Development Application of National Curriculum-Based Learning Outcome Assessment

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This study aims to find out how to develop the application of learning values based on the national curriculum for teachers and operators at the Pontianak Vocational High School level. The development phase starts from design, implementation, validation, and revision and the last is the trial phase. This research is a Research and Development (R&D) research with the form of waterfall modeling development. The results of this study are based on testing stages I and 2 are categorized as Very Eligible. This research also produces learning assessment applications that can be used to recapitulate values, both knowledge and skill competencies as evidenced by the results of system/application tests for teachers and operators of Vocational High Schools (SMK) in Pontianak. The conclusion of this study is the application developed is very feasible to use to manage value data that is arranged in the value of student learning outcomes.

Keyword: application development, national curriculum, assessment

INTRODUCTION

The Word “curriculum” generally refers to a series of courses that help learners achieve specific academic job goals. The curriculum often consists of general learning objectives and a list of courses and resources. Some curriculums are more like lesson plans, containing detailed information on how to teach courses, complete with discussion questions and activities specific to learners. Curriculum is a plan developed to facilitate the teaching and learning process under the direction and guidance of a school, college, or university and its staff members Then Muslich defines the curriculum as a set of plans and systems on the content and materials to be taught as well as the methods used to carry out teaching and learning activities in schools. Similar to Muslich’s definition, our government has defined the curriculum as a set of plans and systems on goals, content and materials and methods used to carry out the teaching and learning process to achieve certain educational goals (Law No. 20/2003, National education system)(Nasional, 2003). Curriculum development includes a variety of activities around the creation of a planned curriculum, pedagogy, instruction, and delivery methods to guide student learning. Indonesia has undergone eleven changes or curriculum transformations since the country’s founding. Transformation of Indonesian language curriculum(Wahyuni, 2016)(Muth’im, 2014).

This can be seen as follows: Curriculum 1947 (study plan clearly described in the study description), Curriculum 1964 (study plan for Elementary School), Curriculum 1968 For Elementary School, Curriculum 1973 (Project on pioneering school Development), Curriculum 1975 Elementary School, Curriculum 1984, Curriculum 1994, Curriculum 1997 (revision of curriculum 1994), Curriculum 2004 pioneering Competency Based Curriculum (KBK) Or Competency Based Curriculum, Curriculum Level Education Unit (KTSP) 2006, andil Curriculum 2013. This is an organized preparation of anything that will be taught in school at any given time of the year. They are made into official documents, as guides for teachers, and made mandatory by provincial and territorial departments. Curriculum changes are logical consequences of changes in the political, social, cultural, economic and science systems(Ilma & Pratama, 2015)(Ritonga, 2018)(Abdullah, 2007) (Leo Agung, 2015).

The development of Science and Technology today has brought almost all aspects to be more advanced than the previous year, the development also improves the ability to obtain accurate and reliable information One of the areas that have a significant influence is the field of education, where basically Education is communication between teachers and students that contains educational information that has elements of educators such as information sources, media and facilities as well as presentation of ideas, ideas and educational materials as well as students themselves(Biesta, 2015)(Syahrial et al., 2019)(Asrial, Syahrial, Kurniawan, Subandiyo, & Amalina, 2019).

In the process of learning, the need for an application that can find out a learning outcome goes well or not. The app can store learning outcomes and can make it easier for teachers and school operators to enter student learning outcomes(Lin, Chen, & Liu, 2017)(Hallinger & Heck, 2011)(Van der Kleij, Feskens, & Eggen, 2015)(Nofriansyah, Ganefri, & Ridwan, 2020). Value data is inputted and later will be printed, of course in input it takes a long time if using manually. Especially for the process of printing Learning Value sheets that must be completed on time before the schedule of learning value division. Even inputs that are done using a computer still require a short time in inputting it if the application used does not meet the necessary needs. Vocational schools in Pontianak have Learning Value that has been using computerized systems to date. The Learning Value is still using the KTSP curriculum assessment system used for the class of 2013 to the 2015 class but not for the 2016 class. Based on observations and interviews that researchers submitted to vocational schools in Pontianak that the new school year will implement a replacement curriculum 2013 in accordance with the direction of the Education Office. Currently at a vocational school in Pontianak, the learning value administration system starts from the subject teacher giving grades to each homeroom teacher who will later enter the grade into the leger document. Leger is a class guardian supporting document containing student data that becomes class guidance, values derived from the teacher. After all the grades have been collected, the homeroom teacher hands the leger over to the operator to input and print. Before printing the operator shows input data for the homeroom teacher check first. It was only then that the Learning Value sheets were printed. In addition to the operator, some

homeroom teachers input their own grades without the help of the operator. This homeroom teacher is a teacher who is familiar with computers and has more time to input her data. Meanwhile, the homeroom teacher who submits the value input process to the operator is the teacher who has an additional task so that he does not have much time to input it.

The results of the research were analyzed quantitatively based on observations and discussions which showed that all technical guidance participants were able to fill in the e-report system according to their respective roles after technical guidance was carried out for filling in the e-report card system. Another research has also been conducted under the title development of an instrument to measure preservice teachers' technology skills, technology beliefs, and technology barriers. The result of this study is a valid and reliable measure of teachers' technology skills, beliefs, and barriers and has implications for preservice teacher technology preparation(Kovalik, Kuo, & Karpinski, 2013). The research was conducted under the title Designing Student Registration Book and Application for Processing Student Reports at SD Pangudi Luhur Don Bosco Semarang. As for the results of this study, applications that can store data with a much larger capacity, so that they can continue to be used for years. This application can process student data and become a good student data archive(Susanto, Widyarto, & Harnadi, 2020). Research that discusses software development in this study is something that has never been done, therefore researchers want this research to be a reference for other researchers.

In this application all input results will be given to the operator to be collected and grouped to facilitate administration later by the Administration. Administration requires this Learning Value data for the purposes of the Education Office. This value is needed to find outstanding learners to be submitted for an education scholarship. in implementation is still schools that have not used computers optimally, because most use computer technology simply as in the form of worksheets with simple formulations for data processing. The problem experienced by vocational schools in Pontianak is in terms of processing value learning value data where the data processing is still processed computerized but using the KTSP Assessment model which is of course different from the new curriculum, namely the National curriculum.

KTSP assessment and assessment on the national curriculum are very different. Assessment in the KTSP curriculum of each subject is given a value with a scale of 1-99, while in the National Curriculum each subject is given 2 types of value, namely the value of knowledge and value of skills with a scale of 1-99 each. Computer education application in vocational processing in Pontianak will be effective and efficient in processing data value of Learning Value(Ilma & Pratama, 2015)(Nasir, 2020). Effectively and efficiently can be interpreted by not taking a long time, the number of people needed is not much and the funds spent are not large so that the teaching and learning process in schools becomes smoother, timelier, and better. Until now, there has been no provision of Learning Value by the relevant agency about the Learning Value of this national curriculum. In fact, The Value of Learning is important in school administration, especially in Vocational Schools in Pontianak. Therefore, the development of The Value of Learning document is necessary to look at the approach of the new school year, the development of Learning Value using the curriculum assessment system resulting from the development of the 2013 Curriculum, namely the National Curriculum(Rudy, 2015)(Ramdani, M. Agphin Ramadhan & Students, 1968)(Setiawan, 2020).

Seeing the importance of Learning Value to complement school administration and the need to immediately create a new Learning Value for the new curriculum, namely the National Curriculum, it is necessary to develop applications for Value of Learning. Not only that, but this development is also considered important to see the situation of research subjects, related agencies still have not provided a Learning Value application to use.

Based on the very important things mentioned earlier, the researcher tried to develop the application of the Application of Learning Value of the National Curriculum for Teachers and Operators in Vocational High Schools in Pontianak (SMK). The questions in this study were How to design the National Curriculum Learning Value application for teachers and operators in SMK in Pontianak? How is the feasibility of implementing the National Curriculum Value application for teachers and operators at SMK in Pontianak?

How do teachers and operators respond to the implementation of the National Curriculum Value Learning application for teachers and operators at SMK in Pontianak?

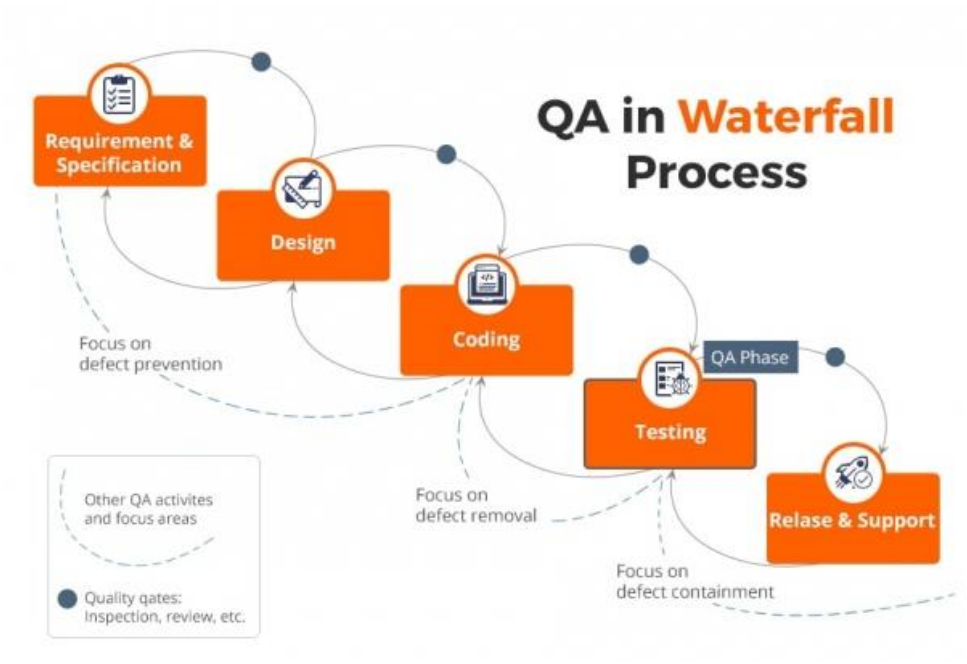
RESEARCH METHOD

Types and Forms of Research

In this study, researchers used Research and Development(R&D) research. In the implementation of R&D, there are several methods used, namely descriptive, evaluative, and experimental methods (Hendri & Anugrah, 2019) (Nofriansyah et al., 2020). Descriptive research methods were used in the initial research to gather data on existing conditions. Evaluative methods are used to evaluate the process of testing the development of a product. And experimental methods are used to test the efficacy of the resulting product.

There are several models of development stages, one of which is waterfall modeling development used in this research(Mulyanto, 2009)(Bassil, 2012)(Adetokunbo & Basirat, 2014). The procedures or stages in its development can be seen in the picture below:

FIGURE 1
WATERFALL PROCEDURE



Investigation Stage

It is done to determine if there is a problem or is there a chance that a report system can be developed. At this stage, a feasibility study needs to be conducted to determine whether the application to be developed is a viable solution.

Analysis Stage

It aims to find the needs of users and organizations and analyze existing conditions (before new applications are implemented).

Design Stage

Aims to determine the detailed specifications of application component components (human, hardware, software, network, and data) and information product products in accordance with the results of the analysis stage.

Implementation Stage

It is a stage to obtain or develop hardware and software (coding programs), conduct testing, training, and transfer to new systems.

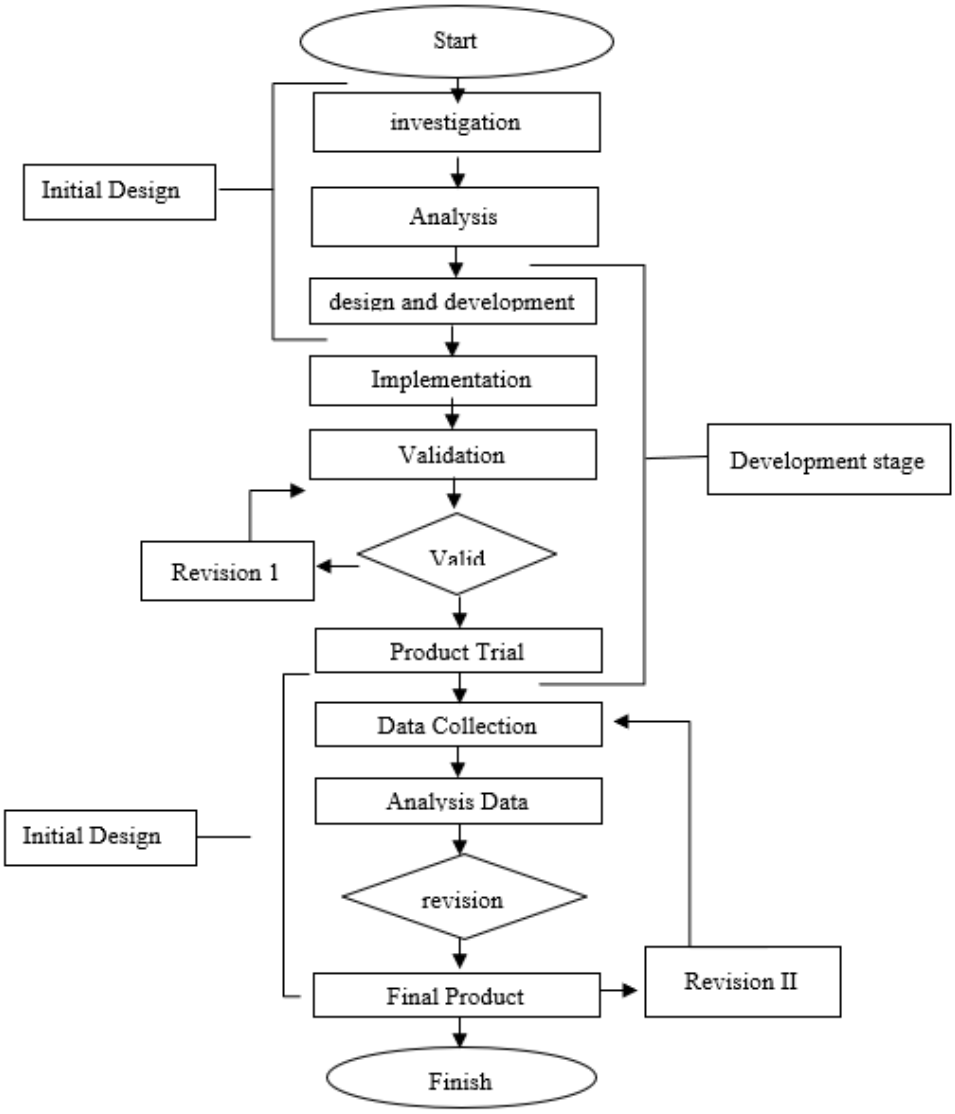
Stages of Maintenance

This stage is performed when the application is already in operation. At this stage, monitoring the process, evaluation, and changes (improvement) when needed.

Development Procedures

Research and development procedures follow the flow according to the modified waterfall model(Munassar & Govardhan, 2010)(Sethi, 2016)(Jr, 2020). The design and flow of research can be described in the following stages:

FIGURE 2
DEVELOPMENT FLOWCHART



Early Stages

Investigation

At this stage of the investigation is carried out a search for the possibility of this report application developed and is the best solution. The investigation stage also collects data that may be needed in future development.

Analysis Stage

Vocational Schools in Pontianak currently require a report card used at the end of each semester, the needs needed in each school are the same with a slight difference in each school.

Development Stage

Design Stage

Make an initial design of the display of data input in the report application later, by considering the aspects and needs obtained from the results of communication with the research subject.

1) Home. The initial page containing the menus as navigation to use the outcomes application. It is expected that the menu on this front page includes the entire function of the outcomes.
2) Primary Data Input Page. The main data in question is student data containing the student's name, NIS/NISN, class name and nip, ranking, major, Study program, and the date of distribution of the report.
3) Learning Data Input Page and Graduation Grade Standard. The data filling on this page is subject data and minimum grade standards that will be used on the filling of grades.
4) Extracurricular Input Page. Some students have Extracurricular spirit whose grades and predicates will be included in this page.
5) Semester Report Value Input Page. Filling in the data that is the values of each lesson. The value entered will appear during the printing process.
6) Semester Description Input Page. In the National curriculum, the grade description is part of the semester value, which contains the text of the student's progress description.
7) Printed Pages. Report printing is the most important thing in the application, so a print sheet design must be created. The design of this report from the example given in the previous section which was modified according to the needs of the school. With the provisions of A4 paper size, and the weight of the paper adjusts to the needs.

Implementation Stage

It is a stage to obtain or develop hardware and software (coding programs), conduct testing, training, and transfer to new systems. This stage is arguably the most important stage in the overall branching.

Expert Validation

Validation is done including product validation by experts. Product validation is done to see how feasible and can achieve research objectives. Validation contains activities validating the content of the application by experts. This validation test also answers the third sub issue.

Revision I

Revision I is done to improve the application in certain aspects, such as layout, color, text, and others according to the tangent of expert validation.

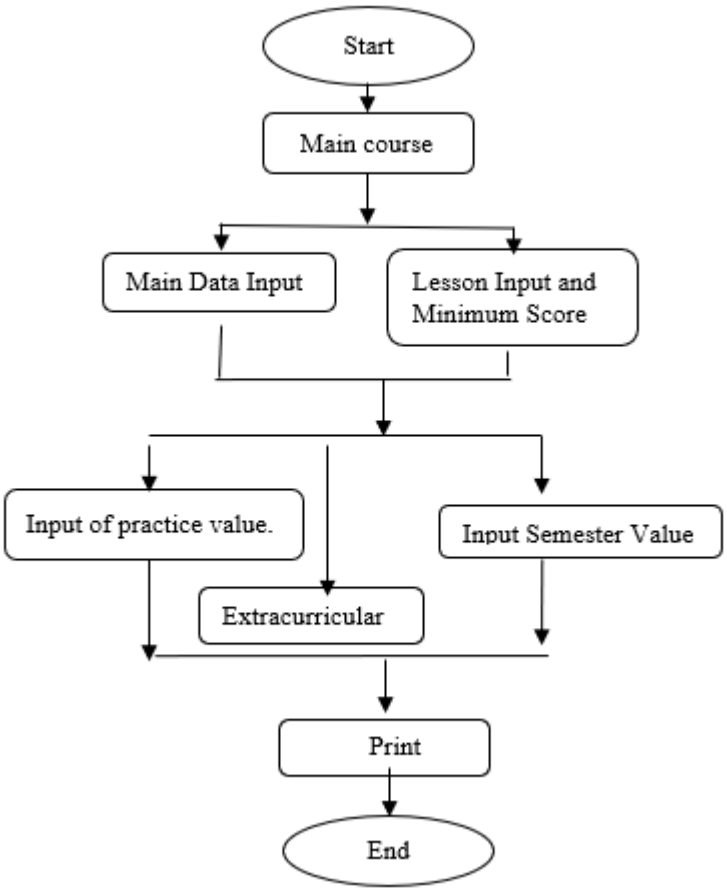
Final Stage

The final stage is carried out as the final stage which includes testing, data collection from teachers and operators *who are users who* directly use the product, to be caught data in the form of product responses or responses that are materials for product revision II that after completion will reach the final product.

Application Design

The design is required to form applications according to minimum requirements. Applications are designed on a *sheet-by-sheet form with* each sheet representing s*pecifica*tion-tan input. On the front page is given a User *Interface* to represent each input Application is expected to be able to overcome all requests for data entered the report. The data entered is data such as student data, grades, descriptions, absences, homeroom data, and print sheets. The initial design of the application can be seen in the following image.

FIGURE 3
APPLICATION DESIGN



For the sake of ease of navigation, the application is designed in such a way as to make it easier for users to use the application on the side of the user interface. The menu in the application is designed in such a way that consists of the main data menu containing the main data, the 1st semester value menu, the 2nd semester value menu, the 3rd semester value menu, the 5th semester value menu, the 6th semester value menu, the extra-curricular menu, the subject menu, and the minimum value standards formed from hyperlinks to each sheet. Hyperlink in the form of a button representing the sheet that stores the data as above.

DISCUSSION AND CONCLUSION

Description of Research Results

Investigation Stage

The results of the investigation stage found several things that make the development of the report application can be done, among others:

a. Operators who have become accustomed to filling in value data. In filling the KTSP curriculum report, operators are accustomed to inputting a lot of value data, and in the future design, the report application will be made in such a way as *to maintain familiarity* with the old system. This will make it easier for the operator later.
b. Operators and homeroom parents have enough Laptops/PCs to use the report application.
c. The condition of schools that require a new report that will be used for the national curriculum.

Stage of Analysis

Some conclusions obtained from the list of needs and requests show can be integrated into the application developed, among others:

a. The value data entered has a range of 1 to 99.
b. Assessment of Knowledge Assessment and Skill Assessment.
c. There is an Internship value.
d. There is a Value of Self-Development
e. Attendance, Class Rank, Average.
f. There is a Description of Learning.
g. Student Achievement
h. Student Name, class guardian name, NIP Class Guardian, and class guardian record.
a. For use for 3 years (semester 1 to semester 6).

Design Stage

Home. The initial page containing the menus as navigation to use the reporter application. Which consists of lessons and minimum standards., Internship value, Extracurricular, Achievement, grades for semester 1, semester 2, semester 3, semester 4, semester 5 and semester 6.

FIGURE 4
REPORT APP HOME PAGE

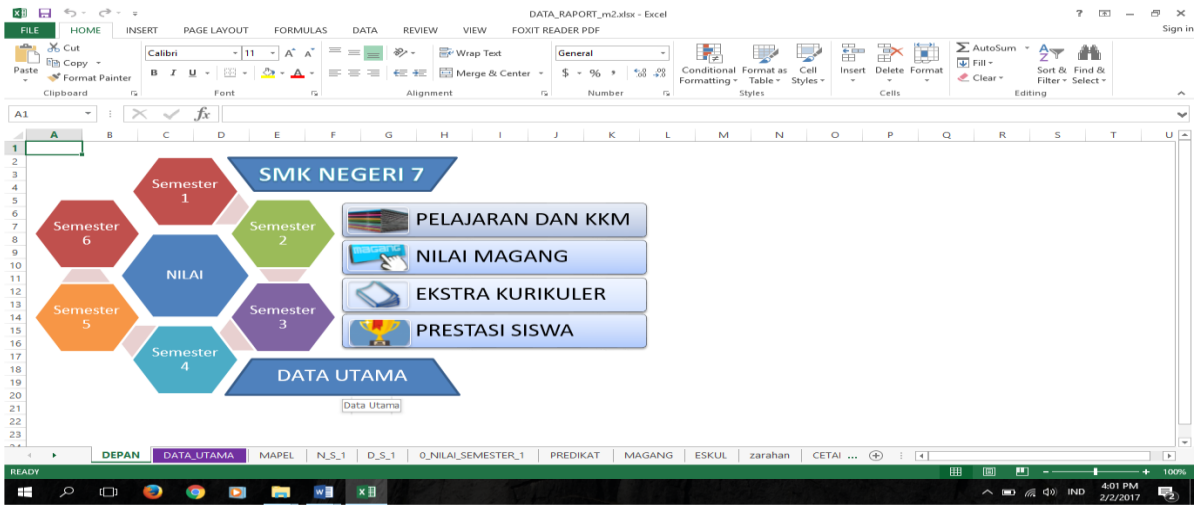
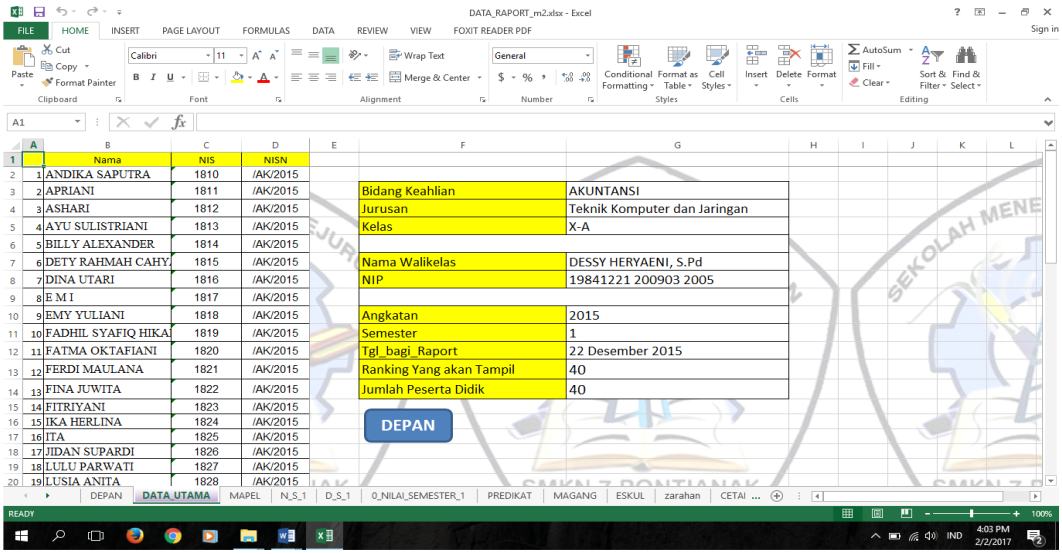


FIGURE 5
MAIN DATA FILLING PAGE

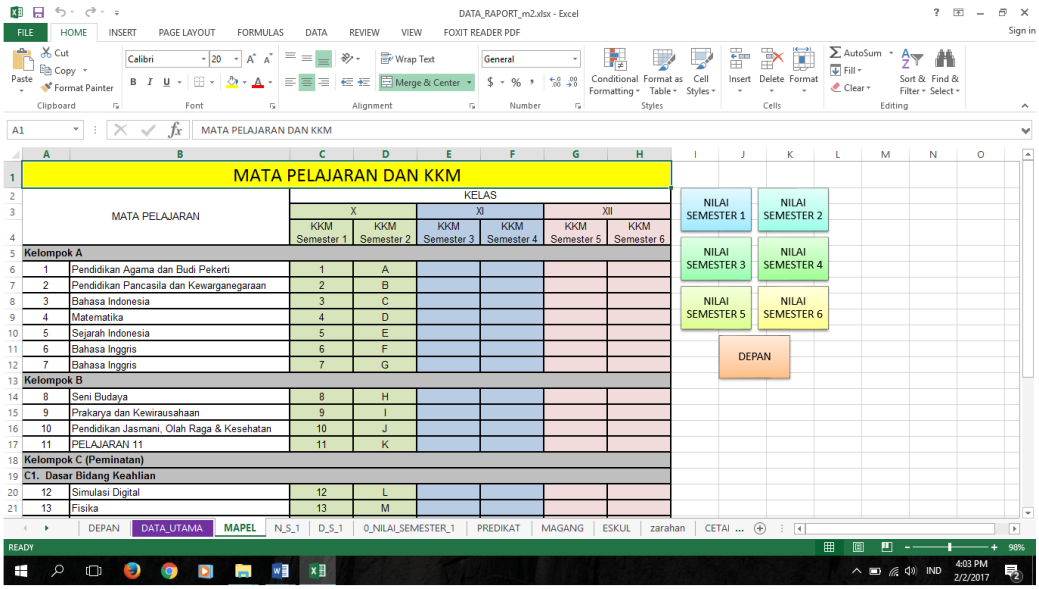


Nama	NIS	NISN
ANDIKA SAPUTRA	1810	/AK/2015
APRIANI	1811	/AK/2015
ASHARI	1812	/AK/2015
AYU SULISTRIANI	1813	/AK/2015
BILLY ALEXANDER	1814	/AK/2015
DETY RAHMAH CAHY	1815	/AK/2015
DINA UTARI	1816	/AK/2015
E M I	1817	/AK/2015
EMY YULIANI	1818	/AK/2015
FADHIL SYAFIQ HIKA	1819	/AK/2015
FATMA OKTAFIANI	1820	/AK/2015
FERDI MAULANA	1821	/AK/2015
FINA JUWITA	1822	/AK/2015
FITRIYANI	1823	/AK/2015
IKA HERLINA	1824	/AK/2015
ITA	1825	/AK/2015
JIDAN SUPARDI	1826	/AK/2015
LULU PARWATI	1827	/AK/2015
LUSIA ANITA	1828	/AK/2015

Bidang Keahlian	AKUNTANSI
Jurusan	Teknik Komputer dan Jaringan
Kelas	X-A
Nama Walikelas	DESSY HERYAENI, S.Pd
NIP	19841221 200903 2005
Angkatan	2015
Semester	1
Tgl_bagi_Raport	22 Desember 2015
Ranking Yang akan Tampil	40
Jumlah Peserta Didik	40

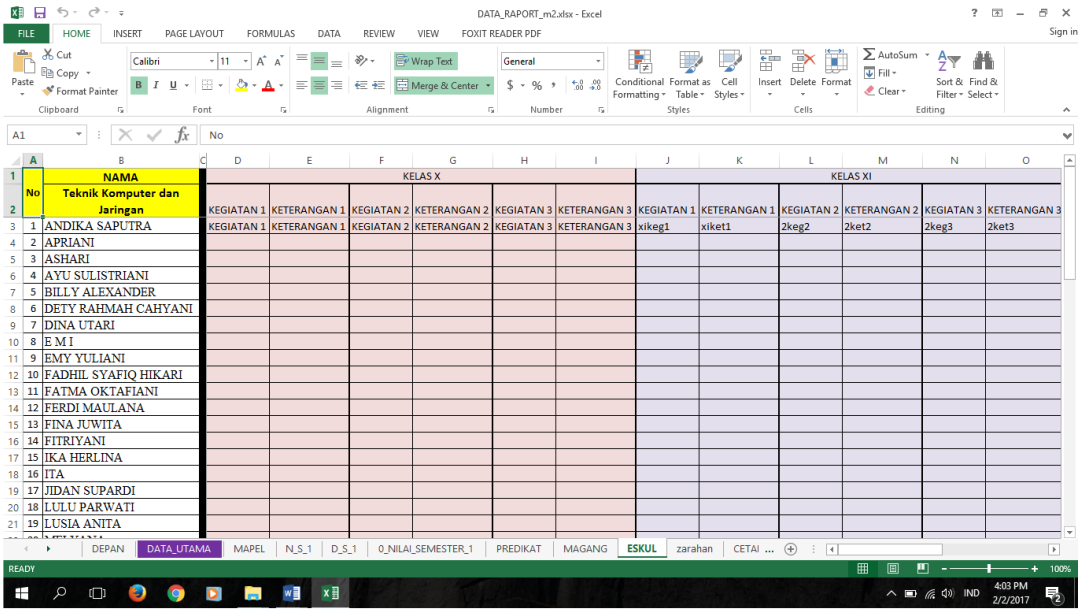
DEPAN

FIGURE 6
SUBJECT FILLING PAGE AND KKM



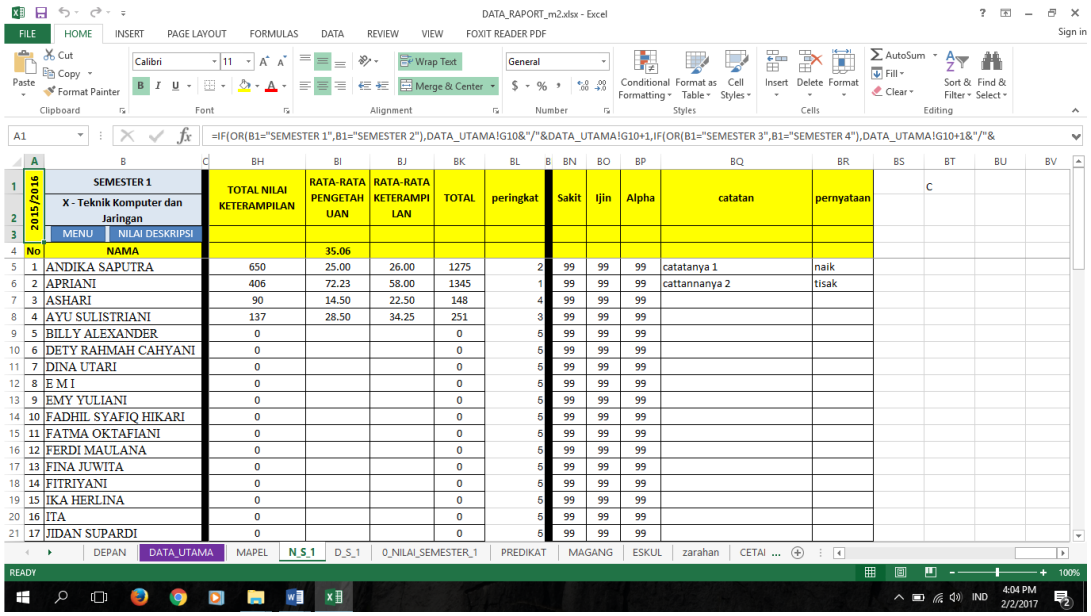
MATA PELAJARAN	KELAS X KKM Semester 1	KELAS X KKM Semester 2	KELAS XI KKM Semester 3	KELAS XI KKM Semester 4	KELAS XII KKM Semester 5	KELAS XII KKM Semester 6
Kelompok A						
1 Pendidikan Agama dan Budi Pekerti	1	A				
2 Pendidikan Pancasila dan Kewarganegaraan	2	B				
3 Bahasa Indonesia	3	C				
4 Matematika	4	D				
5 Sejarah Indonesia	5	E				
6 Bahasa Inggris	6	F				
7 Bahasa Inggris	7	G				
Kelompok B						
8 Seni Budaya	8	H				
9 Prakarya dan Kewirausahaan	9	I				
10 Pendidikan Jasmani, Olah Raga & Kesehatan	10	J				
11 PELAJARAN 11	11	K				
Kelompok C (Peminatan)						
C1. Dasar Bidang Keahlian						
12 Simulasi Digital	12	L				
13 Fisika	13	M				

FIGURE 7
EXTRACURRICULAR DATA FILL PAGE



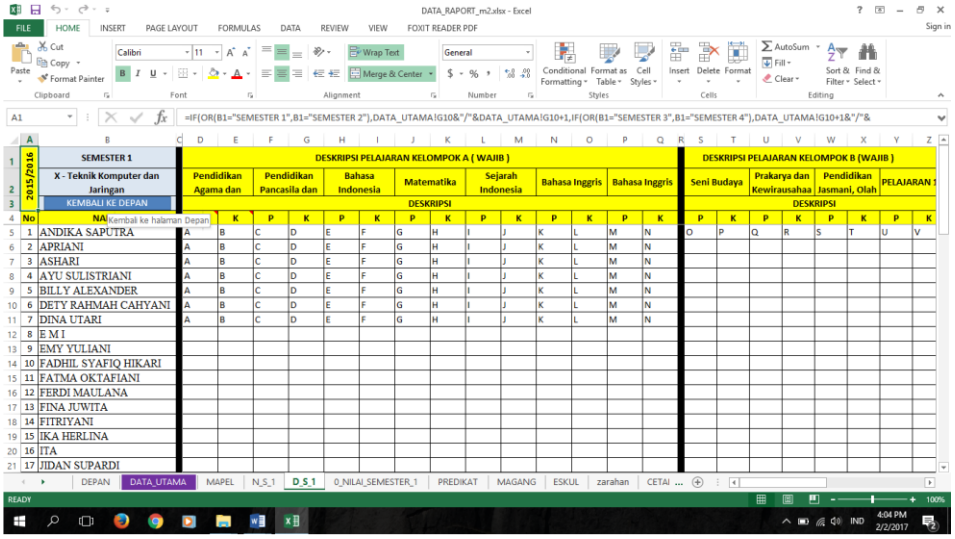
No	NAMA	KELAS X						KELAS XI					
	Teknik Komputer dan Jaringan	KEGIATAN 1	KETERANGAN 1	KEGIATAN 2	KETERANGAN 2	KEGIATAN 3	KETERANGAN 3	KEGIATAN 1	KETERANGAN 1	KEGIATAN 2	KETERANGAN 2	KEGIATAN 3	KETERANGAN 3
1	ANDIKA SAPUTRA	KEGIATAN 1	KETERANGAN 1	KEGIATAN 2	KETERANGAN 2	KEGIATAN 3	KETERANGAN 3	xikeg1	xiket1	2keg2	2ket2	2keg3	2ket3
2	APRIANI												
3	ASHARI												
4	AYU SULISTRIANI												
5	BILLY ALEXANDER												
6	DETY RAHMAH CAHYANI												
7	DINA UTARI												
8	E M I												
9	EMY YULIANI												
10	FADHIL SYAFIQ HIKARI												
11	FATMA OKTAFIANI												
12	FERDI MAULANA												
13	FINA JUWITA												
14	FITRIYANI												
15	IKA HERLINA												
16	ITA												
17	JIDAN SUPARDI												
18	LULU PARWATI												
19	LUSIA ANITA												

FIGURE 8
SEMESTER VALUE FILLING PAGE



2015/2016	SEMESTER 1	TOTAL NILAI KETERAMPILAN	RATA-RATA PENGETAHUAN	RATA-RATA KETERAMPILAN	TOTAL	peringkat	Sakit	Ijin	Alpha	catatan	pernyataan
	X - Teknik Komputer dan Jaringan										
	MENU / NILAI DESKRIPSI										
No	NAMA		35.06								
1	ANDIKA SAPUTRA	650	25.00	26.00	1275	2	99	99	99	catatanya 1	naik
2	APRIANI	406	72.23	58.00	1345	1	99	99	99	cattannanya 2	tisak
3	ASHARI	90	14.50	22.50	148	4	99	99	99		
4	AYU SULISTRIANI	137	28.50	34.25	251	3	99	99	99		
5	BILLY ALEXANDER	0			0	5	99	99	99		
6	DETY RAHMAH CAHYANI	0			0	5	99	99	99		
7	DINA UTARI	0			0	5	99	99	99		
8	E M I	0			0	5	99	99	99		
9	EMY YULIANI	0			0	5	99	99	99		
10	FADHIL SYAFIQ HIKARI	0			0	5	99	99	99		
11	FATMA OKTAFIANI	0			0	5	99	99	99		
12	FERDI MAULANA	0			0	5	99	99	99		
13	FINA JUWITA	0			0	5	99	99	99		
14	FITRIYANI	0			0	5	99	99	99		
15	IKA HERLINA	0			0	5	99	99	99		
16	ITA	0			0	5	99	99	99		
17	JIDAN SUPARDI	0			0	5	99	99	99		

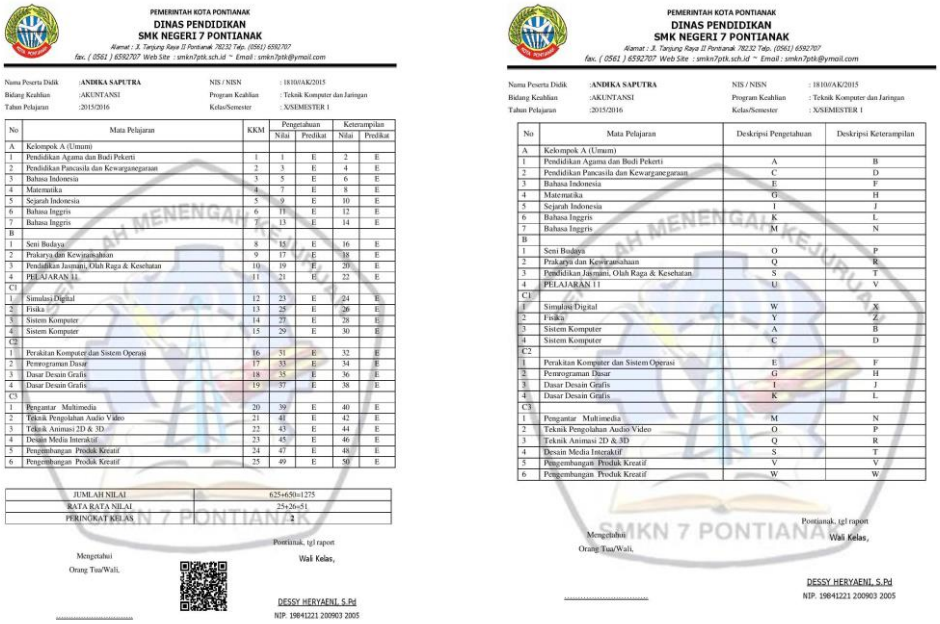
FIGURE 9
SEMESTER DESCRIPTION FILL PAGE



The printout of this report is used as evidence to students and parents who contain the results of their assessment for 1 semester. Print pages are used to print report documents, either individually, by printing only a few students or can also be used to print in bulk which means printing all pages for all students in the filled class.

Printed sheets are also given barcode facilities with a type of Quick-Read code or QR-Code that can be used for security from the report card to prevent the report sheet is modified. The code can also be read by a standard barcode scan tool or can also use the application on a smartphone. The width of the printout is given to the class guardians to be distributed later the distribution of reports at the end of each semester.

FIGURE 10
SHEET PRINTOUT, PICTURE 11 SHEET PRINTOUT 2



Test Results I

From the results of the application in the initial design, in the test and validation by experts. The test focused on the conformity aspect of the application based on the learning assessment guidelines Test results by experts of three people, consisting of The Deputy Principal and Productive Teacher in the Field of Multimedia and Productive Teacher in the Field of Software Engineering Based on the table of test results of phase I, obtained a feasibility score from experts 106 from a maximum score of 120, so that the percentage is 88.3% which category as Very feasible. In the first stage of testing there is also a discrepancy or not in accordance with the point input value of Knowledge and Expertise in accordance with the subjects, looking at the recapitulation of the value of each student and his subjects and User interface is easy and appropriate to use. From the I test it was also obtained that the advice from experts is:

1. On inputting value, the value of knowledge and skills to be presented by filling in the description value.
2. Complete the recapitulation of grades in the form of student ratings.
3. Change *the sheet* list into menus.

Product Revision

From the results of test, I, there is a change / revision of the system design, which was originally only limited to the value / input value of the assessment results, the application added several functions in accordance with the request of experts.

Phase II: Testing

Phase II testing is a field test, applying the system/application into real conditions. Testing of the system / application is tested directly to the father / teacher who has the ability in class X and the operator of the report. Test results are measured on a *Likert scale,* with instruments in the form of questionnaires.

The data of questionnaires by teachers and operators. After being tried by teachers and operators proved that the application in its application reached 75% of the respondents agreed, followed by 25% of respondents gave an assessment agreed to this application, this is likely because some teachers still feel new in using different applications with the usual application. Another possibility is that teachers are used to using the old report system that is still semi-manual semi-automatic that takes more time in operating it for improper assessment, not one respondent felt this application is not feasible in its ease of application and indeed application design to eliminate the appearance in its use.

1. Is application easy to implement?
2. Do you feel helped by the application in filling out the report card?
3. Do you agree that the application is an easy and effective way to fill out the report?
4. Do the teachers intend to use this report application for the future?

Product Discussion

The test was conducted by experts who obtained a percentage of application feasibility results of 88.33% which is categorized as Very Feasible. This result also answers the question on the second sub-issue that contains the level of application feasibility by experts, namely that this application is very feasible to be used for the processing of grades in the National curriculum summarized in the report.

Based on the test results that have been done, the analysis of the level of ease of use of the system / application from the data of questionnaires by the father / teacher examiner shown by the diagrams above illustrates that most respondents / examiners expressed strongly agree that the percentage is 75% for question number 1, who agreed that the application of this report on the application is easy. None of the respondents disagreed. Thus, the application of this learning assessment application can be said to be easy.

In question number 2, most respondents felt helped by the application of the report in filling out the report that can be obtained by 42% of respondents strongly agree and 33% of respondents agree. None of the respondents expressed less or disapproval. It appears that this application does help in the process of filling out the report in accordance with its purpose.

As seen in the pie chart for question number 3, 75% of respondents strongly agreed that implementing this application is an effective way to process the value of the report and 25% agreed. Of these, it has been explained that most respondents approve of the effectiveness of this application, moreover no respondents have stated enough, less or disagree.

Questions asked to respondents about their intention to use this application in the long term can be seen with a percentage of 83% indicating that this report application is highly accepted by teachers and operators at Pontianak Vocational School.

CONCLUSION

Based on the results of the research conducted, it can be concluded as that the application of learning assessment that can be used to recapitulate grades, both knowledge and skill competencies, which is proven by the results of system /application tests to teachers and operators of Pontianak Vocational School.

The test results conducted by experts prove that the report application is categorized as Very Feasible in meeting the needs of the Report. The application of learning assessment can be easily used by teachers, with an average level of convenience of 95%. The report application helps in filling the report, with an average of 75%. Application is an easy and effective way to fill the report, with an average percentage of 75%. The report application will be used in the long term with a respondent's choice rate of 83%.

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