

The Use of Educational Technology by Educators

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Abstract: *The development of knowledge and technology, particularly the development of information and communication technology, has created a new tradition and culture in human beings civilization. Electrical technology has a big impact on various kind of life including in educational sector in shaping a new light to high quality of teaching and learning. As the education system is continually changing, educators need to work hard to reform the educational system from the old system to a new one. The basic principle of education is to create a better education with high quality. For the purposes, it needs to develop a system of learning that work well in line with the development of knowledge and technology, particularly information and communication technology (ICT). ICT offers many benefits where a wide range of information available including the facilities to access learning-related information. These good offers to facilitate a better system of spreading knowledge should be enthusiastically received by educators. Educators may use ICT to access learning materials and write important information in special blog that can be read by students. The benefits of ICT are not restricted by place and time. Educators also have the benefits to design and create learning methods and learning model due to its practicality and easiness. On the side, the rapid growth of worldwide educational system and ICT requires good technological supports for people to have access to it from wherever they are.*

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I. Introduction

Technology is an important mean in developing the educational process by educator in an educational institution. Technology is considered as “idol” that may influence the future of education. Computer, notebook, and internet become the powerful tool to find various kind of information including educational information. Everyone may access unlimited required information including educators at educational institutions.

Educators should know the benefit of technological products such as computers and notebooks. The tools can be used to search, download, prepare, and make interesting instructional materials that sometimes can be performed in Microsoft power point. The problem then is that not all educators today, particularly in the rural area, are able to use technology to create a high quality of instructional process.

The government currently is making a breakthrough to solve the educational problems through the implementation Information and Communication Technology (ICT) in educational settings. In the instructional process, currently, the use of technology is highly encouraged to improve educators’ performance and professional in instructional process. The use of technology becomes an important factor as long as the educator can use it professionally.

Computerization era is not a new thing, particularly for developed countries where the technological development grows in line with the globalization trends that is difficult to control. Various kinds of information are available in it both the constructive and destructive one. Computers may hypnotize their user. The users may be able to sit for long time to find the required information. In the simpler form, notebooks and hand phone tablets have the same function. It is expected that everyone, particularly educators my use them wisely to improve the quality of education.

Munir (2008) stated that information and communication technology is the use of electronic devices, mainly computers, to store, analyze, and distribute various kinds of information including words, numbers, or pictures. Therefore, information and communication technology is a very important tool for educators to use it. It enables to improve the efficiency in instructional process such as instructional materials exchange from one educator to another, accessing many good resources of instructional materials, etc. Generally, it is highly expected that all educators may use the technology in their improving the quality of education, specifically in instructional process.

Educators must always adapt themselves to the development of knowledge. Generally, there are three main task of educator as a profession. The tasks are educating, teaching, and training. Educating means transferring and developing the life values from educators to students. Teaching means transferring and

developing knowledge among the students and directing students to be better in certain objectives. Training means developing the skills and competencies needed by students for their future life. To be able to perform the mentioned tasks and responsibilities, it is a must for educators to have the capability and competency as a part of educators' professionalism.

Competency can be considered as the capability or skill owned by a person. McLeod (2004) stated that competency is the rational behaviors to reach the conditional goals and expected condition. Educational competency is the ability of educators to perform the task responsibly and eligibly in the viewpoint of stake holders. Pedagogical competency is the ability of educators to manage the instructional processes that include educational insights, understanding of students, curriculum development, using if educational technology, evaluating the processes and results of instructional as well as encouraging students to actualize and maximize the potential they have.

As teachers, educators also have the ability to teach and conveying information according to their qualification as teachers. The educators must have the professional skills of education and research. The educators will be able to better perform their role with these main skills. The roles are: (1) the role as facilitator, this role means that the educator can help students understand the instructional objectives and contents. Facilitators may take the moderator in classroom, discussion and direct the process of the discussion. (2) the role as tutors, this role means that the educator guide and help students to overcome their study problem. (3) the role as environment creator, this role mean that the educators function as the creator of challenging learning environment in order for students to learn seriously, communicate effectively, and build interactive relationship among the students, parents, and society. The duty of educators must become as the second parents for students, can attract students' attention and can become as role models. (4) the role as models, this means that educators can show the best sample, behave appropriately as instructed by the religion and the rules in educational environment. Each educator has his/her own unique habit, but it has a big impact on the life of educators and students. Therefore, it is required that the educators need to have the mindset that reflect their daily habit. It is also important that the unexpected mood and situation faced by educator should never affect the classroom atmosphere. In line with the advice from Kihajar Dewantra that the teachers (educators) should be always show good models to be imitated by their students. (5) the role as motivator, this role is so important because it has a big impact on the success of failure of students' learning. Therefore, the educators should have good knowledge on how to maintain students' motivation along the school years.

There are some simple guides for the educator to improve the students' motivation. They are: (1) clarifying the learning objectives. The clear objective will make the students understand where they are going and may increase their learning appetite; (2) connecting the learning materials to the students' need. The motivation will grow if the students see the benefit of the learning materials for their life. Various kinds of learning approach such as group discussion, group project, experiment, demonstration, etc. also can give students the relationship of learning materials and the real life; (3) creating the joyful learning environment, the environment that is free from anxiety. The environment should also be vibrant and fresh, free from stressful, and can also be added with a bit joke and funny activities. (4) Giving reward to appreciate the learning successful may increase students' motivation. (5) Giving positive comment toward a good work. The comment may be in the form of nodding, smiling, and encouraging facial expression. (6) giving objective appraisalment, objective and quick appraisalment toward a good work may stimulate students to work better. The appraisalment must be commensurate to the result the students present. (7) Creating competition and cooperation. The educators must be able to design conducive environments to that enable students to compete and cooperate among students. Competition can be performed among groups or among individuals. Cooperation can be nurtured by motivating students with different ability in one group. Cooperative learning approach is one of the best learning approaches that enable students with different abilities to work together (Sanjaya, 2008)

All the above guides for students' motivation can be important reference for educators to develop creativity to stimulate interest, igniting motivation and mood. Students are young people who need appropriate attention to develop the talent they have. Educators are the key figures to show the role models for student to follow in educational institution. In other words, the educators function as director and the students function as actors or actresses who follow the instruction from director.

As leaders in the field, educators must have a wider and deeper knowledge, particularly the knowledge that is relating to the subjects they teach and communicate the knowledge with the reality so that it will make the learning process more interesting and meaningful. Educator may encourage students to find or discovers learning material-related example to make the materials more meaningful. Educators are also expected to develop science-related skills as they will make time more efficient.

Educator must possess science education quality because it is the important aspect the educator need for thinking skills and science-related process in classroom activities. Thinking skills is an important aspect to solve any problems. If the thinking skills are not nurtured continually in the learning process, it can be predicted that the ability to solve problems among students is low. Science process skills train students to experience

thinking process and build them think as scientists' way of thinking. Creativity aspect is highly required in science education, and it can be achieved through creative thinking skills.

There are so many problems to solve in educational sectors, mainly ones real thing to the function, authority, and duty of educators as the responsible person in teaching and learning process. The rules and regulations prescribe by the government is considered as less appropriate due to the following reasons. They are: (a) the opportunity given for educators to be more creative is so limited. The educators is tended to be considered as the servant who work for the government than as the educators have abundant ideas to implement creatively an independently. (b) educators' involvement in formulating educational policies is also so limited, (c) program of education quality improvement is tended to be related to the improvement the need of tuition fee (Prasetyo, 2006).

Criticism toward the educational policies should be always performed to ensure nationwide good quality of education. As independence educators, the educators must always aware that they are carrying heavy tasks so that they must be more creative in managing a good classroom atmosphere, using learning media, models, and appropriate strategies with the final main goal is to create a convenient environment for students.

The fast growing of information and communication technology has spread the impacts to almost every side of life, including in education sector. Technology development has changed not only the world economy system, but also the way the people think until to the life style and currently the people feel that they live in "a world village" (Witarto, 2003). Siahaan (2002) stated that there are at least three ways of using technology in education, i.e. technology as supplement, complement, and substitution. Technology as complement means that students freely to choose if they use technology in learning or not. In this case, there is no compulsory for students to access learning material using technology. The alternative for the purpose of making all students may unleash their full potential, learning with technology materials is programmed to fast learners and remedial for the slow learners.

Although the government has initiated many programs to improve the education quality, such as improving educators competency and improving supported facility, the impact of these programs still do not have a significance impact (Liliasari, 1997). One of the alternative options we can do is by creating computer-based learning materials to train the students to think creative and science-processed skills. The developed learning media are expected to improve concept understanding, creative thinking skills, and science-processed skills. Besides that, the developed learning materials may be used in other related topics in science subjects.

The fast developing technology has also changed the examination modes at all level of schools in Indonesia. Paper-based examination system in the past has evolved to be computer-based national examination. Computer-based national examination is performed by using computer as the main tool. There are many differences between computer-based national examination and paper-based examination. For Indonesian schools, computer-based national examination is firstly conducted in Indonesian Junior High School in Singapore (*SMP Indonesia Singapura*) and Indonesian Junior High School in Kuala Lumpur (*Sekolah Indonesia Kuala Lumpur*). The results found on the examination are highly satisfying and encouraging to improve students' literacy on information and communication technology. This computer-based examination will be continually applied and evaluated in the future, particularly at schools which have had enough computer facilities.

II. The Development of Technology-Based Learning

1. Improving Knowledge and Competency of Educator

The rapid development of knowledge together with the current advancement of information technology requires educators to continually adapt their professionalism skills and knowledge abreast with the knowledge development. If they do not do these, the knowledge and skills they acquire when they were as university students will be obsolete with the rapid change in many things in this digital era. Therefore, there is no other choice for educators except to continually upgrade their knowledge and skills. In this information technology era, it could be students may have to be more familiar to a subject than the educator. This is due to the abundant resource of information available today make students may learn from anywhere and at anytime. If this happen continually, the role and authority of the educator will be decrease and even disappear. Therefore, in the era of the rapid and strong development of science, knowledge, and technology, educators must be able to encourage themselves to continue learning, particularly on things that are considered new and supportive to the teaching and learning process.

The changes in many aspects of life require pedagogical changes of an educator. Currently, the pedagogical ability is defined so narrow i.e. the ability to perform instructional in classroom. Ideally, pedagogical ability should include the ability to prepare, manage, and evaluate the learning process as well immerse in the educational culture. Educational culture is the comprehensive values the educators use as the foundation for their activities and attitude. The failure of the educators to understand the social dynamism will make irrelevant to the society's expectation and this will have a great impact on students.

2. Technology in Learning

In line with the development of technology that have make a great impact on educational aspects, particularly in learning, Rosenberg stated that there are five changes in accordance of such technology development, they are:

1. From training to demonstration;
2. From the classroom to anywhere and anytime;
3. From paper to online;
4. From physical facilities to network facilities;
5. From period time to real time;

The use of technology in education is performed through the application of various technology devices such as telephone, internet, email, etc. Interaction among educator and students is not only performed through face-to-face interaction in classroom but also through using such the media. On the other hand students also may acquire various large scale information called cyber space using computer. The current popular term for the educational technology, particularly in teaching and learning, is e-learning where the process of teaching and learning can be run well over the internet. E-learning is a superb internet-based product relating to education that requires educators to understand and use it.

Suyanto (2010) stated that e-learning is an application of internet technology in education to deliver message and content massively in three criteria. The criteria are (1) e-learning is a educational network which provide innovation, storage, distribution, and deliver learning materials or information (2) the delivered materials received by the user through standardized internet; (3) focus to a broader viewpoint paradigm rather than traditional paradigm.

Technology gives a new insight in contemporary education, different from traditional education process that needs face-to-face interaction between educators and students both inside and outside classroom. The future of modern era will come with the abundance information available and internet connection in all corners of the world demand everyone, mainly educators, to adapt with. in this condition, computer and internet connection are the main facilities the school need to ensure the educational process work well.

The future classroom can be called as cyber classrooms where students may study individually or collectively through the interactive learning pattern with the connected computers. Students will work with connected computer in a network interactively and may get learning materials from various resources. In this way each students will learn at their own pace to maximize their potential. The curriculum is also need to be flexibly adapted to the new way of learning in term of process and environment that enable the process of learning happen continually at anytime and anywhere. In such the situation, the role of educators is as facilitators while the role of students is active learners where the communication happens through technology. Although information and communication technology (computer and internet) have shown in improving and enhancing the learning process effectively and productively, in the other sides, there are many weaknesses and shortages shown by information and communication technology (Asep Jihad, 2013). They are: (1) the students are mire immersed with the internet facilities than the learning materials prescribed to them; (2) learning process tends to be individually so that the students will be likely lack of social skills; (3) information on the internet is not necessarily valid, therefore it is very dangerous if the students do not have critical thinking skills; (4) for primary school students, un-proportional use of internet may cause negative effect on the development of their manual skills such as handwriting, drawing, and counting, etc.; (5) the misuse of facebook such as wasting time and accessing inappropriate materials may harm brain development (Syarifah Rahmah, 2011); (6) improving knowledge which mean that educators must continue to sharpen their abilities through reading and studying learning-related information from various source of information available; (7) Educators must build effective communication skill with students.

The misused of information and communication technology may caused prolonged dilemma. Controlling and directing by parents and educators are highly needed to filter the massive flow of global information, and even may dissolve religious education. Most students currently tend to use information technology as their primary needs, and even wasting studying time (Syarifah Rahmah, 2014). Globalization era has made many changes of students' attitude and behavior as the effect of misuse of technology. If these phenomena are not given enough attention, the situation will be worse and cannot be controlled.

In responding to these problems, educators need to have a good skill of learning management and handle it proportionally. It also needs a good cooperation between educators and parents to guide and control students when they access internet at home. It is very important to make prevent them from accessing prohibited website such as website of pornographic and violence. Therefore, to handle such the problem, it requires supports from various parties such as schools, parents, and society.

III. Advantages of Technology in Learning

The quality of instructional in the future should be improved for the purpose of improving students' competency to keep abreast with the development of knowledge in the world. The use of technology in classroom is one of the efforts to improve the instructional quality. Therefore it is important for the educators to be familiar with the technology, particularly the information technology relating to education.

There are three important things the educator should do in incorporating information technology to improve the instructional quality. They are: (1) the school must have a good access to the internet that educators and students may conveniently use it to improve the quality of learning; (2) the availability of culturally supported materials for educator and students; (3) the students must have skill sets of information technology to use in the learning process.

In line with the advanced development of information technology, the process of teaching and learning also have change both inside and outside the classroom. In the past, instructional process is viewed as something that is difficult, to fill students with knowledge, to transfer and receive information, individual or solitary. The activities is performed by breaking down the materials into small unit and isolated and the process is linear.

The instructional process in this information technology era is opposed to all mentioned above. Information technology has changed the way the instructional process conducted. The information technology has made learning process wider that it has become in the traditional way. The learning process has become more natural in network system, involving active and passive learning, linear and non-linear, integrative and contextual, strength-based activities, skills, interest, culture, assignment-based learning, outcome, problem solving either by individual or groups.

These phenomena show that the learning process in information technology era require some changes performed by both educators and students. Suyanto (2010) stated the changes in the role of educator as the following:

1. The role of educators from the source of knowledge, information, and answers has become to be the facilitators in learning, navigators, trainers, collaborators, and partners for students.
2. From the controlling and directing figures will become the figures which provide learning alternative and responsibility to students.

On the other side, the role of students in learning also has changed much. The changes are as the following:

1. From the passive information receivers to active learning individuals.
2. From knowledge recite to knowledge and technology producers.
3. From individual learner to collaborative, group learners.
4. From competitive to collaborative learners.

The role of educators to improve the quality of education require hard work, mainly to motivate and cultivate the talent the students to maximize their potential. Students are the youths who need guidance and direction to achieve the goals. Conducive environment must be created to accommodate the need of educators and students. Educator-centered learning environments where students put as passive information receivers should be replaced to be student-centered learning environment. With the unlimited source of information today, students might be the master in the topics currently discussed. These phenomena are highly different from the learning environment in the past where educators are the main source of information to be delivered to students.

IV. The Use of Technology by Educators

The role of educators in classroom to incorporate information technology in the teaching and learning process is very important. This is important for the sake of improving learning experience among students. Educators are expected to design students-centered and innovative learning approach, encourage students to dig a fresh idea through brainstorming, direct the students to be able to think with higher-order thinking skills, and support students to be more creative in learning.

Learning methods should not be always monotone and boring, the educators must use their skills to develop the learning methods that suit to the students' need. Educators must be able to adapt various kind of learning methods to appropriately apply them in classroom. The ability to choose the suitable learning methods at a certain condition reflects the capability and proficiency of educators.

The availability of information technology in classrooms may benefit students in anticipating their curiosity with the unlimited information and connectedness. The classrooms look for more interesting with a good atmosphere and will stimulate students to learn enthusiastically and happily.

In line with the rapidly developing information technology that has impacted on all aspects of life make schools have the responsibility to prepare and produce human resources to face the challenges and changes. Ebersole (2000) states several functions of media. (1) Media as technology. Media as technology must be able to accommodate the need of educator in the teaching and learning process; (2) Media as tools. Media as tools make educator easier to access many kind of leaning resources from various books and journals; (3) media as socialization tools. Media can be used as communication devices and gathering information; (4) media as

learning motivators. Educators may use information and communication technology product to motivate students. The facility such as blog can be use for this purpose; (5) media can be used as tools to think and solve problem.

The use of information and communication technology in education can be described as the following: (1) information and communication technology as learning materials that is implicitly included in any subjects. The material contents are arranged according to the level of educational institution. The learning process is expected to equip students with information and communication technology and they may use in their future life due to the skill is highly needed in educational environments and social life; (2) information and communication technology as tools such as the tool to work on any learning assignments, analyzing data and documentation process while doing data collection process; (3) information and communication technology as medium of learning where the teachers use it to teach and the students use it to learn. The use of technology in the process of teaching and learning may increase the process of achieving the learning objectives. Using information and communication technology as a medium may increase the chance to communicate around the educational process to other educators, other students or students association, parents. Educators may use various information and communication devices to reach the learning objectives. Educators may use any facilities available on the internet in Microsoft PowerPoint, Microsoft Word, animation, etc.

Internet-based learning and incorporating information technology with moving class system may give multi benefits such as:

1. Enable the educators and students to easily find numerous update learning resources without restricted to the obsolete resources.
2. Students may make the materials presented in classroom clearer and deeper without worrying the hectic schedule.
3. Learning process look more interesting due to the materials enriched with communicative images and animations.
4. Learning activities may happen in more independent as students may learn individually or collectively without accompanied by educators.
5. Students will be more familiar in using computer as a tool for learning.
6. The devices will give the educators and students opportunity to deepen their insight and knowledge of information technology and learning.

Even though, the implementation of information technology-based learning system also has no guarantee that it will work well. There will be many obstacles that will be faced when the processes will be applied such as preparation, facilities, infrastructures, human resources, and the readiness of students. That is why the educators' professionalism. Therefore the creative and innovative educators are required to make this ideas run well on every subject the educator teach.

To make the information technology based success performed by students from different social, economy, and culture background, a good support from parents and guidance from educators is highly required. This is important to ensure that the information technology devices will be used appropriate ly by students. Therefore, educators' knowledge on the information technology should be well-enough to be able to for them to manage and control students' learning process. The roles of educators have changed from the information sources in the past to the learning managers in information technology era. Today, the role of educator is only as one source of information among any others abundant resources. Suyanto (2013) stated that the roles of future educators will be broader. They may functions as coach, counselor, learning manager, participant, leader, leaner, and author.

As a coach, an educator should give the students a broad opportunity to perform their own learning style and pace. The role of educators is just providing the main guideline to perform and explore. This is analog to the way a trainer when he gives the main rules and regulations for the trainee to follow and perform them creatively and innovatively.

As a counselor, an educator should create conducive environments where students will conveniently interact which each other both among students and educators. Besides that, educators should understand all students personally and help them reach their potential maximally with the benefit of information technology.

As learning manager, educator has a broad independence and autonomy in managing all the learning processes and utilizing all learning resources. As information technology based learning manager, the educator should perform a good skill of management, supervision, and evaluation.

As participant, educator functions not only to teach but also to interact appropriately with students. This indicates that the educators (teachers) are not the only source of learning, but they are also the learning facilitators. With the information technology and networks, educators and students may discuss around the subjects more flexible without having to meet in classrooms.

As leader, educator is expected to encourage students to act and behave as it has been formulated as objectives of learning. Besides the teachers, the educators must take the opportunity to take responsibility in any

other activities from teaching. Educators also have to provide their leisure time to help students improve their studying and counselor for their students.

As learner, educator must always upgrade their proficiency in information technology to keep abreast with the changing knowledge. When educators' knowledge on information technology is always up-to-date, the teaching and learning process will be interesting and the level of satisfaction of students in learning also will be high. If there are among educators who are hesitant to improve their proficiency of how to get benefits from information technology into classroom, the educators may be considered as the ones who are out date compared to the current available information technology. In this case, the role of principal to motivate such educator is highly expected to be able to for the educators upgrade their proficiency in information technology.

As author, educators must always be creative, innovative, and productive to contribute new ideas and novel approach in educational practices that support the professional activities. A good, independence educator is not an operator who follows the rigid provided guidelines, but he/ she must always produce innovative and creative breakthrough in his/ her disciplines. This must be supported by a good commitment as a foundation of his professionalism. Besides author, educator is also a creator, designer, fabricator, and researcher. As designer, an educator has a full authority to design learning activities including designing learning media, etc.

With many roles that have been performed by educators as mentioned above, the real excellent and professional educators can be seen when they are performing various activities among their students. It is a must that the future educators should have innovation orientation so that the educators will be always in the up-to-date situation of the learning process among the continuous changing in many aspects of life. By following these tips, the learning process in classroom will always be vibrant and far from boring activities. In other words, an educator is an actor whom the students follow and imitate his actions. If the actions played do not reflect the action of an educator, then the action will be the failed actions. Otherwise, if an educator is success in performing his main role as the one who can show a good behavior, then he will be the reference for his students. In other word, this educator has made an important breakthrough to support the successful learning at all time.

V. Conclusion

Learning activities with information and communication technology is a way to improve the educators and students to access the available information. The more the educators and students in using information and communication technology in learning activity, the more interesting and colorful the learning activities will be. The use of information and communication technology require many changes, mainly the educators' mentality toward new approaches of learning so that the educator will experience all new aspects including contents and methods. Making familiar with this all new constructive and innovative approaches will make the availability of information technology far from the misuse. However, the main goal of incorporating information technology in learning process is to improve educators' professionalism and students' competency. The out of date teaching methods that are not relevance to the information technology age should be replaced by the most up-to-date and relevant. Educators should shape themselves as models around their students in order for students to follow their tracks.

To create conducive learning process, it is very important for the educators to continually and seriously improve their knowledge through learning forever, sharpening their skills, and evaluating their capability.

To actualize the above noble purpose, the educators need to collaborate with other educator to encourage taking benefit from information and communication technology to create high quality of learning materials and delivered through high quality of learning media also. The rapid changing world requires the hard work of educators to answer it in educational sectors, particularly in learning process. The interesting and attractive learning process will grow among students if the process is performed in a challenging and joyful way.

Education can be analogized as a tree of knowledge which has color at all its branches. Educators are the painters who coloring the branched in their own ways, but the process of coloring should be in line with the general objectives. If the educators insist their own interest, the learning process will be distortion and rigid. This pattern of will produce authoritarian educators and difficult to collaborate with their students.

Professional educators are those who have educational souls and mind, understand their students' characters, have a great creativity, able to motivate their students to learn, and use various source of learning resources. Furthermore, the educators should be ready to be criticized around their performance.

To have beloved educators among their students, the educators should improve their competency by using various learning facilities and infra structure, in this case it is technology. Technology plays important roles in ensuring the learning process run well. It can be said that all knowledge, particularly those which are relating to learning, has a tight relation to the information technology.

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