

ONLINE ASSESSMENT TOOLS FOR 2013 CURRICULUM BASE ON INFORMATION TECHNOLOGY

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ABSTRACT: Assessment is an important component of the curriculum. It illustrates an achievement of learning objectives. Curriculum 2013 (K13) uses an authentic assessment system, which emphasizes students' learner's ability to demonstrate real and meaningful knowledge. The problem is that not all teachers master how to set up an assessment instrument, and the adoption of an authentic assessment system takes longer. This causes authentic assessment sistem not fully used by the teacher. Therefore, it is necessary to develop the 2013 curriculum assessment tool based on information technology so that it can make it easier for teachers to use it and to time their application. The sistem was developed using prototype model. The test results show that the developed system is valid and practicality is used as an authentic assessment tool.

Keywords: Assessment, Authentic, K13, Technology, Information

1. INTRODUCTION

Substitution of curriculum KTSP (2004) into Curriculum 2013 (K13), aims to anticipate the development of Information and Communication Technology (ICT) that has hit the community (kompasiana.com, 2015). However, these efforts have not produced significant changes. According to Furqon Hidayatullah, as quoted by metronews.com, the implementation of K13 still leaves a number of problems, among others: the difficulty of changing teacher's mindset, low spiritual morale, reading and researching culture is still low, lack of mastery of information technology, weakness of administrative dominance, teachers who emphasize more cognitive aspects. Meanwhile, according to Syarwani Ahmad (2014), as written in Sriwijaya Pos, the K13 training process implemented by the government is very short, the learning time has to be implemented, while the teacher is not ready yet. The training process is short and not fundamental, resulting in confusion.

The development of information technology that is so advanced should be used to overcome various problems in human life, not least the problem of time efficiency in the application of authentic assessment system as mentioned above. Educational practitioners can use information technology to facilitate the assessment process because this system can be programmed so that complicated work (if done manually) will be easy and fast (automated). The system can provide various formats and assessor aspects such as should be done in an authentic scoring system. Using an automated assessment system, the assessment process will be effective and efficient. This is as revealed by Abdallah Tubaishat, et al (2009: 51) in his article entitled "Using an automated assessment system, the assessment process will be effective and efficient." This is as revealed by Abdallah

Tubaishat, et al (2009: 51) in his art entitled "... faculty members in the college use information generated to assess curricular efficiency and to evaluate the effectiveness of the learning outcomes for each course." Stephanie, N. (2016: 1) adds:

The future of the educational system is practically determined by the development of technology. Some educators and experts are against the trends of implementing EdTech tools and apps in every single aspect of the schooling system, mainly because technology is a source of distraction for students. However, proper technology integration guides students of greater understanding of all concepts are covered in class.

Based on the above issues and the ease of being offered by information technology, it is necessary to develop an automated assessment war. The development of this assessment tool is titled "Development of The Autenthic Assessment Tools K13 based On Information Technology."

2. DEVELOPMENT OF THE 2013 CURRICULUM ASSESSMENT TOOLS

Aspects contained in K13, include aspects: (1) Attitude; (2) Knowledge; and (3) Skills. The Attitude, is the most difficult aspect to do assessment. Attitudes include temperament manners, adab in learning, social and religious attitudes. The difficulty of assessment in this aspect is largely due to the fact that teachers are unable to supervise their students, so the assessment is not very effective.

The assessment of the knowledge aspect in K13 is similar to the knowledge aspect of SBC, which equally emphasizes the level of students' understanding of the subject. The value of the knowledge aspect can be obtained through: Daily Deuteronomy; Middle Exam; Final exams; and Classroom Increase Test. The fundamental

difference between K13 and KTSP is that the assessment of the knowledge aspects of K13 is not a major aspect.

While skill assessment is a new aspect that is included in the curriculum in Indonesia. Skills are an emphasis on skill or ability. For example, the ability to express opinions, berdiskusiwarah, create report files, and make presentations. Aspects Skills itself is one aspect that is quite important because if only with knowledge, then students will not be able to distribute the knowledge they have so it only becomes a theory alone.

2.1 Assessment Principles and Approaches

Principles and Appraisal Appraisal that must be considered by the teacher when conducting the assessment according to Ministerial Decree No. 66 of 2013 on the Education Assessment Standards are as follows: (1) Sahih, the assessment is based on data that does reflect the ability to be measured; (2) Objective, judgments based on clear procedures and criteria and should not be influenced by the subjectivity of the appraiser; (3) Fair, an unfavorable or disadvantageous assessment of a student simply because of differences in religious, ethnic, cultural, cultural, socioeconomic, and gender backgrounds should be avoided.

While the assessment approach K13 is the Criteria Reference Assessment (*Penilaian Acuan Patokan*). PAK is an assessment of competency achievement based on minimal mastery criteria (*Kreteria Ketuntasan Minimal*). KKM is determined by the educational unit taking into account the characteristics of Basic Competence (*Kompetensi Dasar*) to be achieved, the carrying capacity, and characteristics of learners. The appraisal principle for each of the K13 assessment aspects is described below.

2.1.1 Assessment Attitude

Assessment of attitude is an activity to know the tendency of students' spiritual and social behavior in daily life inside and outside the classroom as a result of education. Assessment of attitudes is intended to determine the achievement / development of student attitudes and facilitate the growth of student behavior according to the points of attitude value in the kd of ki-1 and ki-2.

Assessment attitude is done by using observation technique. Observations by subject teachers were conducted during the learning process during the lesson, and the observations by teacher of counseling guidance and classroom teachers were conducted outside the lesson. The result of the observation is written in the journal. The journal contains anecdotal records, incidental records, and other valid and relevant information. Journals are not only based on what the teachers, class guardians,

and bk teachers see directly, but also other relevant and valid information received from various sources figures or tables should be sized the whole width of a column, as shown in table 1 or fig.1 in the present example, or the whole width over two columns. Do not place any text besides the figures or tables nor place them altogether at the end of the manuscript.

The attitude assessment can also be done by self (self-assessment) and peer-to-peer assessment. Assessment results can be used as one of the confirmation data from the assessment of attitudes by educators. The attitude assessment scheme as shown in figure 1.

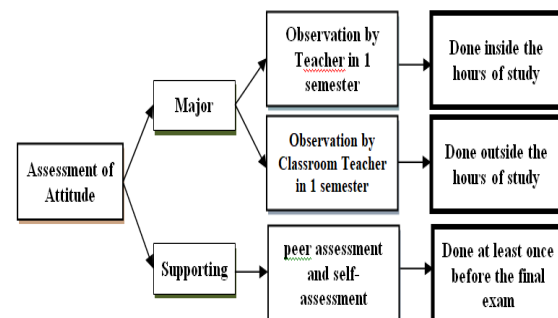


Fig. 1 Assesment Scheme of Attitude

2.1.2 Knowledge Assessment

Assessment of knowledge is the assessment conducted to determine the mastery of students, including: factual knowledge, conceptual, procedural, and low to high thinking skills. Assessment of knowledge is done by various assessment techniques. The teacher chooses assessment techniques that match the characteristics of the competencies to be assessed. Assessment begins with planning undertaken at the time of developing a lesson plan (rpp). Assessment of knowledge aims to determine whether the student has reached minimal mastery, and identify weaknesses and strength of mastery/ knowledge of students in the learning process. Assessment results are used as feedback for students and teachers to improve the quality of learning. Knowledge assessment is conducted during and after the learning process. The results are expressed in terms of numbers ranging from 0 to 100. The commonly used knowledge assessment techniques are: (1) written test, the form can be a matter of: multiple choice, stuffing, right-wrong, matching, and description; (2) oral test, is a test given by the teacher in the form of questions delivered orally and students respond to the questions verbally as well; (3) assignment, is a test by assigning tasks to students to measure and / or facilitate students acquiring or increasing knowledge; and (4) a portfolio, is a continuous assessment based on a collection of reflective-integrative information that shows the development of students' ability in a given

period.

2.1.3 Skills Assessment

Skills assessment is the assessment conducted to determine the ability of students in applying knowledge. Skills assessment can be done with various techniques, among others: (1) performance appraisal; (2) project appraisal; and (3). Porto-folio. Performance appraisal measures learning achievement in the form of process and / or product skills (product). Project appraisal measures students' ability to apply their knowledge. While the portfolio assessment assessed the best student work samples from KD on KI-4 to describe the achievement of skills competencies.

2.2 The Role of Information Techlogy (ICT) in Education

Information Techlogy (ICT) is an important element in the life of a nation and a state. The role of ICT in human life activities at this time is quite large. ICT has become a major facility in many areas of life and has contributed greatly to fundamental changes in the structure of operations and organizational management, education, transportation, health and research. Therefore it is very important for every organization to always increase its human resource capability in mastering and using information technology.

ICT is a technology used to process and convey information. The advantages of using ICT in information processing are: (1) innovative; (2) flexible; (3) quality; (4) productive; and (5) cheap (Albertin, Alberto and Rosa de Moura, 2004: 871-872). Currently many educational institutions have taken the mafaat from the benefits of ICT.

ICT for the world of education means the availability of facilities that can be used to deliver education programs and activities. ICTs can be catalyzed for a median change in the teacher's role: from information to transformation. Schools should be moderate to technologies that enable them to learn faster, better, and smarter. ICTs are the key to a better future school model. The use of ICT in developing an authentic assessment tools K13 is an attempt made to modernize education, especially education in West Sumatra.

2.3 Methods of Development and Results

Development of the Online Assessment Tools for 2013 Curriculum Base on Information Technology is a research and software development. There are two main stages of this research, namely: (1) development; and (2) testing (evaluating) of the assessment tools. The final target expected is the creation of a software (online assessment tools) that complies with K13. Therefore, the method used in

developing this system is the prototyping method. This method is chosen because the development can be done in an integrated manner between the user (teacher and student), information technology experts and educational technology experts (Hanif Al fattah, 2007: 36). The software development step with this prototyping method is illustrated in Figure 2.

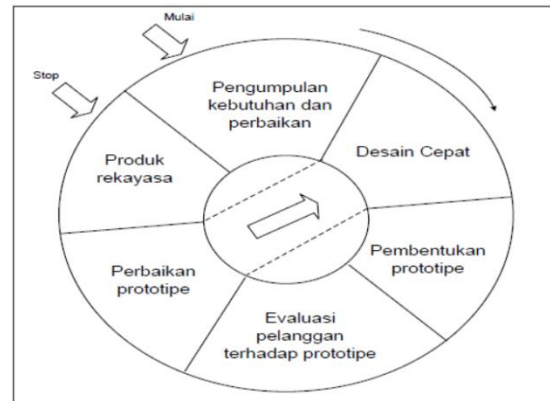


Fig. 2 Diagram of Software Development

Based on the data obtained at the stage of collecting system requirements and evaluating it, then developed its prototype. The prototype is created in the form of context diagrams, diagram of relationships between entities (Entity Relationship Diagram), and navigation menu. Context diagram can be seen in Figure 3. While the relation diagrams between entities are shown in Figure 4, and the navigation menu show in Figure 5.

The resulting prototype is then evaluated and upgraded along with potential users. If deemed appropriate, then the system is directly produced. Conversely, if there are still shortcomings / mistakes, then made improvements. The advantage of this paradigm is that if there is a discrepancy between user demand and the design done, the developer can quickly make improvements. The result is that on the prototype there is no more deficiencies and is approved by potential users.

After the prototype is received by the prospective user, the prototype is subsequently implemented into the software. The software should have facilities for assessing students based on aspects of the K13 assessment, are that assessing attitudes, knowledge, and skills, and accessible by external entities (users) using online systems.

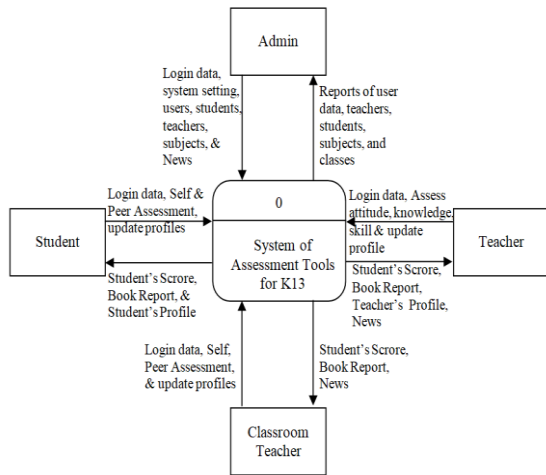


Fig. 3 Context Diagram of The System of Authentic Assessment K13 base on ICT

The software is developed and tested on a local computer (local host). Once operated (used for assesst), accordang with the rules of the K13, and no longer found error, the software is uploaded to the internet server. Further software is evaluated by experts and users.

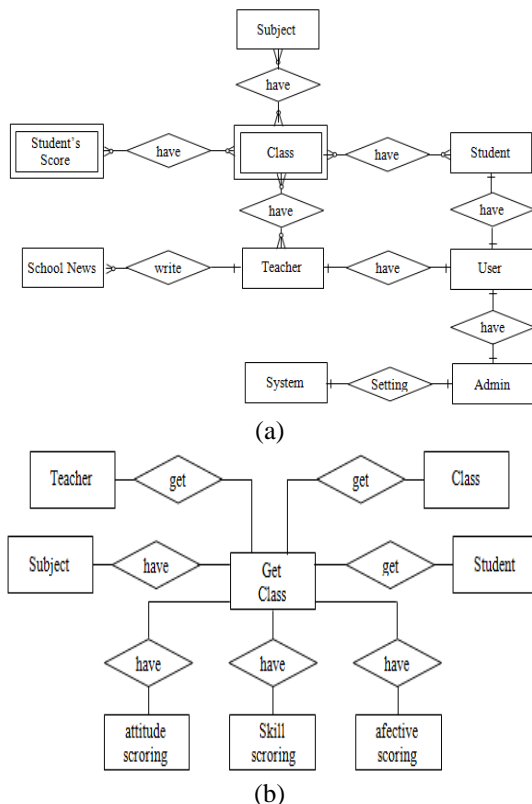


Fig. 4 (a) Diagram of The Relationship between Entities before Normalized; and (b) The Result of Normalization of Weak Entity.

There are two areas of expertise that evaluate the software assessment tool for K13, namely

information technology and education technology experts. In addition, potential users also participate in this activity. Based on the results of the evaluation of improvements made, until the system developed meet the criteria and declared eligible to use.

If the evaluation results indicate that the developed software is not feasible to use or there is still a shortage (error), then the revision will continue to be done. Revisions may be made at the design and implementation stage, depending on the error. If the error only occurs in the programming syntax then the revision is only done on the implementation. If the error occurs in the design then the improvement is done starting the design and continued with the revision of the implementation phase.

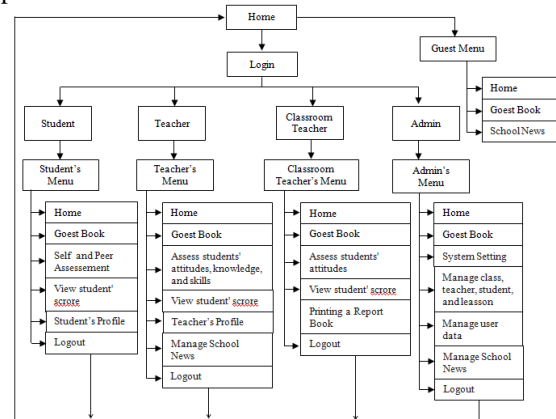


Fig. 5 Interface Design of the Onile Assessment Tools for K13

3. DISCUSSION

The instrument used to record the opinions of experts and users is a questionnaire. This study uses three types of questionnaires, namely a questionnaire of information technology experts, an expert questionnaire of educational technology, and user questionnaires. The three types of questionnaires, before being used in research first tested the validity and reliability. Test the validity using correlation coefficient formula as follows:

$$r_{xy} = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{(N\sum x^2 - (\sum x)^2)(N\sum y^2 - (\sum y)^2)}}$$

and reliability testing using Alpha Cronbach (α), by the formula:

$$r_{11} = \left(\frac{n}{n-1}\right) \left(1 - \frac{\sum \sigma_t^2}{\sigma^2}\right)$$

The calculated r value (for each question item) is compared with r table When the three questionnaires were distributed and the respondents tested their validity with the above formula, r calculated compared to r table at the 0.05 level of significance. The result is all the items from the three questionnaires obtained the number of correlations

above the critical value (the probability number is below or equal to 5%), then the three questionnaires are valid (worth using in the research).

Reliability test of three questionnaires using Alpha Cronbach (α), each obtained α value, namely: (1) questionnaire information technology experts of 0.67, (2) educational technology experts of 0.7 and; (3) use questionnaire of 0.72. Based on this test, the three questionnaires are considered reliable ($\alpha > 0.6$).

After the questionnaire declared valid and realibel, then the questionnaire is used to know the opinion of experts (Expert of Information Technology and Education Technology). Expert opinion is given after running the assessment

apparatus, and observing the inside of the program. A summary of the opinion of information technology experts stated in table 1.

Through table 1 it can be seen that information technology experts assess the correctness, extendibility, and efficiency or performance indicators with excellent qualifications. Indicators of reusability, portability, verification, modularity, and readability are assessed with good qualifications. Only indicators of robustness and integrity are assessed with sufficient qualifications. Based on this data can be said that information technology experts judge good (feasible) rating tool used as an authentic assessment tool.

Table 1. Assessment Results by Information Technology Experts

No.	Indicator	Descriptor	Qualification
1.	Correctness	The ability of the authentic assessment system in doing the tasks in accordance with the goals and specifications.	Excellent.
2.	Robustness	The ability of the system in anticipating abnormal conditions in performing its functions	Sufficient.
3.	Extendibility	Ease of system to be developed in accordance with demand demands.	Excellent.
4.	Reusability	The existence of the program to be reused either partly or entirely for other applications.	Good.
5.	Efficiency or Performance.	The ability of the system in the efficient use of resources.	Excellent.
6.	Portability	Ease of system is transferred to different hardware.	Good.
7.	Verification	Ease in tracking program failures and validation.	Good.
8.	Integrity	The ability of the system to protect themselves from illegal use and modification.	Sufficient.
9.	Modularity	Program settings in modules.	Good.
10.	Readability	Readability of the program by someone other than the programmer.	Good.

Table 2. Educational Technology Expert Assessment Results

No	Indicator	Descriptor	Qualification
1.	Objectivity	The ability of assessment tools to provide objective assessment.	Good.
2.	Validity	The validity level of the assessment tools in measuring what is measured.	Good.
3.	Practicality	The practicality of the authentic assessment tools in measuring learning outcomes of student from various aspect of assessment.	Excellent.
4.	Reusable	The ability of the authentic assessment system is re-used to assess learning outcomes across a range of subjects.	Excellent.
5.	Completeness	The completeness of assessment tools	Good

Table 3. Results of User Assessment (Teachers, Classroom Teacher, and Student)

No.	Indicator	Descriptor	Qualification
1.	Performance	The performance of the authentic assessment system according to the needs and specifications of the 2013 curriculum.	Good.
2.	Easy for use	Easy to operate the authentic assessment system.	Good.
3.	User friendly	The friendliness of the authentic assessment system in giving the user instructions..	Good.
4.	Usability	The usability of authentic assessment system for users.	Excellent.

Educational technology experts, assessing indicators of objectivity, validity, and completeness with good qualifications, and indicators of practicality and reusable are assessed with excellent qualifications. Therefore it can be concluded that educational technology experts judge the assessment tools feasible to be used in carrying out the task of learning.

Through table 3 it can be seen that users rate: performance, and ease of use, and hospitality with good qualifications. While the usability indicators are assessed with excellent qualifications.

4. CONCLUSION

Development of an online information assessment tool K13 based on information technology has been implemented and published on the internet (provided links from school website) research location. After that the experts and users do the testing in accordance with his expertise.

Based on the above test results can be concluded that: (1) Information technology experts assess the authentic assessment tools K13 base on ICT is in accordance with the specifications and criteria of ICT-based systems; (2) Experts in the field of educational technology, assess the system developed practically used to provide an assessment in accordance with the assessment system K13; and (3) the user (teacher) assess that the student is practical (has good performance, is easy to use to assesst students) in accordance with the type and format of the K13 assessment.

This authentic assessment tools can help the school, especially teachers and homerooms in storing, processing and making assessment reports. Assessment tools developed can also facilitate the task of homeroom teachers in making report cards because the device developed equipped with this facility.

5. REFERENCES

- [1] Abdallah Tubaishat, et al. (2009). E-portfolio Assessment System for an OutcomeBased Information Technology Curriculum. *Jurnal Information and Technology Education*. Volume 8, pp51.
- [2] Albertin, Alberto and Rosa de Moura. (2004). The Benefits of Information Technology in Business Performance. *Americas Conference on Information Systems Proceedings*, 12-31-2004.
- [3] Azwar Saifuddin. 2000. *Reabilitas dan Validitas*. Yogyakarta: Pustaka Belajar.
- [4] Hanif Al Fattah. 2007. *Analisis dan Perancangan Sistem Informasi*. Yogyakarta: Penerbit Andi.
- [5] Republik Indonesia. (2013). Peraturan Menteri Pendidikan dan Kebudayaan No. 66 tahun

- 2013 tentang Standar Penilaian Pendidikan. Menteri Pendidikan dan Kebudayaan. Jakarta.
- [6] Stephanie, N. (2016). 7 Benefits of technology integration in the education sphere. Diambil dari <https://elearningindustry.com/benefits-technology-integration-education-sphere> pada tanggal 10 maret 2017.
- [7] Syarwani Ahmad. (2014). Penerapan Kurikulum 2013 Selalu Menuai Masalah. Diambil dari <http://palembang.tribunnews.com/2014/08/06/penerapan-kurikulum-2013-selalu-menuai-masalah>, pada tanggal 7 Maret 2017.