



# Development Of Learning Media For The Formation Of Characteristics Based On The Philosophy Of Science

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## ABSTRACT

Teachers tend to have different characteristics in delivering the material, which may result in different interpretations in the student's point of view. Learning media can be created using writing, audio, visual, or even a combination of all of them. If the selection of learning media is carried out correctly, it will greatly help the interaction in learning activities in the classroom. The philosophy of science and education has a great role in shaping the characteristics of learning media. In the philosophy of science and education, there are several aspects and dimensions that are the basis for making learning media, namely aspects of ideas and facts, as well as abstract and concrete dimensions both theoretically and practically. The approach of philosophy of science and education ontologically, epistemologically, and axiologically in the development of learning media, if summarized in accordance with its practical objectives, will be able to form practical values that lead to learning abilities or outcomes.

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## INTRODUCTION

Philosophy of Science is an important foundation in the development of science. The development of the era accompanied by the development of information technology has resulted in more and more specializations from science. Humans as actors in such developments need to realize the importance of philosophy to provide realistic and logical limits to develop science so as not to harm humans, nature, and the environment. In the world of education related to learning and learning philosophy of science is a series of approaches to ways of thinking that guide the direction of the development of the world of education.

The problems that occur in learning both related to planning, implementation, and evaluation cannot be separated from the philosophical foundations related to educational philosophy. Learning, which is an important part of supporting the progress of the world of education, often faces obstacles in its implementation, such as student learning activities and achievements that are not optimal.

In the series of learning processes in it not only involves the teacher and students but also involves learning resources both that are already available and deliberately created by the teacher. Learning resources in the form of learning media are created by teachers to support learning and build a new atmosphere in student learning activities. The development of learning media certainly requires an approach that will be able to form the characteristics of the media, in accordance with the expected practical goals. Approaches in the philosophy of science and education become a very important factor to direct the orientation of the creation of learning media, as in learning that tends to use media as a means of assistance to help describe abstract concepts for easy understanding. The definition of science comes from the Arabic words 'ilm, English science, Dutch watenchap, and German wissenchaf. Science is an urgent matter in human life in the world so that humans improve their quality and ability and elevate their existence. One of the definitions of science proposed by foreign experts is R. Harre. Science according to Harre, namely: a collection of well a sested theoris which explain the patterns regulaties and irregulaties among carefully studied fenomeno. The definition of science according to Harre is a collection of tested theories that explain regular or irregular patterns among carefully studied phenomena. The definition of a Marxist thinker of the Russian nation named Alfensyef explains science: Science is the society and thought, if reflect the word corecctness, categories and laus the recivied by practical experince. Science is man's knowledge of nature, society, and mind. It reflects nature and its concepts, categories of categories, and correctness is tested practically. One of the Indonesian experts who defines science is Science is the general consensus of a society consisting of scientifis (A.Baiquni, 2013)

## RESEARCH METHODOLOGY

The method used in writing this article is the literature study method. Literature study is a process of collecting information from various sources in the library. Literature study is the process of studying references from the results of previous research to be used as a theoretical basis. Meanwhile, according to literature studies, it is a theoretical study to develop a theory related to culture, norms, and values in certain social situations. So literature studies are a technique that is carried out by conducting studies through collecting references from books, articles, magazines, newspapers, and online media. The references that have been collected are then sorted out according to the topic to be discussed. In literature studies, synthesis is also carried out, namely re-describing with its own language the opinions or theories of experts contained in reference sources. The preparation of this article uses references obtained through online media, such as website pages, blogs, articles, modules and electronic books.

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## RESULTS AND DISCUSSIONS

### Philosophy of Science

Philosophy is also defined as an attitude of a person who is aware and mature in thinking about everything deeply and wants to see in a broad and thorough way with all relationships. Philosophy as the "ancestor" of science As it is commonly known, that philosophy is considered and recognized as the beginning of any existing science. the material content is life-based learning. As a form of value education, philosophy can be an appropriate means of maintaining the habit of thinking and contemplating (contemplating) the values of life. Contemplation here can be understood as a process of intellectual testing or a serious retrospective view of what is happening (Mudhofir, 2013).

Philosophy comes from the Greek word *Philosophia* which is a combination of the word *philos* which means friend or lover of knowledge and *sophia* which means wisdom. So philosophy can be interpreted as wisdom and wisdom towards the companions of knowledge. Some figures express different opinions about the meaning of philosophy, these figures are: (a) Plato who states that philosophy is a science to obtain pure truth; (b) Aristoteles states that philosophy is a science for studying reality, (c) Rene Descartes states that philosophy is a set of things that have a base of inquiry into god, nature and man, and (d) William James states that philosophy is an attempt to think clearly and brightly.

In philosophy there are many problems discussed so that they need to be divided into several groups, as initiated by Aristotle who divided philosophy into three branches, namely theoretical philosophy, practical philosophy, and productive philosophy. In theoretical philosophy, the main goal is objective science, while practical philosophy focuses on the behavior that shapes humans in order to be able to act to implement science. Then productive philosophy emphasizes the importance of special skills so that humans can be productive in making something useful for their lives.

### Functions of Science

Inside there is not much that explains the function of science. According to the author, the function of science is as follows: (a) Can know the various knowledge that have been systematically compiled based on the conditions and methods to be able to become a science. (b) It can function functionally in a system, meaning that something consisting of parts and between parts is interconnected with each other. 3) Can create a hypothesis that will be tested for correctness. 4) Can control various things based on theories in science.

### The Nature of Educational Philosophy

Philosophy of education emphasis on planning, implementation, and evaluation in education. In opinion (Karim, 2014) education is a study of history that includes the nature of the basics, psychology, student learning processes, and the way teachers teach and the expected objectives of learning.. In general there are several studies related to education namely: (a) basic properties ; (b) the history of development ; (c) the psychology of learning ; (d) learning theory.; (e) curriculum development; and (f) curriculum implementation.

Specifically the philosophy of education leads to the philosophy of constructivism. According to (Burhanudin, 2013) learning is the process of forming understanding. The opinion is supported by Bettencourt (1989) who states that learning not only imitating and reflecting on the theory being studied but also forming understanding. The process of forming this understanding is due to the activeness of students in the learning process. Fisher and Lipson (1986) in research on misconceptions found that in learning. involves an active and constructive role. Constructivism had a major influence on misconceptions as demonstrated by the many studies on misconceptions in the period 1983 – 1993. The idea of constructivism was put forward succinctly by von Glaserfeld and Kitchener (1987), who stated that knowledge is a real construction of activity, which builds cognitive schemes of knowledge formed by the structure of conception based on one's experience. In this

construction process requires the ability to: (a) remember, (b) re-express, (c) compare, (d) distinguish, (e) choose, (f) understand, (g) apply, and (h) analyze.

In education related to the individual learning process, construction begins with building a memory of the concepts learned, then continues by re-expressing concepts in their own words until they are able to apply and analyze. This stage certainly corresponds to the stage of development of human thinking as conveyed by Piaget who stated that cognitive development consists of motor sensory, pre-operational, concrete operations, and formal operations. The construction process will also be able to run effectively if it is supported by learning media as a means and learning resource

### **Benefits of Learning Media**

Media is the plural word of medium, which means intermediary. In learning media can be a source of information in the form of printed writing, audio, visual, or audio-visual. According to Schramm (1977) learning media is a technology to deliver information that contains learning materials. Then Briggs (1977) stated that learning media is a tool to help deliver material. Meanwhile, according to Arief S. Sadiman (1986) stated that learning media are all forms of objects used for message delivery. So learning media is a means or tool used in the learning process to help convey information and as a learning resource that contains messages and learning materials.

In learning, learning media is used to help smooth communication and interaction between teachers and students so that learning activities and achievements are more optimal. Adapting the opinions expressed by Kemp and Dayton (1985) there are several benefits of using learning media in learning, namely: (a) there is a uniformity of learning materials; (b) learning will be more interesting; (c) learning takes place more interactively; (d) the duration of the learning time . can be more efficient; (e) tendencies to activity and learning outcomes. may increase; (f) media of a network nature can help the learning process . done wherever and whenever; and (g) teachers can be more creative and productive.

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### **Characteristics of Learning Media Development**

Based on the grouping, each learning media has its own characteristics according to the function of the learning media. Learning media are generally made to provoke abilities related to the senses in the form of sight, hearing, touch, taste, or smell. If it is associated with learning media, it will be more dominant to use media in the form of a combination of writing, audio and visual. Philosophy of science and education has a big role in shaping the characteristics of learning media (Komariah., 2019). In the philosophy of science and education, there are several aspects and dimensions that are the basis for making learning media, namely aspects of ideas and facts, as well as abstract and concrete dimensions both theoretically and practically. Development of learning media . nor can it be separated from the existence of technology. Science is a support and an important factor in supporting technological developments, especially related to the use of theories or approaches to the philosophy of science and education. The development of learning media requires a philosophical approach to science and education consisting of an ontological, epistemological, and axiological approach. Ontologically, the development of learning media can be based on experience or in this case an evaluation of the learning process that has been implemented before, including the overall learning outcomes of students. In this case, the development of learning media is carried out based on reality in accordance with the conditions or circumstances that occur in the classroom.

In contrast to the ontological approach, the development of learning media carried out epistemologically emphasizes the scientific method which consists of: (a) the existence of a systematic, logical and consistent framework of thought; (b) requires a hypothesis based on a frame of mind; (c) requires verification of the hypothesis made. A logical, systematic, and consistent frame of mind is indispensable in developing learning media., so that the media created is easy to use, effective in results, and time efficient. The hypothesis is also necessary as a component that will be used to anticipate any possibilities or shortcomings that occur during the application of learning media . in the classroom, so that such deficiencies can be evaluated and acted upon. In terms of axiology, the development of learning media . must have benefits in activities, interactions, and communication between teachers and students or between students and students in accordance with learning objectives.

Based on ontological, epistemological, and axiological approaches, learning media have practical objectives to be achieved in learning. The development of learning media needs to be distinguished according to its practical objectives, namely: (a) graphic media; (b) audio media; and (c) projection media. Graphic media is a learning media that uses verbal symbols that function to attract attention, clarify the material, and provide illustrations of facts that are difficult to imagine (Surajiyo, 2019). Examples of graphic media are photos, sketches, charts or diagrams, graphs, and cartoons. All graphic media can be poured in the form of posters, pamphlets, or flip charts.

If it is associated with the sense of hearing, audio media can be used as a means of learning. A number of media that can be used can be radio and audio CDs. Meanwhile, to provide more real visualization, the media that is more suitable for use is the projection medium. This media has similarities in terms of graphic appearance, but projection media already uses moving graphics so that the appearance is more real in both dimensions and three dimensions. Examples of projection media are films, short stories, online videos that can be shown on television, laptops, or mobile phone devices.

The philosophical approach of science and education ontologically, epistimologically, and axiologically in the development of learning media, if summarized according to its practical goals,

will be able to form practical values that lead to learning abilities or outcomes. These practical values can be in the form of: (a) abstract concepts that can be understood concretely; (b) the message of a difficult object can be shown similar to its original condition; (c) students can interact actively; (d) the perception of students becomes uniform; (e) students' learning motivation increases; and (f) consistency of information delivery is more effective and repeatable. These practical values will be achieved if the selection of learning media is carried out appropriately, so it is necessary to take into account the condition of the student, the learning objectives, and the characteristics of the media used. This will be very good in helping the effective, efficient, and productive learning process occur.

## CONCLUSION

The philosophy of science becomes the foundation in the development of learning media, especially to form the characteristics of media development in accordance with approaches on axiologically, epistemologically, and axiologically. The approach is oriented towards the practical objectives of media development oriented towards the practical values obtained after the learning media is applied.

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