

Andi Musriani, Mustamin. (2014). Improving the Learning Result of the Integer Number Operation Using Card Model. *Journal of Education and Learning*. Vol.8 (1) pp. 23-28.

Improving the Learning Result of the Integer Number Operation Using Card Model

Andi Musriani *

Maros District Education Office, South Sulawesi

Mustamin **

Maros District Education Office, South Sulawesi

Abstrak

Pendidikan merupakan suatu rekayasa teaching untuk mengendalikan learning untuk mencapai tujuan secara efektif dan efisien. Konsep tersebut menjadi asas bagi guru untuk senantiasa melakukan inovasi dalam proses pembelajaran, khususnya mata pelajaran matematika yang dianggap sulit oleh sebagian besar siswa. Sebagai contoh, berdasarkan hasil pretest yang dilakukan oleh penulis sebagian besar mereka salah dalam menentukan hasil operasi dari $-3 + (-2)$ and $-3 - (-2)$. Hasil penelitian tindakan kelas ini menunjukkan bahwa terdapat peningkatan hasil belajar operasi bilangan bulat dengan menggunakan model kartu dari siklus I dengan rata – rata 7,40 menjadi 9,30 pada siklus II. Oleh itu, metode penggunaan model kartu ini bisa menjadi satu inovasi pembelajaran operasi bilangan bulat khususnya pada sekolah dasar.

Kata kunci:

Abstract

The education poses a teaching engineering to control learning to reach goal effectively and efficiently. This concept is a base of teacher for frequently to do innovation in the learning process. For example, based on the pretest result has been done of writer most of the students have wrong to determine operation result of $-3 + (-2)$ and $-3 - (-2)$. This result of classroom action research shows that there is an increase of the student result in the integer number operation by using card model from cycle I to II with an average value 7.40 to 9.30. Therefore, this using of card model metode can be one of innovation to learn about the integer number operation specially for elementary school.

Keywords: *the integer number operation, using of card model, teaching and learning mathematics innovation*

* Andi Musriani; mathematics teacher at SMA Negeri 4 Bantimurung Maros District
E-mail: ahmad_jaelani_ilyas@yahoo.co.id

** Mustamin; mathematics teacher at SMA Negeri 1 Maros, Maros District
E-mail: mustamin_sman1maros@yahoo.co.id

Introduction

The education constitutes an engineering to control learning for reaching a goal that has been planned effectively and efficiently. In the engineering process, the role of teaching is very important because it poses the activity of the teacher for transferring the knowledge, skill and value to their student so that what is transferred to have meaningful for student self and useful to community (Slameto, 2003). For facing the challenges, it has been needed the high power resource and can compete globally so that it needs the high skill of thinking, critics, systematic, logic, creative and willing to work together effectively. This way of thinking can be developed by mathematics education, it is so possible because the mathematics has a clear structure with the strength association to others, as well as patterning the deductive thinking and consistent. The mathematics also poses a tool that can be clear and simple of the condition and situation by abstraction, idealization or generalization for a study of problem solving (Pusat Kurikulum, 2006).

The reality of using in learning media

Mathematics learning management orients to teacher readiness to provide matter subject such as planning the various aspects that needs to be considered by the media used and its relevance with evaluation tool. According to document of Departemen Pendidikan Nasional (2006) that the age of junior students are characterized by the wide range of capabilities as the following; (1) able to communicate actively with their friends, (2) have a wide vocabulary of verbs, adjectives, situation, question words and conjunctions, (3) demonstrate insight and understanding about something, (4) able to express thoughts, feeling and action by using simple sentences, and (5) able to read and express something through pictures.

It is the other statement that Technology plays an important role in enriching the educational process (Cenk and Sevdane, 2013).

The integer number operation is a basic and very important subject matter for elementary school. Based on research result of Rahmiah and Mustamin (2007) have revealed that some of the previous teaching that must be considered in developing the students the cognitive ability through learning management is good, one of them is use of the media as a medium of meaningful learning. Teachers should learn, explore and utilize various kinds of instruction organization and teaching methods: inquiry learning, cooperative learning, problem-solving in daily life, role playing, simulation, collecting information, concept mapping, constructivist (Hallak, 2000).

The method of delivery or presentation of using in learning media to their students so that the learning is interesting and the students can pay the close attention to what the teacher teaches. Students can ask if they don't understand. Students can answer the questions, and furthermore what the teacher says so student can express it. In the high school learning guidelines have followed the principles of learning as the following; the principle of appreciation, concreteness and motivation, independence, cooperation, individualization, correlation and lifelong learning (Departemen Pendidikan Nasional, 2010).

The main task of the teacher creates in an atmosphere or climate of learning that can improve student's motivation to continue the learning spirit. According to Usman (1993) that with a challenging learning climate in a healthy competition and student motivation for learning, will positively impact to the achievement of optimal learning result. Contrarily, without that will not the students actively respond. Therefore, the teachers should have an ability to choose the method and at once using an instructional media in the learning process. As we know that the learning media is very helpful an instructional media delivery of content matter, so that the presence of the learning media has still been adapted at all the subject characteristics. According to author that one of media can be used to explain the integer number operation concept is use of card models with positive and negative mark. As a logic consequence inaccuracy by using of method and the learning media often causes problems to learn students such as in the learning boredom, less understand of material and finally the student becomes apathetic. Therefore, to avoid it the teacher should be quite careful, choosing and using the learning media to teach his or her students.

The various mathematics learning strategies can be used for improving the student learning motivation one of which is the teacher should do three things, (1) the teacher can move, develop of all the student capabilities, (2) to become that what has been transferred be challenge for his or her self, so that the student has intrinsic motivation to learn, (3) examine in depth of the material is transferred resulting in linkages with other knowledge. The policy in the learning innovation currently, be aware or not more toward addressed to a consumption with relative to the high Intellectual student. In fact, it shows that the student has with high intellectual is more or less 10 percent, the other word that the

education policy and reformation have implemented only favorable for 10 percent of students were proficient.

In the demonstration, the teacher and student demonstrate using card models then other student. Hence, the demonstration is always followed an experiment. Using of Card models in this research is such as a picture below:

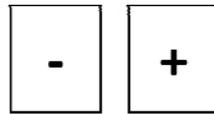


Figure 1. Card models

Research methodology

The type of this research is classroom action research. Classroom action research poses a design and evaluation procedure in collecting and analysing data systematically for determining value and beneficially in a education practice at the institution. The education practice that is examined such as process of learning management including planning, implementation, assessment of learning about mathematics education. It develops of student cognitive capabilities with using card as a media will be held 8 times of meeting. This research has been implemented for students class X with member of 27 students consisting of 10 males and 17 females.

This research refers to a collaborative research model is a research done together with researcher, teacher and school principals. This research consists of four steps, namely; (1) planning, (2) action, (3) observing, and (4) reflecting. Implementation of this action research is on two cycles, that is, cycle 1 and 2. Each cycle performed refers with a goal will be achieved.

This matter is looked at research design based on Kemmis and Taggart (2003) as a picture below.

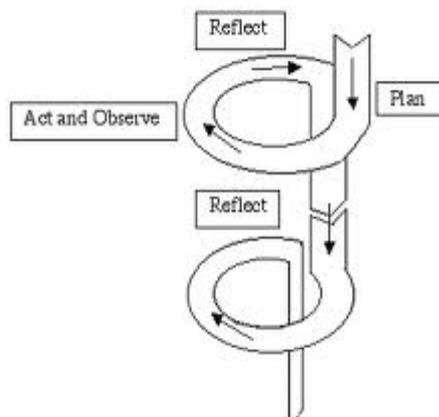


Figure 2. Cycle of action research

Learning research result to aspect of daily test using instrument which is prepared such as explained. Description of the daily test result is showed on the distribution of frequencies as below after conducted the data conversion in three scales with using a converter by Sudjjono (1995) below:

Table 1. The formula of data conversion in three scales

Conversion method	Categories
$Skor < M - SD$	Low
$M - SD \leq Skor < M + SD$	Middle
$Skor \geq M + SD$	High

where;

M = Mean of data

SD = Deviasion Standard of data

Action conduction

1. General description on the cycle I.

Plan step in this research consists of two cycles with description of implementation on the following; (1) on the cycle of one is conducted with explaining the sub topic of the integer number about addition and subtraction operation and it's term. Whereas, the conducted process is begun with planning up to reflection that explained such as; planning step, the activities conducted are; (a) to determine the matter agreed with mathematics teacher class X linkage to the curriculum of education unity level; (b) research time provides with school time learning; (c) to make the learning plan with implementation using card model the negative and positive sign in the learning to each class meeting; (d) to make the test for assessing the student capabilities in solving the problem based on the researched aspect; and (e) to make the observation sheet for recording the student activities in the learning process.

Action step. Based on the learning planning has been made with using card model as a learning media, then in the each meeting classroom the teacher explains about matter of the integer number operation especially about addition and subtraction operation and assesses students capabilities to solve of the problem. Example, the teacher demonstrates how to solve $-3 + (-2)$ and $-3 - (-2)$ of the following. Based on the operation result, we have found that $-3 + (-2) = -5$ and $-3 - (-2) = -1$.

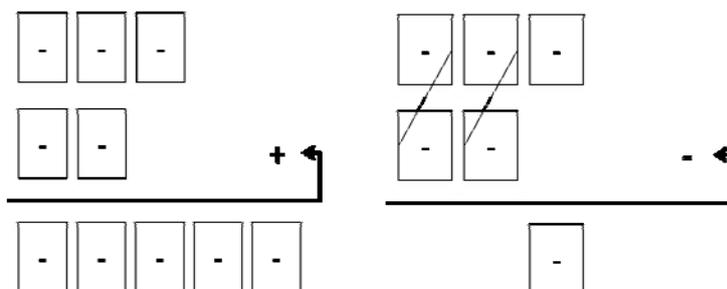


Figure 2. Addition and subtraction operation

Observation and evaluation step. Basically the conducted observation and evaluation process when the learning process is in the classroom with using observation sheet by teacher assistant as an observer. The evaluation of result learning is conducted on the last of the learning process for knowing student capabilities solving problem of addition and subtraction the integer number.

Reflection step. In this step poses analysis of result observation and evaluation was collected. The evaluation results obtained can be used as a reference to assess how extent of success and failure, while achieving goals and formulating a repair plan for the future learning (cycle II).

2. General description on the cycle II.

The cycle II is a continuation of the cycle I that action procedure is similar, but in the cycle II poses to repair of the plan till process. In this cycle makes plan for to the deep implementation of the following; (1) on the cycle I the students activities in the learning process are not good appear yet, because sometimes some students have a bad attitude and they do not attend the teacher lesson yet; (2) as the caused problem of number (1) has influenced their student learning result is still low; and (3) using card model in the learning process is not maximum yet. Therefore, strategy that used on this cycle is planning to revise about these problems especially the learning process climate the used problem solving method with using card models, the teacher should explain about the rule of students in the learning process; and the teacher appreciates to his students when they have capabilities to solve of the problems has been given.

Research result

The obtained data is analysed with qualitative and quantitative analysis. Qualitative analysis is used to analyse of strength or weakness of learning method I during on the learning process.

Meanwhile, quantitative analysis is used to analyse of quantitative data such as an exam result on the cycle I and cycle II. Results of this research is showed in the table 2 below.

Table 2. Distribution of student results on the cycle of I and II

Data	Cycle I	Cycle II	Categories
Skor < 6	5	0	Low
$6 \leq \text{Skor} < 8,5$	17	16	Middle
Skor $\geq 8,5$	5	11	High

Based on the table above has been obtained that student results on the cycle I is more better than cycle II. On the cycle I exists 5 students have low categories with score is under 6 while on the cycle II just exists 0 student. Meanwhile, on the cycle I the students have score between 6 and 8.5 exist 17 students compared on cycle II only 16 students, and the last on the cycle I the students have score 8.5 above exist 5 while on the cycle II exist 11 students. In the other aspect is average of learning result also shows that on the cycle I has average 7.39 and 9.30 on the cycle II. So that these improving of results is caused from many factors and one factor is the teacher has used card models in learning process to teach material about the integer number operation.

Conclusion and Suggestion

Based on this research results, some conclusion will be made on the following: (1) the learning process of the integer number operation can be conducted with using card models as a media; (2) using from card models in the learning process will improve the student learning result especially the integer number operation and it is term; and (3) using card models in the learning process will be good more of the learning climate condition. So that, some suggestions are proposed to school principals and especially in mathematics teacher for considering of this method in the learning process about the integer number operation, so for the next time can be improved of student learning result.

References

- Abdullah, Ambo Enre (1990). *Pokok-pokok Layanan Bimbingan Belajar*. Ujung Pandang: FIP IKIP Ujung Pandang
- Cenk, Kesan and Sevdane, Caliskan (2013). *The Effect of Learning Geometry Topics 7th Grade in Primary Education with Dynamic Geometer's Sketchpad Geometry Software to Success and Retention*. The Turkish Online Journal of Educational Technology – January 2013, volume 12 Issue 1
- Depdiknas (2006). *Standar Kompetensi Lulusan siswa pada Sekolah Menengah Atas*. Jakarta:Dirjen Dikdasmen
- Depdiknas (2010). *Acuan Pelaksanaan Kurikulum Berbasis Kompetensi*. Jakarta: Puskur_Balitbang Depdiknas
- Dick dan Reiser (1989). *A Planning Effective Instruction*. Amerika: Allyn and Bacon
- Hallak, Jacques (2000). *Science Education for Contemporary Society: Problems, Issues and Dilemmas*. Final Report of the International Workshop of the Teaching of Science and Technology. Beijing; Muriel Poisson International.
- Hamalik, Oemar (2001). *Pendekatan Baru Strategi Mengajar Berdasarkan CBSA*. Bandung: Sinar Baru Algesindo
- Usman, Moh. Uzer (1993). *Upaya Optimalisasi Kegiatan Belajar Mengajar*. Bandung: PT. Remaja Rosda Karya
- Nasution S. (1984). *Berbagai Pendekatan dalam Proses Belajar Mengajar*. Jakarta: Bina Aksara
- Permen No. 23 Tahun 2006 Tentang Standar Kompetensi Lulusan
- Pusat Kurikulum (2006). *Kebijaksanaan Umum Pelaksanaan Pembelajaran Matematika*. Jakarta: Balitbang Depdiknas

- Rahmiah dan Mustamin (2012). *Upaya Peningkatan Efektivitas Proses Belajar Sistem Koordinat Cartesius dengan Penggunaan Peta Buatan*. *Journal of Education and Learning*. Vol.6 (2) pp. 99-108
- Slameto (2003). *Belajar dan Faktor-Faktor yang Mempengaruhinya*. Jakarta: PT Rineka Cipta
- Sudjijono, Anas (1995). *Pengantar Evaluasi Pendidikan*. Jakarta: Grafindo Persada
- Sugiyono (2004). *Metode Penelitian Administrasi*. Jakarta: Biligraf Publishing
- Tap MPR No. IV tahun 1998 tentang Garis-Garis Besar Haluan Negara
- Undang-Undang Nomor 20 tahun 2003 tentang Sistem Pendidikan Nasional
- Undang-Undang Nomor 14 tahun 2005 tentang Guru dan Dosen
- Zamroni (2003). *Paradigma Pendidikan Masa Depan*. Jakarta: Biligraf Publishing