

## Multi User Decision Support System For Teachers Certification With HTTPS

Edi Setiawan  
Department of Computer Science,  
Gorontalo State University  
Jl. Jendral Sudirman 6  
Gorontalo, Indonesia  
Email: [elioedi@gmail.com](mailto:elioedi@gmail.com)

Eko Sedyono  
Department Of Information  
Technology  
Satya Wacana Christian University  
Salatiga, Indonesia  
Email : [ekosed1@yahoo.com](mailto:ekosed1@yahoo.com)

Kodrat Iman Satoto  
Department of Information System  
Postgraduate Program,  
Diponegoro University  
Semarang, Indonesia  
Email : [kodratis@gmail.com](mailto:kodratis@gmail.com)

**Abstract** — Education quality is a key condition to realize the life of a developed nation, modern dan Prosperous. (Fasli Jalal 2008) Teacher quality greatly affect the effectiveness of learning (Suherman, 2007, Rink, 2002).

Teacher certification program is a way to improve the quality of teachers so that the quality of education will be increased dan in turn affect students' achievement (Siedentop & Tannehill, 2000).

The purpose of this paper is to discuss the design of decision support systems passing teacher certification so as to facilitate the certification team dan assessors in the decision making sertikasi teacher graduation.

In this paper we use a qualitative method based on system development life cycle (SDLC), including planning, analysis, design, dan implementation.

Design of decision support systems passing teacher certification can provide information about passing the certification of teachers, as information analysis dan control in teacher certification assessment conducted by the assessor dan teacher certification of graduation information.

**Keywords** : *Teachers Certification, System Development Life Cycle (SDLC), Qualitative Methods, Method of Black Box.*

### I. INTRODUCTION.

Quality education is a key condition to realize the life of a developed nation, modern and prosperous. (Fasli Jalal, 2008) Teacher quality greatly affect the effectiveness of learning (Suherman, 2007, Rink, 2002).

Teacher certification program is a way to improve the quality of teachers so that the quality of education has increased. and in turn affect students' achievement (Siedentop & Tannehill, 2000).

Implementation of teacher certification is a commitment of the government, in this case the Ministry of Education, to implement the mandate of Law Number 14 of 2005, which embody a quality and professional teachers. Given the many variables that influence it, from the system and mechanisms of certification, assessors, until the teachers themselves as the party to be assessed. Own portfolios as assessment

models open the possibility of manipulation of the certification documents.

To overcome this problem, this paper discusses the design of decision support systems passing teacher certification using a qualitative method based on system development life cycle (SDLC). The result serves as a information analysis, control in teacher certification assessment conducted by the assessor and teacher certification of graduation information.

### II. BASIC THEORY

#### A. *Decision Support System*

Understanding decision support systems that raised by Michael S Scott Morton and Peter GW Keen, in the book Management Information Systems (McLeod, 1998) states that the decision support system is a system aimed at producing information on a problem that must be made by the manager.

According to Moore and Chang (2008), SPK can be described as a system capable of supporting ad hoc data analysis, and decision modeling, decision-oriented, future-oriented planning, and is used at times unusual.

Stages of SPK (Moore and Chang, 2008):

1. definition of problem
2. The collection of data or elements of relevant information
3. processing data into information in the form of graphs and written reports
4. determine the alternatives solutions (can be in percentage)

The purpose of the SPK: (Moore and Chang, 2008).

1. Help resolve the problem of semi-structured
2. Supports managers in making decisions
3. Improve the effectiveness rather than efficiency of decision making

The process, SPK can use help from other systems such as Artificial Intelligence, Expert Systems, Fuzzy Logic, AHP, mathematic, qualitative, quantitative, etc.

### B. *Qualitative Methods*

According to Strauss and Corbin (2003) qualitative writings referred to as a type of writing that the findings are not obtained through statistical procedures or other forms of matter. Furthermore, chosen because of steadiness qualitative researcher writing based on experience writing and qualitative methods can provide more details about the complex phenomena that are difficult revealed by quantitative methods.

### C. *System Development Life Cycle (Sdlc)*

SDLC (Systems Development Life Cycle) is an evolutionary process that is followed in implementing the systems and subsystems of computer-based information (McLeod 2001). SDLC consists of a series of tasks that follow closely the steps a systems approach. SDLC consists of five stages. The first four phases are planning, analysis, design and implementation (implementation). The fifth stage is the stage of its use. SDLC is the implementation of a systems approach to the task of developing and using computer-based systems.

The method itself is an SDLC methodology, but the pattern is more influenced by the need to develop a faster system (McLeod 2001).

### D. *Method Of Black Box*

Black box testing focuses on the functional perseratan software (Roger S. Pressman. Ph.D). Thus, black box testing software allows engineers to get a set of input conditions that fully utilizes all the functional requirements for a program. Black box testing is not an alternative to white box techniques, but it is a complementary approach that is most likely able to uncover the error class than the white box method. Black box testing trying to find errors in the following categories:

1. Functions that are not correct or missing.
2. Interface errors.
3. Errors in data structures or external database access.
4. Error performance.
5. Initialization and termination errors.

### E. *Web Security*

HTTPS is the secure version of HTTP, the communication protocol of the World Wide Web. Discovered the World Wide Web by Netscape Communications Corporation to provide authentication and communication tersdani and use in electrical komersi.

HTTPS approach is very simple, the client makes a connection to the server, to negotiate an SSL connection, then sends it via HTTP SSL applications.

Security level depends on the accuracy in implementing the web browser and server software and supported by the actual algorithm penydanian. Therefore, on a web page to use HTTPS and the URL used starts with 'https://' instead of 'http://'

### F. *Implementation Of The Teacher Certification Process*

The birth of Law Teachers and Lecturers in 2005 is a policy to improve the quality and competency of teachers through teacher must have qualified Strata 1 (S1) or Diploma 4 (D4), and has a professional certification. Based on ownership sertifiakasi profession, teachers are entitled to allowance of 1 (one) month basic salary.

In accordance with Government Regulation Number 74 Year 2008 concerning Article 65 of the Master's letter b and Peranturan Minister of National Education No. 10 of 2009 on Setifikasi Teacher In Position, Setifikasi for Teachers in Position to obtain certification of educators conducted through a pattern:

1. Competency Test in the form of Portfolio Assessment.
2. Educator certification directly.

Accordingly, the following ten components of portfolio assessment:

1. Academic qualifications.
2. Education and training.
3. Teaching experience.
4. Planning and implementation of learning.
5. Assessment of superiors and supervisors.
6. academic achievement.
7. The work of professional development.
8. Participation in scientific forums.
9. Experience in the field of educational and social organization.
10. Awards that are relevant to the field of education.

## III. RESULTS AND DISCUSSION

This paper uses qualitative methods, and implement the development stages of the SDLC.

### A. *Planning*

At this stage the researchers do opservasi to school which is the object of writing. In addition researchers conducted interviews with sources organizer sertifikasi vocational teacher in Gorontalo. To complement the data obtained, the authors undertook a literature study.

B. User Needs Analysis

A data collection process and problems of user needs in an information system. Analysis of user requirements as follows:

TABLE 1 TABLE USER NEEDS

No	Needs	Application
1	Login	SPK graduation teacher certification Log of teacher (user), operator certification, managers, assessors, admin
2	Entering data	Form data entry a certified teacher identity, income assessor's name, ertification assessment.
3	Calculation of Data	Processing teacher certification data values are automatically performed by the system
4	Information provided	information is passed or not the teachers who participated sertifikais. Notification to the leadership of teacher certification teacher certification in rayon organizers about the number of teachers who graduated and did not pass the certification.

Pembahasan - Input Nilai

NANANG

Nomor Peserta: 0920041840002

Bidang Studi/Sertifikasi: Fisika

Matapelajaran/Guru Kelas: Fisika

Asesor 09187184002 (Nomor Induk Asesor)

Komponen Portofolio	Skor
A. Unsur Kualifikasi dan Tugas Pokok (max 845)	
Kualifikasi akademik (max 525)	200
Pengalaman mengajar (max 160)	100
Perencanaan dan pelaksanaan pembelajaran (max 160)	100
B. Unsur Pengembangan Profesi (max 495)	
Pendidikan dan pelatihan (max 200)	150
Penilaian dari atasan dan pegawai (max 50)	50
Prestasi akademik (max 160)	100
Karya pengembangan profesi (max 85)	50
C. Unsur Pendukung Profesi (max 160)	
Keikutsertaan dalam forum ilmiah (max 62)	60

FIGURE 2 INPUT VALUES FROM THE ASSESSOR

Figure 2 giving out information input value is only done by the assessors.

Asesor 1 | Asesor 2 | Format C2 | [Selah] | Ceta

Rayon LPTK Penyelenggara: Universitas Negeri Gorontalo

Selisih Penilaian Portofolio

Komponen Portofolio	Skor Asesor 1	Skor Asesor 2	Selisih
A. Kualifikasi akademik (max 525)	400	400	0
Kualifikasi akademik (max 525)	200	200	0
Pengalaman mengajar (max 160)	100	100	0
Perencanaan dan pelaksanaan pembelajaran (max 160)	100	100	0
B. Pendidikan dan pelatihan (max 200)	350	350	0
Pendidikan dan pelatihan (max 200)	150	150	0
Penilaian dari atasan dan pegawai (max 50)	50	50	0
Prestasi akademik (max 160)	100	100	0
Karya pengembangan profesi (max 85)	50	50	0
C. Keikutsertaan dalam forum ilmiah (max 62)	100	100	0
Keikutsertaan dalam forum ilmiah (max 62)	60	60	0
Pengalaman organisasi di bidang kependidikan dan sosial (max 40)	40	40	0
Penghargaan yang relevan dengan bidang pendidikan (max 50)	40	50	-10
<b>Total</b>	<b>850</b>	<b>850</b>	<b>0</b>

FIGURE 3 DISPLAY THE INDIVIDUAL VALUES THAT ARE ACCESSED BY THE ADMIN AND LEADERSHIP CERTIFICATION.

Figure 3 giving out information about the components assessed in the certification, also demonstrated the difference in value between assessors

Context diagram

General description of teacher certification.

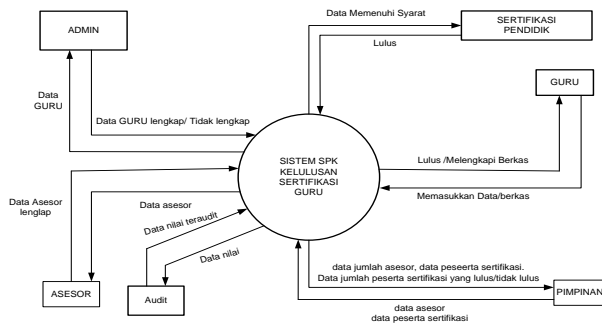


FIGURE 1 DIAGRAM CONTEXT SPK TEACHER CERTIFICATION

C. Implementation And System Testing

1). Testing System

After all programs are created, performed system testing using black box methods on a small scale by entering the participant teacher certification data that has been in the can SMK 3 Gorontalo participant data in the form of certification.

Peserta v | Nilai v | Admin v | Logout v

Edit Peserta - Rincin Nilai

Rayon LPTK Penyelenggara : Universitas Negeri Gorontalo

Jenjang Pendidikan Tempat Menopajar : SMK

Matapelajaran/Guru Kelas : Bahasa Inggris

NO URUT	NOMOR PESERTA	NAMA PESERTA	ASAL SEKOLAH	SKOR		RATA RATA	KETERANGAN
				ASESOR 1	ASESOR 2		
1	07300202700003	ANDRIANI	SMK 2 GORONTALO	860	880	860.00	L

Keterangan:  
 NP: Memenuhi Persyaratan  
 RV: Rantai Nilai (selisih)  
 MD: Melengkapi Data/Dokumen (ikut PLPG)

Catatan:  
 L: Lulus  
 BL: Belum Lulus

FIGURE 4 DISPLAY THE INDIVIDUAL VALUES THAT ARE ACCESSED BY THE TEACHER

Figure 4 giving out information outcome assessment teacher certification. Exemplified above that participants have graduated with no 07300202700003 (L) tingka vocational teacher certification. Evidence recap the results of such value that will be brought to

LPTK parent / organizer (Gorontalo State University) to take a certification certificate.

If participants get to meet certification requirements (MP), the participant is declared passed, because its value has exceeded the set limit of 850 points.

If a participant certification to get the revised value (RV), the peseta was worth having to wait longer because the value is there is a very striking difference from the provisions that have been determined from the rule book allows teacher certification (book 2 guide the technical implementation of teacher certification). Difference in value (RV) will be processed / reviewed by two assessors member value, it is likely the final result value can be passed or follow PLPG (latian the implementation of education and the teaching profession).

If a participant sertifikasi get the complete data or disqualification (MD), if the data melengkapi the participants must follow PLPG whereas if the disqualification is not able to follow the certification process due to reasons that have been determined by the technical implementation guide book 2 teacher certification.

NO	Nomor Peserta	Nama Peserta	Mata Pelajaran / Guru Kelas	Skor			Status
				Assesor 1	Assesor 2	Akumulatif	
1	07300202700001	MUKLISIN	Umum (kelas awal dan akhir)	1067	1066	1111.5	MP
2	07300202700002	BUCIHANSYAH	Umum (kelas awal dan akhir)	-	-	-	-
3	07300202700003	ANDRIANI	Umum (kelas awal dan akhir)	880	880	880	L

FIGURE 5 REPORTS THE VALUE

Figure 5 reports the value of giving out information accessed by the admin and leadership certification. Page views this value reports no difference between admin and management certification.

id	id_p	id_ac	skor	note	seq	entry_by	tgl
14	20	11	1315	bagus	2	admin	2011-09-23 22:39:37
15	21	12	588	kurang	1	09187164001	2011-09-23 22:45:17
16	21	13	586	kurang	2	09187164002	2011-09-23 22:48:57
13	20	10	1171	bagus	1	admin	2011-09-23 22:38:23
17	22	10	919	bagus	1	admin	2011-09-23 22:59:18
18	22	11	923	bagus	2	09187406002	2011-09-23 22:02:17
19	23	15	865	bagus	1	admin	2011-09-23 23:04:57
20	23	16	860	bagus	2	09180436003	2011-09-23 23:07:02
21	24	12	850	bagus	1	admin	2011-09-24 00:42:18
22	24	13	890	bagus	2	09187164002	2011-09-24 00:48:14

FIGURE 6 LOG USER CERTIFICATION

Figure 6 giving out information display where the server using xampp phpmyadmin and mysql data base using a description of the input data tracking the value of certification carried out by whom, at what time, and what date. Tracking is necessary for the record for the leadership to digungakan as necessary in accordance with the certification.

*D. Aspects Of Decision Support System*

This information system was tested with the installation of the system performed at the Operator Certification Rayon University Teachers, in this case conducted at the State University of Gorontalo.

Implementation of decision support systems:

1. Help resolve the problem of semi-structured in terms of teacher certification assessment conducted by the assessor.
2. Supporting the leadership in making decisions in terms of determining the loan assessors and assessors of rayon organizers to assess certification.
3. Improve the effectiveness rather than efficiency of decision making

Work process program is as follows.

- Admin.  
Admin reserves the right to mengelolan data management (data teacher, assessor data, certification data). To enter this system admin using the password papers.
- Operator  
The operator is only entitled to enter and edit data to teachers. To enter this system the operator uses the operator's name and password papers.

- Assessors  
Assessors are only eligible to enter the teacher certification participants. To enter this system assessors to use the name of the parent number of assessors and assessors password with no parent.
- Head of certification  
Head teacher certification are entitled to see the value of the participants, the difference, the value of the input values and assessors recap. Where the difference in value of certification can be seen when the participants entered in the menu.
- Teachers  
User teachers are participants in this certification. Where teachers are entitled to see the results of certification.

#### E. *Operation And Maintenance*

Operation performed by the operator and administrator certification team. The operator in charge of teacher input data are: the name of the teacher, and a number of identity-related teacher certification. Assessors in charge include the value of teacher certification. Administrator charge of data processing teacher certification.

System maintenance (maintenance) is done once every 4 months, so the system can run with best performance.

#### IV. CONCLUSION

Design of decision support systems provide certification of graduation information about teacher certification, as a information analysis, control in teacher certification assessment conducted by the assessor and teacher certification of graduation information. This application still needs to be tested (at least two teacher certification period), so it can be known benefits for the management of teacher certification.

#### REFERENCES

- [1] Fasli Jalal, 2008 The Role of Education in Efforts to Improve the Competitiveness of Nations
- [2] Moors and Chang, 2008. Design of Decision Support Systems. "Data Base, vol.12, Nos.1 and 2.
- [3] Government Regulation number 74 year 2008 on the Guru.
- [4] Article 65 letter b of the Minister of Education National regulation no 10 of 2009 on the certification of teachers in position.
- [5] Raymond Mcleod, Jr. (1998) Management Information System.
- [6] Rink, J. E. (2002). Teaching Physical Education for Learning. Fourth Edition. New York: Mc Graw Hill.
- [7] Siedentop, D. (1990). Introduction to Physical Education, Fitness, and Sport. California: Mayfield Publishing Company
- [8] Suherman, A. (2007). Teacher's curriculum value orientations and the implications for curriculum development and learning