

Teachers' Opinions About Learning Continuum Based on the Level of Abstractness in the Biological Resources Management Aspect

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ABSTRACT

The purpose of this study was to determine the opinion of elementary school teachers about the learning continuum based on the level of abstractness in the biological resource management aspect. This study used a survey method, conducted in Yogyakarta City and Bantul Regency. The population in this study followed the hypothetical population rules and sample convenience according to Daniel (1989), in this case the sample convenience was 156 respondents as representatives of the hypothetical population who had the same characteristics as the sample characteristics. Total of 156 respondents consisted of elementary school teachers from grade I to grade VI. The data analysis technique in this study used descriptive analysis techniques to obtain the mode score. The results of this study indicate that some of the sub-aspects of the aspect of biological resource management are taught in grade four and grade six elementary schools with abstractness levels of 2 "concrete" and 3 "kind of abstract".

Keywords: *Learning continuum, Teachers opinions, Biological resources management aspect.*

1. INTRODUCTION

The curriculum has a very important role in learning. The curriculum consists of a set of plans and arrangements regarding the objectives, content and learning materials and guidelines in the process of implementing learning to achieve certain educational goals [1]. The current curriculum applied in Indonesia is the 2013 curriculum, which includes four competencies, namely the competence of spiritual attitudes, social attitudes, knowledge and skills. These competencies must be mastered gradually by students when taking a certain educational program. In addition to competence, the curriculum also contains teaching materials that will be studied by students in which the presentation of the characteristics of teaching material in the curriculum ideally has shown a continuous gradation starting from concrete to abstract at every level of education [2]. Therefore, in preparing the curriculum, it must be adapted to the concept of learning continuum.

The concept of implementing the learning continuum is carried out by laying out several interrelated competencies at each level starting from the most concrete to the most abstract [3].

Learning continuum is a line form an abstract cotinuum that connects competencies and material aspects that must be taught by the teacher continuously and adapted to the development of students [4]. In addition to paying attention to the development of students, when determining competencies or learning themes at the elementary school level, it is necessary to pay attention to several principles including starting from the concrete to the abstract, and the scope of the theme is adjusted to the age and development of students, including interests, needs and abilities [5]. That is, in the preparation of teaching material, it must start from concrete material for the elementary school level to abstract material at the junior and senior high school levels which is adjusted to the cognitive development of students so that students learn it easier. Thus the competencies that will be mastered by students are also sustainable from what they have learned at the previous education level. This is done so that the scientific concept can be in line with the knowledge gained and there is a suitability for each level of education. The learning continuum has many roles, namely for the selection of teaching materials, discussion of learning resources, curriculum planning, school

improvement and planning [6]. The use of the learning continuum can make it easier for teachers to develop indicators of teaching material in detail and assist teachers in explaining learning concepts and presenting material according to its development stage [7].

One of the subjects that students must study in Biology, one of which is the aspect of biological resources management. The scope of material in this aspect is very broad so it is necessary to prepare material on biological resources for continuous learning. The preparation of this material is important to involve the opinions of elementary school teachers. The importance of teacher opinion is due to the teacher interacts directly with students and has experience that knows the mental and cognitive development of students [8]. In addition, teachers have an important role in learning activities so it is hoped that they will not only act as curriculum implementers but also act as curriculum developers because teachers are people who know and understand the conditions of students [9]. Meanwhile, according to Andriani, teachers are people who implement the curriculum so that teachers are expected to know the needs of students including teaching materials that are most appropriate to their age and mental development so that learning activities become more effective and achieve targeted competencies [7]. Therefore, it is necessary to develop the learning continuum so that it is easy to adjust the abilities of students according to their mental development. Based on the description above, a study was conducted to collect elementary school teacher opinions about the *learning continuum* based on the level of abstractness in the aspects of biological resource management.

2. METHODS

This type of research is a descriptive study using a survey method, which seeks to obtain data from elementary school teachers' opinions about the learning continuum based on the level of abstractness in the aspects of biological resource management aimed at elementary school (ES) students. This research was conducted at 26 elementary schools including 12 ES in Yogyakarta

City and 14 ES in Bantul Regency which was conducted from February to April 2020.

The population and sample collection in this study followed the population and sample rules according to Daniel (1989) [10], namely using hypothetical populations and samples convenience. The population in this study were all elementary school teachers in Yogyakarta Province. Samples convenience are data collection from members of the population that are easy to obtain and can provide the information needed by researchers. The sample in this study consisted of 156 elementary school teachers ranging from grade 1 to grade 6 teachers with a total of 26 people at each grade level. The data collection technique was carried out using non-test techniques, namely using a questionnaire given to the respondent (ES teacher). The data was collected using a questionnaire or a confirmatory assessment model questionnaire regarding aspects of biological resources management. The level of abstractness in this study consists of five levels, namely 1 "very concrete", 2 "concrete", 3 "rather abstract", 4 "abstract" and 5 "very abstract. The data analysis technique in this study uses descriptive analysis techniques, namely by describing the data that has been collected from the questionnaire to see the mode of the respondent's opinion data.

3. RESULT AND DISCUSSION

In this study, the aspects of management biological resources are divided into 5 sub-aspects, namely: 1) Natural balance, 2) Nature protection, 3) Benefits of biological resources, 4) Kinds of biological natural resources, 5) Conservation of biological resources. The results of research on elementary school teacher opinions about the learning continuum based on the level of abstractness in the aspects of biological resource management are presented in the mode form of the respondents' opinions. Mode is a number that often appears or has the most frequency in a data set [11]. The mode in this study is shown as a percentage. This mode data shows that there is a similarity in opinion among respondents, meaning that every respondent who has the same thoughts will be in one mode so that the bigger the mode data, the greater the agreement between respondents [12]. The results of data analysis is presented in table 1.

Table 1. Percentage of elementary school teachers 'opinions about the learning continuum based on the level of abstractness in the aspect of biological resource management

Level of abstractness	Biological resources management	ES teacher's opinions (N ^a =156)	
		Modus	Level/Class
1 (Very concrete)	-	-	-
2 (Concrete)	Sub-aspect 1: The balance of nature The harmony of nature	28%	ES ^b /VI
	Sub-aspect 3: The benefit of biological resources		
	a. Benefit in the economic field	31%	ES/IV and VI
	b. Benefit in the biological field	21%	ES/IV
	c. Benefit in the environment field	29%	ES/IV
	Sub-aspect 4: The kinds of biological resources		
	a. Plants	41%	ES/IV
	b. Agriculture and farming	38%	ES/IV
	c. Animals, livestock and fisheries	38%	ES/IV
	Sub-aspect 5: Conservation efforts of biological resources		
	a. Conservation efforts of biological resources artificially	29%	ES/VI
	b. Conservation efforts of biological resources naturally	35%	ES/VI
	c. In-situ maintenance		
	1) National park	46%	ES/IV
	2) Sea park	44%	ES/IV and VI
	3) Nature preserve	47%	ES/IV
	4) Wildlife sanctuary	47%	ES/IV and VI
	d. Ex-situ maintenance		
	1) Botanical garden	39%	ES/IV
	2) Zoo	39%	ES/IV
	3) Highway forest park	41%	ES/IV
3 (rather abstract)	Sub-aspect 1: The balance of nature The conservation and preservation	29%	ES/VI
	Sub-aspect 2: The conservation		
	a. The conservation with general purposes		
	1) The tight conservation	17%	JHS ^c /VII
	2) The guided conservation	17%	ES/VI
	b. The conservation with certain purposes		
	1) Geological protection	20%	ES/VI
	2) Botany conservation	20%	ES/VI
	3) Zoology conservation	22%	ES/VI
	4) Anthropology protection	22%	ES/VI
4 (abstract)	-	-	-
5 (Very abstract)	-	-	-

^a = total respondent

^b = elementary school

^c = junior high school

Table 1. shows that according to the respondent's opinion on sub-aspect 1 about the harmony of nature, it is at the abstract level 2 "concrete" and is taught at the sixth grade elementary school level. This opinion can be said to be illogical because when we look at the abstractness of the material, this material should fall into category 3 "rather abstract" and taught at the seventh grade junior high school (JHS) because the harmony of nature has real objects but the concept of material is abstract. Sub-aspect 3 benefits of living natural resources are at the level of abstractness 2 "concrete", on indicator a) the benefits of biological resources in the economic sector are taught at the fourth and sixth grade elementary school levels. This opinion can be said to be illogical because if a material has been taught in grade IV, it does not need to be taught again in grade VI, in accordance with Kusumawati's opinion that learning material that has been taught does not need to be taught at the next level in order to avoid overlapping teaching materials [13]. The benefits of biological resources in the economic sector should only be taught in grade IV. Indicators b) the benefits of biological resources in the field of biology and c) in the environmental field are taught at the fourth grade elementary school level. This opinion can be said to be logical because when viewed the abstractness of the material has a real object so that it is still easily observed by students.

Sub-aspect 4 concerning the kinds of living natural resources is at the abstract level 2 "concrete" and is taught at the fourth grade elementary school level. This opinion can be said to be logical because when viewed the abstractness of the material it has a real object or can be seen directly without the need for tools. Sub-aspect 5 concerning efforts to conserve biological resources is at the level of abstractness 2 "concrete", on indicators a) artificial preservation of biological resources and b) naturally, respondents think that the material is taught at the VI grade elementary school level. On indicators c) in-situ maintenance and d) ex-situ maintenance, respondents think that the material is taught at the fourth and sixth grade elementary school levels. This opinion can be said to be illogical because the material should not be taught repeatedly at different grade levels. In accordance with the level of abstractness, the material has a real object so that it is still easily observed by students and taught at the grade IV level. When compared with Ministerial Regulation No. 37 of 2018 concerning core competencies and basic competencies in the 2013 curriculum for

aspects of biological resources are at the grade IV elementary school level on basic competencies 3.2, namely comparing the life cycle of several types of living things and linking with their conservation efforts and 3.8 explaining the importance of balancing and preserving natural resources in his environment [14]. This shows that the teacher's opinion about the level of abstractness in the aspect of biological resources mostly tends to follow what is in the 2013 curriculum.

In sub-aspect 1 about the protection and preservation of nature is at the level of abstractness 3 "rather abstract" and according to respondents it is taught at the level ES grade VI. This opinion can be said to be illogical because when viewed from the abstractness of the material, it should have been taught at the seventh grade JHS. Sub-aspect 2 is about a) nature protection with a general purpose, indicator 1) strict nature protection, respondents think it is taught at the VII grade JHS level, while indicator 2) guided nature protection is taught at grade VI ES level. In sub-aspect 2 concerning b) nature protection with a specific purpose, indicators 1) geological protection, 2) botanical nature protection, 3) zoological protection and 4) anthropological protection, respondents argue that they are taught at the sixth grade ES level. This opinion can be said to be illogical because when viewed from the abstractness of the material, the entire sub-aspect 2 indicator should be taught in grade VII.

The determination of the logical or illogical statement above follows the level of cognitive development of students with material characteristics based on the level of its abstractness. This is in line with Dahar's opinion that when referring to Piaget's theory of mental and cognitive development, with age humans should learn from concrete to abstract things [15]. Students aged 7-11 years are at the concrete operational level, meaning that students are able to think rationally, but are still limited to concrete forms, while students who are more than 11 years old are at the formal operational stage, meaning that students are already capable do reasoning in an abstract, idealistic and logical way [16] [17] [18]. When compared with Permendikbud Number 44 of 2019 regarding the requirements for prospective first grade elementary school students aged 7 years to 12 years [19]. This means that grade IV elementary school students are aged 7-11 years, while grade VI students are 12 years old, where grade VI students have been able to learn abstract things. This is also in line with Jiang's opinion that the higher the level of education, the wider the

scope and depth of the material, and the concepts developed by students also increase because the initial material will be the basis for students to find the next concept [20].

Learning process activities will not be effective if in continuous curriculum development it does not pay attention to the essence of sustainable material at every level of education [21]. In curriculum development, it must pay attention to directed learning aspects, meaning that its development must be adjusted to the age development of students and be directed so that they can obtain maximum achievement in each competency for each level of education [22]. Therefore, it is very important to implement the learning continuum for material design in curriculum development.

4. CONCLUSION

Based on the results of data analysis, it can be concluded that in the opinion of respondents learning continuum aspects of biological resource management began to be taught in grade 4 elementary schools in several sub-aspects, namely the benefits of biological resources, types of biological resources, in-situ maintenance and ex-situ maintenance. Implication the results of this study is that the order of the presentation of the learning continuum aspects of biological resource management based on the level of abstractness targeted at elementary to middle school students, which is compiled based on the opinion of elementary school teachers, still needs to be improved by expanding the scale of the research area and increasing the number of respondents so that the formulation results are obtained, a more accurate grid and is expected to be a reference for teachers in learning and can be used for curriculum development by the government.

AUTHORS' CONTRIBUTIONS

The author contributions are in the process of developing instruments, collecting data in research, and conducting data analysis.

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