

The Practicality of Independence Worksheet In Preparing Mathematics National Examination Integrated Constructivism Approach Completed Modified Crossword Game For 6th Grade Student In Elementary School

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Abstract—Mathematics is one of subjects which included in national examination. Preparation is needed to face it by doing more exercises and having complete teaching material to make students easier to review their lesson independently. The fact is many students do not have worksheet and a set of lesson material about mathematics national examination. In order to improve student skill in answering the examination. A teaching material has been designed which completed with a simple game that can attract student more in doing mathematic national examination exercises. The purpose of this research is creating an independent worksheet of mathematic national examination preparation integrated constructivism approach completed with modified crossword for the 6th grade students in elementary school with valid and practical way. Type of this research is research and development (R&D). The limited trial had been done in SDN 12 Nan SabarisPariaman. Worksheet had been designed and validated by three experts. The instrument of this research is validated sheet for RPP and independent worksheet also questionnaire of teacher and student respons. Based on data analysis result, the validity value of teaching material is 91,87 which the level of validity is in very valid category. The value of teachers' practical is 80,28 which category is very practical and the of student practically is 86,15 which category is very practical.

Keywords—*independent worksheet practically, elementary mathematic national examination, constructivism approach, modified crossword*

I. INTRODUCTION

In education assessment standard which is designed by Education National Standard Corporation, explained that assessment done by educator, school, and government. The assessment done by educator has purpose to fix learning process. The assessment which done by school is doing in school test form. The assessment which done by government is doing in national test form. This test has purpose to evaluate competency achievement nationally (Suwandi, 2013:229). Mathematic is one of subjects which is included in national and tested in level of elementary school, junior high school, and senior high school. Students need some

preparation to face the test. Such as adding exercises and collecting complete teaching material which is very helpful for students in review materials independently at home.

Based on interview with teachers who teach in 6th grade of elementary school it can be concluded that there are still many students who do not have complete materials to face the national test. The fact shows that more than 50% students do not have note and complete materials of mathematics subject. It can influence the students' learning result and graduation level. Students with less teaching materials will get some difficulties in doing exercises as a solution, there is an integrated worksheet which has constructive approach and completed with modified exercises such as a simple game. Trianto (2012:111) in Rahmadina et all explained "LKPD included some basic activities that should be done by students to maximize students' understanding in order to form basic ability based on learning competency achievement indicator that should be gained". The existence of LKPD in teaching learning process has role to improve students' understanding about a concept of teaching material because usually in LKPD students get involve to think in solving a problem related to materials discussed.

In this research, LKPD developed as a worksheet for students which consist of collection materials to face national test worksheet can guide students to work step by step. Students' independent in learning can be developed by applying construction learning theory in teaching learning process. The transparent of constructivism approach in worksheet construction can be seen in working steps such as: (1) apperception step (reveal early conception and come students' motivational up), (2) exploration step, (3) discussion and explanation step, (4) development step, in apperception step, the worksheet designed to make students interested in learning so that it can improve students' motivation. Development step related with concept application and apply knowledge that had been gathered in discussion step.

According to Lasati (2007:47), she stated that "Constructivism approach assumes students learn one by

one about limited context then they construct their own understanding". Moreover, Aminah (2012:3) mentioned that, "Teacher's role in constructivism classroom only as facilitator not as an active answer giver". It can be concluded that by this learning constructivism students' basic knowledge have big influence in developing their own knowledge. And this approach also makes students more active in learning teaching process.

Constructivism approach can be completed with crossword game. Khalullah explained (2012:3) "Crossword is a game played by fill in the blank or the empty space with words or numbers based on the given clue. Rules applied in game can be formed in sentences and language system used". Marinda (2011:25) said, there are some rules that should be noticed in designed a crossword, they are: (1) the sentences should be well arranged so that students can read the challenge of it, (2) the crossword should give more chance for students to practice and repeat words of question and answer, (3) the game should be enjoyable and make students forget about their saturation and boredom. The most important thing is about time allocation which should be logic and appropriate with portion and depth question. One of purposes using this crossword game is to make students motivated more and not getting bored in doing exercises that have been prepared in worksheet. Beside as a motivation, students will be happy when they can finish the game correctly. Crossword in worksheet can be found in the last stage which is an evaluation type shifting and replace question type such as essay which is disposed more monotonous for students. Instruction used in crossword game makes students to be more careful and it challenge them to find the answer based on prepared boxed. By using crossword method in learning hopefully the atmosphere in classroom will be more fun so that the students can increase their achievement in study (Astuti, 2013:87). The aim of this research is to develop mathematic national test preparation independent worksheet integrated with constructivism approach and completed with modified crossword for 6th grade students in elementary school.

II. METHODS

This research is development research to produce a new product, which is a mathematic national test preparation independent worksheet, integrated with constructivism approach and completed with modified crossword for 6th grade students in elementary school. The development model is 4D development model (four D models). According to Thiagarajan in Trianto (2010) 4D model consists of 4 stages: define, design, develop, and disseminate. Developmet stage is a stage to produce independent work sheet integrated with constructivism approach and completed with validated and practical modified crossword. The developed product in this research has been validated and teachers' and students' response also has been asked related to the teaching learning process using this product.

III. RESULT AND DISCUSSION

The development process starts from the UASBN graduate analysis of elementary school mathematics subjects until the validation process worksheet independently. Worksheets that have been get validly tests on the students of class VI SDN 12 Nan Sabaris Pariaman. The analysis of the

grid on the UASBN mathematics of elementary school is in accordance with that set by the National Education Standards Agency (BSNP) 2017 / 2018. The material included is Numbers, Geometry and measurement and Data processing. Furthermore, material analysis is a reference to the material-material relevant to UASBN's mathematical grid.

The analysis of the students showed that the students class VI SDN 12 Nan Sabaris Pariaman amounted to 30 people. Based on the data analysis that has been done that students are not so interested in math lessons, learners less active in group discussions or class discussions, UN exercise questions are still lacking, the students feel bored because the monoton way to teach and bored to do the exercises of final exam preparation. Then the students also rarely repeat the lessons and exercises about the UN back at home. It is expected that the instructional materials in the form of independent worksheets preparation of national mathematics exam integrated constructivism approach equipped with crossword puzzle modification is expected to solve the problem in the analysis of the learners. The constructivism approach is in accordance with the student's condition and the stage of development so that it can assist the students in gaining their own learning experience of building their own knowledge.

The approach used in the self-employed worksheet is a constructivism approach, which directs students to work step by step, can arouse students' interest in learning so as to enhance student motivation. The self-contained worksheet is also designed with a modified crossword puzzle game. The goal is for students to feel constantly challenged in doing the exercises given in the form of a crossword puzzle modification. Crossword puzzles are in the form of letters and some are numbers. With this crossword puzzle makes students feel happy and not quickly bored or saturated in answering the matter of national exam preparation mathematics exams. The development stage is the stage to produce a self-contained worksheet integrated constructivism approach with a valid and practical modified crossword puzzle game. The result of validator assessment on validation sheet consisting of two lecturers namely lecturer of mathematics and lecturer of Indonesia as well as a primary school teacher who has been certified instructor in UASBN exam making training for elementary school level. Here is the discussion and analysis of data from the development stage.

A. Validation of Worksheet

Author Worksheet self-contained national math exam preparation integrated constructivism approach equipped with crossword modification game validated by an expert with an average validation value of 91.87 valid criteria. Validation Results Self-contained worksheets can be seen in Table I.

TABLE I. THE RESULT OF VALIDATION ANALYSIS OF INDEPENDENT WORKSHEET BY EXPERT

No.	Rated aspect	Validation Value	Criteria
1.	Substance of Material	88,89	Very valid
2.	Visual Communication Display	94,29	Very valid
3.	Learning Design	94,29	Very valid
4.	Language	90,00	Very valid
Values and Criteria Validation Worksheet Independent		91,87	Very valid

The validation worksheet validation results have been valid, it means independent worksheet developed well and can be used as learning resource for students in the learning process of UN mathematics preparation integrated constructivism approach equipped with crossword puzzle game modification. The self-developed worksheet is a learning resource for students in the face of UN mathematics and the workforce has developed steps of activities tailored to the needs of learning resources to prepare for UN, UN mathematics grid from BSNP, build their own knowledge actively and fun in discussing and working on problems.

Validation results Self-contained worksheet that shows valid value criteria is due to the independent worksheet created by the researcher is in accordance with the objectives to be achieved is to obtain self-employed national exam preparation mathematics integrated constructivism approach equipped with a valid crossword puzzle game. The self-developed worksheet has incorporated components of the constructivism approach, material descriptions and action steps of the self-employed Worksheet. Because of that, the validator gives a valid value because the independent worksheet developed by the researcher has met the appropriate criteria of development goals. This is supported by Prasetyo and Sumarno who conveyed that the valid Worksheet is the Worksheet that developed in accordance with the purpose of development. Opinions by Prasetyo and Sumarno is supported by Sudrajad (in Rahmadani et al) it is already appropriate with the content and construction.

B. Practical Worksheet

The results of the questionnaire analysis of teacher and student responses to the self-contained national exam preparation of national mathematics exam integrated approach to constructivism equipped with a crossword puzzle game modification is practical in its use in the learning process. Results of teacher and student response analysis can be seen in Table 2.

TABLE II. TEACHERS AND STUDENTS' RESPONSES TO PRACTICE WORKSHEET INDEPENDENT PREPARATION UN MATHEMATICS INTEGRATED CONSTRUCTIVISM APPROACH EQUIPPED WITH CROSS FASHION PUZZLE GAME

No.	Rated aspect	Value	
		Teacher	Student
1.	Preliminary activities	83,33	88,33
2.	Core activities	82,50	87,11
3.	Closing Activity	75,00	83
	Value	80,28	86,15
	Criteria	Very Practice	Very Practice

This means that the self-contained Worksheet integrated constructivism approach equipped with a modified crossword puzzle developed in the learning introductory activity can assist the teacher in explaining the learning objectives and the scope of the material to the students in order to be easy to learn and remember. In the core activity of self-help sheets can help teachers in providing broad information, can help teachers in creating students' activity in learning, giving tasks and discussion to students, so that teachers can play a good facilitator in

learning activities practical criteria because it helps the teacher in provides learning motivation for students who have not understood the material through this independent worksheet. In closing activities the teacher's learning is greatly helped by the self-employed worksheet developed this can be seen from assisting the teacher in the student's ability in receiving the material and helping the teacher in guiding the students to conclude the lesson.

Student's Response to Practice The self-contained worksheet used during the integrated learning constructivism approach equipped with a crossword puzzle game is known to be very practical. This means that students are greatly assisted in understanding the objectives to be achieved and the scope of the material using independent worksheets of national mathematics exam preparation integrated constructivism approach equipped with modified crossword puzzles at the introduction stage. At the core activity stage students learn to feel motivated to learn and understand the material by using the help of independent worksheets in learning mathematics to face the preparation of national mathematics exam. Students can actively build their own knowledge in which the teacher only acts as a facilitator. Worksheets with customized crossword puzzles make students feel happy and challenged in working on the questions. Students are helpful in concluding lessons at the closing stage. This is in line with According to Depdiknas (2006) LKPD is the sheet of tasks that must be done by learners, activity sheets are usually in the form of instructions, steps to complete a task.

Overall it can be concluded that the self-prepared national Worksheet preparation of mathematics mathematics integrated constructivism approach equipped with modified crossword puzzle game developed is practical. According Sugiyono development is a method to develop new products or test products that already exist and test the practicality of these products (Sugiyono, 2008: 407). According to Arikunto (2008), Sukardi (2011), Purwanto (2009) (in Rahmadani dkk) A product can be said as a good practical product if the possibility in using that product is big. Beside, a practical product can be seen in the way of using it, the usage time, the attractive of product toward students' interest and can be interpreted easily by teacher expert or other teachers.

IV. CONCLUSION AND RECOMMENDATION

A. Conclusion

Based on the development and trials of the self-contained Worksheet, the self-prepared Worksheet preparation of the national mathematics exam integrated constructivism approach is equipped with a modified crossword puzzle game for grade 6 elementary school students through development research using highly valid 4-D models development models and very practical. The resulting self-produced worksheet is interesting for students to learn. The material presented has relevance to the student's real life. Self-contained worksheets with modified crossword puzzles allow students to be more challenged and motivated and happy in working on mock issues. Integrated worksheets integrated constructivism approach train students in actively building their own knowledge. The independent worksheets produced through this study can

also support the learning process for both teachers and students in preparation for the national mathematics exam.

B. Conclusion

Based on the research that researchers have done, the researchers suggest things as follows

- a. Teachers should pay attention to the readiness of students to learn to make the learning process more optimal
- b. A limited trial is needed in other schools to better understand how the self-employed Worksheet worksheet has been created by the researcher.
- c. For primary school teachers to use self-contained national exam mathematics preparation mathematics integrated constructivism approach equipped with crossword puzzle modification as an alternative learning tool with different approach for elementary school students of class VI in preparation for the national exam mathematics

REFERENCES

- [1] Aminah. Neneng, "Pendekatan Konstruktivisme Paradigma Baru dalam Pembelajaran Matematika di Sekolah", Jurnal Euclid, 2012.
- [2] Astuti. Heni, "Efektivitas Penggunaan Media TTS dan Kartu Soal di dalam Metode Diskusi pada Materi Koloid Kelas XI Semester Genap SMA N Colomadu TP 2011/2012", JPK:UNS, 2013.
- [3] Badan Standar Nasional Pendidikan (BSNP), Tentang Kisi-kisi ujian sekolah berstandar nasional tahun pelajaran 2017/2018.
- [4] Depdiknas, Panduan Pengembangan Bahan Ajar, Jakarta: Depdiknas, 2008.
- [5] Khalullah, "Permainan TTS sebagai Media dalam Pembelajaran Bahasa Arab", Jurnal Pemikiran Islam, 2012.
- [6] Lasati. Dwi, "Penerapan Pendekatan Konstruktivisme pada Pembelajaran Teorema Pythagoras di Kelas 8 SMP", Jurnal Pendidikan Inovatif, 2007.
- [7] Marinda. Kurnia Sari, "Penerapan Media TTS pada Pembelajaran Stenografi dengan Model Pembelajaran Berkelompok Tipe NHT untuk Meningkatkan Semangat Belajar Siswa di Bidang AP KLS XI AP di SMK TAMSIS Kudus", Skripsi, UNS, 2011.
- [8] Rahmadani. dkk., "Pengembangan Lembar Kerja Siswa Biologi Berorientasi Pendekatan Kontekstual Pada Materi Pewarisan Sifat untuk Kelas IX", Jurnal Penelitian Pendidikan Universitas Negeri Padang, 2014.
- [9] Rahmadina. dkk., "Persepsi Guru Terhadap Penggunaan Lembar Kegiatan Peserta Didik Di Smp Negeri 3 Terbanggi Besar Lampung Tengah", Fakultas Keguruan dan Ilmu Pendidikan Universitas Lampung, 2017.
- [10] Suwandi, "Evaluasi Pelaksanaan Ujian Akhir Sekolah Berstandar Nasional (UASBN)", Jurnal Pendidikan Teknologi dan Kejuruan, 2013.
- [11] Trianto, Model Pembelajaran Terpadu Konsep, Strategi, dan Implementasi dalam Kurikulum Tingkat Satuan Pendidikan (KTSP), Jakarta : Bumi Aksara, 2010.