

Development of Buy and Sell Comics to Improve Counting Ability for Mild Intellectual Disability Students

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ABSTRACT

Mild intellectual abilities (mental retardation) students who have difficulty in recognizing nominal money. Therefore, it is necessary to have an attractive media to help the students in the learning process. The purpose of this study was to describe the design of the buying and selling comic media to improve the numeracy skills of mild intellectual abilities students in the class VIII Junior High School for Special Student (SMPLB) and to describe the results of the feasibility test of buying and selling comic media. This study used the Research and Development (R&D) method which has been modified into five stages. The results of this study indicate that the buying and selling comics are feasible to be used in the mathematics learning process to improve numeracy skills.

Keywords: mild mental retardation, numeracy skills, buying and selling comics

1. INTRODUCTION

Mathematics is a science that discusses regular patterns and organized structures. In the process of learning mathematics, abstract concepts can be understood by the students by providing reinforcement, so that they can be attached to their thought patterns and actions. In implementing mathematics learning, the teacher should understand students' various abilities. In learning mathematics, teachers need to pay attention to the following three things: (a) objects in learning mathematics must be produced from human inventions or creations, (b) the creation of mathematics learning is from activities that come from needs and knowledge from everyday life, and (c) once found, a mathematical object can have properties that may be difficult to understand, but with these characteristics the child gains broader knowledge.

In addition, according to Hersh (1990) mathematics is also related to the cultural history of many mathematical activities. Bishop in 1988 (Runtukahu, 1966) argued that there are six activities related to mathematics in general in the culture of every nation, including the following: counting, placing (locating), measuring, designing, playing, and explaining.

In mathematics learning, it is very structured where one ability that is mastered by students affects the next ability. If the students do not understand the first material,

they also cannot understand the second material. Therefore, they must first understand the first material to be able to understand the next and it will impact them feel stress due to learning abilities that are not the same as their friends such as often forgets and difficult to organize learning activities.

In overcoming this problem, (Kitchen & Dufala (2006) suggest rewards or reinforcement for inappropriate behavior. This is in accordance with behavioral procedures and other modifications that can be used are self-management and behavioral contracts such as by managing time by prioritizing tasks while maintaining productivity standards, and working efficiently.

In the process of learning mathematics, there are several things that need to be considered according to one of the figures named Hamil & Bavel (Runtukahu, 2014), there are three stages of the learning process namely: (a) planting the concept in question is by linking one material to the material that has been taught and in the children's life, they five senses are needed in the learning process such as eyes, ears, and tools for movement; (b) understanding, in expanding the mathematical concept that has been learned and applying it to solve a problem, teacher needs learning media to make it easier to carry out the understanding process; (c) skills, the children are trained to use mathematical concepts in solving a

problem. Intellectual disability children in understanding a concept need to be studied in depth so that they can solve problems found in the environment around them. In this case, the teacher needs aids, media or concrete object in processing.

According to Mumpuniarti (2007) the learning approach of intellectual disability students is related to previous student learning principles. The principles based on the theory of behavior include: (a) the material that must be given to students should be given from the easy first and gradually to the difficult so that students' thinking patterns can develop properly, (b) the material will be easier to understand if it follows the process learning, (c) positive reinforcement needs to be given as soon as possible so that students can follow the appropriate response, (d) the mathematics learning program must provide individual learning so that it can measure students' abilities, (e) evaluation is very necessary which functions to determine how students learn on each material, (f) the material provided by the teacher must have goals that must be achieved, (g) the material studied must be in accordance with the limits of the students' ability. this process is directly related to the potential contained in intellectual disability students, or according to the disorders experienced, and (h) the material that has been given to students must be useful in students' daily lives.

In presenting the material, principles related to learning procedures are needed and the material presented needs to be adjusted to the child's abilities. The mental age stages of intellectual disability children and their development are lower with the ages of children in general. For this reason, the material taught needs to be adjusted to the abilities of the children so that young children can understand. Comic media buying and selling can fulfill the study of the principles of learning mathematics for mentally retarded children that makes it easier for students to learn.

Mild mentally retarded children are children whose intellectual abilities are below the average of children in general. Usually children are very difficult to learn academically such as writing, counting, and reading. Mentally retarded children need special training to teach reading, counting, and writing because of their intellectual abilities. In addition, children with mild mental retardation also experience some difficulties in communicating, social interaction, doing academic tasks, being unable to take care of themselves and carry out daily activities. They need proper learning so that they are able to do work daily activities without the need for help from others regularly so that they can remember and not easily forget if they do repeatedly.

Mild mentally retarded children with abilities possessed in learning mathematics will experience various obstacles in understanding the introduction of nominal money, addition, subtraction, and exchanging

money. In the learning process of mathematics, it really requires full attention, logical thinking, and there is a need for strong encouragement in following mathematics learning, especially arithmetic material. If in the learning process students are distracted and not focused, it will cause less understanding of learning material whereas in mathematics learning, it is very structured where one ability mastered by students affects the next ability.

From the results of observations, it is found the difficulties faced by mild mentally retarded students in the learning process of mathematics especially in arithmetic such as: (1) the students' low interest in arithmetic material learning, (2) students quickly feel bored and lack of attention when the teacher is giving an explanation of material, (3) students have difficulty in introducing nominal money, addition, subtracting, and exchanging an amount of money, and (4) the learning media used in counting material by the teacher is less attractive. The above factors can affect student achievement if they do not understand the material being taught, especially the material for introducing nominal money, addition, subtracting, and exchanging money. Eighth graders have difficulty understanding and working on calculating operations to calculate the addition of currency from a nominal value of Rp. 10.000 to Rp. 50.000. The students are quite capable of recognizing nominal money from Rp. 10.000 to Rp. 50.000 but they still have difficulty adding, subtracting, and changing money so that they needs to be guided in the process.

Based from above problems, the role of the teacher in increasing numeracy skills is needed because they should be understood by every child, especially in everyday life that it is inseparable from counting activities. Almost all activities carried out daily will involve buying and selling which requires students able to understand arithmetic operations. Therefore, students with mild mental retardation must be able to master the operation of calculating currency values correctly.

In this case, learning activities in the classroom should always link the material with daily life, therefore an interesting learning media is needed to help students improve their numeracy skills. Teachers are required to determine the optimal teaching and learning strategy, which can provide insight into knowledge, and they can stimulate children's creativity by using learning media that can be used as a medium for learning activities and can help stimulate attention, thoughts, feelings, curiosity, and skills. So, children's learning can encourage a fun learning process and can achieve the goals of learning.

Comic is one of the learning media that can be used to improve children's numeracy skills. Comic is a medium in the form of images and words combined into one medium which aims to provide information to be conveyed to readers. A comic always makes use of an image with a layout. the pictures can form a story, which

is included in the form and sign. Comics are included in literary works, namely pictorial literature (Bonnet, 1998). Through buying and selling comic media, it can foster students' interest in learning numeracy concept material. The comic media is very helpful for students and can arouse students' interest in learning. This buying and selling comic book is a fictional story or an essay that is not based on a real story. Drawing techniques are made based on stories with various interesting illustrative points of view in order to attract students' interest in learning mathematics, especially simple counting.

Sudjana and Rivai (2005) state that "pictorial comic books can be used effectively by teachers as a medium in an effort to increase interest, develop vocabulary and skills which are packaged into an attractive medium." Through comics buying and selling children is expected to foster students' interest in learning to count and to continue to follow mathematics learning.

The media developed is a buying and selling comic which includes the introduction of nominal money, adding, subtracting, and exchanging money starting from Rp. 10.000 to Rp. 50.000. Comics in general are pictures with an interesting layout. It is intended that the images form a story, which is written in the form and sign. In this buying and selling comic, there is an introduction to nominal money and in the material of the comics, there are three sub-chapters. The first is addition, the second is subtraction, and the third is exchanging money starting from a nominal Rp. 10.000. In comic closings, there are Core Competencies (Kompetensi Inti / KI) & Basic competencies (Kompetensi Dasar / KD) as the basis to create media, research objectives, and author biographies on the last page and back cover of comics.

The type of buying and selling comics is a comic book presented in book form. Comic books are included in the type of fiction or engineering books. The content of this buying and selling comic book is a fictional story that is not based on a real story, the drawing techniques in this pictorial story are made based on stories with various points of view, so that, it gets interesting depiction results in order to attract students' interest in learning mathematics, especially simple counting.

2. METHOD

The method is a research and development design model. The development of buying and selling comic media to improve the numeracy skills of children with mild mental retardation in grade VIII uses a development model from (Research and Development) Sugiono (2013) which is modified from ten steps to five steps due to seeing conditions that are not possible and costs can be seen on Figure 1.

The data subjects in this study were three media experts (two special education lecturers and one educational technology lecturer), three material experts

(special education lecturers), and three expert practitioners (special school teachers). In the data collection technique uses both qualitative and quantitative data analysis techniques. Quantitative data was generated from validation trials by media experts and material experts in the form of a percentage of the results of the questionnaire feedback, while qualitative data is obtained from the results of input and suggestions based on evaluations from media, material, and practitioner experts.

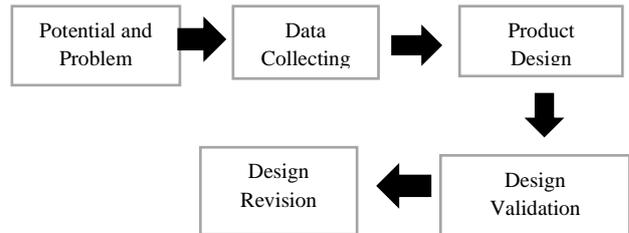


Figure 1 The Step Modification of the Research and Development Method (R&D) (Sugiyono, 2013)

The formula used to manage quantitative descriptive analysis data is presented in a percentage.

$$P = \frac{\sum X}{\sum X1} X 100\%$$

3. RESULT

The results of data analysis from this development research consisted of three experts who are competent in their fields namely the results of three data analysis results of expert media, three results of data analysis from material experts, and three results of data analysis from expert practitioners (Table 1).

Table 1 Results of Product Validation

No	Validator	Score	Qualification
1.	Media expert	91.13%	Very feasible
2.	Material expert	93.42%	Very feasible
3.	Expert practitioner	90.52%	Very feasible

The results of the score from media experts are obtained with details from experts. The first media got a score of 95.16%, the second media expert got a score of 81.45%, the third media expert got a score of 96.77%. And the average score obtained from media experts was 91.13%. The results of the score from the material expert were obtained with details from the first material expert obtaining a score of 88.16%, the second material expert obtained a score of 97.37%. the third material expert obtained a score of 94.74%. And the average score obtained from material experts was 93.42%.

The results of the score of the practitioner expert obtained by details of the first practitioner expert obtained a score of 91.38%, the second practitioner expert obtained a score of 87.07%, the third practitioner

expert obtained a score of 93.10%. And the average score obtained from expert practitioners was 90.52%. Based on the validation results that the researchers have obtained from experts (media, materials, and practitioners), buying and selling comic media to improve the numeracy skills of mild mentally retarded children class VIII is suitable to be used as a learning medium.

The results of the analysis in the form of evaluation were also obtained from suggestions or responses from the three media experts. The first material expert gave a response "As a graphic medium, this comic is good enough. Optimization in its utilization needs to be synergistic with teacher/ companion assistance, characteristics and levels of student learning performance (mild mental retardation), as well as variations in utilization with other methods or media formats, for example sociodrama. "The second media expert responded that "In terms of suitability, language use, physical appearance and presentation of the Buy and Sell Comic media, it can be said that it is appropriate to be used as a learning medium to improve numeracy skills for grade VIII mild mentally retarded children." And the third media expert gave a response "Overall the learning media feasible to be used in the test".

The evaluation was also obtained from suggestions or responses from the three material experts. The first material expert gave a response "In the money exchange material it is necessary to provide a closing sentence as a question sentence or an order for the questions that will be done by students." The second material expert gave a response "Can be used with a little revision, on theme 3 the material on money-changing meatball prices should be changed to Rp. 10.000. And the third material expert gave a response "Add a comic back cover to make it look attractive, for material in comic book media, buying and selling is okay and appropriate".

The evaluation was also obtained from suggestions or responses from the three expert practitioners. The first expert practitioner gave a response "in my opinion, the language used in the comic media is casual language, but according to standard Bahasa (*Ejaan Yang Disempurnakan*) it is not standardized." The second expert practitioner gave a response "be more detailed indicators, because the more detailed indicators are better." And for the third practitioner expert gave a response "Slide 4: Complete written nominal value from Rp. 11.000 to Rp. 19.000, because mentally retarded children find it difficult to think abstractly (guessing), Slide 7: the word "for each" should be clarified to "1 kg orange and 1 kg apple".

4. DISCUSSION

This development research resulted a product in the form of learning media in the form of buying and selling comics to improve the numeracy skills of mild mentally retarded children in grade VIII. Comic media for sale and

purchase are made according to children's needs so that children feel happy during math lessons, especially arithmetic material. In addition, from a visual perspective, starting from the cover to the content of the material are using cute illustrations and using bright colors, it can make students interested in this buying and selling comic learning media. Each character in each sub-theme is illustrated with a cartoon character, this is done because this type of learning media is a buying and selling comic book, so as a whole this comic media is illustrated as attractively as possible.

The material in the buying and selling comic media is in accordance with the mathematics material for mild mental retardation children which refers to the lesson plan (RPP / Rencana Pelaksanaan Pembelajaran) class VIII Theme 1 Beautiful Friendship, Sub-themes 2 My Friends are My Friends in Learning Schools. This is in accordance with the procedure for selecting media according to Kearsley (1984) which includes as follows: (a) identify the characteristics of the media according to the needs during the learning process; (b) identify the characteristics of learners who need special learning media in the learning process which aims to facilitate the delivery of material; (c) identify the characteristics of the learning environment according to the learning media to be used; (d) identification of practical considerations in the process of selecting appropriate media for the material; and (e) identifying economic and organizational factors that aim to determine the total expenditure in the process of making learning media.

Some of the problems faced by mentally retarded children, one of which is learning problems, according to Rochjadi (2005), mentally retarded children experience difficulties in thinking abstractly, learning must be related to objects that are concrete/ real so that students do not feel confused during the learning process. Conditions like this have something to do with short-term memory weakness in mentally retarded children, weakness in the learning process, and very difficult to develop ideas.

Learning problems experienced by mentally retarded children, there are several things that need to be considered in the learning process, namely: (a) the material being taught needs to be divided into small parts and arranged in sequence, so that, it is easy to understand, (b) the material is taught one by one and repetition is required to make it easy students remember, (c) learning activities should be carried out in concrete situations, (d) need to be given encouragement to do what the students are learning, (e) create a pleasant learning atmosphere and should avoid formal learning so that children are comfortable during the learning process, and (f) use learning media in the learning process, preferably using concrete (real) media so that students easily understand the material.

As a whole, buying and selling comic media can help students in the process of learning. This comic media can be used as learning media in the two-way learning process, namely as a teaching aid used by teachers and as a learning medium that can be used by students themselves. This was also expressed by Putri & Yuniarti (2009) as saying that “comic media has unique characteristics so that it is able to attract students’ attention, both from the level of education, socio-economy, and so on. The nature of the comics referred to here is that they contain many elements of entertainment that can make the reader amused by the stories presented”. In line with the opinion of Sudjana, Rivai (2005) argues that “comics can be defined as a cartoon-shaped media that contains stories and in it there are several characters that portray a coherent or regular story which is closely related to images designed in such a way. to provide entertainment to his readers”.

5. CONCLUSION

The media for buying and selling comic made is 19.5 cm x 19.5 cm in size, with a size that is not so large that buying and selling comic books are easy to carry everywhere. Therefore, it can make it easier for students to carry them. Using art paper, with a thicker cover, so that, it is not easily torn. The material content of the buying and selling comics contains material on the introduction of nominal money and there are three sub-themes; the first sub-theme is containing summation material, the second sub-theme is containing sub-theme, and the third sub-theme is containing material exchange money.

A sub-theme was made so that students better understand the material presented. The making of buying and selling comics uses paint Tool software SAI and Adobe Photoshop CS 6 with style cartoon illustration. This buying and selling comic has gone through the validation stage of the experts, the validation from the media experts obtained a score of 91.13%, the validation from the material experts obtained a score of 93.42%, and the validation of the expert practitioners obtained a score of 90.52%, from the validation of the three experts. So, it can be concluded that the buying and selling comic media is very feasible to be used as a learning medium.

Buying and selling comic media has weaknesses, among others: (a) making buying and selling comic media for math lessons with arithmetic material, (b) research for mild mentally retarded children grade VIII, (c) the material is still adapted to the characteristics of the

child, (d) trading comics containing counting operations starting from a nominal value of Rp. 10.000 to Rp. 50.000, and (e) cannot be disseminated.

The advantages of buying and selling comic media include: (a) learning media that are interesting, varied and communicative; (b) comic media for sale and purchase measuring 19.5 cm x 19.5 cm is easy to carry everywhere; (c) the characters in the buying and selling comic use style cartoon illustration; and (d) comic media buying and selling can add insight to students in arithmetic.

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