Development of Spot Capturing Problem Based Models for Growing Elementary School Students' Character

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Abstract

This study aims to develop a spot capturing problem-based model that teachers can use to foster student's character values in elementary schools. The type and the research design used are Research and Development (R&D) according to Borg & Gall with research methods using experimental quasi one group pretest posttest study. The research data was taken using instrument observation sheet and questionnaire then was analyzed using quantitative descriptive percentage. This study produced a spot capturing problem-based model consisting of six learning steps: (1) doing students' orientation, (2) organizing students, (3) conducting investigations and troubleshooting, (4) presenting the investigation results, (5) evaluating and reflecting, (6) following-up. The validity of the problem-based spot capturing learning model was obtained from an expert validation assessment with a score of 85.7%. The results of the limited trials show that the problem-based spot capturing model is effective to cultivate the character of the students in the elementary school: caring character obtained a score of 78% (good) and responsible character obtained score of 82% (very good). Spot capturing model based on practical problems used in elementary school learning is seen from student and teacher response questionnaire obtained an average score of 82.5% (practical).

Keywords: problem-based spot capturing model, character, elementary school students

Pengembangan Model *Spot Capturing Problem* untuk Membangun Karakter Siswa Sekolah Dasar

Abstrak

Penelitian ini bertujuan untuk mengembangkan spot capturing problem-based model yang dapat digunakan guru untuk mendorong nilai karakter siswa di sekolah dasar. Jenis dan desain penelitian yang digunakan adalah penelitian dan pengembangan menurut Borg & Gall dengan metode penelitian menggunakan penelitian kuasi eksperimental satu kelas pretest-posttest. Data penelitian diambil dengan menggunakan lembar observasi dan kuesioner kemudian dianalisis dengan menggunakan prosentase deskriptif kuantitatif. Penelitian ini menghasilkan sebuah model yang dinamakan spot capturing problem-based model yang terdiri dari enam langkah pembelajaran, yaitu: (1) melaksanakan orientasi siswa, (2) mengorganisasikan siswa, (3) melakukan penyelidikan dan pemecahan masalah, (4) menyajikan hasil penyelidikan, (5) melaksanakan evaluasi dan refleksi, (6) melaksanakan tindak lanjut. Validitas model pembelajaran pengambilan gambar berbasis masalah diperoleh dari penilaian validasi ahli dengan skor 85,7%. Hasil uji coba terbatas menunjukkan bahwa model pengambilan gambar berbasis masalah efektif untuk menumbuhkan karakter siswa di sekolah dasar yaitu: untuk karakter kepedulian diperoleh skor 78% (baik) dan untuk karakter yang bertanggung jawab diperoleh skor 82% (sangat baik). Model pengambilan gambar berdasarkan permasalahan praktis yang digunakan dalam pembelajaran sekolah dasar terlihat dari kuesioner respon siswa dan guru dengan perolehan skor rata-rata 82,5% (praktis).

Kata kunci: problem-based spot capturing model, karakter, siswa sekolah dasar

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INTRODUCTION

In the last decade, increased attention has been given to character education programs in schools. The National Education Association policy has stated the importance of building the learning achievements and the character of each child (Benninga et al., 2006). Education is considered as a media that is most effective in developing the potential of students in the form of attitude, skills and insight. Therefore, education is continually built and developed so that the implementation process produces the expected generation.

In the implementation of the 2013 curriculum, thematic learning is applied in elementary education level i.e. elementary and junior high, so this learning is possible to make students can obtain a whole knowledge and develop a balance between the development of spiritual and social attitudes, curiosity, creativity, cooperation with intellectual ability and psychomotor (Permendikbud 67, 2013). Learning should be more varied in applying methods, models and strategies to optimize the potential and foster the value of the character in the student's self.

The spot capturing problem-based model is a collaboration learning model composed of spot capturing and Problem-Based Learning (PBL) method which has interesting characteristics for students in learning. Spot capturing problem-based model is oriented towards the use of technology in the learning process that uses digital technology to take pictures, photographs or videos that are based on the visualization of a theme from a particular problem, and invites students to interact to conduct inquiry and learning activities in the classroom or outside the classroom. Widiasmadi (2010) stated that spot capturing method giving the widest possible motion to the students so that global brain stimulation can radiate optimally. While PBLs have the potential to help students learn how, how to work together and apply what they learn to understand and solve real-world problems (Hmelo-Silver, 2004).

Critical awareness and student's involvement are central to problem-solving skills, as well as providing philosophical principles to support problem-based learning (Andrew, 2013). An active involvement in their learning will bring about the values embedded through life experience and a sense of empathy towards the environment. Students need an education section that connects them to communities outside the school boundaries to appreciate what is happening in the community. Character is the nature of a person in responding to situations and involvement morally manifested in real action through behavior (Lickona, 2012).

Relating to the context of cognitive development according to Piaget, elementary school-aged children is at a concrete operational stage. According to Santrock (2002) concrete operational stage, lasting from 7 to 12 years old. At this stage, children can do a logical reasoning instead of intuitive thinking as far as thinking can be applied to specific or concrete examples. According to Havighurst (in Desmita, 2009) the developmental tasks of elementary school children include; mastering physical skills, learning to play a social role, being able to participate in society, acquiring number of concepts necessary for effective thinking, developing conscience, morals and character values, and achieving personal independence.

Spot capturing problem-based model is expected to be an innovative learning model that can help construct students' knowledge through various learning experiences to generate reinforcement on the process of building feelings, strengthening perceptions, forming imagination, strengthening philosophy and meaning that influences the growth of character values of students in elementary school.

METHODS
Research Design
The research used is Education Research and Development (R & D). Research and development is the type of research used to produce a particular product, and test the effectiveness and practicality of the product. This research procedure carried out seven steps of research and development according to Borg & Gall (in Sukmadinata, 2005): (1) research and data collection, (2) planning, (3) development of product draft, (4) initial field trials, (5) test results revision, (6) main field trials, and (7) field test result product refinement. The design of limited trials is done on a regular basis using Pre-experiment Design with One Group Pretest Posttest Study. Student is given pretest before the treatment is then given posttest after the learning has been developed on the character of care and responsibility of elementary school students.

Table 1. Experimental Group Design

Experiment Group	O_1	X_1	O_2

Footnotes:
O_1 = Pretest
O_2 = Posttest
X_1 = Treatment (spot capturing problem based model usage)

Research Subject
The research subjects were 47 fourth grade students of elementary school consisting of experimental class (n = 24) and control class (n = 23). In spot capturing problem-based model implementation on learning, students were divided into several discussion groups with each of the 3-4 members.

Data Collection Instruments
Research data collection techniques, researchers use several techniques and procedures appropriated to the characteristics of data collected and respondent research. Data collection technique was done by literature study, observation, interview, and questionnaire guided by developed instrument..
At the introduction stage (research) the data collection instruments used are interview guides, observation and literature study. While the development stage (development) the instruments used are an expert and practitioner validation sheets. Then on the practicality test the researchers used questionnaires of teacher and student response used to collect data from teachers and students after using product model problem-based spot capturing. In a limited trial the researchers conducted observation activities to collect data on the growth of student's character and responsibilities using characteristic observation charts during the learning activities.

Data Analysis
Data analysis techniques are described based on two stages of research and development as follows: Preliminary study phase, data analysis is done with qualitative approach. Development stage, data obtained in the form of quantitative descriptive percentage. This data is drawn from the expert judgment opinion of the spot capturing problem-based model through a questionnaire with Likert-scale answer options. Test of practicality and effectiveness related to the product that has been developed, the data is analyzed by quantitative descriptive technique.

FINDINGS AND DISCUSSION
Spot Capturing Problem-Based Design Model

Part of this research is to produce a model of learning products spot capturing based problem that has been developed to foster the value of the character of elementary school students. The design of the model developed follows the five main elements of the learning model according to Joyce, Weil, and Calhoun (2009) which is presented in Figure 1.
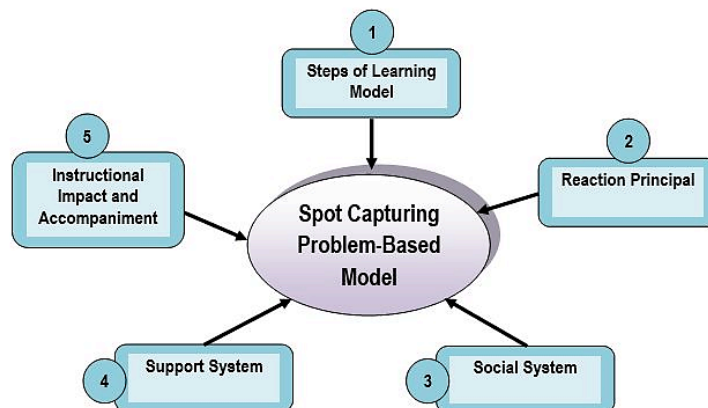

Figure 1. Spot Capturing Problem-Based Model Development Elements

Based on Figure 1 it can be explained that the problem-based spot capturing model has five development elements: (1) SCBP steps, (2) reaction principal, (3) social system, (4) support system and, (5) instructional impact and accompaniment. The development of spot capturing problem based model relies on cognitive, affective and psychomotor psychology, namely the concept of scientific thinking and has an interesting character for students in learning to solve the problems.

Figure 2. Spot Capturing Problem- Based Model Scheme

Based on Figure 2 it can be explained that the spot capturing problem based model developed integrates the three main stages of learning: exploration, elaboration and confirmation, then the stages are implemented against the six learning steps developed consist of: (1) students' orientation, (2) organizing students, (3) group investigation and problem solving, (4) presentation of group investigation results, (5) evaluation, and (6) follow-up.

By applying a spot capturing problem-based model in learning, students will be stimulated to work on authentic problems in daily life and to study using various sources, media and technologies. According to Megawangi (2004) character formation arises when teachers associate learning materials with the student's daily life environment. Thus, active involvement in their learning will bring about the values embedded through life experience and a sense of empathy towards the environment. Students need an education section that connects them to communities outside the school boundaries to appreciate what is happening in the community (Goh, 2009).

Validity of Spot Capturing Problem Based Model

The validity of the spot capturing problem-based model is obtained through the assessment of two validator model experts using a validation sheet. The validity of spot capturing problem-based model developed was assessed from five aspects: (1) steps of learning models, (2) principle of reaction, (3) social system, (4) support system and, (5) instructional and companion impact. Related analysis score expert assessment model can be seen in Table 2 below.

Table 2. Analysis Validation Results of Spot Capturing Problem-Based Model

No	Aspects Rated	Validator Score		Total
		I	II	
1.	**Steps of Learning Model**			
	a. Learning stages	4	4	8
	b. Principles of the model	3	3	6
	c. Sequence of action steps	3	4	7
2.	**Reaction Principal**			
	a. Teacher behavior	3	3	6
	b. Students behavior	4	4	8
	c. Interaction of students, teachers and environment	4	3	7
	d. Media and learning facilities	4	4	8
3.	**Social System**			
	a. Teacher involvement	4	3	7
	b. Students involvement	4	3	7
	c. Student response	3	3	6
4.	**Support System**			
	a. Linkages	4	4	8
	b. Availability of tools and materials	3	3	6
5.	**Instructional Impact and Accompaniment**			
	a. Scope of instructional impact	3	3	6
	b. Companion impact coverage	3	3	6
	Total Score	49	47	96
	Maximum Score	56		112
	Percentages %	87,5	82,5	85,7
	Category	Valid		

Based on Table 2 it can be explained that the results of the assessment of validator model I obtained the total validation score 49 or 87.5%, while the assessment of the validator model II obtained a total validation score of 47 or 82.5%. So overall from the assessment of two validator models obtained an average percentage score of 85.7% in valid criteria. Sugiyono (2007) states that the validity test conducted with the aim to indicate the level of validity and feasibility of products to be used in research.

The Practicality of Spot Capturing Problem Based Models

The practicality of spot capturing problem-based model is obtained through teacher and student responses questionnaire conducted in grade fourth elementary school of Petompon 01 Semarang City. According to Nieveen (in Trianto, 2007) to measure the practicality of looking at whether teachers and other experts consider that the product is

easy to applicate and can be used by teachers and students. The analysis of teacher response questionnaire can be seen in Table 3.

Table 3. Analysis of Teachers' Questionnaire Response

No	Statements	Teachers' Questionnaire Response Score		Total Score
		I	II	
1	Statement 1	4	3	7
2	Statement 2	4	4	8
3	Statement 3	4	4	8
4	Statement 4	5	4	9
5	Statement 5	4	4	8
6	Statement 6	5	4	9
7	Statement 7	4	3	7
8	Statement 8	4	4	8
9	Statement 9	5	5	10
10	Statement 10	5	4	9
11	Statement 11	4	5	9
12	Statement 12	4	3	7
13	Statement 13	4	4	8
14	Statement 14	4	4	8
	Total Score	58	54	114
	Maximum Score	70		140
	Percentages %	82	77	81,4
	Category	Practical		

Based on Table 3 it can be explained that the number of teacher I response score is 58 or 82% and teacher II is 54 or 77%. Thus, based on the data, the average teacher questionnaire response score on the spot capturing problem-based model is 81.4% with Practical category.

The recapitulation of student response questionnaire, after the learning with spot capturing problem-based model on thematic learning, obtained the average score of student response questionnaire 58.4 or 83.5% with practical category. In research the development of the developed model is said to be practical if the experts and practitioners state theoretically that the model can be applied in the field and the level of its implementation model is good / practical (Nieveen, 2007). This is in line with the statement of Sukmadinata (2005) that the practical learning model can be applied and used in classes and schools to assess students' abilities from the aspect of attitude, knowledge, and skills.

The Effectiveness of Growing Character Values

The effectiveness data of character value improvement is obtained from the observer's observation of the learning process in the classroom or outside the classroom using character assessment observation sheet. The results of this observation to see the character of students who grow and emerge in the learning process using spot capturing problem-based model. The observed characters are caring and responsibility. The analysis result of character observation can be seen in Table 4 below.

Table 4. Analysis of Caring and Responsibility Character

Character	Caring	Responsibility
Total Score	82	78
Average descriptor	3,28	3,12
Percentages %	82%	78%
Category	Very Good	Very Good

Table 5. Distribution of Student Character Category

Percentages %	Category
75 < skor ≤ 100	Very Good
50 < skor ≤ 75	Good
25 < skor ≤ 50	enough
0 ≤ skor ≤ 25	Less

Based on Tables 4 and 5 it is shown that in thematic learning using the spot capturing problem-based model, the total score of 82 characters with an average score of descriptor 3,28 was obtained so that the percentage of 82% with the criterion began to be very good. The character of responsibility obtained a total score of 78 with an average descriptor score of 3.12 so that obtained a percentage of 78% with the criteria of culture / very good.

Uno (2008) stated that the effectiveness of the learning process is measured by the level of student achievement on the learning objectives that have been determined. So that a learning model is said to be effective if the learning objectives can be achieved in accordance with certain criteria. Based on the data above that the application of spot capturing problem-based model developed effectively to grow the character of elementary school students, including: the character of care and responsibility.

CONCLUSION

Based on the results of research and development conducted, the researcher concludes that the results of product development were valid, practical and effective to cultivate the caring and responsibility characters of elementary school students. The spot capturing problem-based model consists of six learning steps is: (1) student orientation, (2) student organizing, (3) investigation and problem solving (4) presents the result of group investigations, (5) evaluation and reflection, (6) follow-up.

This research is a Research and Development (R & D) which aims to find out how the efforts and results of application of spot capturing problem-based model as an alternative learning model that has implications for the effectiveness in growing the elementary school students character.

The results of this research product can be used as a reference for teachers or other researchers to develop learning design or learning strategies that can grow the elementary school students' character values. In addition, teachers and schools should develop a learning instrument that is oriented to the character assessment of students, so the process of character education in elementary schools can be created properly.

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