

DEVELOPING THE AUTHENTIC ASSESMENT INFORMATION SYSTEM FOR ELEMENTARY SCHOOL STUDENTS IN YOGYAKARTA USING GOOGLE APPS

Novi Trilisiana, Henny Riska Pratiwi, dan Hartoto
Program Studi Teknologi Pendidikan,
Program Pascasarjana Universitas Negeri
Yogyakarta

email: trilisiana@gmail.com;
hennymoet@gmail.com; hartoto@electindo.com

Abstract

This research aims at (1) producing a product of online based Authentic Assesment Information System in Yogyakarta using Google Apps, and (2) understanding the appropriateness of the product. The produced product is called 'Authentic Assesment Information System'. The product functions on helping teachers documenting the results of student's authentic assesment. Further use of the product for teachers includes the ability of using this product to inform the parents about the students' learning development. Besides, parents are able to consult the teacher about their children through 'Parent's Contact' feature. This research was

conducted through Research & Development of Alessi & Trollip model. This model has three attributes (standard, ongoing evaluation and project management) and three phases (planning, design, and development). At the planning and design, ongoing evaluation was conducted until the preliminary product was created. At the development phase, validation by the media and content experts (alpha testing) was conducted and then the revision to the preliminary product was conducted. The next phase included the beta testing conducted by 6 teachers and 5 parents as the user candidates. The product can be accessed at <http://spa.edutech.web.id>. The validity of the product was assessed and resulted in 'very good' category in alpha testing, 'good' category at beta testing by the teachers, and 'very good' category by parents. It is concluded that this product is appropriate to be used based on the quality evaluation instrument of software and users test (usability testing).

Key words: Information System, Authentic Assesment, Google Apps

Introduction

Analysis of the learning result can be a valuation report that uses authentic assessment approach. Authentic assessment results are obtained from measuring the competence of attitudes, skills, and knowledge based on processes and learning result (Kunandar, 2013:6). The learning result may be communicated to parents through forums and school information media so that parents know their children's learning progress. Authentic assessment is very closely at the elementary education level that has the attractiveness assessment. The attractiveness includes (a) performance assessment, (b) product assessment, (c) project assessment, (d) peer assessment, (e) portfolio assessment, (f) written test assessment, and (g) observation assessment. Nevertheless, instruments that many, can cause not easily documented, not quickly be communicated, and not light, causing the side effects of fatigue on the teacher.

In the beginning observations, at several elementary schools in Yogyakarta, Researchers found that most schools have a connection media between teachers and parents for monitoring the achievement of student learning. The important role

of family (Jacobsen, 2009) is their involvement to communicate with teachers. Some of disadvantages the connection media encountered in the field are communication system still manual, easily damaged, slow, and inflexible while information technology has been widely circulated to parents can help their duties (Munir, 2009: 33). It is necessary to develop a system that is easier. The system could be utilizing information and communication technology.

This research aims at producing and understanding the appropriateness of the product of Authentic Assessment Information System for Elementary School Students in Yogyakarta using Google Apps. Google Apps provides free facilities adequate to the school through Google for Education. Moreover, Google has been widely recognized by the world community. Almost every adult has an account on Google because Google has advantages that cost savings, up to 30 GB of storage space, guaranteed security, support collaboration, and easy using.

Method

The development model used in this study is a model of Research & Development Alessi & Trollip (2001: 410). This model has three attributes (standard, ongoing evaluation and project management) and three procedures (planning, design, and development).

Procedure of planning include: (a) determining the scope of authentic assessment, (b) identifying the capability of the school, (c) determining the limits of development, (d) determining the details of the project costs, (e) brainstorming beginning between researchers, (f) discussion with potential users (teachers and parents).

Procedure of design include: (a) developing initial concept by analyzing the standards of competency subjects at elementary school as a raw data in development of 'Information Systems Assessment Authentic' (b) analyzing initial concept (c) making instruments of authentic assessment that is based on the assessment of software quality McCall and usability testing of JR Lewis (Galin, 2004), (d) producing draft documents such as flowcharts,

storyboards and scripts, (e) creating a prototype, (f) discussion with users to gain approval.

Procedure of development include: (a) preparing a tool of Google Apps, (b) making the program codes, (c) making the Information System Assessment Authentic, (d) entering contents and supporting materials, (e) conducting the alpha tests, (f) making revision, (g) conducting the beta tests, (h) making the final revision, (i) obtaining validation from the end user, and (j) making manual of guidance.

Testing design of Authentic Assessment Information System includes two stages of alpha testing and beta testing while informal evaluation for the development of initial Authentic Assessment Information System, including in the ongoing evaluation and not included in the design of this testing. At alpha testing, expert judgments provide an assessment and appropriate comments on their respective expertise related Authentic Assessment Information System developed. Beta testing is conducted by involving the six teachers and five parents.

Each software application needs to be identified by its appropriateness so that the

application has a good standard to use. In beta testing, the media expert analyzes software application through McCall analysis of software quality (Galín, 2004) which consists of a) correctness, (b) reliability, (c) usability, (d) functionality, (e) portability, and (f) maintainability. The matter expert analyzes content that consists of a) the correctness of content, and b) clarity of content. The instruments used by teachers and parents are usability questionnaire, which consists of a 15-points declaration contain the following principles: a) understandability, b) learnability, c) operability, and d) attractiveness.

Data analysis included quantitative and qualitative data according to the data collection instruments. Quantitative data are data of 5 scales (Likert). Data are converted by category of qualitative assessment, which are **very good**, **good**, **fair**, **less**, and **very less**. Product development is considered feasible and quality if it has been categorized as "Good". The following table of data conversion:

Table 1. The guidance of assesment category

Quantitative data	Range	Qualitative data
5	$\bar{X} > 4,08$	Very good
4	$3,36 < \bar{X} \leq 4,08$	Good
3	$2,64 < \bar{X} \leq 3,36$	Enough
2	$1,92 < \bar{X} \leq 2,64$	Less
1	$\bar{X} \leq 1,92$	Very Less

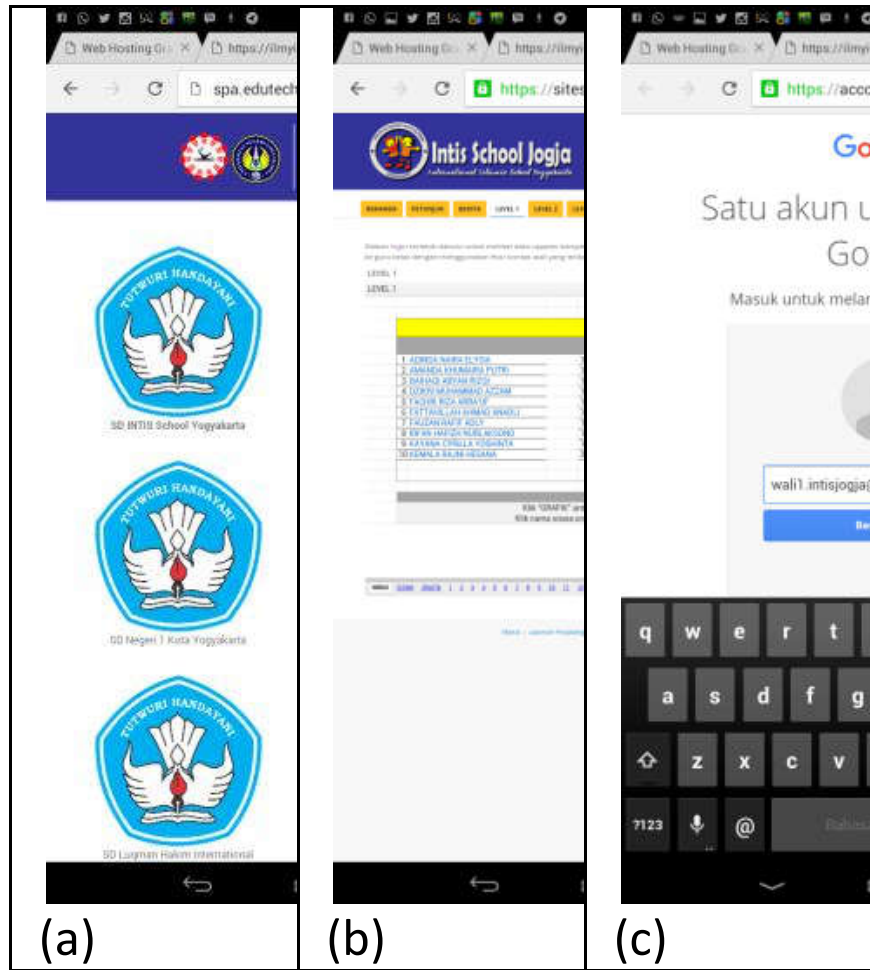
Results and Discussion

1. Description of product

Name of product developed is SPA (Sistem Informasi Penilaian Autentik or Authentic Assessment Information System). This system is named SPA so easily remembered by the user (teachers and parents) and the community. The product can be used for all schools using the curriculum 'Kurikulum Tingkat Satuan Pendidikan' and implementing authentic assessment or schools that want to develop an information system authentic assessment.

Product forms such as applications authentic assessment system developed using google site, google docs, google sheets, google drive, gmail and google apps support. Application that has been made by researchers can be accessed via the home page <http://spa.edutech.web.id> or site.google.com/a/electindo.com/hibah-seamolec. This product was developed by considering the applications are free and easily developed.

Based on the need analysis of schools, 'Information Systems Authentic Assessment' developed by the researchers present an assessment of SCC (Student competence Cecklist) per three months using google sheets. In addition, there is also a bar graph as a display of children's increased competence and the application of the communication link teachers with parents. Here is the screenshot of product which has been developed:



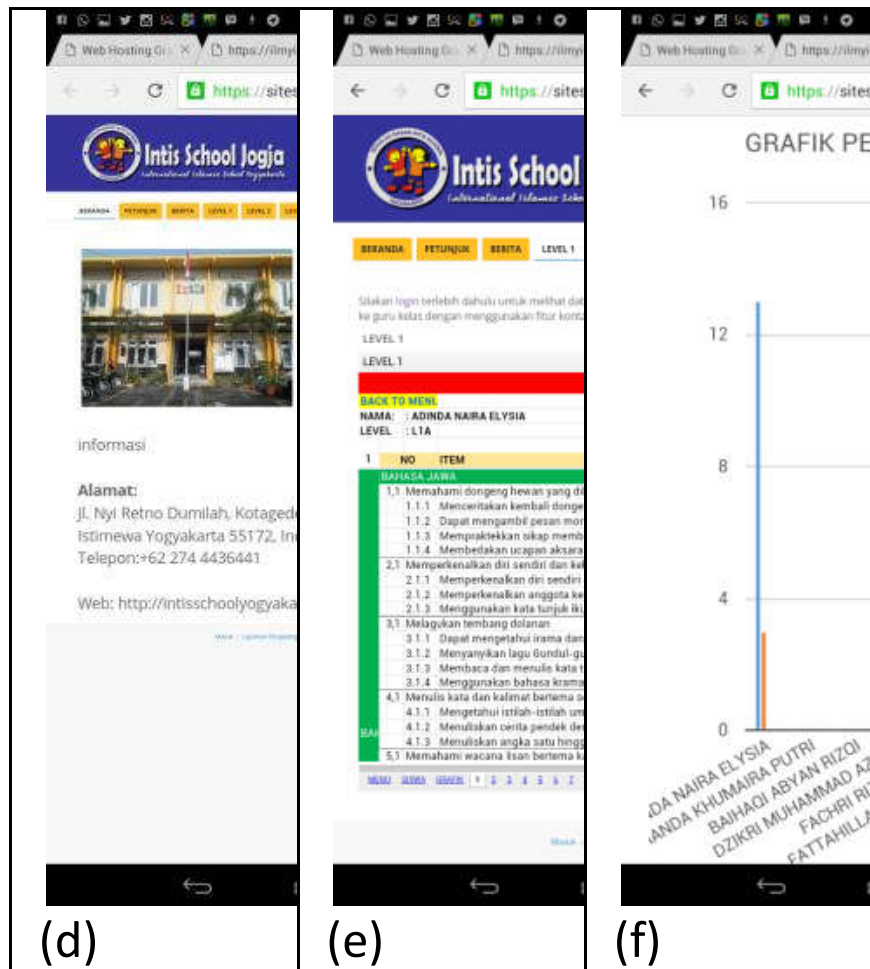


Figure 1. User interface of <http://spa.edutech.web.id> in *smartphone*

In this study, the results of the development are socialized through creating system guides that distributed to several schools in Yogyakarta. Results of the development are expected to be applied massively in some schools in need.

2. Validation of media expert

The results of media expert validation can be seen from the table 2 - 7

Table 2. Aspects of correctness

No	Statement	Evaluation	Score
<i>Correctness</i>			
1	The information system according to user requirements specifications	Agree	4
2	The information system in accordance with the characteristics of adult users	Agree	4
3	Posts in the system information can be read clearly	Strongly agree	5
4	Posts in the information system can be well understood	Agree	4

Total Score	17
Mean Score	4.25

Table 3. Aspects of reliability

No	Statement	Evaluation	Score
<i>Reliability</i>			
1	The information system has a consistency in display content	Agree	4
2	The information system has a consistent navigation buttons on each page	Agree	4
3	System information can be accessed by multiple users simultaneously	Strongly agree	5
4	System information can be accessed at	Strongly agree	5

	any time via the Internet		
5	System information can be accessed quickly	Strongly agree	5
6	Information systems to store and display data in an accurate and systematic	Agree	4
Total Score			27
Mean Score			4.50

Table 4. Aspects of usability

No	Statement	Evaluation	Score
<i>Usability</i>			
1	The information system has a menu option that is easy to understand	Agree	4

2	The information system is easy to learn through the instructions for use	Strongly agree	5
3	The information system is run and managed	Agree	4
4	The information system has a good graphic design	Agree	4
5	The layout of the information contained in the screen is very clear	Agree	4
Total Score			21
Mean Score			4.20

Table 5. Aspects the functionality

No	Statement	Evaluation	Score
<i>Functionality</i>			
1	Admin login function, teachers, and parents are functioning properly	Agree	4
2	Function keys are functioning properly	Strongly agree	5
3	Function discuss parents and teachers are functioning properly	Agree	4
4	Form filling and editing functions achievement of competence for teachers already working properly	Agree	4
5	Achievement of competence graphics	Agree	4

	functions are functioning correctly		
6	Functions see data are functioning properly	Strongly agree	5
7	Logout function admin, teachers and parents are functioning properly	Agree	4
Total Score			30
Mean Score			4.29

Table 6. Aspects of Portability

No	Statement	Evaluation	Score
<i>Portability</i>			
1	The information system can be accessed via PC (Personal Computer)	Agree	4

2	The information system can be accessed via smartphone	Strongly agree	5
3	The information system can be opened in all browsers well	Agree	4
Total Score			13
Mean Score			4.33

Table 7. Aspects of maintainability

No	Statement	Evaluation	Score
<i>Maintainability</i>			
1	The information system makes it easy to modify or change features in it	Agree	4
2	The system is able to continue the process of access to information (resume working) and	Agree	4

3	recovering data (restore data) in case the connection is lost If an error occurs , the system provides a notification message about the steps that must be done to address the problem	Agree	4
Total Score			12
Mean Score			4

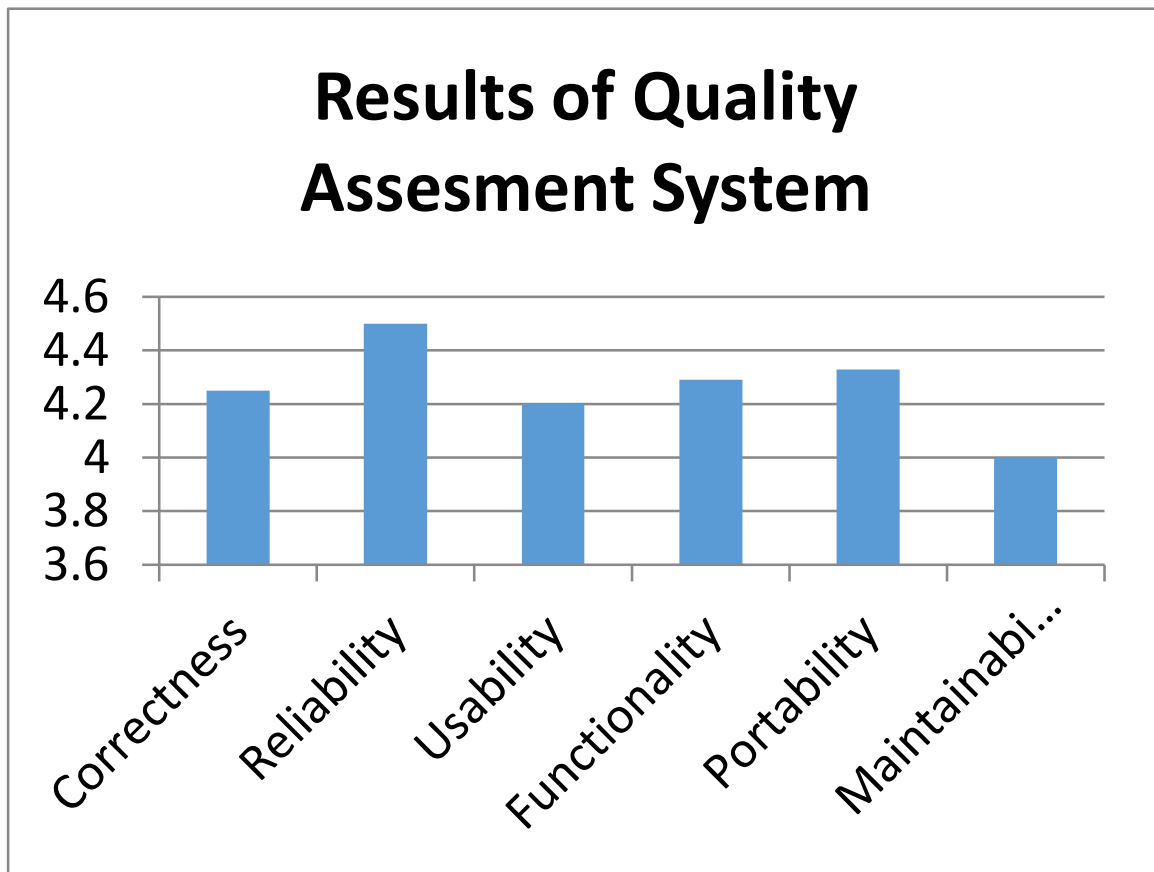
Based on the data presentation from six media aspects of expert validation and guidance categories have researchers calculated assessment, product quality can be interpreted in the following table:

Table 8. Conclusion of quality assessment system

Aspect	The mean scores	Evaluation Category
Correctness	4.25	Very good
Reliability	4.50	Very good

Usability	4.20	Very good
Functionality	4.29	Very good
Portability	4.33	Very good
Maintainability	4	good
Mean	4.26	Very good

Figure 2. Diagram of quality assessment system



Result of the above data could be analyzed that the product of Authentic Assessment Information System got mean score of assessment from six aspects of 4.26. Product is categorized as "Very Good"

so that the product deserves to be tested to the next phase of the beta testing.

3. Validation of matter expert

Here is the assessment result of matter expert can be seen in Table 9 below:

Table 9. Aspects of content correctness

No	Statement	Evaluation	Score
Content Correctness			
1	Content presented in accordance with the competence of subjects	Strongly agree	5
2	Content presented in accordance with the needs of the school field	Agree	4
3	Content presented in accordance with the principles of authentic assessment	Strongly agree	5
4	Content presented in accordance with the	Agree	4

	characteristics of system users (teachers and parents)		
5	Content presented in accordance with the preliminary data provided by schools	Agree	4
6	Content that contains graphics very easy to determine the achievement of competence	Agree	4
Total Score			26
Mean Score			4.33

Table 10. Aspects of clarity content

No	Statement	Evaluation	Score
Clarity Content			

1	Information contained in the information system is clear and easy to understand	Strongly agree	5
2	Information contained in the information system is complete	Agree	4
Total Score			9
Mean Score			4.50

Based on the presentations of data on two aspects of matter expert validation and guidance categories, assessment of product content could be interpreted in the following table:

Table 11. Conclusion of content assesment

Aspect	The Mean	Evaluation Category
Content Correctness	4.33	Very good

Clarity Content	4.50	Very good
The mean	4.42	Very good

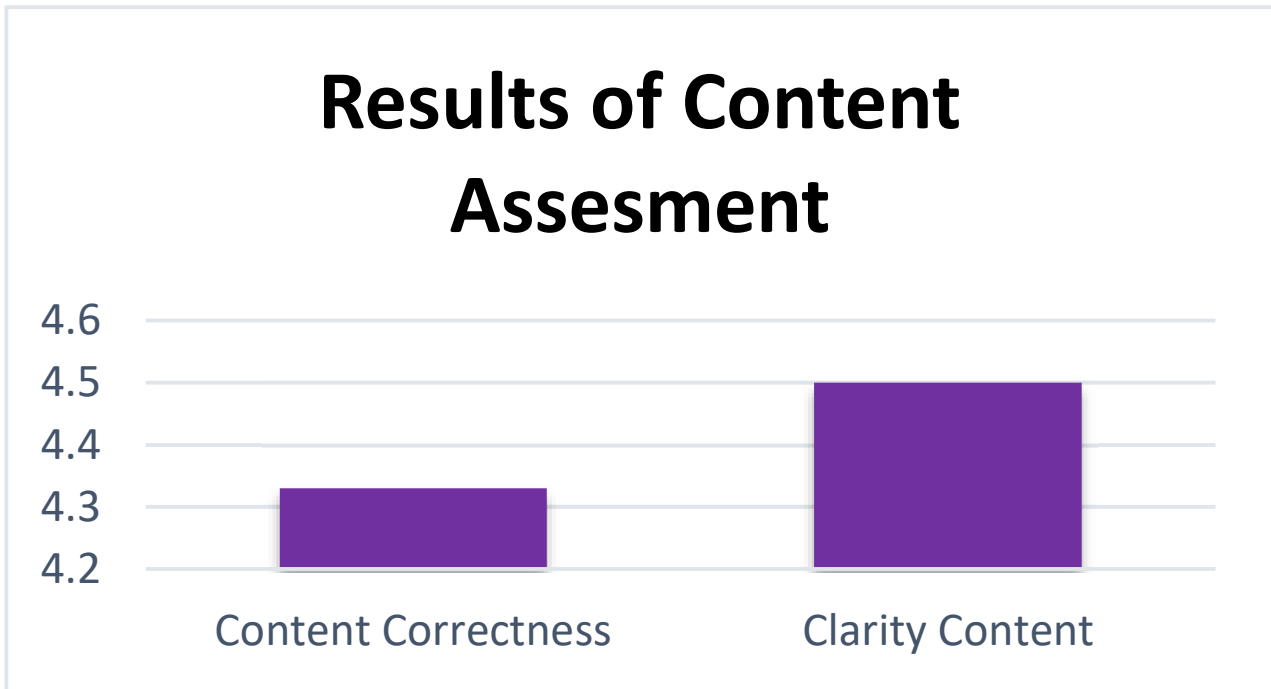


Figure 3. Diagram of content assesment results

Results of the above data, Researchers analyzed the product 'Authentic Assessment Information System' that get a mean score of assesment content from two aspects of 4.42. Product is categorized as "Very Good" so that the product deserves to be tested to the next phase of the beta testing.

4. The beta testing (teachers as users)

The number of teacher respondents is as many as six people. Teachers used their laptop and connected to wireless network school in beta testing. The teachers are female with a mean age of 24 years old. Fourteen points of assessment have a 'Good' category while an item is declared 'Very Good'. An item is about "using of the system very simple". Based on the average of the results that are categorized as 'Good' category, the product in beta testing for teachers is concluded qualify to use. See Table 12.

5. The beta testing (parents as users)

The number of parent respondents is as many as five people. The age average of parents is a mean 39 years old. Fifteen points of assessment by parents have more varying results category rather than by the teacher. The number of items categorized as 'Good' is 2 points while the 'Very Good' category is 13 point. The highest average is in points containing "This system is very easy to learn". Based on the average of the results that are categorized as 'Very Good'

category, the product in beta testing for teachers is concluded qualify to use. See Table 13.

Table 12. Assessment of teachers as users

No	Statement	Respondent assessments						Mean	Category
		01	02	03	04	05	06		
1	This system is very easy to learn	4	4	4	4	4	4	4,00	Good
2	How to use this system is very simple	4	4	4	4	4	5	4,17	Very Good

3	I can complete my duties effectively using this system	4	4	4	3	4	4	3, 8 3	Go od
4	I quickly finished my work using this system	3	3	4	3	4	4	3, 5 0	Go od

5	I feel comfortable using this system	4	4	4	4	4	4	4,000	Good
6	I am sure I will be more productive when using this system	4	5	4	3	4	3	3,833	Good

7	If an error occurs, the system provides a notification message about the steps I did to fix the problem									
		4	4	4	3	4	3	3, 6, 7		Go od
8	Whenever I make									
		4	4	4	3	4	4	3, 8, 3		Go od

	e a mist ake , I can go back and reco ver quick ly								
9	The infor mati on provi ded by this syste m is very clear and easy to	3	4	4	4	4	3	3, 6 7	Go od

	understand								
10	Easy to find the information I need	4	4	4	4	4	4	4,000	Good
11	The layout of the information contained in the screen is	4	4	4	3	4	4	3,830	Good

	very clear								
1 2	Display system is very easy	4	4	4	3	4	4	3, 8 3	Good
1 3	I like to use this kind of system view	4	4	4	4	4	4	4, 0 0	Good
1 4	The system provides the functional	4	4	4	4	4	4	4, 0 0	Good

	ity I need in monitoring child development								
15	Overall, I am very satisfied with the performance of this system	4	4	4	4	4	4	4,00	Good

The Mean	3,87	4,00	4,00	3,53	4,00	3,87
Category	Good	Good	Good	Good	Good	Good

Table 13. Assessment of parents as users

No	Statement	Respondent assessments					Mean	Category
		07	08	09	10	11		
1	This system is very easy to learn	4	5	4	5	5	4,60	Very Good
2	How to use this system is very	3	5	4	5	5	4,40	Very Good

	simpl e							
3	I can compl ete my duties effecti vely using this syste m	3	5	4	5	4	4, 20	Ver y Goo d
4	I quickl y finish ed my work using this syste m	3	5	4	5	4	4, 20	Ver y Goo d
5	I feel comfo rtable using	3	5	3	5	4	4, 00	Goo d

	this system							
6	I am sure I will be more productive when using this system	4	5	4	5	5	4,60	Very Good
7	If an error occurs, the system provides a notification message about	4	4	3	4	4	3,80	Good

	the steps I did to fix the problem							
8	When ever I make a mistake , I can go back and recover quickly	4	5	3	4	4	4,00	Good
9	The information provided by this syste	4	5	4	5	5	4,60	Very Good

	m is very clear and easy to understand							
10	Easy to find the information I need	3	5	4	5	5	4,40	Very Good
11	The layout of the information contained in the screen is	4	5	4	5	4	4,40	Very Good

	very clear							
1 2	Display system is very easy	4	5	4	5	5	4, 60	Very Good
1 3	I like to use this kind of system view	3	4	4	5	5	4, 20	Very Good
1 4	The system provides the functionality I need in monit	4	4	4	5	5	4, 40	Very Good

	oring child devel opme nt							
1 5	Overa ll , I am very satisfi ed with the perfor manc e of this syste m	3	5	4	5	5	4, 40	Ver y Goo d
The Mean		3, 53	4, 80	3, 80	4, 87	4, 60		
Catagory		G oo d	Ve ry G oo d	G oo d	Ve ry G oo d	Ve ry G oo d		

Conclusion

1. The results of the research and development of products such as 'Information Systems Authentic Assessment' that was developed using the Google Apps. This application is web based and can be accessed through <http://spa.edutech.web.id> page. This application is intended for schools that have attempted to apply authentic assessment in achieving of learning competency. This product was developed based on the needs of teachers and parents collaborating to monitor the children's learning development. Print view of the system can be seen in the attachment of study outcomes.
2. Appropriateness of the products have been assessed by the category of 'Very Good' in the alpha testing, the 'Good' category in beta testing by teachers, and the 'Very Good' category by parents. This product is summed feasible to be used based on software quality assessment instruments and usability testing.

Suggestion

1. This application needs further implementation in order to benefit widely.

2. Follow-up of this study is sending guidance manual to schools that has criteria. Hopefully, there is cooperation in utilizing product. Necessary for developing and continuing research in the same theme so that similar products can be enhanced.