ANALYSIS OF LEARNING CONCEPTS

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Abstract

This article discusses concept learning analysis which includes the nature of concept learning, concept learning studies, factors that influence concept learning, concept learning theory, and practical principles about concept learning. Concept learning refers to all activities in which learners must learn to group two or more different objects or events into one category. Learning concepts is also learning to make the same response in groups to stimuli that have the same form. The study of learning concepts includes a stimulus response, and some feedback to students.

1. Introduction

Learning is the result of the interaction between stimulus and response. Based on the theory in learning what is important is input in the form of a stimulus and output in the form of a response. The concept of learning is a process carried out by a student or individual to increase knowledge, broaden horizons, change attitudes towards a better and more positive direction. Learning refers to changes in individual behavior as a result of a process of good or bad experiences that have been experienced. The concept of learning is very necessary for teachers in the learning and teaching process, which by learning the concept of the teacher provides progress in order to influence student learning outcomes in a better direction.

2. Method

This article discusses concept learning analysis, this type of research method is literature review analysis (literature research) this article will describe the analysis of scientific journals that are relevant to the discussion that has been selected, while the stages in this research method are (1) selecting articles, (2) collecting initial data, (3) challenges from the topic, (4) collecting supporting data, (5) producing conclusions and online recommendations.

3. Result and Discussion

A. The Nature of Learning Concepts

According to Rosser (Dahar, 2011) a concept is an abstraction that represents a class of objects, events, activities, or relationships that have the same attributes. Individuals form a concept according to the grouping of stimuli carried out in a certain way. The concept is an abstraction based on experience and no two individuals have exactly the same experience, the concept formed by the individual will have differences.

Concept is the basis or cognitive basis for giving a label, category, or term to something that refers to a number of specific examples. In general, a concept refers to a set of forms or attributes that have one or more properties

that are simultaneously associated with a rule. Ellis (1978) argues that formal conceptual learning refers to all activities in which students must learn to group two or more different objects or events into one category. Learning concepts is also learning to make the same response in groups to stimuli that have the same form.

B. Concept Learning Studies

According to Ellis (1978) the study of concept learning is as follows:

1. Characteristics of Concept Learning Tasks

The study of learning concepts includes a stimulus response, and some feedback to students. The stimulus consists of those in the form of positive examples and in the form of negative examples. These two forms vary in various dimensions, one or more of which are relevant to the concept, and two or more of which are irrelevant to the concept being studied. Each dimension can have two or more values, for example shape, color, and size.

2. Basic Paradigm

Psychologists perform two basic procedures in conceptual behavior research. The first is to use the reception paradigm, where the stimulus is given in a random order and the research subject tries to learn to group each of these stimuli. Second, it is known as the selection paradigm. The subject chooses a stimulus, one from a series of stimuli. Subjects are introduced to the entire set of stimuli at the start of the experiment and then they select the stimulus, experiment by experiment until they get feedback.

3. Attributes and Rules

An attribute of a concept is something that is owned and attached to a stimulus which is a characteristic of the stimulus that is relevant to the concept. Simple concepts have one attribute, such as color. Meanwhile, a complex concept has many attributes, such as Chinese food, European food, and others. For example the concept of human can refer to either male or female, and not a combination of male and female. So, in explaining the concept, we must refer to its attributes and how these attributes are combined to form the rules.

4. Classification of Concept Rules

There are five types of rules used in research and concept learning studies, namely as follows:

a. Conceptual rules describing a concept have only attribute assignment rules. If an object has certain attributes that describe a concept, then that object is an example of that rule.

b. The most complex conceptual rules are conjunctive rules, where a concept is explained by combining two forms or attributes. For example, a brown car is an object in the form of a car and the color is brown.

c. Disconjunction rules, explaining concept rules using relationships and / or. For example, a person who is said to be a voter in a general election is a local resident and / or owner of a building in the area.

d. Conditional rules, namely an attribute is said to be relevant depending on the presence of other concepts, if other concepts do not exist then the first attribute is irrelevant for a concept.

e. Biconditional rules, namely the rule of a concept with the existence of two attributes, usually use if and only if. For example, a red object is an example of the concept if and only if red which is not rectangular is not an example of the concept.

C. Factors Affecting Concept Learning

In general, there are two factors that influence concept learning, namely task variables and learning variables. Examples of assignment variables are as follows:

1. Positive and Negative Examples

Suharman (2005) argues, the concept learning strategy can be divided into two, namely the scanning strategy and the focusing strategy. The scanning strategy is to initially make a possible hypothesis, defend or discard it and replace it with another. The focusing strategy is initially a person to formulate a hypothesis by selecting a positive example as a point of attention, then making the formula again. After that he noted which were

considered examples of positive concepts and which were not examples of negative concepts.

2. Relevant and Irrelevant Attributes

Two things that need to be considered in the relevant attributes and irrelevant attributes. First, the more the number of irrelevant attributes in a concept learning task, the more difficult the learning task will be. Second, the more relevant redundant attributes (repetition / same), the easier concept learning will be. The relevant redundant attributes are forms that are perfectly related, so that the form can be used as a valid predictive basis for a concept. For example, each circle is colored blue, each triangle is colored yellow and each rectangle is colored red (Ellis, 1978).

3. Abstract and Real Stimulus

Relevant clarity of key (cues) helps facilitate concept learning. Children learn the concept of color faster than they learn the concepts of different dimensions or shapes. They also find it easier to learn concrete concepts like 'car', 'house', 'dog', etc. than abstract concepts. If the keys are more similar, which results in less clarity, then conceptual learning is more difficult. For example, learning the concept of "socialism" or "democracy" will be more difficult because the two concepts have many overlapping cues (Ellis, 1978).

4. Feedback and Temporal / Time Factors

Feedback is a factor that influences the success of learning concepts. Feedback will give a sign that the response is correct or not. It can even be used to guide subsequent responses in conceptual tasks. The use of the words 'right' and 'wrong' is already meaningful feedback in learning concepts, but it has little effect on humans. For humans, the postfeedback delay (the delay between the feedback given for a trial and the provision of the next stimulus) has a greater effect on performance. If the postfeedback delay is extended, conceptual learning will be more helpful (Ellis, 1978).

5. Conceptual Rules

The way of combining conceptual rules will determine the ease of learning concepts. Concepts that use conjuntive rules, the law of a concept where the two attributes must be combined, such as a 'round table', are easier to learn than concepts that use conditional rules, if A, then B and biconditional, i.e. if A then B, then A (Ellis, 1978).

6. Memory and Intelligence

The last factor that influences concept learning is memory and intelligence. Concept learning apparently depends not only on the characteristics of the task but also on the characteristics of the learner. Memory and intelligence are different individual variables that affect the ease of learning concepts. To know a concept clearly, one needs to remember the information related to the concept. Likewise with intelligence, the smarter a person is in solving conceptual tasks, the faster he learns a concept (Ellis, 1978).

D.   Concept Learning Theories

1. Association Theory of Stimulus Response

Robert (2007) argues that the oldest and most influential theory in concept formation is the principle of association or also known as associationism. The association principle says that concept learning is the result of:

a. Reinforce the exact pair of a stimulus (eg a red box with a response identifies it as a concept).

b. Non-reinforcement (a form of punishment) the inappropriate partner of a stimulus (eg red circle) with the response identifies it as a concept.

2. Hypothesis Testing Theory

Robert (2007) states that the initial stage in concept formation is to choose a hypothesis or strategy that is consistent with the object of investigation. This theory emphasizes the principle that humans are more active in carrying out tasks in the sense of actively selecting and trying or testing possible solutions to problems. This theory emphasizes the

importance of selecting hypotheses, choosing character problem solving tasks, so that this process involves cognitive theory. This theory is applied by choosing two strategies, namely conservative focusing and focus gambling.

Conservative focusing strategy, the subject is asked to choose a response among several responses in accordance with the initial hypothesis, then given the feedback with the word "true", then he has studied the concept. Whereas focus gambling, the subject is given the opportunity and varies two or more attributes when testing the hypothesis. Usually with this strategy the subject will learn the concept faster.

3. Information Process Theory

The final concept learning theory applied is information processing theory. This theory emphasizes the characteristics of human information processing in learning concepts. (Storm, Angello, & Bjork, 2011) this theory is lifted from the analogy of computer work and views concept learning in terms of the sequence of the student's decision-making process.

E. Practical Principles of Concept Learning

According to Ellis (1978), the principles in learning concepts are as follows:

1. In learning a concept must think of new examples for the concept. Must be more creative to provide additional examples apart from the examples that have been presented before.

2. Use positive examples as well as negative examples.

3. Using a variety of examples. In learning concepts, you must choose sufficient variations so that the learning process will achieve optimal results.

4. Emphasize relevant forms, so that misunderstandings do not occur. This can be done by verbalizing the relevant forms, and by simultaneously presenting both positive and negative examples.

4. Conclusion

Ellis (1978) argues that formal conceptual learning refers to all activities in which students must learn to group two or more different objects or events into one category. Learning concepts is also learning to make the same response in groups to stimuli that have the same form. The study of learning concepts includes a stimulus response, and some feedback to students. The stimulus consists of those in the form of positive examples and in the form of negative examples. In general, there are two factors that influence concept learning, namely task variables and learning variables. In learning concepts, you have to think of new examples for the concept. Must be more creative to provide additional examples apart from the examples that have been presented before.

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