CHALLENGES OF DESIGN EDUCATION IN THE INDUSTRIAL REVOLUTION 4.0 ERA

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CHALLENGES OF DESIGN EDUCATION IN THE INDUSTRIAL REVOLUTION 4.0 ERA

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Abstract. The progress of information and communication technology in the era of industrial revolution 4.0 has progressed very rapidly. The impact of this progress has brought changes in all areas of life. The changes experienced in the education sector are also very significant. The emergence of various sites that offer convenience in education is also not small. Education has entered the e-learning era based on information and communication technology. In addition, the emergence of various applications that facilitate learning is also not small. This provides a new challenge, especially in the scientific field of design. The emergence of various applications in the field of design has made it easy for the creation of works, but other content emerged, a community that claimed to be a designer who had clearly not met the criteria of the designer. This condition is a challenge for design education in order to have special characteristics that distinguish design higher education from design education. This study uses observational methods in the media and literature studies that have relevance to education in general and design education in particular. The purpose of this study was to provide information to all parties about design education and the challenges of design education in the era of industrial revolution 4.0. The results obtained are the need for renewal and improvement of both the curriculum and human resources in the field of design education to be able to face the progress of the time so that design as a work of creativity and thought will later be accepted by the community both locally, nationally and globally.

Keywords: Industrial Revolution 4.0, Education, Design Education, Design Education Challenges.

Background

The progress of information and communication technology in the era of industrial revolution 4.0 has been very rapid. The impact of this progress has brought changes in all areas of life. Historically, humans have experienced 4 (four) times the industrial revolution. The industrial revolution 1.0 began in 1784 with advances in the use of machinery that replaced animal and human labor. The engine used is a steam engine invented by James Watt. The impact of the discovery of this steam engine was that industrialization developed rapidly. Production of human needs can be produced more easily and mass production. The industrial 2.0 revolution began around the year 1870 marked by the use and production of iron and steel on a large

scale, the widespread use of machinery in manufacturing, greatly increasing the use of steam, the widely used telegraph machine, the use of petroleum and the early periods of electricity use (electrification) (Sodeq, 2017) . The industrial revolution 3.0 began around 1969 marked by the use of information technology and automation machines. Industrial revolution 3.0 that makes space and time closer to the emergence of various technological products. Industrial Revolution 4.0encourages automation systems in all activities. Internet technology is increasingly massive which is able to connect people around the world and become the basis for trade transactions that can be connected virtually. The wave of digitalization creates a suitable environment for the industrial revolution 4.0 (Sanawiri & Iqbal, 2018:184) .

The changes experienced in the education sector are also very significant. The emergence of various sites that offer convenience in education is also not small. Education has entered the e-learning era based on information and communication technology. One form of learning based on information and communication technology is MOOC (Massive Open Online Course). MOOC is a learning system in the form of online courses on a large scale and open with the aim to allow unlimited participation and can be accessed through the web. In addition to providing traditional text materials such as videos, reading and discussion of problems, MOOCs also provides an interactive user forum that helps in building communities for students, lecturers, and teaching assistants. MOOC is the latest development in terms of distance education (e-learning) (Anonim, 2013).

In addition, the emergence of various applications that facilitate learning is also not small. These applications make it easy for humans in designing and learning. One example that can be disclosed here is Adobe Photoshop, Adobe Illustrator and so on. This provides a new challenge in design, especially in the scientific field of design. The emergence of various applications in the field of design has made it easy for the creation of works, but on the other hand people appear to claim themselves as designers who have clearly not met the criteria of the designer. This condition is a challenge for design education in order to have special characteristics that distinguish design higher education from design education.

Research methodology

This study uses qualitative methodology using the observation method. Observation method is a method of collecting data that bases on the facts by means of direct observation in the field and texts related to the problem (Hasanah, 2017). In this study, textbooks relating to general and design education are specifically used. The purpose of this study is to provide an overview of the social phenomena that occur and provide solutions to problems.

Discussion

Before discussing design education, it must be known about the definition of the design itself. Design is the result of the process of designing an object that is carried out through certain stages and through consideration involving various parameters attached to the object of the design towards the giving of a form or form that meets the rules and values that apply at a certain time period (Widagdo, 2005:152). The scope of design as a science is specific to matters relating to design ranging from ideas, techniques to their forms (Setiawan, 2018: 6). In the design process, a designer certainly has stages .According to the architects who are members of the RIBA (Royal Institute of British Architect) in the guidebook he made said that the design process can be divided into 4 (four) namely assimilation, general

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study, development, and communication (Lawson, 2015 : 36) . Assimilation is the stage of accumulation and regulation of general information and information specifically related to the problem being handled. General studies are characteristic investigative possible problems and solutions or solution tools. Development is a stage of development and modification of one or more tentative solutions isolated during stage 2. Communication is the stage of communicating one or more solutions to people inside or outside the design team.

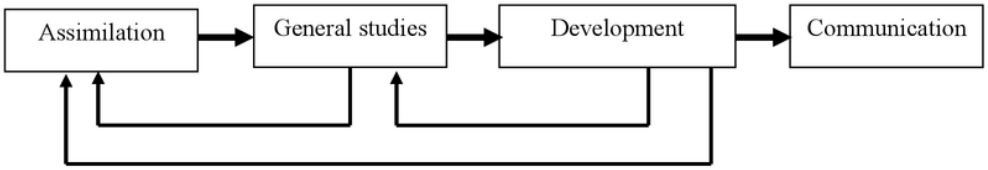

Figure 1. Stages of the Design Process According to RIBA (source: Lawson, 2015: 36)

These four stages do not have to be sequential even though logically the overall design development will run from stage 1 to stage 4. Interpretation of this stage is that a designer is expected to have the ability to have a broad view in seeing problems that occur in society. A designer is expected to not only have technical abilities but also have non-technical capabilities, namely analytical and critical thinking about the problems that occur.

Visual Communicati[5] Design as one of the field of scientific design which is an art form of conveying messages using visual language delivered through the media in the form of design that aims to inform, influence, and change the behavior of the target[6] who sees it according to the desired goal (Setiawan, 2018:9). According to Agus Sachari, visual communication design is a profession that examines and learns with various approaches both matters relating to communication, media, images, signs and values. From the scientific aspect, the visual communication design also examines matters relating to communication and messaging, printing technology, the use of multimedia technology, and persuasion techniques in society (Sachari, 2005:9). The scope of visual communication design includes logos, advertisements, posters, book covers, comics, animation, multimedia design, typography, promotional media, caricatures, and design of environmental markers. While Widagdo revealed that the visual communication design in the modern sense is a design that results from rationality. It is based on knowledge, rational, pragmatic. The essence of the visual communication design is always dynamic, attractive, and changing (Setiawan, 2018:9). In the design process, visual communication design uses seven stages in working on a design work described below.

Figure 2. Seven steps in design (source: Ambrose & Harris, 2010: 12)

The stages in the picture above can be also used by other design scholars such as interior design, product design, and fashion design. The first stage (define) is the stage to get a clear picture of the problem. At this stage, the designer looks for information related both verbally and in writing to the problem. The purpose is specifically to understand the problem and meet

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the design criteria that will be made based on the interpretation of the designer. Information obtained is the key to the success of the design made. The second stage (research background) is the stage of conducting qualitative and quantitative research using various approaches. The approaches taken can be structural, semiotic, historical, cultural, aesthetic, social, and multidisciplinary approaches. The choice of approach to be used depends on the designer. The purpose of the research is to get as much information as possible about the problem to get a solution to the problem. The third stage (ideate) is the stage of making various alternatives in solving problems based on the results of research that has been done. The steps taken are brainstorming, sketching, adapting the designs that have been made and conducting trials, carrying out top-down and bottom-up analytical approaches (Ambrose & Harris, 2010:20). The purpose of ideate is to test the level of deficiencies and misunderstandings that occurred at the previous stage and get clarification on aspects that are not clear. The fourth stage is making a prototype. The prototype is used to carry out technical feasibility tests and functions as a design. In addition, prototypes can also be used to test visual aspects by presenting products as they are. The purpose of making a prototype is to test certain aspects of the design solution made so that these aspects can be evaluated effectively. The prototype can also be used to convey thought ideas about the structure of the product to be made. The fifth stage is the selection of various alternatives that have been made prototypes. This selection is important to do as one of the solutions proposed for problem solving and design development. Criteria in decision making in the selection of a plan are adjusted to the objectives and fulfillment of needs and objectives in solving problems. The design that meets the criteria is usually the closest to the problem and becomes an important part of the solution to the problem. For example the selection of designs that are adjusted to the level of market needs based on age segmentation. This is important considering that each market has a different segmentation and must be adapted to the design. In addition, the budget needed in the design is also taken into consideration during the selection process. Effectiveness and efficiency in the process of selecting a product design so that further developments can be carried out. The sixth stage is implementing the final product that has been carried out at the election stage. Implementation of the final product is the most important part of a design process. The implementation of this final product can certainly be expected to fulfill the existing problem solving and can meet the tastes and expectations of the market. Usually the design team makes project management during this stage, to ensure the final design and maintain the project within the budget and time. During the implementation process, an inspection is needed to ensure the accuracy of the design made and test the functionality and visual appearance of the product. This stage ends when the product has arrived at the client. The last stage is the learning process from the design produced. The learning process is done by asking for feedback from the user about the product that is produced and seeing the effect. This is done to find out the response from the user to the resulting design. Various shortcomings that emerged from the results of the design becomes an important point to be identified and then used as a reference in the development of product ideas further.

The problem that arises is the lack of public knowledge about the field of design. The community still has different views about the field of design. In Indonesia there are two classic views on this matter, namely: 1) the assessment that design is a branch of scientific praxis art and 2) design grows into a new tree eventhough the seeds are the same (Sachari, 2005: 30). The reality is that the design field has a difference with the arts. This difference

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can be seen in the table below.

Table 1. Differences in design and art (source: Purwito, 2014)

Design	Art
Have goals for designing work not to find something new but to communicate something that already exists for a purpose.	The purpose is to form a strong emotional bond between the artist and their audience.
Interpreted design communicates messages and motivates.	The art of connecting people in different ways because they are interpreted differently.
Design has an element of taste but good bad design is a matter of opinion.	Art is judged by opinions and opinions governed by taste.
The designer has the skills taught and learned.	Artists have natural abilities.
A good design where the message delivered is interpreted with each other.	Art is better if the message delivered is different from one another.

Another problem is the increasing number of design universities in Indonesia. This increase in numbers did not provide significant progress for the profession and the scientific world, especially the visual communication design. One reason is the curriculum and teaching programs that are not in accordance with the need to produce quality designers. As a result there is a mismatch between industry needs and those provided by higher education. To deal with these problems, it is necessary to look more comprehensively at the issue of the scope of higher education and the design profession, especially the visual communication design so that it can provide a more real picture and result in a solution. The need for renewal and improvement of both curriculum and human resources in the field of design education is expected to be able to deal with the progress of the time so that design as a work of creativity and thought will be accepted by the community both locally, nationally and globally.

Conclusion

The progress of information and communication technology in the era of industrial revolution 4.0 has been very rapid. The impact of this progress has brought changes in all areas of life. The changes experienced in the education sector are also very significant. The emergence of various sites that offer convenience in education is also not small. Education has entered the e-learning era based on information and communication technology. One form of learning based on information and communication technology is MOOC (Massive Open Online Course). In addition, the emergence of various applications that facilitate learning is also not small. These applications make it easy for humans in designing and learning. One example that can be disclosed here is Adobe Photoshop, Adobe Illustrator and so on. This provides a new challenge in design, especially in the scientific field of design.

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References

Ambrose, G., & Harris, P. (2010). Basics Design 08: Design Thinking. Switzerland: Ava Publishing.

Anonymous. (2013, December 26). MOOC: COLLEGE IN THE WORLD CLASS UNIVERSITY. Retrieved from gudanglinux Wordpress: https://gudanglinux.wordpress.com/2013/12/26/mooc-kuliah-di-universitas-kelas-dunia/

Hasanah, H. (2017). Observation techniques (an alternative method of collecting qualitative data in the social sciences). At-Taqaddum, 8 (1) , 21-46.

Lawson, B. (2015). How do designers think. Yogyakarta: Jalasutra.

Purwito, AE (2014, March 04). Difference between Art and Design. Retrieved from Antonius Eko Purwito Blog: http://antoniusekopurwito.blogspot.com/2014/03/perbedaan-seni-dan-desain.html

Sachari, A. (2005). Fine Culture Research Methodology. Jakarta: Erlangga.

Sanawiri, B., & Iqbal, M. (2018). Entrepreneurship. Malang: UB Press.

Setiawan, A. (2018). Design Methodology. Yogyakarta: arttex.

Sodeq. (2017, February 21). Industrial Revolution Part II - Second Revolution. Retrieved from WarungSTMJ: https://www.warungstmj.com/revolusi-industri-ii-revolusi-industri-kedua/

Widagdo. (2005). Design and Culture. Bandung: ITB Publisher.

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