EDUCATIONAL INNOVATION IN HIGHER EDUCATION WELCOME TO THE ERA 4.0

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Abstract: In the last few decades, the development of learning innovation has followed current technological designs. World information technology developments must be taken into consideration in designing information systems in the educational environment. The current information technology trend which gives users the freedom to choose optimal technological solutions to overcome their informatics problems is a step that should be followed because it will optimize costs, resources and use of technology. The methodology in this writing uses the literature review method. The literature study was carried out by the author with the main aim of finding a basis for obtaining and building a theoretical basis, a framework for thinking, and determining temporary assumptions or also known as research hypotheses. The future innovation developments that the author found are; distributed knowledge (distributed knowledge); resource sharing (sharing resources); collective wisdom (collective wisdom); training for trainers (training); society and the professional world which will ultimately provide an assessment (audit and accreditation) of a person's abilities; and the process of cultural transformation.

INTRODUCTION

Rapid changes in society should be accompanied by the development of education which is one of the driving forces for progress in the global community through the emergence of educational innovations. On the other hand, changes in society's mindset and behavior require changes in higher education institutions. Of course, to keep up with this rapid development, higher education institutions must be ready to change. Change in the form of innovation is important in maintaining the actuality of higher education regarding the situation and conditions of the world around it, both in society and in science itself.

In the United States, according to Peter Serdyukov, “Innovation in education:

what works, what doesn't, and what to do about it? in the Journal of Research in Innovative Teaching & Learning (2017), the main focus of educational innovation is oriented towards developing learning theories and practices, students, parents, communities, society and culture. Technology applications require a solid theoretical foundation based on research with clear, systemic goals and good pedagogy. One important area of research and innovation is cost and time efficiency of learning.

Pasi Sahlberg (2015), a Finnish educator and author of the book, The Finnish Lessons: What Can the World Learn from Educational Change In Finland, stated in an interview to the Huffington Post," in their writing, Howard Gardner's Theory of Multiple, (Rubin, 2015): higher education innovation can take three forms:

1. Process adjustments or improvements:

   Innovation can be developed in everyday performance and seen as a way to make work or the learning process easier, more effective, more interesting, or less stressful. Therefore, innovation must be oriented towards increasing the effectiveness of the use of technology in the education sector, especially online learning; as well as increasing time efficiency and educational costs.
2. Process modification;

   Namely innovation that significantly changes the process, performance or quality of learning products and outcomes, such as accelerated learning, mixed learning (online and offline), research-based learning, learning that leads to the publication of articles in journals as a result of mini-research and class discussions. Lectures are not just a transfer of knowledge through educational communication between lecturers and students, but are academic interactions and discussions that inspire and give birth to many big ideas which are channeled through integrative and collaborative research between lecturers and students, to then be journalized.
3. System transformation;

   Namely systemic conversion, for example a fully automated, digital-based education system; autonomous or independent learning; online, networked and dynamic learning.

Higher education innovation must become an integral part of the education system, in the context of a societal supersystem that shows interconnectedness and interdependence at all levels. Increasing the quality and scale of educational innovation

will have a positive impact on education itself and benefit the entire community.

The idea of independent learning and independent campuses introduced by the Minister of Education and Culture of the Republic of Indonesia, Nadiem Makarim, is actually intended so that all stakeholders, including students, become agents of change, taking part in providing a positive influence and contribution in the transformation of higher education in Indonesia. The essence of freedom to learn is the spirit of seeking and developing knowledge. Meanwhile, independent campuses are bureaucratized by campuses by "breaking through physical and administrative barriers" to access resources and learning experiences outside the study program that can enrich intellectual treasures.

With a spirit of independent learning, students are trained to open new academic horizons and atmospheres in their intellectual journey. Meanwhile, with an independent campus, management, leaders and campus administrators learn to partner, collaborate and adapt to other campuses. Freedom to learn and independent campuses spur new traditions, namely innovation in higher education towards universities with a research tradition and world class with the following criteria:

- a campus with a culture of literacy
- healthy campus
- clean, green and beautiful, (go green campus)
- research-based (research universities)
- information and communication technology (ICT)
- Patented Intellectual Property Rights (IPR), contribute to global issues, and gain

international recognition.

Higher education innovation ideally also produces smart campuses that have a culture of quality and develop the 6C's as 21st century learning skills, namely:

- *Think Critically*
- *Communicate Clearly*
- *Work Collaboratively*
- *Embrace Culture*
- *Develop Crerativity*

- *Utilize Connectivity*

Above all, innovation in higher education must also be based on morality and spirituality which provides enlightenment and guides the path of civility for prospective graduates. It is very important for morality and spirituality to be integrated in the innovation process, so that higher education products can contribute positively as a moral and spiritual fortress for the future of national development and universal humanity (Muhbib Abdul Wahab, 2020).

A. Understanding Educational Innovation

Innovation generally refers to the words updating, changing, either processes or products, as well as ways of doing things so that they are more effective and efficient (Rashin, Journal of Educational Research. 2018). However, not every change can be categorized as innovation. Rogers (2003), for example, defines innovation as an idea, practice or object that is considered new by someone. Based on these limitations, innovation emerges because there are problems that must be overcome, the efforts made are through innovation (renewal). Innovation must be the result of original, creative and unconventional thinking. In the sense that innovation is an alternative problem solving. Identification of this problem is what drives research and development or evaluation of curricula designed to create innovation.

According to Ibrahim (1989) as quoted by Rusdiana (2014), innovation is a discovery that can take the form of an idea, item, event, method that is observed as something new for a person or group of people. Innovation can also be interpreted as an effort to find something new by carrying out activities (discovery). Innovation can be created according to its use, namely creating new things, making things easier in the world of education, and leading to progress.

In another context, innovation is the introduction of new ways or new combinations of old ways of transforming input into output, resulting in major changes in the comparison between use value and price offered to consumers and/or users (Fontana, 2009: 22). From the opinions above, it can be concluded that innovation is introducing new ideas or new goods, new services and new ways that are more beneficial to human life. In this context, of course, innovation is usually related to human creativity. In fact, the essence of innovation comes from the word to innovate, which means making changes or introducing something new. Education is a process of

transferring cultural values to individuals and society. Explained by Langroll (1985:3) that education is the transfer of values, namely:

1. Transfer of cultural values through teaching. Teaching means the transfer of knowledge or knowledge. Education means someone who has knowledge transfers their knowledge to other people who don't know yet.
2. Included in the educational process is training. In fact, training means that someone gets used to doing a certain job to gain proficiency in that job.
3. Education is indoctrination, which is a process that involves someone imitating or following what someone else tells them to do. So this indoctrination process depends a lot on the person who issued the order, who should be imitated by the people who carry out the order.

It can be confirmed axiologically that education does create change, because it is related to instilling the values of truth, holiness and goodness of life for humans. Therefore, education provided through guidance, teaching and training must be able to meet the demands of developing students' potential to the maximum, including intellectual, spiritual, social, moral and aesthetic potential so that maturity or complete personality is formed.

Educational innovation is innovation to solve educational problems. Educational innovation covers issues related to the components of the education system, both in the narrow sense, namely the level of educational institutions, and in the broad sense, namely the national education system. Innovation in education can be anything, product or system. Innovation can be created according to its use, namely creating new things, making the world of education easier, and leading to progress. Innovation in schools occurs in the school system which includes existing components. Among them is the school education system which consists of curriculum, rules and organizational management of learning resource centers. Apart from that, what is more important is that innovation is carried out in the learning system (which plays the role of the teacher) because the teacher directly carries out learning in the classroom. The success of learning is largely the responsibility of the teacher. It is further explained that something new may have been known for a long time in a social context or something that has been known for a long time, but has not changed. Thus, it can be concluded that innovation is change, but not all change is innovation (Idris, Lisma Jamal, 1992: 71).

Change or renewal in the field of education, whether systemic or partial, is often understood as an innovation process. Because of this, educational innovation is a topic that is always hotly discussed from time to time. This issue always arises when people talk about things related to education. Renewal (innovation) is very necessary not only in the field of technology, but also in all fields including education. Educational reform is implemented at various levels of education as well as in every component of the education system. As educators who must anticipate change through various innovations, planners must know and be able to apply these innovations in order to develop a conducive learning process so that maximum results can be obtained towards the realization of superior quality human resources.

Basically, educational innovation is an effort to improve aspects of education in practice. For more details, educational innovation. Educational innovation is a new change, and is qualitatively different from (previously existing) things, and is deliberately sought to increase the ability to achieve certain goals in education (Sa'ud: 2011, 5).

Strictly speaking, educational innovation is innovation (renewal) in the field of education or innovation carried out to solve educational problems. Educational innovation is an idea, item, method that is perceived or observed as new for a person or group of people (society) in the form of an invention. (the new) or discovery (changing the old) which is used to achieve educational goals or solve educational problems.

From several expert opinions above regarding educational innovation, it can be concluded that educational innovation is ideas, goods, method which is felt or observed as something new for a person or group of people (society) which is used to achieve certain goals in education or solve educational problems. Educational innovation in Indonesia can be seen from four aspects, namely: educational goals, education and teaching structure, curriculum and teaching methods as well changes to educational aspects and processes (Wijaya, 1998: 28).

Meanwhile, educational reform can be a fundamental change in education which will involve both targets and policies in education. Therefore, educational reform is always a political action, based on an ideological basis. Although renewal doesn't always have to be a big change. So reform will generally affect many disciplines, including: the labor system, health care, use of free time and possibly the economic

system (Mauegha, 1982: 91). In educational innovation, in general two new innovation models can be provided, namely: First, the "top-down model", namely educational innovation created by certain parties, various leaders/superiors, which are applied to subordinates; such as the educational innovations carried out by the Department of National Education or the Department of Education and Culture so far. The second "bottom-up model" is an innovation model that originates and is created from below and is implemented as an effort to improve the quality of the educational process and outcomes.

B. The Urgency of Innovation in Education

In the era of globalization, there is a strong tendency for a universalization process to occur that is affecting all aspects of human life. One of the implications of uniformity can be seen with the emergence of global lifestyles such as: food, clothing and music. There are many things that need to be paid attention to so that as a nation we are not left behind by new things that are happening globally so that we can adapt to other countries in the world. On the other hand, we must also have a strong filter so that the negative influence of globalization does not interfere with the life of a nation that upholds morals and has a noble culture. This is important in order to become a dignified nation without having to be left behind by other countries.

In the field of education, the role of teachers in educating students to become human beings who always keep up with the times without abandoning their cultural roots is very important in determining the journey of this nation's generation. Teachers are required to become educators who can bridge these interests. Of course, through real efforts that can be applied in educating students. In contemporary developments, the world is changing very quickly and globally. This is caused by the very rapid development of science and technology, especially in the fields of communications and electronics. Developments in this field have resulted in an information revolution. A huge amount of information, almost about all areas of life from all places. All aspects and activities have been collected, processed, stored and distributed. Openly, at any time this information can be accessed, read and watched by everyone, especially via the internet, print media and television (Sukmadinata, 2006:5). According to Wijaya, et al (1992:7) education today faces various challenges and problems, including:

1. The very rapid increase in population and at the same time the increase in people's desire for education, which cumulatively demands the availability of adequate educational facilities;
2. The development of modern science requires solid educational foundations and continuous mastery of abilities, and thus demands longer education in accordance with the concept of lifelong education (life long education);
3. The development of technology makes it easier for humans to control and utilize nature and the environment, but is often treated as a threat to the preservation of human roles.

These challenges are felt even more seriously because various problems arise, both outside and within the education system itself, including:

1. Resources are increasingly limited and existing resources have not been utilized effectively and efficiently;
2. The education system is still weak with unclear objectives, the curriculum is not yet harmonious, relevant, the atmosphere is not yet attractive, and so on;
3. Education management that is flourishing and stable, and not yet sensitive to changes and demands of circumstances, both present and future;
4. The conception of education and its interpretation in practice is still unclear and not yet established.

Sa'ud (2011) explains that all these challenges and problems require deep rethinking and new, progressive approaches. This approach must always be accompanied by exploration that precedes experimentation, and must not be based solely on trial and error. New ideas as a result of rethinking must be able to solve problems that cannot be solved only by traditional or commercial means. New ideas and approaches that meet these requirements are called educational innovation.

Innovation is always needed by humans. Likewise, those who innovate are also people with high creativity. Especially in the field of education, innovation is needed to overcome problems that are not only limited to educational problems but also problems that affect the smoothness of the educational process.

It can be concluded that the urgency of educational innovation is rooted in at least four reasons, namely:

• efforts to solve educational practice problems so that they can run in accordance with the vision, mission and goals of education;
• provide satisfaction to education stakeholders, thereby bringing profits and progress;
• the importance of providing quality education and accountable administration.
• the importance of education in anticipating external changes so as to provide the nation with competitiveness and excellence in the global world.

RESEARCH METHODS

Research on educational innovation towards quality campuses uses the literature review method. The literature study method is a series of activities relating to methods of collecting library data, reading and taking notes, and managing research materials (Zed, 2008:3). Miqzaqon T, and Purwoko state that library research is a study used to collect information and data with the help of various kinds of library materials, such as documents, books, journals, magazines, and so on (Sari et al, 2020).

Literature study is a required activity in research, especially academic research whose main aim is to develop theoretical aspects as well as aspects of practical benefit. Literature studies are carried out by each researcher with the main aim of finding a basis for obtaining and building a theoretical basis, framework of thinking, and determining temporary assumptions or also known as research hypotheses. So that researchers can group, allocate, organize and use a variety of libraries in their field. By conducting literature studies, researchers have a broader and deeper understanding of the problem to be researched.

RESULTS AND DISCUSSION

Innovation is often translated as anything that is new or renewed, but there are those who make the word innovation into an Indonesian word, namely innovation. Innovation is also used to express discovery, because something new is the result of discovery. The word discovery is also often used to translate the English words discovery and invention. Before discussing the meaning of educational innovation. Discovery, invention and innovation can be interpreted in Indonesian as "discovery", meaning that these three words mean the discovery of something new, whether the item

itself has actually been around for a long time and only then was discovered or it is truly new in the sense that it did not exist before. Likewise, new things are created with the intention of achieving certain goals.

Educational institutions are the motor for a nation's educational innovation. The progress and decline of education lies in the good and bad of educational institutions. Facing the rapid development of science and technology in the world today, and the challenges of competition in the development of science and science, requires educational institutions to make great efforts to promote and implement innovation in higher education. Magno and Sembrano (2007) state that innovation means new ideas, methods or strategies that can be perceived and adopted by individuals or units and become new ideas and practices in the world of education. In recent years, universities have been under increasing pressure to change their learning practices to meet the demands of a world society that is beginning to change according to the competencies required today such as the ability of college graduates to become key players in educational, research, and research teams. problems, improving the quality of industrial work and utilizing technology which has become a basic need for today's society, especially the younger generation.

In the last few decades, the development of learning innovation has followed current technological designs (Gilbert & Dabbagh, 2005; Wang & Hanna fin, 2005; Zhu, Valcke, & Schellens, 2009). Enhanced Learning Platform Innovation refers to the use of technology to facilitate students in acquiring skills or knowledge with the help of teachers where students gain knowledge quickly through the use of technology-based learning media (Aleven, Stahl, Schworm, Fischer, & Wallace, 2003; Turney, Robinson, Lee, & Soutar 2009). In much literature, several educational innovation trends currently developing include building virtual learning environment platforms, student-centered learning, cooperative learning, collaborative learning and online learning (Drent & Meelissen, 2008; Ertmer, 2005).

This trend of progress in educational innovation is also occurring in Indonesia, where the Ministry of Primary and Secondary Education and the Ministry of Research, Technology and Technology continue to improve the orientation of national education towards world quality education by carrying out various technology-based innovations as the nation's future education platform that is able to compete with state education

platforms. - other countries in the world that have already built technology-based education platforms. Until now, educational innovation platforms in Indonesia continue to be developed, such as the use of computer information technology to develop online education platforms at the best universities in Indonesia by providing online learning facilities, web-based learning, Massive Open Online Courses (MOOC) and Webinars held by leading campuses.

In the digital industrial era, the fourth educational paradigm is more about developing knowledge through technology, where learning is no longer confined to the classroom, but can be done outside the classroom using technological tools such as online learning, distance learning and massive open online courses. This technology-based educational innovation this year has again become an appeal by the Ministry of Research, Technology and Higher Education for universities in Indonesia to have technology-based learning channels by opening distance learning and online learning classes like universities in developed countries America, Germany, England, Japan, China and other European countries.

Facing this condition, the government has carried out educational innovations by establishing policies regarding e-learning since 2009. Whether or not e-learning will be used really depends on government policy in the education sector and how users view or assess e-learning. However, generally the use of this technology depends on:

- Is the technology really a necessity?
- Are the supporting facilities adequate,
- Is it supported by adequate funds and
- Is there support from policy makers.

A. Future Development of Educational Innovation

The use of interactive information technology devices such as CD rooms, multimedia, in education is gradually replacing TV and video. What is even more interesting is that with the advent of information technology and the internet, knowledge is no longer focused on formal school benches. Someone can easily gain knowledge from anywhere. This is the final challenge for the world of formal education. Thus, in the world of education in the future there will be several fundamental paradigm changes, especially those caused by the application of information technology which accelerates the transfer of knowledge. These paradigm

shifts include:

1. Distributed knowledge (distributed knowledge); which means that in the future knowledge will no longer be centralized in formal educational institutions but will be distributed in all corners of the world, and is very conducive to long life learning. Therefore, the age limit will no longer be an obstacle to formal learning, society will not judge someone based on the diploma they have. Performance and professional abilities will determine a person's career.
2. Resource sharing (sharing resources); The explanation for this includes the ability to produce information and knowledge as well as carry out resource sharing that relies on information technology, which in the end will greatly benefit knowledge producers and society in general.
3. Collective wisdom (collective wisdom); In this case, the teacher does not have the answers to everything. The teacher becomes a mediator, in groups it becomes important in building knowledge. Therefore, learning based (learning) is more prominent than teaching based (teaching).
4. Training for trainers (training); It is very important to maintain the ability of lecturers as mediators in the three main processes carried out in the world of education (tridharma of higher education), namely: education, research and community service.
5. Society and the professional world will ultimately provide an assessment (audit and accreditation) of a person's abilities. Therefore, a school diploma does not necessarily guarantee a person's abilities.
6. Cultural transformation process. A weak and passive culture will be influenced by a strong and aggressive culture, high reading habits, the ability to absorb a lot of knowledge and knowledge quickly, open to various innovations, even always trying to find new things, a view of life that has local, national and universal, able to predict and plan the future, technology that is constantly developing and being used.

If some time ago the consideration and selection of information technology was only a cheap hardware platform and a strong application base, now other, more complex factors are starting to emerge. Connectivity and freedom to develop are starting to become determining factors in choosing appropriate information technology and being

able to anticipate increasingly rapid technological developments. This is because the majority of current users have generally gone a long way in changing the implementation of information systems. These changes are generally not easy and cheap changes, but rather changes that cause a lot of shifts and require quite large resources (Wayan Ordiansa 2003).

B. Information Technology Applications in the World of Education

In developing information technology, all lecturers and employees need to prepare themselves to become active participants in the information revolution which continues to develop rapidly at this time;

1. In academic information systems (AIS), improving the quality of academic information systems. The rapid and dynamic development of information technology currently encourages higher education managers to apply it to develop and improve information systems, especially in the campus environment.
2. In management information systems (SIM), improving the decision-making process. A good academic information system can provide support in decision-making for university leaders to take action. The faster, more complete and valid the information, the more certainty the decision-making process will provide for leaders.
3. Data integration, with a computer network-based academic information system, making it possible to integrate data in the form of setup and transaction data carried out from various terminals in the system network environment. This integrated data can be explored in various forms of information, including academic information, which will be the basis for University leaders to carry out planning, development, organization and regulation of campus performance, both in each department, faculty and as a whole.
4. The data organization system allows a system free of data redundancy. Building an information system that relies on a data organization system will avoid the danger of data duplication or what is called redundancy.
5. Increase the speed and accuracy of report preparation. The demand for fast and standardized availability of academic information often results in very high psychological pressure for employees and lecturers who manage academic

administration.

6. Increasing productivity, the availability of quality academic information and good computer network infrastructure will increase productivity.

Information technology development systems require a fairly large investment of time, money, human resources and effort for a campus environment. Now academic information technology is present and increasingly popular. By having a good academic information system, you can increase profits through speed in transaction services so that transactions can be carried out from various different places with data processing centers in the academic environment. One example of an academic information system is that all students connected to the academic information system network can see and access their respective information data so that they do not need to come to campus to find out. This can save energy and time used to process transactions because it is done online, so that academic activities become more efficient. Motivations for building academic information systems include:

1. The need for an adequate academic information system to speed up data processing and improve the quality of the information produced.
2. The effectiveness of processing data located in several places requires fast transactions.
3. Computer networks enable fast communication between leaders, lecturers, employees using e-mail facilities.
4. Computer network systems provide protection and ownership of online data. Data security guarantees are provided through setting user access rights and passwords as well as hard disk management techniques so that data receives good protection and can be accessed by the owner at any time from different places within the campus environment.
5. With a computer network, each network user can share one or more file systems (file sharing) making it easier to exchange data, time and cost efficiency.
6. Every lecturer, employee and leader can upload (place) or download (take) files to the server in accordance with the authorization given, (Arnita, 2003).

CONCLUSION

Higher education innovation must become an integral part of the education system, in

the context of a societal supersystem that shows interconnectedness and interdependence at all levels. Increasing the quality and scale of educational innovation will have a positive impact on education itself and benefit the entire community. Higher education innovation ideally also produces smart campuses that have a culture of quality and develop the 6C's as 21st century learning skills, namely: (1) Think Critically (2) Communicate Clearly (3) Work Collaboratively (4) Embrace Culture, (5) develop socio-cultural wisdom, (6) Develop Crerativity and (7) Utilize connectivity. The future innovation developments that the author found are; (1) distributed knowledge (2) resource sharing; collective wisdom; (3) training for trainers; (4) society and the professional world which will provide an assessment (audit and accreditation) of a person's abilities; and (5) the cultural transformation process.

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