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Students' Interest and Cognitive Ability through the Implementation of Comic Media

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Abstract

This study aimed to determine the students' interest and cognitive ability through the implementation of comic media on the environmental pollution concept at one of Junior High School in Serang City, Indonesia. The method used in this study is a descriptive research. The subject in this study was class VII.2. The class was chosen because of the information from the subject teacher that it has students who are less active in learning and obtained the lowest average score of all class VII in the first semester. The data collection technique used non-test instruments in observation sheets and questionnaires to determine the students' interest. The test instrument was in multiple-choice questions and open-ended essay to determine the students' cognitive ability. The results showed students' interest as measured by observation and questionnaires were in the high category with 56% and 88%, respectively. The average value of the students' cognitive ability is 65.59, with a good category. It can be concluded that the implementation of comic media can foster students' interest in learning. The results of this study can be a suggestion for curriculum developers to use comics as an alternative media for an exciting learning process. Future studies can focus more on specific comic components that can attract students' attention in the learning process.

Keywords: Comic Media, Interest, Cognitive Ability

INTRODUCTION

Learning activities in schools are influenced by several factors, including learning approaches, external and internal factors (Syah, 2010). The learning approaches are ways for students to learn and understand the subject matter. External factors are things outside the students, including environmental conditions both in the school and community environment. Internal factors are factors from within students, including psychological factors. Psychological aspects are internal factors affecting learning, namely learning interest and students' cognitive abilities.

Students who have low interest in a subject will not learn well (Ruiz, 2009). With the existence of interest, students will be enthusiastic to carry out their activities to affect their learning outcomes. Learning outcomes consist of three domains, namely the cognitive, affective, and psychomotor domains (Reisberg, 2007). The cognitive domain is related to intellectual learning outcomes, the affective domain is connected to students' attitudes, and the psychomotor domain is associated with the learning outcomes of skills and the ability to act. Teachers in schools mainly assess the cognitive domain because it is related to the ability of students to master the content of teaching materials (Slameto, 2010).

According to Piaget (in Anderson, 2017), the cognitive development of students aged 12-14 years is the early operational formal period categorized as adolescence. Students at the age of teenagers tend to imagine and lack experience in natural things. The teaching and learning process is one of the primary factors influencing cognitive interests and abilities. The teaching and learning process can be exciting and easy to understand if it is assisted by approaches and media that can attract students' attention.

Effective learning requires media that are easy to imitate and understand by students. Comic media is visual media with exciting and imaginative images which is liked by children and teenagers (Widodo, 2017). Comics can be used as learning media because comics can be designed according to the material to be delivered. Based on the previous research's result, comics media brought changes in student learning outcomes and creativity, this could be seen from the increase in test scores and the students's ability to create comic dialogues that matched the ecosystem material (Fasae, 2018). Therefore, environmental pollution concept is expected to bring good results.

METHOD

The research method used is descriptive, directed to describe or explain the problems studied following the facts found during the research. The problem in this study is students' interestand cognitive ability based on the observations of teachers at one of Junior High School in Serang City, Indonesia. The subject in this study was class VII.2. The class was selected by purposive sampling due to the consideration of the subject teacher that the class had students who were less active in learning and and obtained the lowest average score of all class VII in the first semester. The average score of VII.2 students in the first semester was less than the school's Minimum Learning Mastery Standard.

This study aims to determine the study of students' interest and cognitive ability by using comic media on the environmental pollution concept at one of Junior High School in Serang City, Indonesia. The instruments in this study were non-test and test. The non-test instrument consisted of a questionnaire and an observation sheet to measure student interest. Meanwhile, the test instrument consists of an objective and essay test to measure cognitive abilities.

All measuring instruments, both test and non-test, have been calibrated through validity and reliability instrument tests. The validity value used in this study is the biserial point and the KR20 formula for the reliability value because the instrument score range is 0-1 (Glass, 1998). The essay test, questionnaires, and observation sheets instruments used the product-moment correlation formula for validity values. In contrast, the reliability values use Cronbach's Alpha

formula because the scores for the essay test and non-test are not from a scale of 1-0 but have a scale range > 1. The validity analysis results obtained 20 multiple choice questions from 30 tested questions and six essay questions from 10 tested questions. The PG reliability value is 0.82, the essay reliability value is 0.84, and the questionnaire reliability level is 0.86. Therefore, it can be concluded that the instruments used are valid and reliable.

The non-test instrument using a questionnaire consists of 5 indicators: motivation, curiosity, pleasure, attention, and satisfaction with positive and negative statements. The questionnaire uses a *likert scale* with four alternative answers, namely SS (Strongly Agree), S (Agree), TS (Disagree), and STS (Strongly Disagree). In addition, the observation sheet instrument is used to observe the activities of students by using indicators of interest that can appear during the teaching and learning process, namely attention, curiosity, and activeness.

Multiple choice objective test is used to determine students' cognitive abilities in understanding the sub-concept of environmental pollution. This test uses the levels of remembering (C1), understanding (C2), applying (C3), and factual, conceptual, and procedural knowledge. In addition, the description test is to determine students' cognitive abilities at the level of analyzing, evaluating, and creating the sub-concept of environmental pollution. According to Syah (2010), the assessment to find out students' thinking process should use a test in the form of an essay. The essay test in this study used levels of C4 (analyzing), C5 (evaluating), C6 (creating), and factual knowledge, cognitive and procedural knowledge.

RESULTS AND DISCUSSION

The researcher summarized the cognitive ability test scores for environmental pollution and non-tests to measure students' interest in learning. The instrument used to obtain the cognitive ability score of environmental pollution is a validated instrument consisting of 20 multiple-choice questions and six essay questions. Each correct item was given 1 point while the incorrect got 0 point for multiple-choice questions and with a score range of 1-4 points for essay and a score of 0 for students who did not answer or answered incorrectly (does not match keywords).

Student Interest in Learning Using Comic Media

Students' learning interests were measured using observation sheets and questionnaires. Observation sheets were used to observe students’ activities during the learning process. The student's interest is included in the high category based on the observation sheet. The results of the measurement of interest in learning are shown in the Table 2.

Table 1. Categories of Students' Learning Interest Score Ranges Based on Observation Sheets

Category	Average score range	Students	Percentage
High	$x \geq 13$	19	56%
Medium	8– 12	10	30%
Low	$x \leq 7$	5	14%
Total students		34	100%

Based on Table 1, it is known that most of the students have high interest of 56%. Observations through this observation sheet observe three dimensions of interest, namely attention, curiosity, and activity, with an average range of interests using the Riduwan's (2010) formula. Observation results show that students pay attention to the teacher during the learning process. The concentration of students is focused on the learning process when observing the school environment and when reading comic media.

Students' attention is focused on things that have just been seen and observed. The newly implemented learning activities attract students' attention so that students are enthusiastic during the learning process. Based on the recapitulation of the indicators of interest raised by students from the observations, most of the students expressed agreement or disagreement. They asked questions to their groupmates or teachers. This shows the high curiosity of students towards the learning process using comic media. According to Cohn (2012), comic media can also increase the attractiveness of students' lessons with colorful images that attract attention. This is reinforced by Wahab (2017), who states that curiosity, activeness, and attention are essential factors in interest.

Based on the results of Revalina's research (2020), teachers must have the ability to optimize students' interest in an object through understanding the center of intelligence or neuroscience. The information contained in comics media with a combination of attractive image patterns and colors has a unique attraction for the brain in processing data to be meaningful. This is reinforced by Christen (2021) that combining images with the right colors can affect how to process information and is closely related to decision-making. It is hoped that the information conveyed from comic media can stay longer in students' memory with this combination.

There are 30% students with moderate interest, and 14% students with low interest. Through field notes, during observation activities, and when observing comic media, some students were busy observing their environment or comic media. This causes students' attention to be divided when their group friends express their opinions. In addition, some students do not

meet one of the three criteria of active indicators during the learning process, namely asking, answering, and expressing opinions

Students' interest in learning is also measured by a questionnaire. The average interest score of class VII.2 students is 65.57 which belongs to the high category. The complete data is to see the average interest score of class VII.2 students. The results of the measurement of interest in learning are shown in the Table 2.

Table 2. Categories of Students' Learning Interest Levels Based on the Questionnaire

Category	Average score range	Students	Percentage
High	$x \geq 60$	30	88%
Medium	40 – 59	3	9%
Low	$x \leq 49$	1	3%
Total students		34	100%

Based on Table 2, it is known that almost all students have high interest of 88%. Students' responses on the questionnaire showed that nearly all of the students stated that they had gained new knowledge during the observation activities outside the classroom and noted that the comic pictures were interesting. This is supported by the results of the media expert test showing that comic illustrations, pictures, colors, humor techniques, and comic storylines have good criteria so that the comic media in this research attracts the attention of students to read comic media. Comic is a form of graphic communication that conveys a message quickly and concisely that attracts the attention of students (Istiana, *et.al*, 2012).

According to the results of the observation sheets and questionnaires, most of the students have a high interest in the learning process with the CTL approach using comic media. The results of research by Dwiputra (2020) also shows that most students have high interest after being given comic media during the learning process. According to Rohani (1997), comic media is a bridge to foster student interest in reading because comics media attract students' attention.

Cognitive Ability of Students Using Comic Media

Assessment of the cognitive abilities of students is carried out individually. The instruments used were twenty multiple-choice questions and six essay questions. The complete data is to see the value of students' cognitive abilities. The percentage of cognitive skills using comic media can be seen in the Figure 1.

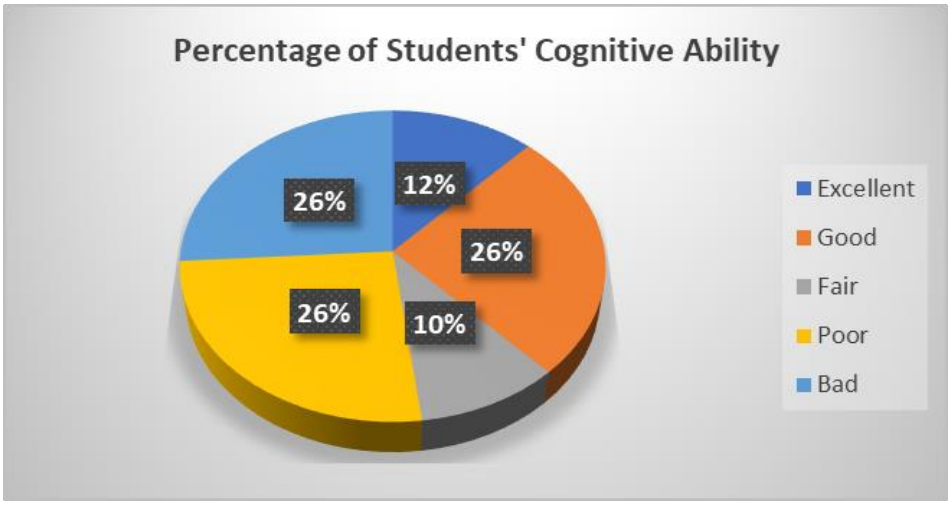

Figure 1. Percentage of Students' Cognitive Ability

Based on Figure 1, the cognitive ability scores are categorized into excellent, good, fair, poor, and bad categories based on the picture above. This is because the academic abilities possessed by students vary widely. According to Reisberg (2007), in general, students in one class have varied cognitive skills and are divided into three groups, the smart, average, and poor group.

The excellent category is 12%, and the good category is 26%, so that 38% of students have scores above 70, which is the Minimum Mastery Criteria at one of Junior High School in Serang City, Indonesia. The category is based on the students' written test results after receiving comic media learning. The *excellent* category is if students get scores in the range of 80-100. Students who fall into the *good* category get scores in the range of 70-79. This value is obtained from the sum of the multiple-choice and essay scores. Students whose scores fall into both categories mean that they have solved problems in the form of C1 (knowing) - C6 (creating). Both percentages are obtained because students can understand the subject matter with real-world situations.

The ambiguity of the subject matter can be helped by presenting the media as an intermediary. Comic media is one media that can make it easier for students to capture abstract things or formulations. The age of class VII junior high school students ranges from 12-14 years; at that age, students have a tendency to imagine and lack experience in real things (Slavin, 2011). The use of comics as a learning medium has an imaginative function to increase and develop students' imagination.

Fair category is 10%, poor category is 26% bad category is 26%, these three categories are students who have not completed the learning process because their scores are below 70.

The average value of students' cognitive abilities in class VII. 2 overall is 65.95, which is still below the Minimum Mastery Criteria score. The factors that affect the value of students' cognitive abilities in this study are the lack of comic media, forgetting factors, absorption of students, incidental disturbances, and external factors.

Comic media is a graphic communication medium to convey subject matter quickly and concisely that attracts students' attention (Smaldino, 2012). Students' attention is focused on comic media because the comic media in this study has interesting and colourful images.

Based on a test with two media experts using a questionnaire, one media expert stated that the accuracy of the terms used in the comics and the clarity and simplicity of the language used in the comics were not good. This can be seen from several parts of the comic, the language of comics regarding environmental pollution is challenging for students to understand.

In addition, the expert test results stated that the environmental pollution material contained in the comic media is still difficult to understand because the language conveyed is still less attractive than the images presented. This is supported by Eker (2014), the lack of comic media, namely comic media with the help of attractive colour images, causes students sometimes to be lazy to read the dialogues contained in comics.

The forgetting factor is the inability to recognize, remember, and reproduce previously studied material (Syah, 2010). This research was conducted in two meetings. There is a postponement of the schedule for the second meeting. The schedule was postponed for seven days due to the holding of training for teachers at one junior high school in Indonesia, so that the schedule was postponed. The delay in the schedule was relatively long from the first meeting. This causes some students to be wrong in answering questions about cognitive abilities. This is because changes in the environmental situation between learning time and recall time are too far away so that old subject matter will be difficult to remember (Syah, 2010).

In addition, the expert test results stated that the environmental pollution material contained in the comic media is still difficult to understand because the language conveyed is still less attractive than the images presented. This is supported by Rohani (1997), the lack of comic media, namely comic media with the help of attractive color images, causes students to sometimes be lazy to read the dialogues contained in comics.

Based on the results of observations, some students are slow in absorbing the material presented by the teacher. This is supported by the results of interviews with science teachers who stated that most of the class VII.2 students had average grades below other classes and were very slow in absorbing subject matter. Students who have low absorption and find it

difficult to accept lesson materials generally pay less attention to lessons and ultimately affect the value of their cognitive abilities.

Things that can interfere with student activities can be in the form of incidental events. Based on field notes, several disturbances that caught the students' attention during the learning process were students who arrived late during the lesson (first meeting), distribution of the ninth graders farewell food stamps which took approximately five minutes of core activity time (second meeting), in the middle of the test at the end of the second meeting, commotion outside the classroom made by some classes which had no teacher (no class)-disturbing students who were thinking about working on cognitive abilities. These events can lead to changes in the classroom atmosphere that can affect the child's psychology. The class atmosphere that was initially calm became noisy and not conducive, while a conducive classroom atmosphere will implement fun teaching activities (Santrock, 2008).

Based on the field notes, some students have special needs behavior; for example, some students talk to themselves, and some behave naughty during the learning process. Students who experience emotional barriers and behavioral idiosyncrasies are less able to adjust well to their environment and disrupt their learning situation.

CONCLUSION

The results showed that the students' interest as measured by observation and questionnaires was in the high category with 56% and 88%, respectively. The average value of students' cognitive abilities is 65.59, with a sufficient category. It can be concluded that students' interest is high with the use of comic media. It is hoped that the data from this research can be used as a basis for other researchers to conduct similar studies. Similar research is expected to use this type of quantitative research with experimental methods to get better results.

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