LEARNING EDUCATION BASIS LITERATION OF STATISTICS

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Abstract

This type of writing is a theoretical study that is literature study and aims to study the foundation of statistical literacy learning education . The focus of the discussion in this study is to describe the educational foundation of statistical literacy learning, h acyl obtained are u raian about educational foundation of statistical literacy learning includes grounding philosophy of education, socio-cultural foundation, and the foundation of the theory of teaching and learning of literacy statistics

Key words :

Basic educational philosophy , socio-cultural, learning theory, statistical literacy

Introduction

Statistics is the science concerned variable and become a means to explain the phenomenon of the uncertainty that always happen in life, at work and in science itself (Moore, 1997) . L iterations statistics include the ability to interpret, critically evaluate, and communicate information and statistical message (Gal, 2002; Wahab et al., 2018) .

The role of statistics is defined as a way of reasoning using statistical ideas and can be understood from statistical information (Garfield, 2002) . This includes making interpretations based on the data, data representations, or statistical summaries of the data. The form of statistical reasoning can be in the form of a combination of ideas about data and possibilities, such as inference and interpretation of statistical results, understanding the concepts of important ideas such as: centralization, distribution, linkages, probability, randomness, and sampling, are part of this form of statistical reasoning (Schield, 2013) .

Philosophical review of variables , including the basis of education, means free thinking and stretching the mind as far as possible about that variable . There is a close relationship between education and philosophy because philosophy tries to formulate an image of man and society while education tries to create that image. The formulation of human dignity and society also determines the aims and methods of education, and from the other side education is a humanizing process. Educational philosophy seeks to answer critically and fundamentally the main questions about education. In writing, he wants to reveal the educational foundation of statistical literacy learning which includes the foundation of educational philosophy, socio-cultural foundation, and learning theory foundation.

Research Methods

This type of research is qualitative research (Hennink et al., 2020) through literature studies which are literature studies (Cawelti, 1969) which describes the foundation of educational

philosophy, socio-cultural foundations, and theoretical foundations for learning about statistical literacy learning.

Result And Discussion
1. Platform Philosof of Education
Learning literacy statistics rests on the four schools of the educational philosophy of modern great influence in the thinking and the provision of education in Indonesia today, namely; progresivisme, iceensialisme , perenialisme, and rekonstruksionalisme.
a. Flow progresivisme
Progressivism flow as a stream of new thinking evolved rapidly during the beginning of the century to 20 , B M any contributor to mind in the development of progressivism, such as Francis Bacon, John Locke, Rousseau, Kant, Hegel, and so on. Francis Bacon named the principle of the experimental method (scientific method in natural knowledge) to be the main method in the educational philosophy of progressivism. John Locke with the theory of the principle of independence that respects human rights (political freedom). Rousseau believes that human nature can do good and is born as a good creature. Immanuel Kant glorifies human dignity and upholds the human personality. Meanwhile, Hegel laid the principle of human adaptation to nature with the expression "*The dynamic, ever* reading justing *processes of nature and society* " (Brameld, 1956) . In other words, nature and humans are dynamic in a process of adaptation and change that never stops.

This flow of progressivism was very influential in educational reform. This development was mainly driven by the flow of naturalism and experimentalism, instrumentalism, eviromentalism, and pragmatism so that progressivism is often referred to as one of these schools. Progressivism in his view, is always related to *The liberal road to cultural,* namely liberal means flexible (flexible and not rigid), tolerant and open, and wants to know and wants to investigate for the development of experience.

Progressivism is referred to as naturalism, which has the view that the real reality is this universe (not a spiritual and supernatural reality). Naturalism can become materialism, because it sees that the human soul can degenerate into and have an essence like the material elements. Progressivism is also synonymous d e ngan experimentalism, which means the flow is realized and practiced experiment (scientific experiments) is the primary tool to test the truth of a theory and a science.

Progressivism instrumentalism e, because this flow assumes that the potential of human intelligence (the tool, instrument) as the main force to face and solve the problems of human life. Progressivism as eviromentalisme, because it considers the environmental flow as the field battling ta n a hand in both the physical environment and social environment. Humans are tested to what extent they interact with the environment, face reality and change. Progressivism as pragmatism because the flow is considered the largest implementer of progressivism and the implementation guidelines for more advanced education than ever before.

Based on these descriptions , it is not surprising that progressivism education always emphasizes the growth and development of mental thoughts and attitudes. Progress and progress give rise to change, while change gives rise to reform. Progress also contains values that can encourage achieving goals. Goals will appear, if the goals have been achieved. The value of a goal can be a tool if you want to achieve another goal. For example, good health benefits will bring prosperity to society.

The results show characteristic u all progressivism flow can be described as follows (Brubacher, 1972) :

1) Having a concept that humans as subjects who have the ability to face the world and the environment ;
2) Having the ability to overcome and solve problems that will threaten humans themselves ;
3) The task of education according to progressivism pragmatism is to conduct research or observation of human abilities and test these abilities in practical work. In other words, humans should actualize their ideas in real life, think and act.
4) Humans will experience development when interacting with the surrounding environment based on thoughts.
5) The negative nature of progressivism is that it does not approve of the existence of an education that is authority and absolute and all forms as found in religion, morals, politics, and science ;

Statistical literacy is progressive education which is based on several principles, including the following:

1) A person shall be free to be able to develop naturally in accordance with the potential ability for the potential ability of humans is a tool as the main force to face and solve the problems of human life.
2) Progressive learning emphasizes on observing human abilities and testing these abilities in practical work. In other words, humans should actualize their ideas in real life, think and act. In order to actualize these ideas, then someone needs to be trained with various abilities to think that the form of literacy statistics .
3) If a person develops according to his potential abilities and is trained with statistical literacy skills , then of course someone will experience progress in learning in solving problems and producing real work which is the ultimate goal in learning.

b. Flow esensialisme

Essentialism is a school of educational philosophy that applies the principles of idealism or realism by not combining the principles. Essentialism sect initially more dominant in Europe since the existence of such among educators that began to arise problems between theoretical lessons (*liberal art*) that draws the intellect with the lessons of practice (*practical art*). According to the school of essentialism, which includes *the liberal art* , namely: (1) Mastery of language includes rhetoric ; (2) Grammar ; (3) Philosophy ; (4) Natural science ; (5) Mathematics ; (6) History ; and (7) the art of beauty (*fine art*) .

The main characteristic of this school is based on the viewpoint that flexibility in all forms can be a source of changing, volatile, less focused, and uncertain and unstable views. Therefore, education must stand above the value that can bring stability, have stood the test of time, tah A n old, and values that have clarity and selected.

Then the basic pattern of essentialism is based on the view of humanism, which is a reaction to life that leads to mundane, scientifically, and materialistic. The general goal of essentialism is to form a happy person in this world and in the hereafter. The content of education is determined based on the importance of the effectiveness of personality development which includes knowledge that must be mastered in life and able to move human desires.

Learning literacy statistics bases itself on essentialist schools because some assumptions as follows;

1) Learning literacy statistics are humanistic and universal so it can be followed by all circles someone either the ordinary, middle and aristocrat.
2) Learning literacy statistics attempt to shape a person in accordance with the will of God . Therefore, learning must be dynamic, systematic, and aimed so that a person is formed according to his intellectual potential.
3) Learning statistical literacy trying to get as close to the situation and condition of a person .

4) Learning statistical literacy trying to build confidence that someone is God's creation as part of this nature. Therefore, he submits and follows the rules and laws of nature. someone as a creature with creative expression (Bruce et al., 2011) .

c. The flow of perennialism

Perennialism comes from the word perennial which means *continuing throughout the whole year* or *lasting for a very long time,* eternal or eternal and can also mean never ending. Perennial is holding on to values and norms that are timeless. This flow of social realities take the analogy of human culture, like reality Sepohon continuous flower blooming from season to season, dat a ng and go, changing colors regularly throughout the period, with symptoms that continue to exist and the same. Perennialism sees the consequences or ends of modern life that have caused many crises in various areas of human life. To treat this sick era, this flow provides the concept of a " *regressive road to cultural* " *solution* , namely returning or regressing to the past culture which is still ideal.

Development of concepts perennialisme much influenced by influential figures sep e RTI Plato, Aristotle, Thomas Aquinas. Plato described science and value as manifestations and universal laws that are eternal and ideal. According to Plato, humans by nature have three potentials, namely lust, will and reason. Aristotle's ideas were later developed by Aristotle who were closer to the world of reality. The purpose of education according to Aristotle is happiness. As Aristotelas goal, then Thomas Aquinas argued her about the world of education as an attempt to realize the capacity of (potential) which lies within individuals to become active and become aktualis.

Learning statistical literacy rests on perenialisme flow due to the following considerations;
1) Learning statistical literacy seeks to maintain p rinsip common ideal , the principle of which is related to the value of science, reality, and morality has an important role and the key holder to the success of cultural development.
2) Learning literacy statistics eager to realize the intellectual capacity of a person individually in order to be active and be real so that someone can articulate What Knowledge is *truth*, *beauty*, love to goodness.
3) To activate his intellectual potential, a person needs to be equipped with thinking skills in the form of statistical literacy abilities .

d. Flow rekontruksionalisme

The school of reconstructionism is a logical continuation of the progressive way of thinking in education. Individuals not only learn about current societal experiences in college , but must lead society towards the desired new society. The uniqueness of this school is that his theory about the role of the lecturer , yak n i as a leader in the member i role to someone big enough in the educational process.

This flow agrees with the flow of perennialism in facing the crisis of modern culture. However, it uses a different approach to that of perennialism. However, as i stilah it contains, which is trying to build a consensus which is the broadest and most probably on the main and highest goal of human life. Through educational institutions and processes, this sect wants to overhaul the old structure and build an entirely new order of cultural life. This goal can only be realized by the joint efforts and cooperation of all nations. Followers of this sect believe that the nations of the world have grown awareness and agreed to create a new world with a new culture, under one world sovereignty and under the control of the majority of mankind.

Learning literacy statistics rests on the flow rekronstruksionisme because someone did not just learn about the experiences of the present community in college , but someone should become

a pioneer society towards the desired new society. P eranan lecturer as a leader in the member i role to someone quite large in the process of learning in the classroom.

2 . Groundings Osio cultural

Developmental experts have differing opinions about the determining factors in human development. These opinions appear in theories about development which can be described as follows:

a. Empirism

The empirical theory views that individual development is determined by the experiences obtained since the individual was born , including the education received by the individual concerned. According to the theory of individual empiricism that is born like a clean white paper that has no writings on it, what the individual will become depends on what will be written on it. The role of educators in this case is very large, it is the educator who will determine the situation of the individual in the future. The theory of empiricism in the field of education raises an optimistic view that education is a sufficiently capable effort to shape an individual personality. The theory of empiricism was stated by John Locke, also often called the theory of *tabula rasa* (the human soul newborn is like a table or board wax that has not scratched) , which looked at the offspring or demeanor no role nothing (Park, 1974) .

b. Nativism

This theory states that human development is determined by the factors below by the individual at birth (natus), so that individual development depends solely on the basis. According to this theory, when individuals are born they carry certain characteristics that will determine the condition of the individual concerned, while other factors, namely the environment, including education, can be said to have no effect on individual development. This theory was put forward by Schopenhouer. The experts included in this group are Plato, Descartes, Lombroso, and his other followers. Scholars who follow this position usually defend the correctness of this conception by pointing out various similarities or similarities between parents and children. For example, if the father is a musician there is a high probability that his son will also become a musician; if the father is a painter, then his son will also be a painter; if the father is a physicist, then his son turns out to be a physicist, and so on. The main thing is, the privileges that parents have are also owned by their children.

The theory of Nativism creates a pessimistic view in the field of education, which views education as a helpless attempt to face human development. This contradicts the reality we face, because from ancient times until now people have tried to educate the younger generation, because education is something that can, needs, and even has to be done. This theory can also lead to the opinion that to create a good society, the step taken is to select members of the community. Bad members of society cannot be given opportunities to develop, because this will give offspring that are not good as well. So this theory of nativism cannot be accepted by other experts because it cannot be defended or justified.

c. Convergention

The convergence theory is a combined theory (convergence) of the two previous theories. William Stern argues that both innate nature (endogenous factors) and experience or environment (exogenous factors) play an important role in individual development. Research from Stern provides evidence about the correctness of his theory. He conducted research with twins in Hamburg. In terms of endogenous factors, twins have hereditary traits that can be said to be the same. The children are separated and placed under different environmental influences. This separation is carried out after birth. It turns out that in the end they have different characteristics from one another, even though they can be said to be relatively similar in descent, this is due to

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the influence of the environment in which they are located. Hereditary factors do not determine absolutely or are not the only factors that determine a person's personality. Then this kind of research is carried out in other places such as Chicago and Texas.

The convergence theory also says that talents already exist in each individual, but the available talents need to find the appropriate environment in order to develop. For example, every normal human child has the talent to stand straight on both feet. However, this talent will not become actual (become reality) if the human child does not live in the human society.

Learning literacy statistics on the theory of nativism, empiricism, and convergent because some view as follows;

1) Learning literacy statistics using nativism theory because it emphasizes that a person learned in accordance with the nature of the potential occurrence.

2) Learning literacy statistics using the theory of empiricism because it believes that environmental someone has a big hand in improving the ability of the stimulus response is done through a systematic and continuous.

3) Learning literacy statistics using the theory of convergence for that the potential of nature and the environment is a major force in solving various problems of life and work benefit of mankind (Wahab, 2017) .

3 . The foundation of learning theory

There are several basic learning theories in developing statistical literacy learning, including: behaviorism learning theory, cognitiveism learning theory, constructivism learning theory, and humanism learning theory .

1) . Behaviorisme

Behavioristic theory is a theory coined by Robert M. Gagne and Berliner about changes in behavior as a result of experience. This theory then developed into a school of learning psychology which influenced the direction of developing the theory and practice of education and learning known as the behavioristic school. This flow emphasizes the formation of behavior that appears as a result of learning.

Behavioristic theory with its stimulus-response relationship model places people who learn as passive individuals. Specific responses or behaviors using training or habituation methods only. The emergence of behavior will be stronger if reinforcement is given and will disappear when subject to punishment .

Figures who developed behavioristic theories include: Edward Lee Thorndike , Ivan Petrovich Pavlov , Burrhus Frederic Skinner , and Robert Gagne .

2) . Cognitifisme

The theory of learning refers to the discourse of cognitive psychology, which is based on cognitive learning activities. These learning theorists attempt to scientifically analyze mental processes and memory structures or *cognition* in learning activities. *Cognition is* defined as the activity of knowing, obtaining, organizing, and using knowledge. The main pressure of cognitive psychology is a cognitive structure, ie treasury personal knowledge of individuals that include term memory length (*long-term memory*).

The mental structure of the individual develops according to a person's level of cognitive development. The higher the person's level of cognitive development the higher the ability and skill in processing a variety of information or knowledge that it receives from the environment, both environmentally f Isik and social environment.

The researchers who developed this *cognitive theory* were Ausubel, Bruner, and Gagne. Of these three researchers, each has a different emphasis. Ausubel emphasizes the aspect of management (*organizer*) which has a major influence on learning. Bruner works on grouping or

providing conceptual forms as an answer to how learners obtain information from the environment. The figures adhering to this flow, namely; Robert M. Gagne, Jean Piaget, Irving Sigel, Edmund Sullivan, and Jerone S. Bruner. Bruner's important statement, namely; "It is very possible that every child can learn anything as long as the learning materials and instructional methods are adapted to the characteristics of the child.

3) . Constructivism

Construction means that it is constructive, in the context of educational philosophy it can be interpreted as an effort to build a modern cultured life structure. Constructivism is the basis of thinking (philosophy) *of* contextual *learning,* namely that knowledge is built by humans little by little, the results of which are extended through a limited context.

Concepts or rules that are ready to take and remember. Humans must construct this knowledge and give meaning through real experiences. With constructivism theory, one can think to solve problems, look for ideas and make decisions. Someone will understand better because they are directly involved in cultivating new knowledge, they will better understand and be able to apply it in all situations. In addition, someone is directly involved actively, they will longer remember all the concepts. The figures adhering to this flow, namely; John Dewey, Jean Piaget, Maria Montessori, and Lev Vygotsky (Piaget, 1960) .

4) . Humanism

As the name implies, humanism learning theory emphasizes individual freedom in learning. According to humanistic theory, the purpose of learning is to humanize humans. The learning process is considered successful if a student has understood his environment and himself. Someone in the learning process must try to be able to achieve self-actualization as well as possible.

This learning theory seeks to understand learning behavior from the point of view of the doer, not from the point of view of the observer. The role of the lecturer in this theory is as a facilitator for someone while the lecturer provides motivation, awareness of the meaning of one's life . Lecturers facilitate learning experiences and assist someone to achieve learning objectives. Someone plays the role of the main actor who interprets the process of his own learning experience. The figures of this genre include, namely; Benjamin S. Bloom, David R. Krathwohl, Carl R Roger, Abraham Maslow (Slavin, 2018) .

Conclusion

Based on the description above, it can be concluded that:

1. Progressive learning emphasizes on observing human abilities and testing these abilities in practical work.
2. Learning literacy statistics using the theory of nativism , empiricism, and the convergence of the stresses that a person learns in accordance with the potential of his, which can increase the ability of continuous stimulus

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