The Development of Authentic Assessment Instruments Based on Characters in Measuring Students' Competence at Primary School

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Abstract-**This research aims to produce authentic assessment instruments that are comprehensively packaged for students in primary schools. The subjects of this research are: (1) teachers; (2)students; and (3) seven expert validators. This research is conducted in fourth grade students of SDN 104202 and 106811 Bandar Setia. The used method is formative research and development focused on two stages, namely the preliminary and formative evaluation stage. The instruments used are expert validation questionnaires. The research results shows that the authentic assessment instrument is valid, has very high reliability, and gets average score of the competence is 88.03 or high categorized. Another finding shows that authentic assessment instruments can helped the teachers in measuring students' competence, namely: attitude, skill and knowledge, and also give the contribution in developing the students' character values.**

Keywords-authentic assessment, competence, character

I. INTRODUCTION

Character building on children of elementary school today is very necessary because the Indonesia is experiencing a crisis of character in the nation's children. Character as one's personality is formed from the results of internalization of various virtues that are believed and used as a basis for the way of viewing, thinking, and acting. The virtue is a number of moral values and norms, such as honesty, courage to act, trustworthy, respect for others, discipline, independence, hard working, creative. The various problems that have plagued the nation lately are suspected because nation's children do not have character. The national identity seems to be uprooted from its true roots, so character becomes a hot topic to be discussed again lately.

Character building is one of national education purposes. Article 1 of National Education System Law 2003 states that the goal of national education is to develop the student's potential to have intelligence, personality and noble character [1]. The mandate of the National Education System Law in 2003 is intended to not only shape intelligent Indonesian people, but also have personality or character, so that later generations of nation will grow up with characters that breathe the noble values of the nation and religion [1].

The importance of character building in children of elementary school certainly needs to be supported by learning tools that can support the strengthening of student's character. One of the learning tools is authentic assessment which is oriented on character. To achieve character values, besides being carried out indirectly through various learning activities that is carried out, teachers are expected to be able to directly assess the achievement of certain character values on students [2].

The facts in the field, not all teachers understand the concept and implementation of authentic assessment that orient on the character. This case explained by Rusilowati in a survey conducted on 20 of 23 teachers of Junior High School 21 Semarang [3]. Based on it, 87% of teachers found that teacher still get difficult to conduct authentic assessments. 23 respondents, 87% experience difficulties in understanding how to assess, and 70% has difficulty in making observation instruments.

The data above is supported by preliminary observations on elementary schools in the city of Medan, where almost all teachers get difficulty to assess. This is because many teachers do not understand the authentic assessment especially in assessing the achievement of students' character. From 5 elementary schools in Medan that have been observed, all of them state difficulties in carrying out authentic assessments in measuring the achievement of certain character values in students [4].

The government is very intense in conducting trainings by bringing competent speakers, but the training is not efficient. The teacher's reason when observed is the difficulty in assessing the achievement of student character, because there are no examples of instruments

that made it easier for teachers to carry out authentic assessments based on character.

According to Clementsa and Cord, "assessment is an important component in learning and the learning environment and has a role in knowing learning outcomes" [5]. According to Komalasari, Authentic Assessment is a learning assessment that refers to the situation or context of the real world, which requires various approaches to solve problems that provide the possibility that one problem can have more than one type of solution [6].

The use of authentic assessment is used to shape students 'positive attitudes, standardize students' thinking skills, to provide information to parents in knowing their child's learning progress, as a means of improvement in learning implementation plans, a means to optimize the learning process so that students achieve successful learning outcomes [7]. Thus, authentic assessment is very important to be used in learning activities and the development of authentic assessment instruments is also needed so that the meaning of authentic assessment itself can be achieved.

Assessment in character dimensions is not only related to the cognitive achievement of students, but also affective and psychomotor achievement. It means that character assessment is indeed more weighty in achieving learning outcomes in the affective and psychomotor domains of students than their cognitive achievement. The development of authentic assessments based on character includes three competencies (attitudes, skills and knowledge) that are carried out in a balanced manner, so that it can be used to determine the relative position of each student towards a predetermined standard. In the role of ministry of education and culture Number 66 of 2013 state that coverage refers to the scope of the material, subject competencies, program content / competencies, and processes [8].

The definition of several attitudes assessment, namely: (1) Observation: assessment techniques carried out continuously by using the senses, both directly and indirectly by using observation guidelines which contains a number of behavioral indicators observed; (2) Self-assessment: assessment techniques by asking students to express their strengths and weaknesses in the context of competence chievement; (3) Peer assessment: an assessment technique by asking students to judge each other related to the achievement of competence; and (4) teacher records [9][10].

Educators assess competency of skill through performance assessment, which is an assessment that requires students to demonstrate a particular competency by using practice, project, and portfolio assessment tests. The used instrument is in the form of a checklist or rating scale equipped with a rubric [9]. The definition of knowledge assessment, namely: (1) written test: in the form of multiple choice questions, entries, short answers, problems, matching, and descriptions; (2) oral test: in the form of a list of questions given by the teacher / oral; and (3) assignments: in the form of homework and / or projects carried out individually or in groups based on the characteristics of the task [9].

Authentic assessment instruments based on character are very necessary for teachers in assessing the achievement of students' character, but unfortunately, authentic assessment instruments based characteristic have no examples that can be used as guidelines in the implementation of assessments in elementary schools. Therefore, in this research, an authentic assessment instrument based on character in elementary schools will be developed including the cognitive, affective and psychomotor domains comprehensively as research products. With the instrument of authentic assessment based on character, it is expected that it can facilitate teachers in carrying out authentic assessments based characteristic that comprehensively cover cognitive, affective and psychomotor domains.

II. RESEARCH METHOD

This research is conducted in SDN 104202 and 106811 Bandar Setia, located at Terusan Street V hamlet, Percut Sei Tuan District, Deli Serdang Regancy. The research is conducted from April to September 2018 for the third year. The subjects of this study are: (1) primary school teachers; (2) primary School students; (3) seven experts for validation of assessment instruments.

The used method in this research is type of formative research of development method [11]. According to Tessmer, development research is focused on two stages: the preliminary stage and the formative evaluation stage [11]. The instruments used in this research are: (1) expert validation sheets and (2) sheet of authentic assessment instruments. Analysis of the assessment results provided by experts on the quality and advisability of the product uses descriptive analysis with the formula of Percentage of Average Score proposed by Sudjana and the internal reliability of all instruments proposed by Guilford [12].

III. RESULT

A. The Development of Authentic Assessment Instrument

The development of authentic assessment instruments is conducted to complete the assessment that is not exist yet in the teacher's book or the student's book because the evaluation in the book has not been comprehensively compiled for the three domains in one lesson. The development of authentic assessment instruments is only conducted on all themes contained in class IV elementary school. The development of this assessment instrument does not only uses observation assessments, but also various types of assessment, namely: attitude assessment (observation, self-assessment, peer assessment), skills (performance, project and portfolio), and knowledge (written examination). Some types of assessments refer to the curriculum 2013.

B. Expert Validation

Based on the score achievement of expert validation on the table 1 and figure 1:

TABLE I. EXPERT VALIDATION RESULT

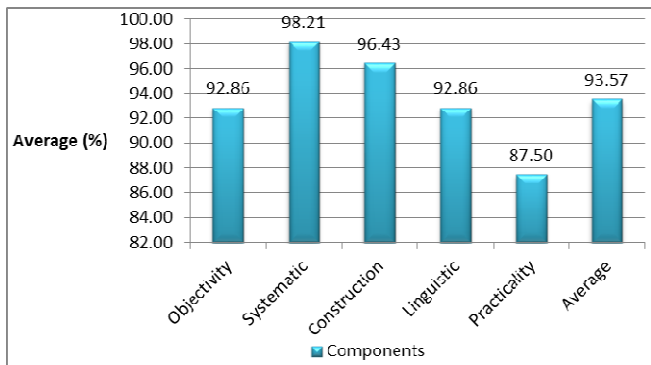| Components	Average	Criteria	Validity
Objectivity	92.86	Very Good	Very Valid
Systematic	98.21	Very Good	Very Valid
Construction	96.43	Very Good	VeryValid
Linguistic	92.86	Very Good	Very Valid
Practicality	87.50	Good	Valid
Average	93.57	Very Good	Very Valid

Fig. 1. Expert validation result

Data of Table 1 and Figure 1 show that the average validation results provided by 7 experts obtain a score of 93.57 with very good criteria. In detail based on the validation component, it is found that: (1) objectivity gain an average score of 92.86 or very good; (2) systematic obtain an average score of 98.21 or very good; (3) construction gets an average score of 96.43 or very good; (4) linguistic gain an average score of 92.86 or very good; and (5) practicality in obtaining an average score is 87.50 or good.

The assessment data of expert validation show that authentic assessment instruments only obtain good criteria, namely on the practicality component. This is because the variation in the number of students for each class is not the same, so to conduct an assessment, the teacher must make additional paper and make an assessment table as developed in the product, but overall, the development of authentic assessment instruments is very valid and very good criteria to be used at the next stage, namely field trials.

C. Field Trial

Before the field trial is conducted, the researcher first conducts a discussion with the teacher about the use of assessment instruments based on the learning objectives and handbook. The researcher provides an authentic assessment manual which contains an explanation of authentic assessment, core competence mapping, basic competence and indicators, learning scope, assessment rubric, and authentic assessment instruments on each theme that is prepared based on learning.

The type of assessment used in this third year product is more complete than the first and second year because in the third year it is considered that the three domains of learning outcomes comprehensively every day, they are attitudes, skills and knowledge. Therefore, each use of the types of assessments and the way of assessment are explained. The results of the discussion aim to avoid errors or obstacles experienced by teachers and students in using authentic assessment instruments that might also affect the results of field trials.

The implementation of field trials is divided into two scales, namely small scale and large scale. Field trials are carried out in grade IV class in SD 104202 Bandar Setia and SD 106811 Bandar Setia. Small-scale trials are conducted in grade IV class with the theme of Beautiful Togetherness.

Based on a small scale trial, it is found that the teacher or students do not experience problems in using authentic assessment instruments on the theme of Beautiful Togetherness so that large scale trials could be proceed. Large-scale trials are carried out in grade IV class SD 104202 Bandar Setia and SD 106811 Bandar Setia which each school made 60 students and 2 teachers as research samples. Large-scale trials are carried out in two stages, namely: (1) the first stage applies the theme Always Save Energy; and (2) the second stage applies the theme Caring for Human Beings.

The results of large scale trials also do not find obstacles. As the product trial process progressed, the teacher begins to get used to using the products developed and even memorized by teachers with the assessment rubric and scoring techniques. From the side of the students, it has positive impacts, such as increasing students' knowledge, growing characters and attitudes that deserve to be developed and the skills of students are also trained. This can be seen from the acquisition of student's scores based on the sub-themes as presented in Table 2 and Figure 2:

TABEL II. THE AVERAGE OF STUDENT'S SCORE

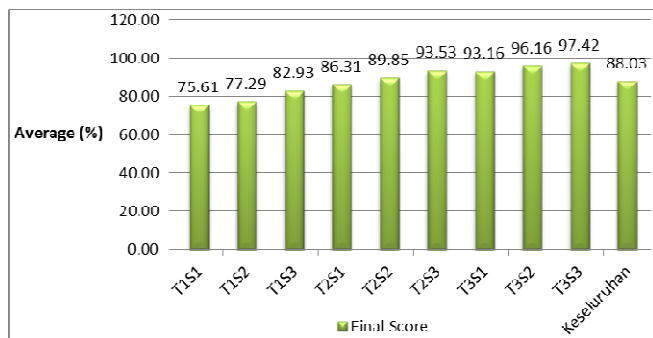| Theme	Final Score
T1S1	75.61
T1S2	77.29
T1S3	82.93
T2S1	86.31
T2S2	89.85
T2S3	93.53
T3S1	93.16
T3S2	96.16
T3S3	97.42
Average	88.03

Fig. 2. The Average of Student's score

The data in Table 2 and Figure 2 show that the average of student's score is 88.03 so that students are passed classically because the average score exceeds minimal score (75). The highest average of students is in the theme 3 sub-themes 3 (T3S3) where the score is 97.42 and many students get a maximum score of 100. Based on field findings, it is possible because the teacher has been accustomed to assess students by using authentic assessment instruments even memorize it by the assessment rubric, so that the misstatement of giving score can be minimized. In terms of students it also obtained a positive impact and drastic changes because students have started to get used to learning with experiences such as performance and projects to train their skills. Even the attitude of students is also assessed and reflected by the teacher so that each student knows the attitude that deserves to be imitated and that is not. Thus, his knowledge also runs one way with his attitude and skills.

The results of the field trial also shows that the instrument of authentic assessment does not only develop character values through attitude assessment, training skills and increasing students' knowledge, but also it is proved to have increase in the advisability category during the field trials as presented in Table 3 and Figure 3:

TABEL III. REALIBILITY OF INSTRUMENTS

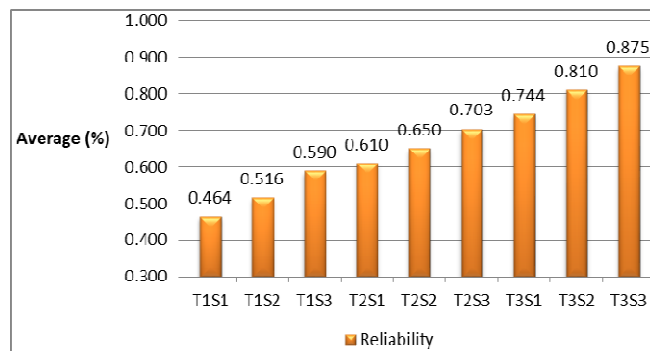| Theme	Score	Criteria
T1S1	0.464	Enough
T1S2	0.516	Enough
T1S3	0.590	Enough
T2S1	0.610	High
T2S2	0.650	High
T2S3	0.703	High
T3S1	0.744	High
T3S2	0.810	Very High
T3S3	0.875	Very High

Fig. 3. Realibility of Instruments

Data in Table 3 and Figure 3 show that there is an increase in scores and levels of instrument reliability continuously to the peak of reliability at the theme 3 sub-themes 3 where the score is 0.875 (very high reliability level), and the lowest reliability on the theme 1 sub-theme 1 with a score is 0.464 (enough reliable level). Thus, the authentic assessment instrument developed in the third year has fulfilled reliable requirements.

Based on expert validation and field trials, it is concluded that the authentic assessment instrument developed in this research has very valid criteria and very reliable so that it is suitable to be used as an evaluation tool in developing character values in students comprehensively in the domain of attitudes, skills and knowledge.

IV. DISCUSSION

The result of this study does not only develop instruments of authentic assessment but also develop character values that are suitable the three domains of learning outcomes and expected learning objectives at each level of education, especially in this study is grade IV of Primary School. Authentic assessment instruments are developed by referring to each type of assessment for the attitudes, skills and knowledge, so that in one learning there are various types of assessments that have their own functions, namely: the attitude (assessment of observation, self and peer), skills (assessment of performance , projects and portfolios), and the knowledge (written assessment).

The results of expert validation show that the average score given by 7 experts Is 93.57 with very good criteria. From data of the expert validation assessment, it also shows that the authentic assessment instrument only obtains good criteria, namely the practicality component. This is because the variation in the number of students for each class is not the same, so to conduct an assessment, the teacher must make additional paper and make an assessment table as developed in the product, but overall, the development of authentic assessment instruments has very valid and very good criteria to be used at the next stage, namely field trials.

Validation result of this research is line with research result of first and second year, and supported by some previous research result that has been published on national or international journal, such as Setiawan and Sitompul (2016) "expert validation and field trials, it can

be concluded that the attitude of character-based on assessment instruments are valid and have very high reliability category, so the instrument is eligible to use in measuring the achievement of the student character value". The character-based authentic assessment instruments in the skill domain is valid and excellent categorized, and has a very high reliability [13]. Damayanti, "the developed assessment model meets content and constructs validity and effectively improves students' critical thinking skilss and has a high level of suitability, easiness, and usefulness well-being"[14].

The research results show that the development of authentic assessment is needed by adjusting the characteristics needed in the surrounding area and the expected learning goal. When learning objectives require students to be able to think critically, it is recommended that assessment tools or instruments used must also be valid and reliable with critical thinking skills to be measured, so that an authentic assessment instrument is developed to improve critical thinking skills. Likewise with problem solving abilities and abilities or other characteristics. In this research, an authentic assessment instrument based on character is developed because the demands of education in Indonesia today are character building for the Indonesian people that has been begun since primary school.

The results of the field trial show that the student's average score 88.03 so students are declared to have passed classically because the average score exceeds the minimal score (75). The student's highest average is in the theme 3 sub-themes 3 (T3S3) with a score of 97.42 and many students get a maximum score where it is 100. In the field findings, it is possible because the teacher is accustomed to assessing students by using authentic assessment instruments and has memorized by the assessment rubric, so that the mistake in doing an error can be minimized. There is positive impact and drastic changes of students because students have started to get used to learning with experiences such as performance and projects to train their skills. Even the attitude of students is also assessed and reflected by the teacher so that each student knows the attitude that deserves to be imitated and who does not. Thus, knowledge will go in one line with their attitudes and skills.

The results of the field trial show that the authentic assessment instrument as a whole do not not only develop character values through attitude assessment, training skills and increasing students' knowledge, but also there is increase in the reliability category. The score and the level of reliability of the instrument has increased continuously until the peak of reliability where in the theme 3 sub-themes 3 with a score is 0.875 (very high level of reliability), and the lowest reliability on the theme 1 subtema 1 with a score is 0.464 (sufficient reliability level). Thus, the authentic assessment instrument developed in the third year has fulfilled reliable requirements.

Based on expert validation and field trials, it is concluded that the authentic assessment instrument developed in this research met the very valid and very reliable criteria so that it is suitable to be used as an

evaluation tool in developing student's character values comprehensively in their attitudes, skills and knowledge.

Character-based authentic assessment instrument can assist teacher in measuring the achievement of competence skills and also developing the students' character values [13]. The authentic assesment techniques global warming to measure and cultivate critical thinking skills consisting of written tests, performance, portfolio, projects, and attitudes. The developed assessment model meets content and constructs validity and effectively improves students' critical thinking skilss and has a high level of suitability, easiness, and usefulness well-being [14]. Kinay and Bagceci conclude that "authentic assessment contributes positively to the perception of teachers' problem-solving skills, it is recommended to use this approach in acquiring problem-solving skills in teacher education" [15]. The results of Bhakti's research prove that "the teacher's manual is suitable for use and adds to the teacher's understanding of authentic assessment. Product development specifications, namely (1) an explanation of various authentic assessment techniques, (2) accurate steps to conduct authentic assessments, (3) an explanation of conducting time of authentic assessment, and (4) how to process the value of knowledge, skills, and attitude " [16].

The research results shows that the development of authentic assessment is needed and increases certain capabilities based on the purpose of developing the product itself. As the result of Setiawan and Sitompul's research shows that the development of authentic assessment instruments based on character in the realm of skills that produce data that students' competencies can be trained by embedding character values and measuring them by using authentic assessment instruments that have been developed [17]. The results of Damayati's research prove that authentic assessment instruments can improve critical thinking skills through the use of test instruments, performance, portfolios, projects and attitudes that are also in line with the authentic assessment instruments developed in this research [14]. In this research, it does not only develop an authentic assessment instrument in the realm of attitudes, skills and knowledge comprehensively but it emphasizes character building through various types of assessment. This is because the Indonesia is experiencing a crisis of character in the children. Character as a one's personality is formed from the results of internalization of various virtues that are believed and used as a basis for the way of seeing, thinking, and acting.

The virtue is the number of moral values, and norms, such as honesty, courage to act, trustworthy, respect for others, discipline, independence, hard working, creative. The various problems that have plagued the nation lately are suspected because children do not have character. The national identity seems to be uprooted from its true roots, so character becomes a hot topic to be discussed again lately.

Character building is one of national education purposes. Article I of the National Education System Law 2003 states that the goal of national education is to develop student's potential to have intelligence, personality and noble character [1]. In addition, Lickona argues that the character of citizens includes several aspects that involve

knowledge (moral knowing), feelings (moral feeling), and actions (moral acting) [18]. The three components according to Lickona need to be considered in education so that students realize, understand, feel, and practice the values of goodness in their daily life in a complete and comprehensive manner [18].

Another study is conducted by Kardiman finds that "today experts consider that Character Education has a higher meaning than moral education [19], because it does not only teach whether the right and wrong are, more than that, character education instills habituation about good things so that students understand (cognitive domain), about whether the good and wrong are, are able to feel (affective domain) good value and want to do it (psychomotor domain). The relationship between authentic assessment and character development is also proven by the research results by Ramirez and Nolan that in the application of authentic assessment there is a link between student's characteristics, achievement, and attitude [20], [21]. A good authentic assessment instrument can contribute to measure student's character values. Therefore, the character is very important to continue to be practiced in the form of habituation, namely education so that in this research an authentic assessment based on character is develop on the three domains of learning outcomes comprehensively (attitudes, skills and knowledge).

Thus, the character reflected through one who is strong, competitive, moral, tolerant, cultured, etc will be develop if there has been an internalization of knowledge values (moral knowing), feelings (moral feeling), and actions (moral acting) in a person and also relate to the world of education. Value internalization must be improved through education, so that in the process authentic assessment is required in measuring the habituation of these values through attitudes, skills and knowledge.

V. CONCLUSION AND SUGGESTION

The result of expert validation shows that authentic assessment instruments have very valid and very good criteria to be used in measuring students' attitudes, skills and knowledge comprehensively every day. This is because authentic assessment instruments are arranged based on goals and learning activities every day and use various types of interrelated assessments.

The result of field trials shows that authentic assessment instruments can develop character values, train skills, and increase student knowledge. The highest average of students is found in the theme 3 sub-themes 3 (T3S3) with a score of 97.42 and many students get a maximum score of 100. This is possible because the teacher is accustomed to assess students by using authentic assessment instruments, even teacher has memorized with the assessment rubric, so that mistake in doing score can be minimized. The students also obtain a positive impact and drastic changes because students have started to get used to learning with experiences such as performance and projects to train their skills. Even the attitude of students is also assessed and reflected by the teacher so that each student knows the attitude that deserves to be imitated and

who does not. Thus, his knowledge, his attitude and skills can develop well.

The results of field trials show that there is an increase in scores and levels of instrument reliability continuously to the peak of reliability at the theme 3 sub-theme 3 with a score of 0.875 (very high reliability level), and the lowest reliability on the theme 1 sub-theme 1 with a score of 0.464 (sufficient reliability level). Thus, the authentic assessment instrument developed in the third year has fulfilled reliable requirements.

Some suggestions obtained from the findings of this research, namely: (1) teachers are expected to adjust assessment instruments, learning activities, learning materials and character values to be achieved; and (2) For other researchers who will conduct development research, products that are developed are based on those required at the time of development are conducted and also pay attention to the usability of the products being developed.

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