessons taught in the class. They also pay attention to the speaker for s/he uses different gesture-postures to make the lesson lively like a professional presenter, enjoy the story related to the topics and the warmth of the teacher-student relationship. However, both the students and teacher differ in their opinions regarding the use of technology in the classes on critical topics like mathematics where the teachers usually like to use white boards and marker to illustrate the theory with suitable examples in the context of Bangladesh.

Lecture-method or ICT-based Teaching?

The perception of the adult learners could be assessed logically through the survey result in several classes. As stated by one undergrad student, "if the course teacher relies on technology to teach us, it is fine; but s/he should prepare the class lecture before conducting the class. The teacher should have known the topic beforehand." Another student opined that sometimes teacher forget to interact with the learners while teaching with the support of ICT. So, interaction with the students are part and parcel of the class as stated by maximum participants in the survey (See Appendix).

As a matter of fact, "through ICT, many images can easily be used in teaching learning process which are helpful for improving the retentive memory of the students. Moreover, teachers can explain complex instructions and ensure students' comprehension too by applying ICT in the class. However, the most significant aspect of using ICT is that teachers

are able to create interactive classes and make the lessons more enjoyable which could improve student attendance and concentration." (http://www.elmoglobal.com/en/html/ict/01.aspx).

Finally, it has been observed that both the teachers and learners at tertiary level support ICT and lecture-based methods in teaching learning process. However, if the instructors prepare their lectures with the support of audio-visual aids properly and make the lesson interesting, it can be easily motivating and beneficial for the learners in any class. In another perspective, the delivery of the teacher matters a lot at any atmosphere regardless it is based on the use ICT or traditional method. Some teachers like to cover many topics in one class, and thus like to teach fast and tend to move from one PPT slide to another quickly. At this stage, the learners fail to keep pace with the instructor to understand the topic completely. Consequently, the students of the class ask for the lecture sheet at the end of the class delivered by the course instructor to get the clear conception of the topic.

Ultimately, learning is not properly done for over-dependence on the class lecture rather than the entire topic itself. The fact is that the learners can get interest in the class for the time being to attend the class depending on ICT-based lecture, but they are not properly benefitted in the long run. Again, a teacher is able to finish a particular syllabus of a course quickly teaching in the class using ICT.

Perception of Teachers regarding Dependence on ICT at Tertiary Education

Whether ICT is suitable for tertiary education or not, it is a matter of debate, but the issue of concern is that some teachers are unable "to make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly (Smeets, 2005)". As stated by Harris (2002), "the benefits of ICT will be gained "…when confident teachers are willing to explore new opportunities for changing their classroom practices by using ICT. As a result, the use of ICT will enhance learning environments and prepare next generation for future careers (Wheeler, 2001).

Through class observation and discussion, it was found that many teachers are dependent on technology to conduct classes in different universities. Before starting a course, some course instructors prepare PowerPoint documents i.e. class lectures for all the classes of a course; subsequently, they deliver their lecture simply by demonstrating those PPT documents and use those in the entire semester. To these educators, PPT documents are good enough to utilize through projector mainly because of saving time and energy. In this way, they are totally dependent on ICT to teach and complete the course in a semester.

In another situation, it has been observed that if there is no adequate support to use technology in the class, like electricity back up, some teachers do not continue the class for that period or slot. It is to mention here that load shedding is a common problem in Bangladesh; for the failure of constant electricity supply in summer, conducting classes by the support of ICT becomes tough sometimes. As a result, learners are mainly the sufferers if the course instructors completely depend on ICT and do not teach beyond the PowerPoint document. It is a common scenario at higher education too as has been observed in some public and private universities of the capital i.e. Dhaka city.

Again, some authorities at higher studies are still not aware about the importance of technology in the classroom teaching and learning. Before entering a class when a teacher asked an authority of a renowned institution whether ICT facilities are available there, the administrator was totally astonished and asked the facilitator, 'ICT, what is it?'

The opposite scenario is also prevailing where the teachers are not applying technology in the class and are just lecturing for hours without any interaction and active participation from others.

In fact, the knowledge and the interest of the teachers act as a vital issue regarding the use of technology in the classroom teaching at tertiary level. In this age of technology, there are still many teachers who are comfortable with lecturing hours after hours with sincerity and fun while others use projector to demonstrate the major points of their lecture with different images, maps, graphs, data and other audio-visual aids. It absolutely depends on the mentality and preparation of the concerned teacher how s/he likes to present the topic in the class. The use of language esp. English in the PowerPoint document also makes some students uncomfortable to understand the topic properly as was found in the survey.

Some senior teachers of Art & Science Faculties at tertiary level were interviewed regarding the effectiveness of using ICT in the classroom teaching. Among them, maximum teachers are in favor of teaching manually i.e. tutoring naturally following lecture method and using white board and markers in the class. One has opined that the use of ICT, more specifically, PowerPoint document-based lecture can be convenient for some educators, undoubtedly; to the contrary, this method of teaching is deceiving in another way since the respective teachers using technology put less effort in the class to teach a topic from heart.

The fact is that too much dependence on PPT document and likewise tools can hamper the quality of teaching to some extent. Again, when the students or learners are over-dependent on the lecture delivered in PPT document, sometimes they are not inclined to study further beyond the lecture sheet i.e. from their textbook. Ultimately, it affects their entire learning process, and thus hampers their exam grades since the conception on the particular topic remains vague for focusing on few points only rather than overall topic at a time.

Suggestion and Recommendation

Considering the result of the survey, interview, class observation and practical experience, it can be asserted that the teachers should consider the interest of the learners before preparing class lecture and delivering it in the class. If required, the facilitators depending on ICT can update their teaching materials time to time to enrich their lesson and class lecture that can be more effective for the learners in the next classes.

An experienced professor has opined that one of the best methods of classroom teaching at tertiary level can be applying both traditional and modern methods of teaching sensibly. In this process, the ICT can be applied to facilitate critical theory, but the examples can be provided by the respective instructor writing on the board with further illustration from the experience of the teacher. When the learners are writing along with the course instructor in the class, the lesson can be well- perceived. It is also useful for remembering the points discussed in the class.

Conclusion

Since the learning strategy varies from learner to learner where multiple intelligence is a key factor, the issue of ICT-based class cannot be ignored. Completely lecture-based class of 90 minutes duration is really monotonous for maximum learners as far as retaining the concentration is concerned. The chairman of a Department in Arts faculty believes that the speech of a teacher in the class should be both lecture-based and with the use of technology to facilitate learning and create a congenial atmosphere. The use of marker and white board also cannot be ignored in classroom teaching at tertiary level. ICT-based class lecture should be prepared depending on the merit of the learners and the importance of the topic. Thus, a teacher mainly needs to decide which method he will adapt to deliver his speech in the class.

A common practice in the higher education in Bangladesh is that many senior teachers prefer lecture method to ICT-based classes for they are less interested and comfortable with the use of technology or are not use to it that much. Actually, ICT-based class can bring diversion for

creating favorable learning environment among the learners. It is just like the appeal and difference between the functions of radio and TV. When we only listen and enjoy programs in radio, we can enjoy more watching television for having both audio-visual effects together. So, the combination of both conventional lecture and ICT-based document can make a class more interesting and effective rather than following one particular one.

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Appendix

Survey on ICT in Education 2017

Gender: Male / Female **Date:**

Department:
SEMESTER:

Answer the following questions regarding your experience in the class. Give your honest opinion on the following points:

Put tick mark (√) beside the appropriate option or give your opinion in writing where applicable:

1. **I enjoy lecture-based classes where teachers only speak and students only listen**
   i. Agree ii. Disagree iii. Not sure iv. _____
2. **Classes where technology is used (like ICT) is preferable to lecture-based class**
   i. Agree ii. Disagree iii. Not sure iv. _____
3. **Audio-visual teaching aid is always effective for understanding class topics.**
   i. Yes ii. No iii. To some extent iv. _____
4. **PowerPoint document-based class along with interactive teaching method make the class more enjoyable.**
   i. Yes ii. No iii. To some extent iv. _____
5. **Traditional lecture method of teaching i.e. teacher-centered class like in school and college is suitable at university level**
   i. Agree ii. Disagree iii. Not sure iv. _____
6. **Dependence on technology in the class sometimes hampers the quality of teaching -**
   i. Agree ii. Disagree iii. Not sure iv. _____
7. **ICT-based teaching method is not much fruitful in the context of Bangladesh**
   i. Agree ii. Disagree iii. Not sure iv. _____
8. **Do you like a class where your course teacher teaches you mostly by the help of internet/ technology?** (your opinion please)

Thanks a lot for your cooperation

8ICLEI 2017-056 Aws Y. Kashmoolah

Student's Awareness of Cloud Computing and its Applications: Case Study at the Faculty of Administrative Sciences and Economics at Ishik University, KRG-Iraq

Aws Y. Kashmoolah
Ishik University Erbil- KRG-Iraq
aws.yhya@gmail.com

Abstract

Cloud computing has become one of the major trends in the modern era. With the vast application of cloud computing and the simplicity and ease of use that related to it. Universities can use this technology to provide students and staff with tools which make the learning process easier and more productive. This paper will focus on the student side of the process, their awareness towards cloud computing and how frequently they use it. It also shed light on the student's opinion about the university administration support to integrate that new technology. The study used an online survey to collect insights for a sample of students from the faculty of administrative science and economics at Ishik University, KRG-Iraq. The findings indicated that an increase needed in the awareness and familiarity with cloud computing amongst students and that the presentation of new applications and services to the teaching process will serves as the perfect recipe for increased adoption to take advantage of their mobility and interaction.

Keywords: Cloud Computing, Learning, applications, Cloud services, Service Models, Deployment Models.

Introduction

No one can deny that majority of students has online presence and can interact with the cloud. But do they know what is the cloud? In the simplest terms, cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. In other words, the cloud is just a metaphor for the Internet. In this paper we will discuss the main points about cloud computing such as its characteristics, service and be beneficial to the education sector and review whether the students are aware of it and ready to interact with its applications / services.

Cloud Computing Definition

The term "Cloud" has historically been used in the telecommunication industry as an abstraction of the network in system diagrams. It then became the symbol of the most popular computer network: Internet. This meaning also applies to Cloud computing, which refers to an Internet-centric way of doing computing. Internet plays a fundamental role in Cloud computing since it represents either the medium or the platform through which many Cloud computing services are delivered and made accessible. According to the official NIST (National Institute of Standards and Technology) definition "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.