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Inquiry social complexity-based module analysis for increasing learning outcomes of grade V elementary school students

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ABSTRACT

This study analysed the thematic learning module using the social complexity inquiry basis. The population in this study were all educators and students in class V of SD members of the KKG Cluster II, Labuhan Ratu District, which consisted of 5 public elementary schools and 2 SDITs. All population schools in this study have used the revised 2013 Curriculum. The sample of this study was the fifth-grade students at SDN 1 Sepang Jaya, Labuhan Ratu District, totalling two classes, namely the experimental class and the control class. The approach used in this study was a qualitative descriptive approach, using research instruments, namely questionnaires, needs analysis, observation, documentation and structured interviews. Responding to the results of preliminary research, students need to develop thematic learning modules using the social complexity inquiry basis, which aims to encourage students to be more active in the learning process, not only at school but also to help students learn independently to find a concept in learning.

Introduction

Education is a process in influencing students to adapt to their environment, so that students are expected to have function in community life. The government attempts to improve the quality of education through the development of the education system, including the 2013 curriculum and the law on the education system. In the 2013 curriculum that was developed, one of them was in core competencies. Core competencies emphasize students to have good religious competence, social competence, cognitive competence and psychomotor competence. This is in accordance with Wahab Jufri (2013) "the learning process must be directed at efforts to deliver students to want to overcome every challenge in life through a number of competencies that must be possessed".

The learning process should ideally involve students actively and not only emphasize the cognitive aspects but also the psychomotor and affective aspects. The expected learning is innovative learning, relevant to the needs and active role of students in learning. This is in accordance with Wahab Jufri (2013) "the system of implementing learning and assessing student learning outcomes must change from a teacher centered pattern to a student centered pattern". Referring to the explanation that has been presented about the low ability of students in learning outcomes.

Methods

This study used a qualitative descriptive method to determine the needs of students for thematic learning modules using the social complexity inquiry basis. Data collection was undertaken using questionnaires, observations, documentation, and interviews with students and educators. Several aspects were used as a reference in making the questionnaire, namely regarding the learning that has been carried out so far, the use of learning models used during learning. The results of the data were analyzed by calculating the percentage, besides being presented in the form of a percentage, descriptive analysis was also carried out. The population in this study were all educators and students in class V of SD members of the KKG Cluster II, Labuhan Ratu District, which consisted of 5 public elementary schools

and 2 SDITs. All population schools in this study have used the revised 2013 Curriculum. The list of research population schools can be seen in the following table.

Table 1. State Primary School Name Member of KKG Group II of Labuhan Ratu Sub District

No	School Name	Number of Grade V Teacher	Description
1	SDN 1 Kampung Baru	2	
2	SDN 2 Kampung Baru	2	
3	SDN 3 Kampung Baru	1	
4	SDN 1 Sepang Jaya	3	
5	SDN 2 Sepang Jaya	1	
6	SDIT Muhammadiyah 1	3	
7	SDIT Al Kuro	2	
	TOTAL	**14**	

Source: Coordinator Data of Labuhan Batu Sub District

Research sample

The school chosen as the sample, namely the fifth grade students at SDN 1 Sepang Jaya, Labuhan Ratu District, it consisted of 2 classes, namely the experimental class and the control class. The sampling technique used in this study was proportional random sampling technique, which is a sampling technique that takes into account the considerations of elements or categories in the research population. This technique was used to determine the number of educators who will carry out the module to be developed.

Finding and discussion

The results of the needs analysis through the distribution of questionnaires conducted to fourth grade elementary school educators in Cluster II, Labuhan Ratu District, Bandar Lampung City in March 2022 obtained the following data:

Table 2. Questionnaire Result of Need Analysis

	Question	Number of Respondents	Yes/Done	No/Not Yet
1.	Do you apply curriculum 2013 during learning in the class? *	14	14/100 %	0/0 %
2.	Is your module based on KI, KD, Indicator, and learning purposes? *	14	14/100 %	0/0 %
3.	Have you arranged your own module?	14	9/64 %	5/36 %
4.	Do you know about inquiry social complexity learning model?	14	14/100 %	0/0 %
5.	Did you ever apply inquiry social complexity based learning?	14	3/21 %	11/79 %
6.	Do you know the stages that you do in developing inquiry social complexity based module?	14	9/64 %	5/36 %
7.	Do you know about critical thinking?	14	6/43 %	8/57 %
8.	Have you applied inquiry social complexity based module for students' critical thinking skill?			
9.	According to you, is it necessary to develop inquiry social complexity based module to increase students' critical thinking?	14	14/100 %	0/0 %

From the table above, the teacher has a major influence on the ability of students to form and understand a concept and student learning outcomes. Learning resources are used to simplify and facilitate teachers in interacting with students as a guide in accordance with the learning to be carried out. With this teaching material is expected to help in achieving learning objectives. Many learning resources can be used as teaching materials in learning such as places, objects, people, materials, books, events and facts. All of that will not be a meaningful learning resource for students and teachers if it is not organized through a design that allows someone to use it as teaching material. Based on this understanding, "teachers are not understood as the only source of learning, but must be able to plan and create other learning resources so as to create a conducive learning environment" (Munadi, 2010). This opinion confirms that it is important to develop media as a learning support.

The weak understanding of students' concepts is also due to the fact that the learning carried out by the teacher is generally still teacher centered. Learning from teachers who overemphasize a mere amount of information/concept, although it cannot be denied that the concept is a very important thing, but it does not lie in the concept itself, but lies in how the concept is understood by students. The value obtained has not been maximized because the learning carried out still does not pay attention to students' thinking skills and does not attract students' motivation to dig deeper into their knowledge. This causes students' learning patterns to tend to memorize, and students' thinking skills are less developed. Even though the knowledge obtained by students through discovery and analysis activities, the students themselves will be able to last longer in memory, when it is compared to obtain in other ways.

Dealing with Trianto (2011) argues that in teaching, teachers always require students to learn and rarely give lessons on how students learn, teachers also require students to solve problems, but rarely teach how students should solve problems. Therefore, improvement of learning processes and outcomes needs to be done by applying methods

or using innovative learning media so as to provide opportunities for students to be active and discover knowledge concepts, improve learning achievement and develop students' thinking skills.

In accordance with the Graduate Competency Standards, the learning objectives include the development of the domains of attitudes, knowledge, and skills that are elaborated for each educational unit. The three domains of competence have different acquisition trajectories (psychological processes). Attitudes are obtained through "accepting, carrying out, appreciating, living, and practicing" activities. Knowledge is obtained through the activities of "remembering, understanding, applying, analyzing, evaluating, creating". Skills are acquired through "observing creating" activities. Competency characteristics and differences in the acquisition trajectory also affect the standard characteristics of the process. To strengthen the scientific approach (scientific), integrated thematic (thematic between subjects), and thematic (in a subject) it is necessary to apply disclosure/research-based learning (discovery/inquiry learning).

Suryani and Agung (2012) assert that inquiry social complexity learning aims to provide a way for students to build intellectual skills (thinking skills) related to reflective thinking processes. If thinking is the main goal of education, then ways must be found to help individuals to build that ability. In social complexity inquiry learning, students will be faced with a problem that must be observed, studied, and observed, so that teaching materials are needed to support it. Teaching materials must be developed according to the applicable curriculum.

Hanafiah and Suhana (2009) describe various social complexity inquiry methods, namely: 1) free social complexity inquiry; 2) inquiry social complexity; and 3) modified social complexity inquiry. Among the levels of the inquiry social complexity method, the inquiry social complexity is a suitable method to be applied to students who are not familiar/less experienced in learning with the inquiry social complexity method. Based on the teacher needs analysis questionnaire, information was obtained that teachers rarely use the inquiry social complexity method in learning, so the researchers decided to apply the inquiry social complexity method. The inquiry learning model is carried out through observation, manipulation, generalization, verification, and application activities. The inquiry model was first conducted in 1950 and 1960 in the United States. In this inaugural activity, students are more focused on problem solving, with the aim that students can develop their critical and creative thinking skills (Callicott & Frodeman, 2009; Kao, 2016; Kitot et al., 2010).

The Inquiry Social Complexity (ISC) learning model is the development of inquiry by adding elements of Social Complexity and modifying the syntax to become Conceptual ISC. The implementation of the Inquiry Social Complexity (ISC) stage in learning is expected to empower 21st century skills and be able to explore students' potential to the fullest (Perdana, et al., 2019; Perdana, et al., 2020).
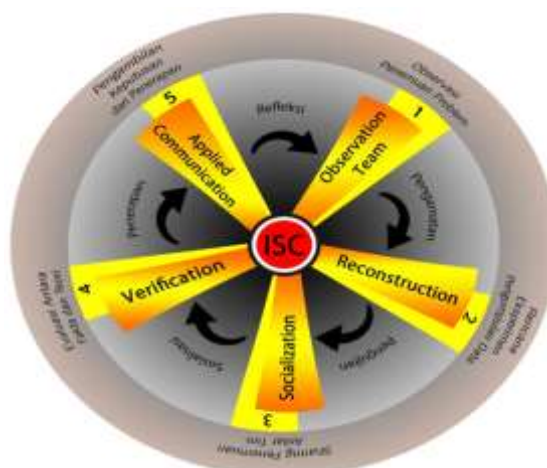
The Inquiry Social Complexity (ISC) learning model is shown in Figure 1 as follows:

Model of Inquiry	Discovery Learning	Interactive Demonstration	Inquiry Lesson	Inquiry Laboratory	Real-Word Application	Hypothetical Inquiry
Student Skills	Rudimentary Skills	Basic Skills	Intermediate Skills	Integrated Skills	Culminating Skills	Advanced Skills
S I N T A C			Observation Manipulation Generalization Verification Application			
cognitive	Low		Intellectual Sophistication			High
Teaching Activity	Teacher		Locus of Control			Student
Social Complexity	Deep		Intermediate			Shallow

Figure 1. Inquiry Social Complexity (ISC) learning model

Figure 1 shows that the element of social complexity is weak at all levels of inquiry, students who have high levels of cognitive are also weak, so it is necessary to add elements of social complexity to the study of some literature, because the social element is very important in learning to empower the abilities of students from low level to high level in cognitive and skills (Trif, 2015; Russo, Vernam, & Wolbert, 2006). The ability of a child is influenced by the skills of being able to solve problems, exchange information with other people who know more about understanding a thing. This will improve skills and understand knowledge more clearly (Woo & Reeves, 2007). The teacher as a source in guiding and providing opportunities for students to find out how far students' understanding, knowledge is in studying or studying learning (Perdana, et al., 2019; Perdana, et al., 2020).

The syntax design of the Inquiry Social Complexity (ISC) model below is in the form of a circle image, each syntax is clearly visible, equipped with the main learning activities in each syntax with colorful colors, adding to the attractiveness of the design model. The arrows are clockwise, depicting the sequence syntax marked with a number at each step. According to the experts who validated the model, the design of the model was considered attractive, and in the drawings, there were also elements that were also new. According to the syntax revision, activity learning was improved in the syntax of the observation, reconstruction, and communication application teams (Perdana, et al., 2020). The stages of activity in learning the social complexity inquiry model, there are 5 syntaxes presented in Figure 2 as follows:

Figure 2. Syntax of Inquiry Social Complexity Learning Model

The stages of syntax in learning using the social complexity inquiry model are as follows:

1) Observation Team: students work together in teams to observe phenomena that give rise to problems that will be researched and studied in learning
2) Reconstruction: students in their respective teams create ideas and collect data both qualitatively and quantitatively
3) Socialization: students in small groups express ideas between groups on the data collected, each student has an important role to participate effectively in groups
4) Verification: students in teams conduct tests and analyze the truth of the facts they find by connecting them with the theoretical basis they already know from the previous stage.

Applied Communication: students in groups express their opinions using oral and written alternately to then agree on the truth with the teacher's direction which is correct in learning and can be applied in everyday life (Perdana, et al., 2020).

The inquiry model was developed based on the assumptions of students who already have a mind ready to learn (Fine & Desmond, 2015; van Rens, 2012). As a result, students who have low academic skills will have difficulty thinking and expressing relationships between concepts, both in writing and orally. Not a few students also experience frustration due to learning difficulties (Nenadal & Mistry, 2018; Oliveira, 2010). The weakness of the inquiry learning process can be overcome by combining it with other appropriate learning elements. One alternative is the inquiry learning model that can be combined with elements of social complexity. This is possible because a person's personality can be developed by observing the behavior of others (Fischer et al 2017: Schunk & Zmmerman, 2005). Social complexity facilitates the sharing process between individuals who called collaboration-elaboration (Kham, 2013).

Social complexity is used as a driving force that shapes one's communicative and cognitive skills in learning (Fischer et al., 2017). A social theory in psychology and communication also states that knowledge and understanding of a person are developed together through social interaction (Bandura, 1977; Pritchard & Woollard, 2010; Santrock, 2010; L. Vygotsky, 1986; L.S. Vygotsky, 1999; Lev Semenovich Vygotsky, 1978). This theory assumes that understanding and meaning are developed in coordination with other humans (Leeds-Hurwitz, 2009). Social complexity emphasizes that a person's understanding is developed through a social process that is developed through interaction with other people who have a variety of different characters who can then understand something they are learning by mutual agreement and learning is a social process, not only happening within a person but nor is it passively developed by external forces (Akyol & Fer, 2010; Fischer et al., 2017).

Teachers have an active role in determining problems and the stages of solving them. With this approach, students learn more oriented to the guidance and instructions from the teacher so that students can understand the concepts of the lesson. In this approach students will be faced with relevant tasks to be completed either through group discussions or individually in order to be able to solve problems and draw conclusions independently. The factors described above conclude that there is a need for an innovation in the learning process, one of which is by making teaching materials according to the characteristics of the material to be delivered.

Dealing with Ibrahim cit. Trianto (2012) that "Teaching materials are a set of learning materials/substances (teaching materials) that are arranged systematically, reflecting the competencies that will be mastered by students in learning activities". This opinion explains that in a teaching material there must be conformity with the characteristics of each material.

According to Briggs cit. Sadiman et al. (2010: 6) that "media are all physical tools that can present messages and stimulate students to learn. Books, films, cassettes, frame films are examples." One of the teaching media that can be used by students for independent learning is in the form of modules. "Modules are teaching materials that can be used by students to learn independently with minimal assistance from others" (Munadi, 2010). These opinions explain that in the learning process media is needed to attract students' motivation and curiosity towards the lesson,

one of the media that can be developed is in the form of a module because it can be used by students to study independently and increase reading interest of Indonesian students who are still below average. neighboring countries average.

This research is an analysis of thematic learning modules using the social complexity inquiry basis. The use of the inquiry social complexity approach in making the module aims to make students more active in the learning process, not only at school but also to help students learn independently to find a concept in learning.

Conclusion

In accordance with the results of the research needs analysis above, it can be concluded that the fifth grade students of SD Negeri Members of the KKG Cluster II Labuhan Ratu District needed the development of thematic learning modules using the social complexity inquiry basis which aimed to encourage students more active in the learning process, not only at school but also assisted students to learn independently and find out a concept in learning.

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