

Innovative Origami Handbook As Teaching Tool In Grade III

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Abstract—The learning and teaching in SDN Srikaton had not applied handbook for paper-folding because it had not been available. The teaching tool usage will stimulate the students' creativity, including handbook for paper-folding. This investigation aims to study the feasibility of the handbook for paper-folding and to find the difference of the grade 3 students' learning outcomes in SDN Srikaton 01 before and after using the origami handbook. I applied qualitative research particularly Research and Development. The samples in small-scale testing are 9 students and the samples in large-scale testing are 47 students. I applied random sampling to determine the samples. The data was collected through enquete filling, interviews, and documentation. The data was analyzed using normalitas test, *N-gain* test and dan T-test. The study shows that : (1) the origami handbook was designed using *Adobe Photoshop* in 8 types of origami shapes, (2) feasibility study conducted by media analyst shows score 95%. It shows that the handbook is highly testable. While the lesson materials analyst gave score 94%. It shows, too, that the handbook is highly applicable, (3) I found the difference between the average grade point for Arts, Culture, and Craftsmanship subject mainly origami lesson before and after using the handbook which was shown that $t_{\text{value}} > t_{\text{table}}$ or $7.95 > 2.228$. The conclusion of the study is that there is significant difference between Arts, Culture, and Craftsmanship learning outcomes before and after the usage of the origami handbook.

Keywords—handbook, origami; art, culture and craftsmanship learning results.

I. INTRODUCTION

Education is one of basic needs of humankind to adapt to the advance of science and technology that will have impact to the more complex life. Through education, it is expected that everyone has adequate knowledge and experience to compete in reform age. Pursuant to National Education System Act (20/2003) (*Undang-Undang Sistem Pendidikan Nasional Nomor 20 Tahun 2003*) Article 1 Section 1, education constitutes the conscious systematic measures to create learning atmosphere and process in order that the students actively develop their individual potentials in order to religious and spiritual power, self-control, personality, intelligence, good behavior, as well as the skills needed by themselves, people, nation, and state.

The Act (20/2003) (*Undang-Undang Nomor 20 Tahun 2003*) Article 37 Section 1 on National Education

System, Curriculum of Primary and Secondary Education is obliged to contain arts and culture. Pursuant to Ordinance of Government of Republic of Indonesia (32/2013) (*Peraturan Pemerintah Republik Indonesia Nomor 32 Tahun 2013*) on National Education System particularly subject of arts and culture is not only included in one subject because it covers all life aspects.

Susanto (2016:261) stated, Arts, Culture, Craftsmanship teaching contains four aspects, including: fine arts, musics, dancing, and crafts. According to Ki Hajar Dewantara (in Bastomi 1993:20), arts teaching is one of the determinant factors in terms of building the children's character and can be made as basic of education in terms of building the psychology and personality, the good behavior, as well as the subject matter at schools because of its multilingual, multidimensional, dan multikultural existence. Multilinguality aims to develop the children's self-expression skill. Multidimensionality means that it develops basic competencies including perception, knowledge, comprehension, analysis, evaluation, appreciation, and productivity functioning to balance the right and left brains, by combining the elements of logics, ethics, and esthetics. And multiculturalism aims to grow the children's awareness of and appreciation to the diversity of local and global cultures in order to have appreciative, democratic, civilized, and harmony-keeping behavior in the complex society and culture.

Regulation of Minister of Education (23/2006) (*Peraturan Menteri Pendidikan Nasional Nomor 23 Tahun 2006*) on Competencies Standard of Graduates for Primary and Intermediate Schools states that esthetical subjects aim to build the students' character into the human being who have the taste and the understanding of arts. To create the best learning, we need good planning that can start from the provision of teaching tools, methods, and learning sources such as books because they are the tools to ease the students' understanding about the key lessons.

The implementation of Arts, Culture, and Craftsmanship learning in grade III of SDN Srikaton 01 complied with standard of teaching process but it did not work best. Activities during the ACC learning are only singing and drawing pictures. During the craftsmanship learning, the teacher only taught the students the simple

foldings because he/she did not have the handbook, particularly on paper folding. The conducted assessment is also too general and not integrated so that we cannot see which skills the students have not mastered. Paper folding as the lesson material for grade III is included into the development of Basic Competency 7.3, i.e. making the things able to be moved by the winds from paper, so origami has not been that in the best way.

According to Robert J. Lang (1988) Origami is the art of folding paper. Origami is derived from the word "ori" originated from the word "oru" which means to fold and the word "gami" originated from the word "kami" meaning paper. So, *origami* means folding paper. Paper-folding skill lesson has been taught from *Playgroup* to Kindergarten, starting from folding paper into fan, flowers, to animals.

The interview classroom teacher of grade II SDN Srikaton 01 who is the arts and culture teacher too for ACC subject for grade III shows that there is not specific book containing the guide to make handicrafts such as art of folding paper. To improve the students' creativity during ACC (SBK) learning, the teacher needs the attractive learning sources in order to generate their enthusiasm, interest, as well as to activate the teaching and learning process in the classroom, and to solve the problem, the teacher would better use the origami handbook.

Pursuant to Regulation of Minister of Education (2/2008) (*Menteri Pendidikan Nasional Nomor 2 Tahun 2008*) Article 1 on Books, it is stated that the learning sources can be textbooks, handbooks, enrichment books, as well as reference books. The handbook contains principles, procedures, description of the main lesson materials, and learning model.

In line with that issue, Supriyo previously conducted study in 2003 titled "The Impact of Textbooks and Printed Books on Grade XII Students' Social Science Learning Outcomes in MAN 1 Marga Tiga Lampung Timur Regency in 2013/2014 School Year" (Supriyo, *Jurnal Pendidikan Ekonomi UM Metro Vol. 3 No. 1 Tahun 2015*). The study shows that the usage of textbook as one of learning sources has positive and significant impact on grade 12 students' social science learning outcomes in SMA Negeri 1 Marga Tiga Kabupaten Lampung Timur during 2013/2014 school year. (Supriyo, *Jurnal Pendidikan Ekonomi UM Metro Vol. 3 No. 1 Tahun 2015*).

The study conducted by Sedanur Cakmak, Mine Isiksal & Yusuf Koc in 2014 on "Investigating Effect of Origami-Based Instruction on Elementary Students' Spatial Skills and Perceptions". The study shows that origami-based learning has significant impact on the relationship between the skill and the knowledge of the primary students. (Sedanur Cakmak dkk, *The Journal of Educational Research Vol. 107 No. 1 in 2014*). The investigation conducted by Lisnani, Ilma R dan Somakim (2013) titled "The Learning of Two-Dimensional Figure Using Fable titled "Dog Catches Cat" and Tangram Puzzle for Grade II Students" "*Desain Pembelajaran Bangun Datar Menggunakan Fabel "Dog Catches Cat" dan Puzzle Tangram di Kelas II SD*". The investigation shows that origami usage can

help to find the students' mathematical creative-thinking skills in the introduction to two-dimensional figure. (Lisnani, et.al., *Jurnal Kreno Vol. 4 No. 1 Tahun 2013*)

The study conducted by Peter Akayuure, S.K.Asiedu Adde and Victor Alebna (2016) titled "Investigating the Effect of Origami Instruction on Preservice Teachers' Spatial Ability and Geometric Knowledge for Teaching". The research shows post-test results in control classroom has difference from experimental classroom. (Akayuure, *International Journal of Education in Mathematics, Science and Technology Vol. 4 No. 3 Tahun 2016*).

The study conducted by Hsi-Hsum Yang and Sheng-Kay Yin (2016) titled "A Study of Elementary School Students' Geometric Reasoning Using Digital Origami Simulasi Tool". The study shows that the digital tools for origami simulation in geometry lesson can help the students improve their performance. (Yang, *The International Journal of E-Learning and Educational Technologies in the Digital Media Vol. 2 No. 1 Tahun 2016*). The problems in this study are: 1) What is the design of origami handbook for grade 3 students like? 2) How feasible is origami handbook for grade 3 students? 3) How effective is origami handbook for grade 3 students?. The objectives of the research are 1) to find what the design of origami handbook for grade 3 students is like, 2) to study the feasibility of the origami handbook conducted by media analyst and lesson materials analyst, 3) to find the differences between students ACC learning outcomes before and after the usage of origami handbook.

II. METHOD

The study applied quantitative method particularly Research and Development. Borg and Gall (1998) (quoted by Sugiyono, 2015:28) stated, research and development can be defined scientifically as scientific methods to study, to design, to generate, and to test the validity of the created product. The activities in research and development can be abbreviated into RDPE (Research, Designation, Production and Evaluation). This investigation uses ten phases of research and development model referring to Sugiyono (2015:409) and were modified with Borg and Gall theory, i.e.: 1) Problem identification, 2) Information Collecting, 3) Designing Preliminary Form of Product, 4) Preliminary Field Testing, 5) Preliminary Product Revision, 6) Small-Group Field Testing, 7) Operational Product Revision, 8) Large-Group Field Testing, 9) Main Product Revision, 10) Final Product.

Samples in the small-group testing are 9 students and the samples in large-group testing are 47 students. The sampling method I applied was random sampling with samples from 5 schools. The data was collected through questionnaires filling, interviews, and documentation. According to Nazir (2011:174) data collection is systematic and standard procedure to get the necessary data. Before being analyzed, the data must pass the *Microsoft Excel 2007*-assisted normality, N-gain, T tests.

III. RESULTS AND DISCUSSION

A. Development Of Origami Handbook

Kurniasih (2014:69) stated, there are some criteria that should be considered in the book composition such as attracting the readers' interests and attention, challenging to stimulate the readers to analyze, referring to the cognitive, psychomotor, and affective aspects, as well as in accordance with their development.

Handbook as the teaching tool was also explained in the book written by Kustandi (2013:8) that teaching tool is the tool that can help the learning and teaching process and functions to elucidate the meaning of the conveyed message, so it can attain the learning objectives better and more perfectly and it is expected to give benefits, i.e. it can improve and direct the children's attention to generate the learning motivation, the more direct interaction between the students and their environment.

The handbook that I developed the the handbook in which there is knowledge concerning what origami is also what the steps to create a form in origami are, it is expected to generate the students' creativity in terms of creating crafts. In composing handbook, I referred to the theories stated by scholars. The tools usage is very helpful to improve the creativity in a learning. Based on the theory stated by a scholar, I developed origami handbook for grade III students, it aimed to habituate the hand skill as well as to help the student memorize. The origami handbook contains the lesson materials about origami, description of the shapes of origami in form of new knowledge about the shape and also the steps to create the origami in the final part of the book, and also added with the questions to find how well the students comprehend the origami lessons.

During the testing in SDN Srikaton 01, SDN Srikaton 02, SDN Tamansari, SDN Sidoluhur and SDN Sumberjo, the students were so enthusiast in the learning, they were very interested in in origami because in the origami learning there were only basic foldings delivered such as making aeroplane and fan.

B. Origami Handbook Feasibility

The assessment conducted by lesson materials analyst and media analyst was used to find the feasibility of the origami handbook. The assessment was conducted by distributing questionnaire consisting of several criteria I have determined referring to the existing theories. The assessment was also aimed at finding the strengths and weaknesses of the composed handbook to then be made the guide by me to revise the created handbook.

The assessment conducted by lesson materials analyst shows score 95 (highly feasible). There were still weaknesses and mistakes found in terms of terminologies and words typing. The assessment conducted by media analyst shows the score 94 (highly feasible), it still needed revision in terms of coloring which was less contrast and there were numbering mistake.

Generally, from all the scores given by the media and lesson materials analysts from the conducted assessment, I can draw a conclusion that the origami

handbook is feasible and can be experimented to grade 3 students.

C. Effectiveness Of Origami Handbook

The origami handbook effectiveness can be viewed from the experiments conducted in 5 primary schools, i.e. SDN Srikaton 01, SDN Srikaton 02, SDN Tamansari, SDN Sumberjo and SDN Sidoluhur 1. The effectiveness level of the handbook can be viewed from the the difference of learning outcomes in the studied primary schools, i.e. SDN Srikaton 01 between the learning outcomes before applying the handbook (*pretest*) and the learning outcomes after applying the handbook (*posttest*). The average *pretest* score was 57.36 while the average *posttest* score was 89.81. From those outcomes, I found that the average difference between *pretest* and *posttest* scores was 32.45.

In addition to being viewed from the difference between *pretest* and *posttest* scores, the effectiveness can be viewed from the responses given by the teacher and the students. The response given by the students to the handbook is 100% and the score of the response given by the teacher to the handbook is effectively applicable.

In general, the study shows that the handbook is effectively used to improve the students' learning outcomes in the origami lesson. It is shown in students' learning outcomes which means 100% mastery, i.e. extending the score of learning mastery criteria, i.e. 75.

IV. CONCLUSION

The conclusion that I can draw are a) Design of the origami handbook was made based on the analysis of the teacher's and the students' necessities, the design also will have impact on the effective development of the media and can give positive impact on the students' learning outcomes, b) Based on the score given by the lesson materials analyst, i.e. 94%, the handbook is highly testable and the one given by media analyst, i.e. 95%, it is also applicable in the Primary Schools; c) The application of the origami handbook as teaching tool to grade 3 students could improve the students' learning outcomes the initial average which was 60.63 into 89.81 or *N-gain* improvement score was 0.74.

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