Trend of ICT in Teaching and Learning

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Abstract—Information and Communication Technology (ICT) is now affecting every aspect of human life. ICT has an important role in workplaces, business, education, and entertainment. Understanding of many people today recognize ICT as a catalyst for change, initiated changes in working conditions, handling and exchanging information, methods of teaching, learning approaches, scientific research, and even in accessing information. The world of education is one of the sectors affected by ICT. This is certainly influential to support learning and teaching in education to be more forward again through the use of ICT media based. In this research will be discussed about Trend of ICT for Teaching and Learning. This research is descriptive qualitative research, the research carried out by conducting a case study at Manado State University and collecting information (Literature) relating to the use of ICT in Teaching and Learning in Education.

Keywords—ICT, Teaching, Learning, Qualitative Descriptive.

I. INTRODUCTION

TECHNOLOGY (ICT) in education became one policy of the Department of Education, where the application of ICT in the educational development of the future not just follow rather it is a global trend a strategic step in the effort improve access and quality of service to the public.

ICT developed in education should be towards the realization of the system integrated to build connectivity between components that exist in education so that education becomes more dynamic and active in a holding communication in order to obtain and achieve the opportunities that exist for the development of education in Indonesia.

In the era of globalization, the role of ICT into increasingly important use for disclose the data and facts into an information that can be utilized.

The contribution of ICT in education which is to support the learning process between teacher and student. ICT is essentially a tool for gain added value in produce an information quickly, complete, accurate, transparent and timely.

Education must now able improve the quality of a good education supported by ICT-based facilities for the success of the learning objectives.

II. LITERATURE REVIEW

A. ICT

Information and Communication Technology is a big term that covers the entire technical equipment for processing and conveying information. ICT covers two aspects of information technology and communication technology. Information technology covering all matters relating to process, use as a tool, manipulation, and management of information. While communication technology is everything associated with the use of tools to process and transfer data from one device to another. Therefore, information technology and communication technology are two inseparable concepts. So the Information and Communication Technology contains the broad sense that all activities related to the processing, manipulation, management, transfer of information between media.

Information technology is the infrastructure (hardware, software, brainware) systems and methods to acquire, transmit, process, interpret, store, organize and use data in meaningful ways (Warsita 2010 : pp 135).

Information and Communication Technology (ICT) can broadly be defined as the tools, facilities, processes, and equipments that provide the required environment with the physical infrastructure and the services for the generation, transmission, processing, storing and disseminating of information in all forms including voice, text, data, graphics and video. From the definition, ICT has a role to play in any country's educational development (Asabere 2012 : pp 62).

B. Teaching

Teaching is a process of knowledge transfer is done by the teacher to the student in the learning process, teaching is done by teachers using the technique with certain media so that it can support the learning goals.

Shababuddin et al, 2003, Teaching is something assignment and activity are cultivated jointly by teachers and his students. Without any one teaching there would not be valid. Teaching designed by teachers systematically using appropriate rules and techniques to create an environment that enables the process of learning. Results than teaching force changes in the relative same eternal exists in the form which explicitly or implicitly. Teaching may be added either in the quest to continue the investigation, the development of

science, strengthening the skills and a reference to the practice of professional related. Teaching also encompass process they shape the curriculum, delivering the curriculum and student assessment system. In the teaching process, there are various approaches that may be applied as centered teaching students, teachers, results, processes and values. In summary, the components principles which form something the teaching process should contains the following traits that is, a teacher, a student or pupil, content, rules, objectives, outcomes (changes eternal in relative terms) and assessment (Nawi 2011 : pp 4).

C. Learning

Learning is an activity that a person or group of people who have the purpose to find out useful to develop knowledge possessed.

Learning in a broad sense can be defined as a psychophysical activities leading to the development of the whole person. Later in the narrow sense, intended as an effort to learn mastery of materials science which is part of activities towards the formation of the whole personality (Sardiman 2011: pp 22).

Learning is a process where the behavior (in the broad sense) generated or modified through practice or exercise. Learning can also be interpreted as an activity that is indicated by a change in behavior as a result of the experience. Learning is also an individual process attempts to obtain a new change in behavior as a whole, as a result of the experience of the individual in interaction with the environment (Djamarah 2002 : pp 12-13). The theories of learning can be seen in Table I.

TABLE I
DEFINITION OF LEARNING
(SOURCE : WARSITA, 2010 : PP 62-66)

No	Definition of Learning
1	Learning is a complex process that happens to everyone and lasts a lifetime, since he was a baby up to the grave later (Sadiman, et al., 1986: 2).
2	Learning is a relatively permanent change in behavior as a result of the experience (not as a result of development, the influence of drugs, or accident) and can execute on any other knowledge and be able to communicate it to others (Pidarta, 2000: 197).
3	Learning requires a relatively permanent change in knowledge or behavior due to experience (Mayer 1982: 1040 in Seels & Richey, 2000: 13).
4	Learning is an activity of everyday people. Learning is a complex process that happens to everyone and lasts a lifetime. Learning activities that form a complex behavior that has long been the object of research scientists. Because of the complexity of learning, a lot of theories that attempt to explain how the process of learning that happens (Miarso, 2004: 550).
5	Genesis relatively simple, namely imitation, was initially complex and has implications for learners and learning (Gredler, 1994: 6-7).

III. RESEARCH METHOD

This research used Qualitative Descriptive method, The goal of qualitative descriptive studies is a comprehensive summarization, in everyday terms, of specific events experienced by individuals or groups of individuals.

Qualitative descriptive studies are the least "theoretical" of all of the qualitative approaches to research. In addition, qualitative descriptive studies are the least encumbered studies, compared to other qualitative approaches, by a pre-existing theoretical or philosophical commitment (Lambert 2012 : pp 255).

IV. RESULT AND DISCUSSION

The results of this research is to provide information about the trends of ICT in education, through ICT in Education and the implementation of ICT in Education. In this study will be known benefits of ICT to be used in education that can be used in the process of teaching and learning.

A. ICT in Education

Information and communications technology (ICT) also took a role in the development towards more advanced in the world of education. Technology is moving to connect between educators and students in the learning process. Better utilization of information technology will be able to provide positive benefits to the world of education to improve the quality of graduates.
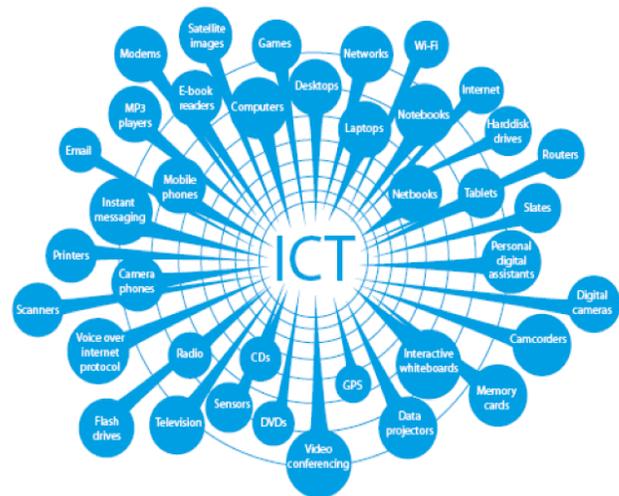

Fig. 1 ICT. Font: UNESCO, 2010
(SOURCE : CARMONA 2013 : PP 429)

According to UNESCO, 2010, the term ICT is plural, referring to a great many technologies and it is an all encompassing term that includes the full of electronic tools by means of which we gather, record and store information, and by means of which we exchange and distribute information to others. ICT are composted of many different tools that enable capturing, interpreting, storing and transmitting information in a fast and easy way. In the following figure (UNESCO, 2010), we can observe several options which allow us to better understand the society where we live (Carmona 2013 : pp 429).

Information and communication technologies have helped life to be easier and they were very helpful in arranging a large amount of information that we receive every day. The use of

today's technology can't be separated from the activities conducted everyday even today students are in constant contact with the technology and we can't ignore it.

For this reason, the changing role of teachers is an important issue. The role of teachers to use technology as a medium in order to invite the attractiveness students to love learning atmosphere can be done using technology.

B. Implementation of ICT in Education

Currently the Implementation of Information and Communication Technology in education is very much available. This is certainly an advantage for teachers and students to participate in learning activities, as for some of Technological Innovation in education :

1. E-Learning

E-learning is a system or education concept that use of information technology in teaching and learning, where learning is structured with the aim of using electronic or computer systems so as to support the learning process. The learning process based E-Learning is a distance learning by combining the principles in the process of learning with technology and learning systems that are used as a tool for teaching and learning process implemented without having to meet directly between teachers and students.

2. Mobile Learning

Learning based on Mobile Learning (M-Learning) is a development that is currently actively developed. The term mobile learning (m-learning) refers to the use of handheld devices and mobile information technology, such as PDAs, mobile phones, laptops and tablet PCs used in teaching and learning. M-learning is learning that unique because learners can access materials, referrals and applications relating with learning anytime and any-where-else, so it will increase attention to the learning material, makes learning more interesting and motivating learners to learning.

3. Cloud Computing

Cloud computing is the combined use of computer technology (computing) in a network with the development of Internet-based (cloud) which has the function to run a program or application via a computer - a computer connected at the same time, but not all that connected via the Internet using cloud computing. Cloud-based computer technology system is a technology that makes the Internet as a central server for managing data and user applications. This technology allows users to run the program without the installation and allow users to access their personal data through a computer with access to computing internet. Cloud whose data is stored in a server is permanent means that all users can access simultaneously via internet access, and use data is also simultaneously, Utilization of Cloud in the world of education is to support Internet-based learning with the use of large scale, where learning is done remotely with a large number of

users at different locations. The implications of this trend for education systems are huge and they will make cheaper information appliances available which do not require the processing power or size of the PC.

4. One-to-One Computing

Academic institutions such as schools or universities at this time provides the opportunity each student registered to be able to use electronic devices to access the Internet, digital learning materials and digital textbooks, it is more commonly known as "bring your own device" (BYOD). This situation is a situation where educators encourage or require students to use their own laptop, smartphone or other electronic devices in the classroom. For this reason, one-to-one computing is a major part of the education policy in force in many countries where learning can increase the excitement of the students in learning activities.

5. Gaming

Based learning games are games designed specifically for use in the learning activities specified, where Function Game is to explain the concepts, reinforce development, understand an historical event, cultural and even studies which will provide assistance to people who use (students). Game based learning is also a lesson in the design using a competitive exercise, good learners engage with each other to make them challenge themselves which later was expected to be able to motivate them to learn.

C. ICTs benefits in Teaching and Learning

Through developments in the field of information and communication technology is there, of course, there are the benefits of Information and Communication Technologies in Education. The benefits of ICTs in teaching and learning can be seen in Table. II.

TABLE II
ICTs BENEFITS IN TEACHING AND LEARNING
(SOURCE : MIKRE, 2011 : PP 10)

No	BENEFITS OF ICTs
1	Offer the opportunity for more student centred teaching.
2	Provide greater opportunity for teacher-to-teacher and student-to-student communication and collaboration.
3	Give greater exposure to vocational and workforce skills for students.
4	Provide opportunities for multiple technologies delivered by teachers.
5	Create greater enthusiasm for learning amongst students
6	Provide teachers with new sources of information and knowledge.
7	Provide distance learners country-wide with online educational materials.
9	Provide learners with additional resources to assist resource-based learning. Furthermore, the document states ICTs to cover all the technologies used for holding and communicating information and their use specifically in education with overall policy goals of.
10	Producing ICT literate citizens.
11	Producing people capable of working and participating in the new economies and societies arising from ICTs and related developments.

12   Leveraging ICT to assist and facilitate learning for the benefit of all learners and teachers across the curriculum.

D. Implementation of ICTs in Teaching and Learning at Manado State University

The role of ICT in education today is very important. In this case study at Manado State University has facilities ICT-based to support teaching and learning activity. Can be seen in Figure 2 and 3 are the facilities provided to support the activities of teaching and learning. Where there are facilities Academic Information Systems, E-Journal, E-Learning, and Web Mail is expected to help lecturers and students.
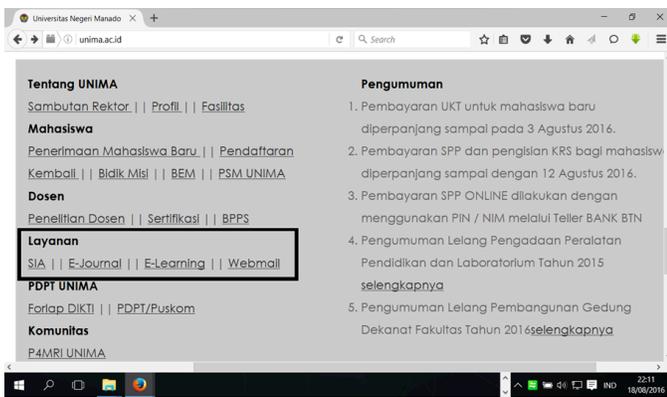

Fig. 2 Services ICT-Based to Support Teaching and Learning Activity at Manado State University
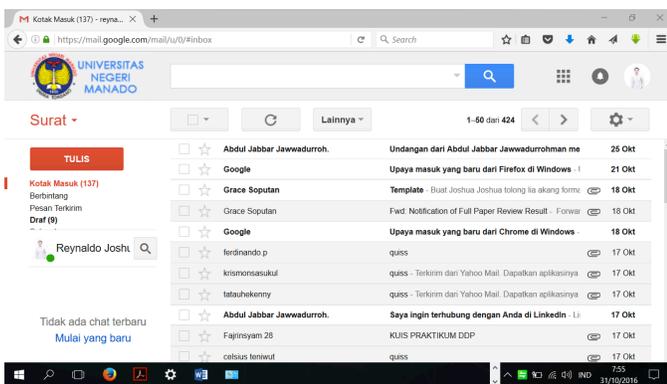

Fig. 3 Web Mail Manado State University

E. The relationship between ICT and Education

In the information and communication technology services have been found useful in teaching and learning, of course it relates to education. In Figure 4 can be seen the relationship between teacher and student is using ICT as a media for learning and to achieve the goal for Education ICT based.
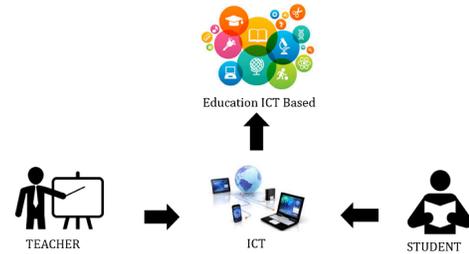
Fig. 4 Relationship between ICT and Education

V. CONCLUSION

The role of Information and Communication Technology (ICT) is necessary to encourage the advancement of quality in education, where technology is used in the process of teaching and learning between students and teachers. Technology development is currently challenging the teacher and the student, the teacher and the student is expected to overcome these changes and see the development of technology as an opportunity to improve our educational practices to achieve better quality education.

The development and application of information technology in education can be seen in this study is very rapid. The role of teachers in the face of these changes is an important part. The role of the teacher is required to be changed in ways of teaching using ICT-based learning. This situation can be clearly seen that the education system must change to adapt to the modern developments and to incorporate new technologies. By combining the technology trends in the educational system is expected to provide a new atmosphere better in improving the quality of education.

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