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Analysis 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 material, which may result in different interpretations in students' points of view. Learning media can be created using writing, audio, visual, or even a combination of everything. If the selection of learning media is done correctly, it will greatly help the interaction in learning activities in class. 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. Ontological, epistimological, and axiological approaches to philosophy of science and education in the development of learning media, if summarized in accordance with their practical goals, will be able to form practical values that lead to learning abilities or outcomes.

Keywords: Analysis, characteristic, Media, Information, philosophy

Introduction

Philosophy is a science that studies everything in this world. Philosophy has a very wide scope, so there is a lot we can learn in philosophy (Mahmuda et al. 2021) [12]. Philosophy of Science is an important foundation in the development of science. The development of the era accompanied by the development of information technology resulted in more and more specialization of science. The critical examination of fundamental ideas and the investigation of all human phenomena constitutes philosophy. Philosophy doesn't come from doing something over and over again; Instead, it is studied by expressing the same problem, finding solutions, and presenting appropriate arguments and justifications for various solutions (Farhaini, Nurul 2023) [4] Humans as actors in these 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 the way of thinking that guides the direction of the development of the world of education.

Problems that occur in learning both involving planning, implementation, and evaluation cannot be separated from 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 activities and learning achievements that are not optimal. In the series of learning processes in it not only involves teachers and students but also involves good learning resources that are already available and deliberately made by teachers. An understanding of educational philosophy encourages and motivates teachers to learn the technical elements and theories of education. In addition, teachers either directly or indirectly apply these techniques or theories as principles or guidelines in taking professional actions or decisions on behalf of teachers. (Review et al. 2024) In other words, education should be sourced from the changing needs of Indonesian society, meaning that education should not be carried out except by people who are able to be rationally, socially and morally responsible. (Oktarianto, Afriyadi, and Rizkasari 2020) [13] Learning resources in the form of learning media are made 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 shape the characteristics of the media, in accordance with the expected practical goals. The approach in the philosophy of science and education is a very important factor to direct the orientation of making learning media, as in learning that tends to use media as a means of assistance to help illustrate abstract concepts so that they are easily understood.

The notion of science comes from the Arabic words 'ilm, English science, Dutch watenchap, and German wissenchaf. Science is an important thing in human life in the world so that humans improve their quality and ability and raise their existence. One of the definitions of science put forward 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. Harre's definition of science is a collection of tested theories that explain regular or irregular patterns among carefully studied phenomena. The definition of the Russian Marxist thinker 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, categories, and truths are tested practically. One of the Indonesian experts who defines science is A. Baiquni, Science is the general consensus of the community consisting of scientists

Method

The method used in writing this article is the literature study method. Literature study is the process of collecting information from various sources in the library. Literature study is the process of studying references from previous research results to be used as a theoretical basis. Meanwhile, according to literature studies is a theoretical study to

develop a theory related to culture, norms, and values in certain social situations.So literature study is a technique 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 according to the topic to be discussed. In literature studies, synthesis is also carried out, namely re-describing with their 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 web pages, blogs, articles, modules and electronic books.

Discussion

Philosophy of Science

Philosophy is also defined as an attitude of someone who is aware and mature in thinking about everything deeply and wants to see in a broad and comprehensive perspective with all relationships. Philosophy as the "ancestor" of science As it is commonly known, that philosophy is considered and recognized as the beginning of every existing science. The content of the material is life-based learning materials. As a form of value education, philosophy can be an appropriate means to maintain the habit of thinking and contemplating (contemplation) 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 Philoshopia which is a combination of the words philos which means friend or lover of knowledge and sophia which means wisdom. So philosophy can be interpreted as wisdom and wisdom towards friends of knowledge. Some figures expressed different opinions about the meaning of philosophy, these figures are: 1) Plato who stated that philosophy is a science to obtain pure truth; 2) Aristotle stated that philosophy is the science of studying reality, 3) Rene Descartes stated that philosophy is a set that has the basis of investigation of God, nature and man, and 4) William James stated that philosophy is an attempt to think clearly and clearly. Philosophy of science as a branch of Philosophy can be viewed from two sides, as a scientific discipline and as a philosophical foundation of the scientific process. Philosophy of Science talks about a special object, namely science as its study. Philosophy of science is a scientific discipline that examines ways to obtain knowledge that satisfies scientific truth. (Juairiah 2020) [6]. In philosophy there are many problems discussed so that it needs 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 behavior that shapes humans in order 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

There is not much to explain the function of science. According to the author, the functions of science are as follows: 1) Can find out various knowledge that has been systematically compiled based on the requirements and methods to become science. 2) Can function functionally in a sisetm, meaning something that consists of parts and between parts is interconnected with each other. 3) Can make hypotheses that will be tested for correctness. 4) Can control things based on theories in science.

The Nature of Educational Philosophy

Philosophy of education. Emphasis on planning, implementation, and evaluation in education. In the opinion (Karim, 2014) [7] of education . is the study of history which includes the nature, psychology, student learning process, and how to teach teachers and the expected goals of learning. In general, there are several studies related to education. namely: 1) basic nature; 2) history of development ; 3) learning psychology ; 4) learning theory.; 5) curriculum development; and 6) curriculum implementation. Specifically the philosophy of education . leads to the philosophy of constructivism. According to (Burhanudin, 2013) [1] learning . is the process of forming understanding. This opinion is supported by Bettencount (1989) who states that learning. Not only imitating and reflecting on the theory 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 their research on misconceptions found that in learning. involves an active and constructive role. Constructivism has a great influence on misconceptions as shown 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 construct of activity, which builds cognitive schemes of knowledge formed by the structure of conceptions based on one's experience. In this construction process requires the ability to: 1) remember, 2) express again, 3) compare, 4) distinguish, 5) choose, 6) understand, 7) apply, and 8) analyze. In education related to the individual learning process constructionally begins with building a memory of the concepts learned, then continued by reexpressing concepts in their own words to be able to apply and analyze. This stage is certainly in accordance with the stage of development of human thinking as conveyed by Piaget who stated that cognitive development consists of sensory-motor, pre-operational, concrete operational, and formal operational. The construction process will also be able to run effectively if supported by learning media as a means and source of learning.

The Relationship of Philosophy and Science

Historically between science and philosophy was once a unity, but in its development experienced divergence, where the dominance of science more strongly influenced human thinking, this condition led to efforts to position the two precisely according to their respective territorial boundaries, not to isolate them but to more clearly see the relationship between the two in the context of better understanding human intellectual treasures. There is difficulty in stating clearly and concisely about the relationship between science and philosophy, because there are similarities as well as differences between science and philosophy, besides among scientists themselves there are differences in views in terms of the nature and limitations of science, but also among philosophers there are differences in views in giving meaning and tasks to philosophy. According to Sidi Gazalba there are two philosophical tasks that do not exist in science, namely (1) Reflection on the whole world, especially on

meaning, goals, and values; (2) Test understanding, either used by science or by general assumptions critically. (Gazalba, 1992) The similarity (more precisely the correspondence) between science and philosophy is that both use reflective thinking methods in an effort to face / understand the facts of the world and life, towards these things both philosophy and science are critical, open-minded and very committed to truth, in addition to their attention to organized and systematic knowledge.

While the difference between philosophy and science is more related to the point of emphasis, where science examines a limited field, science is more analytic and f descriptive in its approach, science uses observation, experimentation and classification of sensory experience data and seeks to find the laws of these phenomena, while philosophy seeks to study experience as a whole so that it is more inclusive and includes general things in various fields of experience Man, philosophy is more synthetic and synoptic and although analytical then its analysis enters the dimension of life as a whole and whole, philosophy is more interested in the question of why and how in questioning the problem of the relationship between specific facts and the broader scheme of problems, philosophy also examines the relationship between the findings of science and religious, moral, and artistic claims. (Widyawati 2013) [16]

Foundation of Learning Media Development

Media is the plural of medium, which means intermediary. In media learning can be a source of information in the form of printed, audio, visual, or audio-visual writing. According to Schramm (1977), learning media is a technology to deliver information that contains learning material. Media is a tool used by teachers to transfer knowledge owned by teachers to their students so that students' knowledge can be more developed. (Cindy Reichmann Andriwardhaya, Huda, and Sulistyono 2023) [2] Then Briggs (1977) suggested that learning media is a tool to help deliver material. Meanwhile, according to Arief S. Sadiman (1986) suggested that learning media are all forms of objects used for message delivery. alkan. The challenges in the development of technology and information in this modern era do not limit teachers in developing a learning media, precisely with that development teachers can easily provide learning materials and conduct an assessment and measurement of student creativity. (Trisiana 2020) [15] Education does not just form intelligent humans, but forms complete humans who have noble personalities and morals (Rohmawati and Watini 2022) [14] So learning media is a means or tool used in the learning process to help deliver 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: 1) there is uniformity of learning material; 2) learning will take place more interestingly; 3) learning takes place more interactively; 4) duration of learning time. can be more efficient; 5) activity tendencies and learning outcomes. may increase; 6) Media that is networked can help the learning process. done anywhere and anytime; and 7) teachers can be more creative and productive. Teachers tend to have different characteristics in delivering material, which may result in different interpretations in students' points of view (Ritaudin, 2015) [9]. Learning media can be created using writing, audio, visual, or even a combination of everything. If the selection of learning media is done correctly, it will greatly help the interaction in learning activities in class. Teacher dominance in learning can be reduced by the use of learning media, so that learning can take place more efficiently, deepening the material more thoroughly. Teacher creations in making learning media will also inspire students to prefer learning.

Characteristics of Learning Media Development

Education in Indonesia today emphasizes student character education (Dewi, Putrayasa, and Nurjaya 2014) [3]. Based on its grouping, each learning media has its own characteristics in accordance with the function of learning media. Learning media in general are 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 using media in the form of a combination of writing, audio and visual. Philosophy of science and education has a great role in shaping the characteristics of learning media (Komariah., 2019) [8]. 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 becomes a supporter 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 philosophy of science and education approach consisting of ontological, epistimological, and axiological approaches. Ontologically, the development of learning media can be based on experience or in this case an evaluation of the learning process that has been carried out 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 epistymological emphasizes the scientific method consisting of: 1) the existence of a systematic, logical and consistent frame of mind; 2) require hypotheses based on a frame of mind; 3) requires verification of the hypothesis made. A logical, systematic, and consistent frame of mind is needed in developing learning media, so that the media made is easy to use, effective results, and time efficient. Hypotheses are also needed as components that will be used to anticipate all possibilities or shortcomings that occur when applying learning media. in class, so that these deficiencies can be evaluated and acted upon. In terms of axiology, the development of learning media . Must have benefits in activities, interaction, and communication between teachers and students or between students and students in accordance with the purpose of learning. Based on ontological, epistimological, and axiological approaches, learning media have practical goals to be achieved in learning. The development of learning media needs to be distinguished according to its practical objectives, namely: 1) graphic media; 2) audio media; and 3) projection media. Graphic

media is a learning media that uses verbal symbols that function to attract attention, clarify material, and provide illustrations of facts that are difficult to imagine (Surajiyo, 2019) [10]. Examples of graphic media are photos, sketches, charts or diagrams, graphs, and cartoons. All media The graphics can be poured in the form of posters, pamphlets, or flip charts If 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 to use is projection media. This media has similarities in terms of graphic appearance, but projection media already uses moving graphics so that it looks more real both in two dimensions or three dimensions. Examples of projection media are films, short stories, online videos that can be shown either on television, laptops, or mobile devices.

Ontological, epistimollogical, and axiological approaches to philosophy of science and education in the development of learning media, if summarized in accordance with their practical goals, will be able to form practical values that lead to learning abilities or outcomes. These practical values can be: 1) abstract concepts can be understood concretely; 2) the message of the object that is difficult to show is similar to its original condition; 3) students can interact actively; 4) students' perceptions become uniform; 5) student learning motivation increases; and 6) consistency in delivering information is more effective and repeatable. These practical values will be achieved if the selection of learning media is done properly, so it is necessary to consider student conditions, learning objectives, and the characteristics of the media used. This will be very good in helping the learning process to occur effectively, efficiently, and productively.

Conclusion

Philosophy of science is the foundation in the development of learning media, especially to shape the characteristics of media development in accordance with ontoological, epistimological, and axiological approaches. The approach is oriented towards the practical goals of media development oriented to practical values obtained after learning media are applied. In our efforts to improve scientific education, we feel the need to develop a new paradigm in various ways by developing an epistemological paradigm of problem solving in addition to the discovery of scientific knowledge. Likewise, it is also necessary to think about the development of other paradigms related to increasing educational and scientific activities. To form the characteristics of media development in accordance with ontological, epistemological, and axiological approaches, the philosophy of science becomes the basis for developing learning media that are useful for the real world and come from the use of learning media.

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