Validity and reliability examination of indicators development materials instruction at Elementary School base on Curriculum 2013

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Abstract - Examination of Validity and reliability this research to know about validity and reliability of indicators development materials instruction at elementary school base on Curriculum 2013. This study is research and development indicators development materials instruction with scientific, authentic, and contextual approach for development cognitive aspect, affective aspect and psychomotor aspect. Subject of this research are the teachers of Elementary School Pilot Project Implementation Curriculum 2013 at Bandar Lampung. Validated indicators development of materials instruction have been done by expert of Curriculum, Technology of Instruction, Social Science Elementary School, Science Elementary School and Mathematic Elementary School. Examination validity of this step by qualitative analysis and examination of reliability by the General Multifaceted Model. Validity examination indicators development materials instruction by teachers are qualitative analysis, Item Total Statistic and examination of reliability by Cronbach's Alpha. The results of research and development indicators development materials instruction at elementary school base on Curriculum 2013, are as follows; (1) Specification of indicators development materials instruction at elementary school base on Curriculum 2013 with scientific, authentic, and contextual approach for development cognitive aspect, affective aspect and psychomotor aspect. (2) The result of validation by experts show that indicators development materials instruction at elementary school base on Curriculum 2013 with scientific, authentic, and contextual approach for development cognitive aspect, affective aspect and psychomotor aspect are very good and the result analysis by statistic program shows that are reliable. (3) The result of validation by teachers' show that are good, and the result analysis by statistic program shows that are valid and reliable. Indicators have been designed with scientific, authentic, and contextual approach for development cognitive aspect; affective aspect and psychomotor aspect are feasible for development materials instruction at elementary school base on Curriculum 2013.

Keywords: Curriculum 2013, development model, elementary school, indicators, materials instruction, validity examination, reliability examination.

I.   PRELIMINARY

Research as a scientific work requires the principle accountable, transparent and objective. An issue that must be faced in the research activities of education and other social sciences is how to obtain accurate data, careful and objective. This is important because the results can be trusted if the information obtained is reliable. Objectivity accurate data on research using quantitative approach can only be credible, through the measurement procedure. The conceptual framework developed by theoretical framework generates variable, sub-variables and operational indicators (observable) as manual data collection can be properly quantified through the measurement process.

The theoretical framework that has been broken down into variable and the indicators, does not guarantee the quality of the data collection instrument, meaning that necessary quality assurance data collection instrument after testing in order to obtain accurate data and reliable. A good instrument that instrument that can provide information that is valid, reliable and objective.

The level of validity and reliability is shown by the level of accuracy and precision instrument. This level of accuracy instrument influences the decision of a particular variable or more variables. Conclusions are based on accurate data generated from measuring instrument which will help for anyone with an interest in research.

If variables revealed by the instrument have not been tested for validity and reliability levels then the conclusions are determined to be not entirely trustworthy. The conclusion to be decided not by the instrument that measured well is misleading. It cannot be accounted for, in the case of a research as a scientific work must be accountable. Conclusion a good research is the conclusion based on the information data collected by the measuring instrument that meets the right, indicated by the level of validity and reliability indicators variables studied.

Based on the above, the research models of development indicators in primary school teaching materials based Curriculum 2013 must be conducted in order to test the validity and reliability of indicators designed reliable accuracy, can be justified and not misleading. The curriculum integrated curriculum implemented in 2013 as an integrated thematic learning. Integrated in the process, the integrated content and integrated in the assessment.

Implementation of Curriculum 2013, particularly in the city of Bandar Lampung known teachers are still experiencing difficulties in the application of integrated learning, teaching materials development and application of authentic assessment, especially on the high grade (Lilik Sabdaningtyas and Rochmiyati, 2013: 44). Integrated learning practices in primary school pilot project in Bandar Lampung totaling 17 primary schools are still experiencing difficulties in the development of teaching materials.

Curriculum 2013 balancing soft skills and hard skills, covering the aspects of competence attitudes, skills and knowledge as well as formulated into four core competencies are the core competencies first about religious values, competence social values, core competencies third of the knowledge and core competencies fourth on skills known as (K1, K2, K3 and K4). The first and second competency is not the materials that needs to be taught in the classroom, but it needs to be invested through habituation or exemplary so that competence is reflected in our behavior in everyday student life. Religious values and social verbally and attitudes reflected in learning implemented in habits and exemplary teachers who are expected to impact the students. Translation of each core competency is poured into the Basic Competence as a basis for developing indicators of learning outcomes.

Based on the study of the development of the model-based teaching materials Curriculum 2013 Primary School, indicators of development of teaching materials (1) The attitude of spiritual (K1) reflects the attitude of the faithful, noble [honest, polite, caring, disciplined, democratic], confident, and responsible interact effectively with the social and natural environment, around the home, school, and playground. (2) Social attitudes (K2) show behavior (honest, discipline, responsibility, caring, polite, friendly environment, mutual aid, cooperation, peace-loving, responsive and pro-active) (3) Knowledge (K3) in a cognitive perspective on factual knowledge, conceptual, procedural in science, technology, art, culture, and humanities. With the insight of humanity, national, state, and civilization-related phenomena and events, as well as applying procedural knowledge in specific areas of study that suit their talents and interests to solve the problem. (4) Skills (K4) with domain impersonation, manipulation, experiences and articulation of an activity or action in the learning process.

Indicators learning competencies adapted to the blueprint development of teaching materials based on the theme of learning, with the integrated model-based transdiciplinary contextual domain in a real-life context and a local-problem in the perspective of cognitive skills. Indicators developed domain-based cognitive, affective and psychomotor. The indicator development regards to cognitive competence of instruction materials is at the step of knowing, understanding, applying, analyzing, evaluating, producing, or creating on knowledge of: fact, concept, and procedure which comprise knowledge's contents such as: technology, art, and humanity. These contents are based on few subjects, those are: religion, civic, Indonesian language, mathematics, science, social, SBDP, and physical education. Curriculum policy as a national policy is centralized, but at the operational level substantive content of the charge is developed in the area, so it is necessary to develop teaching materials in accordance with the conditions of each region, so that the development of teaching materials is done with contextual approach, factual, authentic.

The development of teaching materials on learning scientific approach is appropriate to use development resources that are locality, so that students are on the factual knowledge, there are the real science for the real world (Kate Calvin and Penny Gilmer, 2009). Indicators is developed customized approach to the implementation of the unified scientific thematic learning, authentic, contextual, and good language. The indicators related to instructional materials and media. The description of the indicators compiled in Table 1.

Table 1. Indicators development of instruction materials

APPROACH	Indicators	Instruction materials and media	Source Materials
scientific	Observe Ask Try Process Present Conclude	Image, Text, goods	School environment, student, internet, and other relevant
Authentic	Can be seen Palpable can be felt can be kissed can be heard	Materials / genuine goods Materials / counterfeit / imitation, Pictures	School environment, student, internet, and other relevant
CONTEXTUAL a. Religious	Receive Run Appreciate Appreciating practice	Religious doctrine Compulsory Selection Religious symbols real action	Books religious teachings Religious history book Image / World Map, and other relevant
b. Feeling	Excited / happy Sad Empathy / Caring Angry	sing dance declamation Read prose, poetry, rhymes, picture books	history book books story Classic literature books Indonesia Daily news, and other relevant
c. cognitive	Knowing Understand Apply analyzing Evaluate Create/ Make	Number Arithmetic operations etc. Features Equation Difference Sequence (chain sequence)	Field Studies in elementary school books, maps, pictures of heroes, crop-plants, and other relevant
d. psychomotor	Imitation, Manipulation, Articulated experience.	Movement / Sports Painting / drawing Sew play music	Books, natural environment
LANGUAGE (presentation/the use of language in various activities of teachers and students daily)	Alphabet Standard Structure	Letters Word Syllables Sentence Paragraph type the word The use of the word The use of the word make sentences	Areas of study books And other books relevant

II. RESEARCH METHOD

This study tested the validity and reliability of indicators development of instruction materials on curriculum-based integrated learning 2013. The first data source, the results of the validation curriculum specialists, learning and 6 teachers of elementary learning analyzed using by the

General Multifaceted Model. The second data source, the validation results elementary school teachers who numbered 30 people were analyzed qualitative analysis, Item Total Statistics and examination of reliability by Cronbach's Alpha.

III.   RESULT AND DISCUSSION

A. Qualitative analysis

Validation of the indicators of teaching materials is conducted to obtain a good indicator of instruction materials, can be used, meet the criteria of a good indicator of teaching materials, valid and reliable. In the first development stage, all of the design of the device models of teaching materials validated by two experts, and seven teachers.

Assessment experts only deliver an opinion and suggestions, which states that the development of instruction materials has been good indicator, meet the development in accordance with the syllabus and integrated thematic learning model. Rate teachers as practitioners use a questionnaire assessing the design of teaching materials developed, and suggested that the implementation time adapted to local conditions.

Analysis of the results of the evaluation format on all components of the indicator materials submitted model adapt Saifuddin Azwar (2005: 108), which calculates the average value of all components that are assessed on the sheet format validation ratings given by the validator using a scale of four. Qualification standards validation results of this study using a scale of five categories in order to obtain more detailed data. To what extent the results of the indicator materials validator, the criteria based, and the category of description quality indicators materials instruction is display on table 2.

The range of scores in the instrument 0 to 4
Minimum score = 0,
The maximum score = 4
Range feasibility five categories.
So Range Score = $\frac{4-0}{5}$ = 0.8

The range criteria of description quality indicators materials instruction development is;

Table 2. The category of indicators materials instruction

Score range	Category
3.21 – 4	Very good
2.41 – 3.20	Good
1.61 – 2.40	Enough
0.81 – 1.60	Less
0 - 0.80	Bad

Description calculation of result assessment about indicators materials instruction they are very good. Trend of score of the result is homogeny there is trend of assessment the same and consistent. Description calculation of the result assessment six (6) validator, show that on table 3.

Table 3. Description the result of validity of materials instruction indicators

No.	Implementation	Average score the result of assessment rater, at						Average	Category
		1	2	3	4	5	6		
1.	Development at topic	4	4	4	3.9	4	3.9	3.96	Very good
2.	Stages of materials instruction development	3.5	3.5	3.8	3.8	3.9	3.6	3.70	Very good
3.	Development materials instruction	3.9	3.5	3.7	3.9	3.8	3.7	3.75	Very good
4.	Example development materials instruction	3.9	3.4	3.9	3.8	3.6	3.6	3.70	Very good

Recourse: Analysis data by rater

Trend of data the result teachers assessment are homogeny at for all design model materials instruction. Show that balancing contribution of every component materials instruction indicators. This can be known at present comparison from teachers assessment when implementation

indicators development materials instruction. Description the result of teachers' assessment at table 4.

Table 4. The result of teachers' assessment about implementation indicators Development materials instruction

Implementation	Approach			
	Scientific	Authentic	Contextual	Language
Development at topic	24,0 %	23,3%	24,8 %	24, %
Stages of materials instruction development	26,0 %	25,9 %	26,2 %	27,1 %
Development materials instruction	23,0 %	24,1 %	24,6 %	23,5 %
Example development materials instruction	27,0%	26,7 %	24, 4 %	25,4 %
Total	100 %	100 %	100 %	100 %

Recourse: Analysis data teachers' assessment

Every indicator is implementation follow as (1) Development at topic, (2) Stages of materials instruction development, (3) Development materials instruction, and (4) Example development materials instruction. All of indicators materials instruction can be stated easily matched to know and to implement at development of materials instruction.

B. Quantitative Analysis

The validity examination of development materials instructor indicators by average measure and computer program and coefficient correlation examination by standard critical point examination statistic >0.204 (Maruyama, 1998: 213), or >0.30 (William R. Dellon & Mathew Goldstein, 1984 : 69) it is valid. The computer calculation result of average measure from statistic is 0.664 (>0.204 and >0.30). By methodological result assessment by teachers for all indicators of materials instruction are correct, believed or valid.

Reliability examination of assessment rater (teachers) at indicators materials instruction by analysis of the general multifaceted model. Result reliability examination about implementation indicators at development topic are 0.63, implementation indicators at stage of development materials instruction are 0.67, implementation indicators in the unity materials instruction are 0.64, implementation indicators at example development materials instruction are 0.74. Result the all reliability examination by statistic program are >0.60. This result shows that implementation indicators at development materials instruction by teachers' assessment can be reliable, consistence at assessment, so indicators at development materials instruction are reliable.

The result of the tryout of 30 teachers is heterogeneous. The data has been analyzed by validity examination Item Total Statistic (ITS) at SPSS Program. The result of validity criteria is >0.30 at significant 5% is valid. Examination of reliability about indicators development of materials instruction by Alpha Cronbach's with criteria at > 0.60. The result of teachers' assessment is on the table 4.

Table 5. Result of Validity and Reliability Examination Indicators of Materials Instruction

No.	Implementation	Validity coefficients >0,30	Stated	Reliability coefficients >0,60	Stated
1	Development at topic	0.684	Valid	0.656	Reliable
2	Stages of materials instruction development	0.574	Valid	0.654	Reliable
3	Development materials instruction	0.496	Valid	0.629	Reliable
4	Example development materials instruction	0.655	Valid	0.674	Reliable

Recourse: Tryout analysis data at 30 teachers

The result of development materials instruction indicators by scientific approach very exact because of using the source of local development, so the student can study on factual knowledge there are the real science for the real world. The development indicators adapted at thematic instruction implementation with scientific approach, authentic approach, contextual approach, and good language. That's Indicators are related with materials and media of instruction.

IV. CONCLUSION

The results of research and development indicators development materials instruction at elementary school base on Curriculum 2013, are as follows; (1) Specification of indicators development materials instruction at elementary school base on Curriculum 2013 with scientific, authentic, and contextual approach for development cognitive aspect affective aspect and psychomotor aspect. (2) The result of validation by experts show that indicators development materials instruction at elementary school base on Curriculum 2013 with scientific, authentic, and contextual approach for development cognitive aspect, affective aspect and psychomotor aspect are good and the result analysis by statistic program shows that are reliable. (3) The result of validation by teachers' show that are good and the result analysis by statistic program shows that are valid and reliable. Indicators have been designed with scientific, authentic, and contextual approach for development cognitive aspect; affective aspect and psychomotor aspect are feasible for development materials instruction at elementary school base on Curriculum 2013.

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