

**AN EVALUATION OF OUTCOME AS THE MAIN REQUIREMENT  
FOR IMPROVING THE QUALITY OF  
TEACHER EDUCATION INSTITUTION**



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## ABSTRACT

**NURHENING YUNIARTI:** *An Evaluation of Outcome as the Main Requirement for Improving the Quality of Teacher Education Institution. Dissertation. Yogyakarta: Graduate School, Yogyakarta State University, Dresden University of Technology, 2015.*

The research aims to reveal (1) the indicators of the outcome, (2) the outcome of teacher education institution, and (3) related aspects of the outcome of teacher education institution.

This study employed the quantitative approach and supported by qualitative approach. The population 1,558 graduates of the Faculty of Engineering, Yogyakarta State University from 2001 to 2010. The sampling technique used in this research was purposive sampling technique by taking the graduates who pursued the profession as a teacher at the vocational high school. The calculation of an adequate sample size was determined by Nomogram Harry King with an error rate of 5%. Based on Nomogram Harry King, the number of sample used was 296 people or 19% of the population.

The results of this research are as follows. (1) The indicators used to reveal the outcome of education in LPTK include: work appraisal, work motivation, career development, competence in teaching-learning process, school administration, contribution to school development, creativity and innovation, subject-matter mastery, teaching media skill, teaching strategy skill, evaluation and assessment. (2) LPTK graduates are able to teach productive subject matter very well. The competence of: subject-matter mastery, teaching media, teaching strategy, as well as evaluation and assessment is categorized very good. Furthermore, the graduates carry out their duties in vocational high school very well. The ability to handle school administration and contribution to school development aspect are mostly categorized very good, while the creativity and innovation are mostly categorized good. Work motivation of the graduates is categorized very good, while the career development and work appraisal are mostly categorized good. The advantages possessed by LPTK graduates are subject-matter mastery and work motivation. (3) The evaluation results of related aspects of the outcomes show that: (a) the LPTK inputs on curriculum and educational staff aspect are mostly categorized very good, however student quality and facility should be improved; (b) the LPTK process including: teaching-learning process in the classroom, industrial internship, and educational practicum is categorized very good; (c) the LPTK output shows that GPA average is in the range of 3.01 to 3.25 and the length of study is in the range of 4.51 to 5 years.

**Keywords:** *outcome evaluation, teacher education, teacher.*

## ABSTRAK

**NURHENING YUNIARTI:** *Evaluasi Outcome sebagai Kondisi Utama dalam Peningkatan Kualitas Lembaga Pendidikan Tenaga Kependidikan. Disertasi. Yogyakarta: Program Pascasarjana, Universitas Negeri Yogyakarta, Technische Universität Dresden, 2015.*

Penelitian ini bertujuan untuk mengungkapkan: (1) indikator *outcome* pendidikan di LPTK, (2) *outcome* pendidikan di LPTK, dan (3) aspek-aspek yang berkaitan dengan *outcome* LPTK.

Penelitian ini menggunakan pendekatan kuantitatif dan didukung dengan pendekatan kualitatif. Populasi dalam penelitian ini adalah lulusan dari LPTK yakni Fakultas Teknik UNY mulai tahun 2001 sampai 2010. Jumlah populasi sebanyak 1.558 orang. Teknik sampling yang digunakan dalam penelitian ini adalah purposive sampling yakni dengan mengambil lulusan yang menekuni profesi sebagai guru di sekolah menengah kejuruan (SMK). Penghitungan jumlah sampel ditentukan dengan Nomogram Harry King dengan tingkat kesalahan 5%. Berdasarkan diagram Nomogram Harry King, maka jumlah sampel yang digunakan sejumlah 296 orang atau 19%.

Hasil penelitian adalah sebagai berikut. (1) Indikator yang digunakan untuk mengungkap *outcome* pendidikan di LPTK meliputi: penghargaan yang diterima, motivasi kerja, pengembangan karir, kompetensi guru, administrasi sekolah, kontribusi terhadap pengembangan lembaga, kreativitas dan inovasi, penguasaan bidang studi, media pembelajaran, strategi pembelajaran, serta evaluasi penilaian. (2) Lulusan LPTK mampu mengajar mata pelajaran produktif dengan sangat baik. Kompetensi dari: penguasaan materi pelajaran, pemanfaatan media pembelajaran, penerapan strategi pembelajaran, serta evaluasi dan penilaian semuanya dalam kategori baik. Selain itu, lulusan dapat menjalankan tugasnya di SMK dengan sangat baik. Kemampuan dalam menyelesaikan administrasi sekolah dan kontribusi terhadap pengembangan sekolah dalam kategori sangat baik, namun kreatifitas dan inovasi sebagian besar dalam kategori baik. Lulusan LPTK juga memiliki motivasi kerja dalam kategori sangat baik, namun pengembangan karir dan penghargaan kerja yang diterima sebagian besar berada dalam kategori baik. Kelebihan yang dimiliki oleh lulusan LPTK adalah penguasaan materi dan motivasi kerja. (3) Hasil evaluasi pada aspek-aspek yang berkaitan dengan *outcome* menunjukkan: (a) input LPTK pada aspek kurikulum dan tenaga pendidik sebagian besar berada dalam kategori sangat baik, namun aspek kualitas mahasiswa dan fasilitas masih perlu ditingkatkan; (b) proses pembelajaran di LPTK pada pembelajaran di kelas, praktik industri (PI) dan praktik pengalaman lapangan (PPL) semuanya semuanya dalam kategori sangat baik; (c) output LPTK menunjukkan rata-rata IPK berada pada rentang 3,01 sampai 3,25 dan masa studi antara 4,51 sampai dengan 5 tahun.

**Kata Kunci:** evaluasi *outcome*, lembaga pendidikan tenaga kependidikan, guru

## RATIFICATION SHEET

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Yogyakarta, 16 March 2016

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I, the undersigned:

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declare that this dissertation is my original work, gathered and utilized especially to fulfill the purposes and objectives of this study, and has not been previously submitted to any other university. I also declare that the publications cited in this dissertation, there is no work or opinions ever written or published by others except in citation and mentioned in the bibliography.

Yogyakarta, 16 March 2016

Signature,



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## **CHAPTER I**

### **INTRODUCTION**

#### **A. Background of the Problem**

Globalization and industrialization era brings a consequence in which the competition in every aspect of life is getting tighter. This condition needs to be followed up by improving the quality of human resources. The fact that Indonesia has a big population creates two possibilities whether the citizens become burdens or assets of the country. They can become assets if they have high quality and competitiveness. On the other hand, they can become burdens if they do not have high quality in competencies.

As a country which is rich of natural resources and a large number of human resources, Indonesia is potential to become part of world's top five economies. This is in line with Indonesia's vision "Promoting Indonesia to become a developed country, one of the top twelve powerful countries in 2024, and one of the top eight powerful countries in 2045 through inclusive and continuous economic growth." In realizing such vision, strategic efforts to improve the quality of human resources need to be conducted through education.

According to the data retrieved from the *Education for All (EFA) Global Monitoring Report 2011: The Hidden Crisis, Armed Conflict and Education* issued by UNESCO, education in Indonesia up until now is not yet satisfying. Another institution known as the Programme for International Study Assessment (PISA), in 2012 states that education in Indonesia is ranked 64<sup>th</sup> among 65 countries. Based on the mapping conducted by PISA in 2000, 2003, 2006, 2009,

and 2012, the development of education in Indonesia tended to be stagnant. Meanwhile, a report made by The Learning Curve (2014: 20) shows that the quality of education in Indonesia is included into the 5<sup>th</sup> group of “at least one standard deviation below the mean category” and ranked 40<sup>th</sup> among 40 participating countries. This condition is so terrible that all parties need to take parts in improving education in all levels and tracks in Indonesia.

Vocational education as a part of educational system in Indonesia can be used to push economic growth. That is why it is important to prioritize efforts of strengthening the vocational education in developing the education in Indonesia. The 3<sup>rd</sup> UNESCO Congress in TVET agrees that the vocational education sector will become the main booster of the world’s economic growth. The vocational education has also given evidence in improving the economy in some countries, especially in Germany. The development of vocational schools in this country receives serious attention from its government, causing the vocational education here develops quite rapidly. Meanwhile, Gatot Hari Priyowiryanto (Kompas, 20 April 2002) states that Germany becomes a strong industrial country because it is supported by skilled labours graduated from vocational schools while 80% of high schools in Germany are this type of school.

The next opinion comes from the director of Directorate General of Vocational Secondary School Development (Indonesian: DPSMK) (2006: 3) who notes that in building industrial and other economic sectors, human resources who have competitive and comparative superiority are needed. Meanwhile, the secretary of the Directorate General of Secondary Education, Mustaqhfirin Amin,

in Jakarta (1/3/2013) states, “The need of industries for middle class technicians is very high.” This condition opens wider opportunities for vocational school graduates to get a job in industrial sectors. As a type of school which produces ready-for-use labourers, its system has to be well-organized to produce skilled labourers who can fill job vacancies.

The need for professional labourers who have competitive and comparative superiority is necessary, as it influences the quality of the product. According to Wardiman (1998: 32), the superiority of an industry is determined by skilled labourers who are directly involved in production processes, the front line workers, most of whom are vocational school graduates, and if industry is to be made into a pyramidal composition, they are placed as the middle-class skilled labourers.

The educational system implemented in vocational schools will be able to improve the quality of human resources if it is supported by quality educators (teachers). Prosser (1950: 234) conveys 16 theorems of vocational education. The seventh of these theorems states, “The instructor is himself the master of the skills and knowledge he teaches.” It means vocational education will be effective if the teacher has successful experience in applying knowledge, skills, and attitude in the implemented operation and working process. In other words, vocational school teachers should be specially prepared as the characteristics of the learning process in this school are different from those of public schools. Therefore, the teachers should be equipped with appropriate knowledge, skills, and attitude for their specialities through special education institutions. By conducting such

strategy, the government will produce ideal vocational school teachers, taking effect in the effective implementation of the vocational education.

Some countries believe that the key factor of successful education is teacher quality as the main actors in the knowledge transfer process. This is in accordance with the statement of Harris & Sass (2011: 798) who write, "It is generally acknowledged that promoting teacher quality is a key element in improving primary and secondary education in the United State." Furthermore, Kartadinata, (2010) notes that one key indicator of the quality of education is teacher quality. In other words, he firmly states that teacher quality is the key element/indicator in improving the quality of education.

In addition, Sudarwan (2005: 24) states that low school quality is caused by six factors. These factors are (1) insufficient teacher competence, (2) ineffective teaching-learning process, (3) curriculum's quality, (4) limited learning facilities and resources, (5) input's quality, and (6) social, cultural, and economic environment. In some discussions about education, a teacher is often considered as a factor causing the slow development of a school. This statement is supported by Jalal (2006) who identifies that some problems about teachers exist today. These problems are: (1) lack of teachers, (2) misdistribution of teachers, and (3) low qualification of teachers and educators. In a learning process, a teacher is a part of instrumental inputs who has a strategic position in developing every cognitive, psychomotor, and affective potential of students. The learning process facilitated by a professional, dedicated, and competent teacher determines the

success of education. If it is done, the expected teaching goals will be achieved optimally.

Based on vocational education development roadmap conducted from 2010 to 2014, the number of vocational schools consecutively is 9,164; 9,918; 10,685; 11,708; and 11,748. The increase in the number of schools from year to year proves that the Indonesian government has a profound interest in vocational schools. The increase in the number of vocational schools and the needs for teachers are correlated. The needs for teachers from 2010 to 2014 consecutively are 135,930; 156,268; 179,000; 197,000; and 219,000. The 2010 Unique Identifier for Educators and Education Personnel (*Data Nomor Unik Tenaga Pendidik dan Tenaga Kependidikan*) or NUPTK shows that the number of vocational school teachers in Indonesia is 161.656. As many as 22% of them are productive teachers and the rest are normative and adaptive ones.

In terms of quality, the competence of teachers in Indonesia still needs improvement. Some studies about teacher performance in Indonesia are meant to give recommendation or solution in coping with the low quality of teachers. Concerning this, Baswedan states, “The average score of Indonesian teacher competence is only 44.5 whereas the standard score of teacher competence is 75.” (Kompas 1 December 2014). This fact becomes a real slap for education in Indonesian, and thus, how teachers are educated and prepared need to be investigated more deeply.

Based on the Law No. 14 of 2005, specifically articles 8 and 9, it can be inferred that teachers can be trained through both teacher education institutions

(TEI) and non-TEI. Therefore, the opportunities to become teachers are getting more open and this situation gives wider chances to graduates of bachelor degree and diploma IV of non-TEI universities. This phenomenon surely enhances the competition in fighting over teaching profession. This condition is strengthened by the increase of interest in teaching profession because of the availability of certification compensation as the government's appreciation for teachers. It challenges TEI to keep improving its quality. If TEI does not attempt to do that, this institution will fail to accomplish its missions. It should be noted that quality has become the main priority and is made as a moral movement in every step taken by this institution. This view was supported by Rajagukguk (2009: 77). He elaborates that the current tight competition in job market demands graduates of quality educational institutions. This statement implies that only quality graduates produced from educational processes in quality educational institutions can win the tighter global competition. This means that TEI is responsible to produce quality teachers to develop vocational education in Indonesia.

The implementation of educational quality assurance has been regulated by the government's policy issued in the Regulation of the Minister of Education and Culture No. 49 Year 2014 about National Higher Education Standards (SNPT). In article 3 subsection (2e), it is mentioned that making the SNPT to be foundation of an internal quality assurance system development and implementation is obligatory. Meanwhile it is mentioned in article 3 subsection (2f) that the SNPT has to become the foundation of the establishment of the criteria of an external quality assurance system through an accreditation system. It means that education

institutions should meet the minimum criteria as is explained in the SNPT. In article 2 subsection (1), it is explained that the SNPT consists of (a) National Education Standard, (b) National Research Standard, and (c) National Community Service Standard. It is also explained in article 4 subsection (1) that the SNPT consists of standard of graduates' competence, learning contents, learning processes, learning assessment, lecturer and education personnel, learning facilities, management, and school finance. Determining these standards is meant to be a part of education quality assurance efforts, especially higher education.

Teacher education institutions (TEI) as institutions producing teachers in Indonesia play an important role in improving teacher quality because most teachers are trained in this institution. Furthermore, based on the Regulation of the Minister of National Education No. 8 of 2009, TEI is legitimated to be a forum to implement Professional Teacher Education (PPG). According to Law No. 14 of 2005 Article 1 subsection 14, LPTK is an institute of higher education given responsibilities by the government to conduct teacher training programs for formal early childhood education, elementary education, and/or secondary education, as well as to establish and develop educational and non-educational sciences. Teacher education will also support the school development, which means that good teacher education will enhance the development of the educational institution. It is supported by the statement of Eisenschmidt, Valickis, and Kärner (2011: 67) that “teacher education and supporting young teachers’ professional growth are closely connected with school development in general and the preparation of school managers”.



In fact, there is freedom to open new TEIs in Indonesia. The increasing number of TEI also happens in many other countries as what is explained by Desai (2012: 54) in this following statement: “Teacher education institutions have been proliferating and mushrooming all over the States with profit motives until the National Council for Teacher Education (NCTE) with its headquarters in Bangalore, came up with and insisted on mandatory norms and standards for these institutions”. Ideally, the increase should be counterbalanced with the needs of teachers. If it is not supported by the readiness of all resources, the quality of the LPTK graduates will decrease.

Nowadays, there are 415 LPTKs in Indonesia, consisting of 12 previously known teacher training and educational science institute (IKIP), 24 faculties of teacher training and educational sciences (FKIP) of public universities (PTN), and 379 faculties of teacher training and educational sciences (FKIP) of private universities (PTS). The increasing number of LPTK should be adapted to the real needs for teachers. Munaji (1998: 27) elaborates that the attempts to increase the quality and competitiveness of higher education should be made continuously, including improving the quality of teacher education institutions (TEI) of technological and vocational fields of study. Improving the educational institutions’ quality and relevance cannot be separated from the shifts of the educational world paradigm, including that of higher education. To improve the TEI’s quality, its strengths, weaknesses, opportunities, and threats (SWOT) as well as mapping and rationalizing should be analyzed by observing the real needs. Based on that argument, some matters, i.e. the mapping, rationalization, and

SWOT analysis towards LPTK should be considered. As a result, it is able to produce a clear description of the real needs for teachers and kinds of competencies as well as to find out the supporting and hindering factors in order to take the correct steps of improving the quality of TEI. This is a wise step and a proof that the improvement of the quality of TEI has been considered.

In some European Union countries, education institutions which produce teachers get a lot of attention because there is a belief that economic and social growth is highly affected by the implemented educational system. Therefore, teachers with adequate quantities and qualities are needed. The Commission of the European Communities (2007: 15) notes the following:

To ensure that there is adequate capacity within higher education to provide for the quality and quantity of teacher education required, and to promote the professionalization of teaching, teacher education programmes should be available in Master and Doctorate (as well as in Bachelor) cycles of higher education.

Even, these years, teacher education becomes the main priority of the Albanian political policy. This is as what Abdurrahmani & Boce (2011: 211) state:

The last decade marked significant efforts to make teacher training a key priority of policy reforms in Albania. This priority was sustained in a number of national and international policy documents. National documents include: the Higher Education Law, the Higher Education Strategy, the National Strategy for Development and Integration, the Teaching Profession Draft-Regulation Paper and the National Education Strategy.

Special attention to teacher education institutions will surely bring an expansive effect and result in the improvement of society's living standard.

The attempts to improve the quality of education cannot be separated from an evaluation. Evaluation can be used to observe the success level of education as well as its weaknesses and strengths. The information of these weaknesses and strengths can be used as materials in making decisions or establishing policies of education. One of those issues is that “in order for evaluation efforts to provide stakeholders with answers to their questions about the effectiveness of technology in education, everyone must agree on a common language and standards of practice for measuring how schools achieve that end” (McNabb 1999: 9). Furthermore, Stronge & Tucker (2003: 3) state: “The essential issue is that we have the most effective teachers possible guiding the learning of students. And, ‘without high quality evaluation systems, we cannot know if we have high quality teachers.’” Based on this issue, an evaluation of education model is needed. The education evaluation model should be able to give objective, transparent as well as reliable results, and can be accepted by stakeholders or other requiring parties.

An outcome evaluation is an eminent type of evaluation as it leads to the assessment of the whole program, so that it can be used to observe whether the goals of the program are reached. This evaluation is also expected to provide mechanisms which allow students to enjoy the service given by TEI. Related to this, Myers & Barnes (2005: 6) give some reasons why an outcome evaluation should be conducted. Those reasons are “(1) effective decision making, such as allocation of resources, (2) reshaping and program improvement, (3) accountability for resources used, (4) developing an effective evidence base, (5) delivering better services, and (6) building an evidence base of what works.”

Based on these reasons, the significance of an outcome evaluation for improving the quality of education can be conducted. Moreover, this is to evaluate the educational processes conducted in TEIs where teachers are prepared. The attention towards the outcome evaluation of education becomes an integral part of the management and connects inputs with processes as well as benefits experienced by service users.

Outcome can reflect the quality of the implemented education and it becomes an indicator of the schools' system and management on its attempts to improve the quality of education. This statement can be found in the European Centre for the Development of Vocational Training/CEDEFOP (2011: 19):

The quality of school performance and delivery is evaluated in four main areas: (1) processes at classroom level, relating to the quality of learning and teaching; (2) processes at school level, relating to the institution as a learning, social, and professional place; (3) school environment: relations between the school and parents, as well as links between the school and local community; and (4) student outcomes, measured in terms of academic achievement, personal and social development, and graduate career paths.

Outcome also becomes an element in the quality assurance in Osnabrueck, Germany. It is found in CEDEFOP (2011:17) which states that outcomes covered knowledge, skills, as well as behaviour and are related to the national goals for education and society's positive participation. Meanwhile, in Hamburg it is defined as the satisfaction of stakeholders, educational tracks, and competence.

An initial study result conducted by the researcher from October to November 2014 in three TEI's which prepare vocational school teachers (Faculty of Engineering, Yogyakarta State University; Faculty of Engineering, Surabaya State University, and Faculty of Technology and Vocational Education, Indonesia

Education University) shows that the average study period is 4 years and 11 months while the average GPA is 3.08. Meanwhile, the graduates' waiting period is 11 months with their first salary as much as IDR 1,051,000.00. Their first job also varies, such as honorary staff, civil servants, cram school teachers, education and training instructors, entrepreneurs, white collar workers, and technicians. The data show that not all graduates can work as vocational school teachers expected by LPTKs.

Based on these problems, an evaluation towards the outcome of education implemented in teacher education institutions (TEI) should be conducted. This outcome evaluation is a step of improvement in which the activity can give a lot of information to help improving and developing TEI.

## **B. Problem Identification**

Based on the background of the problem of teachers college in vocational education, some problems can be identified as follows.

1. The quality of education in Indonesia is still low and therefore to produce qualified generation, competent generation, and competitive future generation, special efforts to improve education is much needed.
2. The increasing number of TEI is not counterbalanced with the quality improvement of the institution.
3. The issue of laws about teachers and lecturers results in the increasing competition for teaching profession. It challenges TEI to improve its graduates' quality.

4. Teachers are important factors in determining the quality of education and therefore there should be an effort to improve their competence so they will be qualified.
5. LPTK graduates have various jobs some of which are not in line with their expertise.
6. The waiting period for the LPTK graduates to have jobs is still variable, so LPTK needs the cooperation with the stakeholders.
7. Not all LPTKs have evaluated the quality of their graduates in order to understand it.

### **C. Problem Limitation and Problem Formulation**

Considering the many factors which can affect the quality of teacher education institutions (LPTKs), the research is limited to the outcome evaluation of the teacher education. The Outcomes are focused a long-term outcomes that is looking at the performance of graduates LPTK (UNY) in the work place. Meanwhile the subjects of this research will be limited to LPTKs which produce candidates of vocational school teachers. The research location is also limited to the Yogyakarta Special Territory and Central Java Province. The consideration is the Yogyakarta Special Territory and Central Java Province has variation of conditions. In both regions, LPTK graduates working in public and private vocational high school which located in rural-city areas.

Based on the problem limitation, the problems in the research are formulated as follows.

1. What are the indicators of the outcome of teacher education institution, especially those which produce vocational high school teachers?
2. How the outcome of education in teacher education institution, especially those which produce vocational high school teachers?
3. What are the related aspects of the outcome of teacher education institutions, especially those which produce vocational high school teachers?

#### **D. Research Objectives**

In line with the problems formulated above, the objectives of this research are as follows:

1. To find out the indicators of the outcome of teacher education institutions, especially those which produce vocational high school teachers;
2. To find out the outcome of teacher education institutions, especially those which produce vocational high school teachers;
3. To find out the related aspects of the outcome of teacher education institutions, especially those which produce vocational high school teachers.

#### **E. Research Benefits**

This research can be used as a reference in conducting an outcome evaluation for teacher education institutions. Therefore, it is expected to be useful for the following parties.

1. Teacher education institutions
  - a. Teacher education institutions can identify their strengths, weaknesses opportunities, and threats in conducting education.



- b. By identifying the outcome of the implemented education system, teacher education institutions can conduct a reflection of the implementation.
- c. By identifying the outcome of the education in the world of work, teacher education institutions can determine strategic plans to bring the institutions closer to the world of work.
- d. The research finding can be a reference to be used as guidance to conduct learning processes with quality concept, observed from the education outcome in teacher education institutions.
- e. The results of evaluation can be used as a basis in determining policies in improving the quality of teacher education institutions.

## 2. Stakeholders

The results of this evaluation can be used to identify the outcome of teacher education institutions so that a comprehensive assessment towards them can be conducted. As a result, the stakeholders can assist and play an active role in improving the quality of teacher education institutions.

## 3. Researchers

- a. Researchers will have knowledge and experience in conducting an outcome evaluation such as determining criteria and indicators, arranging instruments, collecting data, analyzing data, formulating results, and disseminating evaluation results.
- b. Researchers can develop knowledge about educational evaluation methods, especially in teacher education institutions.

## **F. Operational Definition**

1. Teacher education institution is an institution which educated teachers in Indonesia.
2. Input is the real condition of the student entering of the pre-service teachers teacher education institution (Faculty of Engineering, YSU).
3. Process is the condition when the graduates studied at the teacher education institution (Faculty of Engineering, YSU).
4. Output is the condition of the graduates upon graduation from the teacher education institution (Faculty of Engineering, YSU). The data description of the output dimension consists of two aspects: grade point average (GPA) and length of study.
5. Outcome is the condition of the graduates (the teachers under study) after completing their study over a period of 5 to 15 years. The data were in the form of opinions from the LPTK Graduates (teachers), principals, and the students of vocational high school taught by the teachers
6. Logic model is a tool and an approach used by evaluator to describe the effectiveness of program. Logic models can also be used to measure and analyze the achievement of outcomes.
7. Outcome evaluation is systematic process which includes some activities: describing, inquiring, collecting, and analyzing the behavioural changes of LPTK graduates in the work place, as part of the efforts in improving the quality of the program.

8. Quality of teacher education institution is the achievement of the goals set by the utilization of all its resources.

## **CHAPTER II**

### **THEORETICAL FRAMEWORK**

#### **A. Theoretical Analysis**

##### **1. Evaluation**

###### **a. Definitions of Evaluation**

The research is expected to be conducted correctly so that the result of this evaluation may give benefits to the development of teacher education institutions (LPTK). Therefore, this theoretical analysis will begin with definitions, goals, and steps conducted in the evaluation.

According to Stufflebeam & Shinkfield (1985: 159), the definition of evaluation is:

The process of delineating, obtaining, and providing descriptive and judgmental information about the worth and merit of some object's goals, design, implementation, and impact in order to guide decision making, serve needs for accountability, and promote understanding of the involved phenomena.

Furthermore, the National Study Committee on Evaluation of the UCLA through Stark & Thomas (1994: 12) notes that "Evaluation is the process of ascertaining the decision of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision makers in selecting among alternatives." Based on this argument, evaluation includes collecting and analyzing information to produce new information to be put into consideration when making decision or determining an option.

Some experts of evaluation also clarify that evaluation is a process of determining the degree of goal attainment. This is in line with the statement made by Stufflebeam (1985: 69) who believes that evaluation is “the process for determining the degree to which these changes in behavior are actually taking place”. Furthermore, Guba & Lincoln (1985: 35) define evaluation as “a process for describing an evaluation and judging its merit and worth.” Another definition of evaluation is stated by Worthen & Sander (1981: 19). They believe that it is “... the determining of worth of a thing. It includes obtaining information for use in judging the worth of a program, product, procedure, or objectives, or potential utility alternative approach designed to attain specified objectives. ”A similar definition is also clarified by Gay (1981: 61). According to him, “(1) evaluation is a systematic process of collecting and analyzing data in order to determine whether, and to what degree, objectives have been or are being achieved; (2) evaluation is a systematic process of collecting and analyzing data in order to make decision.”

Spiel (2001) gives a statement saying that “evaluations are, in a broad sense, concerned with the effectiveness of programs.” Another expert, Patton (1987) declares that “evaluation is a systematic process to understand what a program does and how well the program does it.” He also explains the usefulness of evaluation when he writes that, “evaluation results can be used to maintain or improve program quality and to ensure that future planning can be more evidence-based. Evaluation constitutes part of an ongoing cycle of program planning, implementation, and improvement.” These opinions explain the importance of

evaluation as efforts of to keep and improve quality. Without evaluation, what causes a program's goals unattainable will not be identified. The results of evaluation can also be used as a reflection to plan and conduct further programs.

Evaluation is closely related to assessment and measurement; even these three activities are hierarchical. It includes assessment and measurement. It is preceded by assessment while assessment is preceded by measurement. The difference between these three activities should be understood to avoid misunderstanding when conducting an evaluation.

Measurement is defined by Guilford (Griffin & Nix, 1993: 3) as “assigning numbers to, or quantifying things according to set of rules”, while Oriondo (1998: 2) notes that “measurement is the process by which information about the attribute or characteristics of thing is determined and differentiated.” In the mean time, Allen & Yen define measurement as a systematic establishment of numbers and ways to determine an individual's condition (Djemari Mardapi, 2000). Based on these opinions, it can be concluded that measurement is a process of establishing values based upon particular guides and criteria which can inform an individual's condition.

Assessment is defined by Stark & Thomas (1994: 46) as “a process that provides information about individual students, about curricula or programs, about institutions, or about entire systems of institutions.” Meanwhile Popham (1995:3) defines assessment in the educational context as an effort to formally determine a student's status related to various educational importance. In the mean time, The Task Group on Assessment and Testing (TGAT) describes

assessment as all methods used to evaluate an individual or group's performance (Griffin & Nix, 1991: 3). Based on these definitions, it can be concluded that assessment is a process of interpreting the result of measurement based upon certain criteria.

After comprehending the definition of measurement and assessment, the researcher will investigate definitions of evaluation because activities of measuring, assessing, and evaluating are closely related to each other and they are hierarchical. Griffin & Nix (1991: 3) state that "measurement, assessment, and evaluation are hierarchical. The comparison of observation with the criteria is a measurement, the interpretation and description of the evidence is an assessment and the judgment on the value or implication of the behavior is an evaluation."

Another opinion about evaluation is given by Verduci (Imam Sodikun 2004: 4): "evaluation is much more comprehensive term than measurement." In the mean time, Provus (1971) defines evaluation as "evaluation as the difference between an existing situation and a certain standard, which is intended to find out whether the difference occurs or not." While Hopkins & Stanley (Oriondo & Antonio, 1998: 3) write "*evaluation is a process of summing up the results of measurement or test, giving them some meaning based on value judgment.*" These opinions describe that evaluation and measurement are related but have different meanings. Evaluation has a wider meaning as it does not only compare a situation to a standard but also identify the attainment of the goals of a program and giving the meaning. A similar opinion is also stated by Guiford (Djemari Mardapi et al., 2002: 5) who define measurement as a process of assigning numbers towards an

indication according to certain rules, and thus, generalizing the definition of evaluation and measurement could be confusing as measurement is a part of evaluation. Therefore, it is clear that measurement is a part of evaluation so that evaluation has a wider scope. This means that in doing an evaluation, people need a standard to be used as a reference.

Cronbach (Stufflebeam, et al., 2002: 236) also divides three types of decision for what reason an evaluation should be conducted:

(1) course improvement: deciding what instructional materials and methods are satisfactory and where change is needed; (2) decisions about individuals: identifying the needs of the pupil for the sake of planning his instruction, judging pupil merit for purposes of selection and grouping, acquainting the pupil with his own progress and deficiencies; (3) administrative regulation: judging how good the school system is, how good individual teachers are, etc.

Based on this argument, it can be identified that the benefits of evaluation in education may also vary. In addition to improving programs, the result of evaluation is also very beneficial to students and school management. Considering the many benefits of evaluation, evaluation should be conducted through a correct procedure so that the result of evaluation may really bring benefits.

Stufflebeam, et al. (1972: 153) explains educational evaluation as a process to gain, describe, and assign useful information as materials in considering an alternative decision. The above definition of evaluation is not just about the success of education which happens inside. That is why evaluation is limited not only to students' characteristics but also to the methods used, the curriculum, school facilities, and school administration system. The research instrument can be formal or informal methods and procedures to produce information about



students which can be conducted through written test, oral test, monitoring sheet, interview guidance, homework, etc. (Djemari Mardapi, 2002: 5).

Related to educational evaluation, evaluation is often connected to learning results. This is explained by Tyler (1950) who notes that “evaluation is a process of determining how far the purposes of learning are reached.” A similar opinion is stated by Brinkerhoff, et.al (1986: ix) that evaluation is a process to determine how far the goals of education could be reached. Furthermore Hopkins, Jack, & Terrell (Cullingford, 2000: 160) state that evaluation is “an integral element in school improvement”. Thus, evaluation in education can be used to find out the achievement of the objectives and also become an integral part in improving the quality of education.

Given the importance of the role of evaluation in education, a teacher has to follow the steps in evaluation carefully. Brinkerhoff, et al. (1986: ix) state that in an evaluation, there are seven elements that should be fulfilled. These elements are (1) focusing on evaluation, (2) designing evaluation, (3) collecting information, (4) analyzing and interpreting, (5) reporting information, (6) organizing data, and (7) evaluating evaluation.

Related to goals of evaluation, Stufflebeam (Isaac, 1981: 2) states that “the purpose evaluation is to improve, not to prove.” Furthermore, Weiss (1997: 516) explains that “evaluation, unlike the basic science, does not aim for “truth” or certainly. Its aim is to help improve programming and policy making.” This explains that evaluation heads for improving programs, making policies, and improving performance and quality. Hence, an institution’s anxiety and worry

towards evaluation do not have to happen. Evaluation can help institution to observe its superiority and weakness to be used to improve quality in the future.

Weiss (1997) states the goals of evaluation as follows:

First, evaluation produces information that can be used to improve the project. Information on how different aspects of a project are working and the extent to which the objectives are being met are essential to a continuous improvement process. Second, an evaluation can document what has been achieved. This aspect of the evaluation typically assesses the extent to which goals are reached and desired impacts are attained. In addition, and equally important, evaluation frequently provides new insights or new information that was not anticipated. What are frequently called “unanticipated consequences” of a program can be among the most useful outcomes of the assessment enterprise.

An evaluation is a purposeful, systematic, and careful collection and analysis of information used for the purpose of documenting the effectiveness and impact of programs, establishing accountability and identifying areas needing change and improvement.

Weiss’ opinion explains that evaluation requires documenting what has been reached so that at the same time evaluation can also observe the progress of a program. The interesting part from his opinion is that evaluation contains unanticipated consequences. This statement means that the result of evaluation can give new useful information unestimated and unanticipated before.

Meanwhile, Suharsimi Arikunto & Cepi Safrudin (2008) explain that there are four possibilities that policies can be implemented based on the result of the evaluation of the program’s implementation: (1) stopping the program when it is seen not beneficial or cannot be conducted as expected; (2) revising the program as there are some parts which are inappropriate with the expectation (a few mistakes occur); (3) continuing the program as the program implementation shows that everything progress as expected and gives beneficial results; (4)

developing the program (conducting it in another place or repeating it in another time) as it works well. Therefore, the best thing is conducting it in another place and time.

Rossi et al. (2004: 29) state that “evaluation typically involves assessment of one or more of five program domains: (1) the need for the program, (2) the design of the program, (3) program implementation and service delivery, (4) program impact or outcomes, and (5) program efficiency. An evaluation must be tailored to the political and organizational context of the program being evaluated”. Brinkerhoff (1986: ix) notes that evaluation requires seven stages: 1) focusing the evaluation; 2) designing the evaluation; 3) collecting information; 4) analyzing and interpreting; 5) reporting information; 7) evaluating evaluation. Based on this explanation, evaluation can take 1 or 5 domain(s) from a program but should be conducted through the established steps so that the result can give beneficial information.

Based on the above opinions, it can be concluded that evaluation is a systematic process which includes some activities: describing, inquiring, collecting, analyzing, comparing with standards, and giving precise information as part of efforts in improving the quality of a program.

#### b. General Principles in Evaluation

These principles of evaluation refer to the opinion of Cronbach & Patton (Fernandes, 1984: 2-3):

- 1) Evaluation is an art. There is no simple best plan for an evaluation study. The recommendation that program evaluators prefer true experiment is invalid and

outdated. For any evaluation study many good design can be proposed, but no perfect one.

- 2) The evaluator should not deliver a firm answer to a specified question. It is not the evaluator's task to determine on his own whether a program is worthwhile or what actions should be taken. The evaluator cannot judge for others, just as a counsellor cannot decide what career a student should select. The evaluator's responsibility is to help in selecting action alternatives.
- 3) No one individual is qualified to make all judgment that go into design and interpretation. An evaluation study should be the responsibility of a team.
- 4) Evaluators should not decide which school of thought they belong to. The choices should differ from evaluation to evaluation.
- 5) Designing an evaluation study is a continuous process. There must be flexibility to change plans in midstudy.
- 6) Identifying relevant questions and determining the emphasis each should have are central tasks in a study. The selection among questions should be guided by political and practical considerations, as well as substantive. Question posed in the beginning may prove to be less important than the questions that emerge as observation proceed.
- 7) Objective, quantitative methods and humanistic, qualitative technique are compatible and the two should be working hand in hand. Evaluation tools should not neglect historical and social processes.
- 8) An educational program is not necessarily a single unitary treatment. National Programs like PPSP (*Proyek Perintis Sekolah Pembangunan* = Pilot Project of

Developmental School) may begin conceptually as one treatment, but they usually become many treatments, each mediated by provinces, school districts, school, and teachers. Treatments (programs) in social science do not have a fixed character like drugs or vaccines.

- 9) Evaluation should look within the treatment, between treatment and within the population to identify differentiated effects.
- 10) Affective/motivational/attitudinal objectives and psychomotor objectives should not be neglected in favour of cognitive achievement objectives. Multiple measures of outcome are desirable.
- 11) Lack of concern for implementation, that is, how the program was actually carried out, is the crucial constraint in improving operating programs, policy analysis and experimentation. Outcomes should be evaluated taking into account the implementation program.
- 12) An aggregate analysis is far more credible than a model for individual-level analysis.

#### c. Criteria

The difference of an evaluative research and other research is in the “criteria”. These criteria are used in an evaluative research as the foundation in determining “scores or values” concerning the objects of success or failure of a program. Windham & Champman (2003: 22) state:

Criteria are the characteristics of a program that are regarded as relevant and important bases for evaluating that program.... Criteria are an expression of what people value about program. These valuations are grounded in beliefs,

personal experience, the experience of others, and the result of theory-driven research.

In evaluative research, for developing criteria, some approaches can be used as explained by Fullan & Pomfret (Hasan, 1998: 79) that four approaches in developing the criteria in evaluative research exist. These approaches are: pre-ordinate approach, fidelity approach, mutual-adaptive approach & process approach.

Meanwhile, the characteristics of pre-ordinate approach are as follows. (1) Criteria are established before the evaluative research is conducted. These criteria are general, binding, and unchangeable when the research is ongoing. (2) The criteria are established based on certain standards, for example the theoretical analysis used by the researcher. This approach is used when the research is oriented to the “result” of a program.

Another approach, the fidelity approach, has both similar and different characteristics with the pre-ordinate approach. The similarity is that before the research is conducted, the instruments of evaluation must be created. Meanwhile, the difference is that the criteria are not established based on theories but the ongoing program’s internal characteristics or the developer. Based on these characteristics, the evaluator needs to identify the characteristics, goals, and meanings of the ongoing program.

The third approach, the mutual-adaptive approach is the combination of the pre-ordinate and fidelity approaches. The characteristic is that the criteria are used

based on certain theoretical views and combined with the view of the program's developer as well as the ongoing program's characteristics.

The other approach is the process approach of which the criteria of evaluation are not established before the evaluation is conducted but when the researcher or evaluator is conducting the program. This is intended to make the established criteria may describe the real condition at the site. The program's characteristics should be studied and made into basic framework to establish criteria. Meanwhile, the final development or establishment is conducted after the researcher or evaluator gets in touch with the research objects. House (Hasan, 1998: 82) considers this approach as a way of being honest. This approach is used generally in evaluative research which uses a qualitative or pure naturalistic approach.

## **2. Outcome Evaluation**

### **a. Definitions of outcome**

Rossi, et al. (2004: 204) notes that an outcome is the state of the target population or the social conditions that a program is expected to have changed.

On the other hand, Lunenburg & Ornstein (2000: 101) explain:

Outcomes, classified as first or second level, are the end results of certain work behaviors. First-level outcomes refer to some aspect of performance and are the direct result of expending some effort on the job. Second-level outcomes are viewed as consequences to which first-level outcomes are expected to lead. That is, the end result of performance (first-level outcomes) is some type of reward for work goal accomplishment.

Based on this definition, an outcome is behaviour of the target of the population or a social condition that occurs as a result of a program which can be

observed from the performance or other aspects as a consequence of the performance. Based on this concept, an outcome is focused on the changes sensed by a population or a social condition which can be observed from: satisfaction, success, acknowledgement, career development, salary, and appreciation.

The initial step in developing an outcome measurement of a program is conducting a specific identification whether the outcome is relevant to measure. For that purpose, an evaluator should consider the stakeholder's perspective about the expected outcome.

An evaluation toward an outcome is very important to do as by doing an outcome evaluation, the researcher can identify the program's goals accomplishment level and reveal its benefits to individuals or environment which becomes the target of the program. Some opinions about outcome evaluation can be observed from this statement:

Outcome evaluations provide information on how well your programme is accomplishing its goals. Outcome evaluations measure how clients and their circumstances change, and whether the treatment experience has been a factor in causing this change. In other words, outcome evaluations aim to assess treatment effectiveness. (WHO, 2000).

Another opinion is Myers (2005) who states that evaluation asks questions about what has changed as a result of the programme and its activities. Outcomes can be either short-term or long-term and identifying such outcomes will be an integral part of demonstrating the value of a service, activity or programme.

According to Rossi (2004), there are some reasons why an evaluation needs to be conducted toward an outcome. These reasons are: (1) effective decision making, such as allocation of resources; (2) reshaping and programme



improvement; (3) accountability for resources used; (4) developing an effective evidence base; (5) delivering better services, and (6) building an evidence base of what works”.

In addition, in conducting an evaluation towards the outcome, some outcome assessment principles need to be considered. According to Samuel Ball (Fernandes, 1984: 19), the principles which should be considered in conducting assessment of an outcome are as follows:

- 1) Observing the attainment levels of the goals of the program.
- 2) Ensuring that the outcome behaviors such as affection, motivation, attitude, and psychomotor are not ignored.
- 3) Using a “medical model” not an “engineering model”.
- 4) The evaluator should consider the fact in the interaction between different programs and student groups.
- 5) The evaluator should consider the long-term goals.

In education, an outcome evaluation also becomes the part of efforts to improve quality. One of indicators of a successful educational program can be identified from the outcome while identifying the outcome may be conducted by an evaluation. Sihvonen (1999: 12) relates an outcome evaluation to the improvement of the quality of education as follows:

In practice the evaluation of educational quality is largely concerned with educational outcomes. Here, the emphasis lies on the evaluation of the management and the appropriateness of the processes, that is, on their efficiency, whereas in the case of outcomes the focus is on the whole, and above all, on the effects produced by the activities concerned.

In addition to the observation of the attainment of a program, an outcome evaluation is also able to reveal how an institution can optimize the use of the resources. This is in accordance with the opinion of Sihvonen (1999: 22) as follows:

The evaluation of outcomes is holistic evaluation to find out how well the goals have been reached and how successfully the resources have been used. The evaluation of outcomes is broad-based and seeks to utilise various sources of information as diversely and objectively as possible. When evaluating outcomes, attention is paid to the effectiveness, economy, and efficiency of the activities being studied. To put it simply, effectiveness means that people are doing the right things, while efficiency means that they are doing them in the right way.

According to Trochim (2006), an outcome evaluation is a type of evaluation that investigates whether changes occur for participants in a program and if these changes are associated with a program or an activity. Meanwhile, Allen & Bronte-Tinkew (2008: 3) state:

Once a program decides to pursue an outcome evaluation, certain steps should be undertaken. The steps involved in planning an outcome evaluation are not always linear. It may be necessary to return to previous steps to reevaluate decisions that were made based on the availability of resources or on the feasibility of the evaluation activities. Overall, programs should be responsive to the changing needs of the evaluation design and flexible enough to create a better design when necessary.

Furthermore, an outcome evaluation can be used to observe changes caused by a program. If it is an educational program, conducting an outcome evaluation may observe the behavioral changes of the students after finishing the program.

Some reasons why an outcome evaluation needs to be conducted as explained by Myers & Barnes (2005) are: (1) effective decision making, such as

allocation of resources, (2) reshaping and programme improvement, (3) accountability for resources used, (5) developing an effective evidence base, (5) delivering better services, and (6) building an evidence base of what works.

Based on this opinion, it is clear that some uses of an outcome evaluation for education do exist. Therefore, an evaluation conducted for the sake of education should be done to identify the outcome of the implemented education.

According to Allen & Bronte-Tinkew (2008), there are 8 stages in conducting an outcome evaluation: (1) form a working group; (2) determine the evaluation audience; (3) choose outcomes that will be measured by developing or revisiting the program logic model; (4) choose the outcome evaluation design; (5) choose the method of data collection; (6) conduct a pilot test of data collection methods; (7) collect data for the outcome evaluation, and (8) analyze and report the findings.

By the same token, Rossi (2004: 218-220) notes that the key properties of measurement procedures in outcome evaluation consist of: (1) reliability, (2) validity, and (3) sensitivity. The explanations to these properties are as follows.

- 1) Reliability is the extent to which consistent results are obtained when measuring the same thing.
- 2) Validity is the extent to which the procedure measures what it is intended to measure (may be assessed partly through comparison with alternative measures)
- 3) Sensitivity is the extent to which the values on the measure change when there is a change or difference in the thing being measured

Meanwhile, the principles of evaluation applied in the European Union refer to (<http://www.degeval.de/degeval-standards/standards>)

1) Utility

The utility standards are intended to ensure that an evaluation is guided by both the clarified purposes of the evaluation and the information need of its intended users.

2) Feasibility

The feasibility standards are intended to ensure that an evaluation is planned and conducted in a realistic, thoughtful, diplomatic, and cost-effective manner.

3) Propriety/Fairness

The feasibility standards are intended to ensure that in the cost of the evaluation all stakeholder are treated with respect and fairness.

4) Accuracy

The feasibility standards are intended to ensure that an evaluation is produces and disclosed valid and useful information and findings pertaining to the evaluation questions.

This is in accordance with what is explained by Stufflebeam (1981) who divides four attributes of criteria in an evaluation of 30 evaluation standards. The explanation if these attributes are as follows:

- 1) utility standards: (a) audience identification, (b) report clarity, (c) evaluator credibility, (d) report dissemination, (e) information scope & select, (f) report timeliness, (g) valuational interpretation, and (h) evaluation impact.
- 2) feasibility standards: (a) practical procedures, (b) political viability, and (c) cost effectiveness’.
- 3) propriety standards: (a) formal obligation, (b) conflict of interest, (c) full and frank disclosure, (d) right of human subject, (e) public’s right to

know, (f) human interaction, (g) balanced reporting, (h) fiscal responsibility,

- 4) accuracy standards: (a) object identification, (b) context analysis, (c) described purposes and procedure, (d) valid measurement, (e) reliable measurement, (f) systematic data control, (g) analysis of quantitative data, (h) analysis of qualitative data, (i) objective inform, recommendation, (j) justified conclusion, (k) objective report.

#### b. Outcome Taxonomies

In relation to the multidimensional characteristic of students' outcome, a question will appear: which outcome should be assessed and why? In the main review of evaluation literatures in universities, Bowen (1977) explains that student outcome assessments should cover the following categories of trait: verbal skills, quantitative skills, substantive knowledge, rationality, intellectual tolerance, aesthetic sensitivity, creativeness, intellectual integrity, and wisdom. Furthermore, Astin (1993: 43) offers a conceptual scheme to develop an outcome measurement for an institution. This taxonomical scheme covers three dimensions: kind of outcome, kind of data, and time. The explanation of these dimensions are as follows.

##### 1) Type of outcome

Astin (1993) states the type of outcomes into two broad domains: cognitive (sometimes called intellectual) and affective (sometimes called non cognitive). Furthermore Astin (1993) states the cognitive outcomes have to do with knowledge and the use of higher order mental processes such as reasoning and logic. Of all the possible outcome measures that one might devise for assessing student progress, those involving cognitive learning and the development of

cognitive skills are most likely to be judged as relevant to the educational objectives. On the contrary, affective outcomes have to do with the student's feelings, attitudes, values, beliefs, self-concept, aspirations, and social and interpersonal relationships. Although the number of possible affective or non cognitive outcomes is very large, techniques for measuring such outcome probably not as far advanced as are those for measuring cognitive outcome.

## 2) Type of Data

Whereas the first dimension of this taxonomy—type of outcome—reflects what is being assessed, the second dimension reflects the how of assessment. This second dimension of the taxonomy relates to the types of information that are gathered in order to assess the cognitive or affective outcomes under consideration. Again, two broad classes can be identified: psychological data reflecting the internal states or traits of the student, and behavioral data relating to the student's observable activities. The measurement of psychological traits is usually indirect, in the sense that we are trying to infer some underlying states within the individual from responses to a set of test questions. The responses to the questions themselves are not of intrinsic interest but are considered important because of what they reflect about some internal state.

Behavioral measures are usually of intrinsic interest because they directly reflect transactions between the person and the environment. Behavior such as dropping out of college or changing one's choice of a major would be considered examples of behavioral measurements. Since behavioral (as opposed to

psychological) measures typically involve interactions between the person and the environment, such measures might also be termed sociological (Astin, 1993: 44).

By combining the first two dimensions in the taxonomy—type of outcome and type of data—we can generate the four combinations shown in Table 1. The cell in the upper left, for example, includes cognitive outcomes that are typically measured through course grades or performance on tests of ability and achievement. The upper right cell includes psychological measures of affective states such as the student’s motivation and self-concept as well as subjective feelings of satisfaction and well-being. Most of the published research on college impact has emphasized the use of such measures, in part because of the logistical ease with which such outcomes can be assessed via self-administered questionnaires (Feldman & Newcomb, 1969; Astin, 1977).

**Table 1. A Taxonomy of Student Outcomes:  
Type of Outcome by Type of Data**

Type of Data	Type of Outcome	
	Cognitive	Affective
Psychological	Subject-matter knowledge Academic ability Critical thinking ability Basic learning skill Special aptitudes Academic achievement	Values Interest Self-concept Attitudes Beliefs Satisfaction with college
Behavioral	Degree attainment Vocational achievement Awards or special recognition	Leadership Citizenship Interpersonal relations Hobbies and avocations

### 3) The Time Dimension

**Table 2. The Time Dimension:  
Examples of Short- and Long-Term Outcomes**

<b>Type of Outcome</b>	<b>Type of Data</b>	<b>Short-term (During college)</b>	<b>Long-term (After college)</b>
Cognitive	Behavioral	Completion of college (versus dropping out)	Award for outstanding job achievement
Cognitive	Psychological	GPA	Score on teacher competence exam
Affective	Behavioral	Participation in student government	Involvement in local or national conference
Affective	Psychological	Satisfaction with college	Job satisfaction

(Modification from Astin, 1993: 44)

The outcome of a short-term, intermediate-term, and long-term programs will answer the question “What happened to result of the program?” which is useful to communicate the effects of our investigation.

The short-term outcome of an educational program possibly includes changes in customers’ awareness regarding a problem or issue.

- 1) a customer’s knowledge to understand causes and best solution in solving a problem;
- 2) a customer’s skill which is needed to solve any problematic situation;
- 3) motivation to make changes; and
- 4) attitudes and beliefs that their actions can make changes.

Intermediate-term outcome includes changes which follow the short-term one, such as changes in:



- 1) practices conducted by participants;
- 2) behavior shown by people or organizations;
- 3) policies made by governments or organizations;
- 4) technology applied by users; and
- 5) management strategy conducted by individuals or groups.

Long-term outcome comes after the intermediate-term outcome as when behavior changes, the condition also changes, such as:

- 1) the increase of income and financial stability;
- 2) the improvement of social condition and the number of cooperation; and
- 3) the increase of participation or chances of career development.

The outcome evaluation in this research is meant to identify behavioral changes of graduates of teacher education institutions (LPTK) which include: working appraisal, working motivation, career development, teachers' performance, school administration, contributions to school development, creativity and innovation, mastery of subject matter, using the teaching media, using the teaching strategy, and teaching evaluation and assessment.

### **3. Summative Evaluation**

Some literatures explain differences between a formative and summative evaluation. The very basic difference is that the formative evaluation is conducted when a program is on-going which aims to improve the program in the future. Meanwhile, the summative evaluation is conducted when the program finishes to give information for serving decision or helping in assessing the program's

adoption, continuity, or expansion. They help in assessing the whole score of the programs or services in relation to the important criteria of the program. Stake (Sriven, 1991: 19) gives practical ways to describe the differences of the meaning of formative evaluation and summative evaluation as follows: “when the cook tastes the soup, that’s formative evaluation; when the guest tastes it, that’s summative evaluation”. He also defines evaluation as “evaluation done for, or by, any observers or decision makers (by contrast with developers) who need valuative conclusions for any other reasons besides development.”

According to Scriven (1987: 3), “summative evaluation is implemented for the purpose of determining the merit, worth, or value of the evaluation in a way that leads to making a final evaluative judgment. It is usually conducted after a program’s completion.” Meanwhile, Donclark (2010) notes that a summative evaluation (sometimes referred to as external) as a method of judging the worth of a program at the end of the program activities (summation). The focus is on the outcome.

The summative evaluation will result in accurate data if it combines both quantitative and qualitative methods. This is in accordance with the statement:

Summative evaluation is often associated with more objective, quantitative methods of data collection. Summative evaluation is linked to the evaluation drivers of accountability. It is recommended to use a balance of both quantitative and qualitative methods in order to get a better understanding of what your project has achieved, and how or why this has occurred. Using qualitative methods of data collection can also provide a good insight into unintended consequences and lessons for improvement.

MacDonald (2005) states:

Summative evaluation is meant to evaluate the program at its conclusion. This type of evaluation will attempt to determine: the success of the project,

goals being met, participant satisfaction and benefit, effectiveness, end results versus cost, and whether the program should be repeated or replicated.

Another expert, Widoyoko (2009) explains that a summative evaluation is conducted to assess the benefits of a program so that from the result, it can be decided that the program should be continued or terminated. This type of evaluation focuses on variables which program sponsors and decision makers consider important. In addition, it is conducted at the end of the program implementation. This statement can also mean that it is intended to evaluate the on-going program. It aims to observe the project's success, goal attainment, satisfaction and benefits, effectiveness, final result and expenses, and whether the program should be repeated or replicated. Four steps which should be taken to conduct this type of evaluation are: choosing the expected criteria, establishing standards of performance, collecting data, and integrating results to give assessment.

There are some types of evaluation, depending on goals, time, and procedures. An evaluative evaluation, sometimes referred as a result evaluation, is conducted to document results of a program. The specific goals of a program are identified and the attainment level is documented. The result of the evaluation may show changes that should be made in the program to improve it in the next implementation. The result can determine the status and condition for the sake of the program's accountability. It can also be used for need assessment for the next planning, changing program, or introducing new programs and intervention.

Frechtling & Westat (2010) believe that the purpose of a summative evaluation is to assess the quality and impact of a fully implemented project. This statement explains that a summative evaluation is intended to assess the quality and effects of a whole conducted program. This type of evaluation often discusses many similar questions as an advancement evaluation, but it happens after the project has been established and the time frame to reveal the changes is made.

A summative evaluation can be conducted by collecting information about related results and processes, strategies, and activities causing the results to occur. It is an assessment of values and achievement. This type of evaluation is commonly needed to make decision about the future of the intervention. The alternate decision may include: spreading intervention to other sites or institutions, continuing funding, increasing funding, continuing experimental status, modifying, retrying, or stopping.

When conducting a summative evaluation, we need to consider unexpected outcome. This is in line with what Frechtling & Westat (2010) explain that when conducting a summative evaluation, it is important to consider unanticipated outcomes. These are findings that emerge during data collection or data analyses that were never anticipated when the study was first designed. Therefore, this type of evaluation can be referred to as an integral part of the assessment of a program's service.

Frechtling & Westat (2010) also state that a summative evaluation contains six stages: (1) development of a conceptual model of the program and identification of key evaluation point, (2) development of evaluation questions

and definition of measurable outcomes, (3) development of an evaluation design, (4) collection of data, (5) analysis of data, and (6) provision of information to interested audiences.

Each stage in a summative evaluation is explained as follows.

- a. Development of a conceptual model of the program and identification of key evaluation point

This stage is intended to develop a conceptual model of a program and identify significant aspects which need to be evaluated.

- b. Development of evaluation questions and definition of measurable outcomes

In its formulation stage, the evaluation questions should refer to a conceptual model. This stage can be conducted through the following steps:

- 1) identifying stakeholders and audience who can give important information;
- 2) formulating potential evaluation questions which stakeholders and audience may have their interest;
- 3) giving definition about the intended outcome; and
- 4) giving priorities and eliminating arranged questions

- c. Development of an evaluation design

The development of this evaluation design includes:

- 1) Determining kinds of design which are needed to answer the proposed questions.

One can select from various kinds of evaluation designs which can be used.

The selection is not only influenced by the evaluator's preference but also

by the kind of questions for the ongoing project. The latest one has more influence.

2) Choosing methodological approach and data collecting instruments.

In some literature, mixed methods are suggested to collect data in a summative evaluation. By using both quantitative and qualitative approaches, researchers are expected to obtain comprehensive data which are appropriate to the goals of the evaluation.

3) Choosing comparison group

This step is taken if the evaluator views that a comparison group needs to be selected.

4) Choosing samples

Choosing samples will be often influenced by types of the data collecting method which has been chosen. The sample collecting techniques for a quantitative study are those that enable an evaluator to generalize. In determining samples, an evaluator needs to consider sample bias and response bias. The sample bias occurs when losing a sample unit while the response bias occurs when there is no responses (respondents and selected units are in available or they refuse to participate, or some answers and observation are not complete. The response bias also occurs when responses or observation do not reflect their true behavior, characteristics, or attitude.

5) Selecting research timeline

Evaluation questions and analysis plans in a great deal determine when data should be collected and how often various data collection should be

scheduled. In mixed methods, when the findings of the qualitative data collection affect the quantitative instrument arrangement (or vice versa), appropriate sequencing becomes really significant.

d. Collection of data

For a smooth collection of data, these points need to be considered:

- 1) Getting permission and completing needed administration;
- 2) Considering respondents' needs and sensitivity;
- 3) Ensuring trained and objective data collectors;
- 4) Obtaining data from target samples; and
- 5) Striving to minimize possible disturbance when collecting data.

e. Analysis of data.

After data are collected, next steps are analyzing and interpreting them. Preparing data for analysis is different from that for interpretation, depending on the type of the data. In some cases, a qualitative data interpretation may be limited to a descriptive narration but the other qualitative data may lend themselves for a systematical analysis using the quantitative approach such as thematic analysis or content analysis. The analysis consists of four steps:

- 1) Examining raw data and preparing them for analysis;
- 2) Conducting initial analysis based on evaluation plans;
- 3) Conducting extra analysis based on the initial result; and
- 4) Integrating and synthesizing findings.

f. Provision of information to interested audiences.

Next step of evaluation is reporting findings and disseminating them to the concerned parties.

#### **4. Logic Model**

Logic Model Process is a tool used by a program manager and an evaluator to describe the effectiveness of their program. This model describes a logical relationship between program resources, activities, outputs, audience, and short-term, intermediate-term, and long-term outcomes related to certain problems or evaluation. Frechtling (2007: 2) states that “a logic model is a tool and an approach for depicting the critical element in a project and identifying where evaluation is most important”. It is a tool used by people and with people; thus it takes skill and practice in employing the types of thinking and negotiating that must be done. Additionally, logic models can also be used to measure and analyze the achievement of outcomes. Watson (2006: 9) states that “a logic model is a systematic study that uses measurement and analysis to answer specific questions about how well a program is working to achieve its outcome and why.” Furthermore, McCawley (2011) also states that the logic model is useful for identifying elements of the program that are most likely to yield useful evaluation data and measuring progress. Based on these opinion, it can be concluded that logic model is a tool and an approach used by an evaluator to describe the effectiveness of their program. Logic models can also be used to measure and analyze the achievement of outcomes.



The Logic Model is how to visually describe a theory of changes which underlies a program, project, or policy. Frechtling (2007) mentions four basic components in the logic model:

- a. Inputs, or all resources owned by a project or institution (human resources, program, facility and infrastructure) which caused the program could be done
- b. Activities, or all actions done by the project to reach the expected goals
- c. Outputs, or direct results from a certain action including services, events, and products documenting a certain activity. Outputs are often displayed in numbers.
- d. Outcomes, or changes which occur and show movements to reach final goals and targets. Outcome can be in the form of achievement or changes.

On the other hand, Millar et al. (2001) note that a logic model is started from inputs and worked through the expected results which reflect natural tendency to limit one's thoughts for on-going activities, programs, and research questions. It begins with inputs that tend to encourage defence from status quo rather than create forums for new ideas and concepts. To help us think 'outside the box', Millar shows that the plan arrangement will be inverse, which will help in focusing on results. In an inverse arrangement, we ask ourselves "what do we have to do?" rather than "what are we doing?" Therefore, to create a logic model, these following questions can be used:

- a. What is the current situation that we intend to impact?
- b. What will it look like when we achieve the desired situation or outcome?
- c. What behaviours need to change for that outcome to be achieved?

- d. What knowledge or skills do people need before the behaviour will change?
- e. What activities need to be performed to cause the necessary learning?
- f. What resources will be required to achieve the desired outcome?

The advantages of logic model are: (General Program Evaluation, 2008: 2)

1. The model helps communicate the program outside the program in a concise and compelling way.
2. The model helps program staff to gain a common understanding of how the program works and their responsibilities to make it work.
3. Choosing a small set of performance indicators based upon a logic model:
  - Keeps attention on all aspect of performance balances the perturbations that measurement puts in the system.
  - Inform the timing of in depth evaluations (e.g., there is no reason to look for outcomes if resources haven't arrived)
4. Attribution of outcomes to the program is partially demonstrated by showing the related program activities and output.

Based on the explanation, the logic model is communication between input, activities, output, and outcomes which can be used in evaluation to find out the outcome of the program that is reached and how the outcome can be reached.

## **5. Teacher Education and Standards of Teacher Education**

Just like education in general, a teacher education institution (LPTK) also consists of various components. The success of the educational system in LPTK is determined by some factors such as educators, resources, curriculum, quality of inputs, and evaluation system.

Talking about educators in LPTK, Lunenberg et al. (2000: 257) explain that the standard for teacher educators describes subject competences, subject pedagogical competences, organizational competences, pedagogical and communicative competences and competences for learning and growing.

Furthermore, he also mentions some points related to the desired educators for teacher education. Those points are:

- a. able to design, conduct, evaluate, and adapt to curriculum of teacher education;
- b. able to create an environment which stimulates students as candidate of teachers to learn;
- c. able to differ among students: able to train students with different competencies toward the teacher profession;
- d. able to relate pedagogical aspects to various situations;
- e. able to explain and discuss his/her own teaching and/or explain his/her choice to student teachers; and
- f. able to assess student teachers in their (initial) competence, and give them feedback about their progress and evaluate whether they are appropriate for teaching profession;

Korthagen (2000: 6-13) also formulates basic knowledge which should be mastered by educators in teacher education institutions which include:

- a. understanding the concerns and preconceptions of their students;
- b. creating a safe context for reflection;
- c. organising reflective interaction between student teachers;
- d. teaching future teachers how they can develop systematically and how to connect theory and practice.
- e. is able to stimulate student teachers to reflect on their experiences and to self-assess their suitability for the teaching profession.

Teacher education curriculum consists of two main components: a component to give students knowledge of educational competence and a component to give students knowledge of material substance competence they will teach. In a brief, the journey of curriculum of LPTK in Indonesia is explained as follows.

a. Curriculum of before 70's era.

The curriculum of this era was basically implemented with an integrated system, a system which prepares teachers by combining national educational elements, consisting of pedagogy, psychology, fields of study, and teaching practices. These elements were integrated into the academic and professional management. The LPTK in this era produced graduates of baccaularate or bachelor degree and college degree or *doctorandus* and *doctoranda*. The curriculum consisted of six main elements: (i) nationalism, (ii) pedagogy, (iii) general and educational psychology, (iv) didactic methodology, (v) fields of study, and (vi) teaching practice.

b. Curriculum of 1970 – 1990 Era

The curriculum applied in teacher education institutions in this era was developed to produce professional teacher candidates. The teacher education was conducted through a concurrent or integrated system, or a pattern of preparing teachers, which integrated both academic and professional education, characterized by awarding diplomas and teaching certificates to graduates. This curriculum consisted of development of educational academic competence and academic competence of fields of study strengthened by developing the

Indonesian national character through General Basic Courses (MKDU), Basic Educational Courses (MKDK), Fields of Study Mastery Courses (MKPBS), and Courses of Teaching and Learning Process (MKPBM). MKDK and MKPBM were courses preparing candidates of teachers to master educational academic competence while MKPBS are courses preparing candidates of teachers to master academic competence of their fields of study, which is based on MKDU.

c. From Curriculum of 1994 Era to Curriculum of 2000 Era

Curriculum 1994 approach is content-based which emphasized learning results to the wholeness mastery of knowledge substance, and grouped into General Courses (MKU), Basic Education Courses (MKDK), Expertise I Courses (MKK I), and Expertise II Courses (MKK II). MKK I is a group of courses to develop educational academic competence while MKK II is a group of courses to develop academic competence of fields of study. In implementing the curriculum, LPTKs at that time applied a policy to prepare their graduates to have not only main skills of their fields of study but also additional competence known as Post Secondary Subject Matter (PSSM) with more or less 20 credit points as the learning load, for instance, students of Special Education Study Program can take PSSM of Language Education. Unfortunately, the program was imperfect in its implementation especially in its coordination of cross studies and cross faculties learning process.

d. Curriculum after 2000

In 2000, the Directorate General of Higher Education of Indonesia issued a policy which regulated the development of higher education curriculum based on

the Regulation of the Minister of National Education Number 232/U/2000. It was a competency-based curriculum. It was clarified in Paragraph 1 of Kepmendiknas 045/U/2002 which stated that competence was a set of intelligent actions, full of responsibility of a person as a requirement to be regarded as 'capable' by a society in executing his/her tasks in a certain job. The learning results were emphasized to a method of inquiry and was grouped into Character Development Courses (MPK), Knowledge and Skills Courses (MKK), Expertise Activity Courses (MKB), and Societal Life Courses (MBB).

In Paragraph 2 clause (1), it is explained that the standard competence of learning results of study programs consists of:

- 1) main competence;
- 2) supporting competence, and
- 3) other specific competence which is related to the main competence.

Furthermore, it is explained that competence is developed into elements of competence in clause (2). These elements of competence consist of:

- 1) personality basis;
- 2) knowledge and skill mastery;
- 3) expertise skills;
- 4) expertise behavior and attitude according to levels of expertise based on the mastered knowledge and skills.
- 5) the comprehension of societal life norms according the choice of expertise.

The elements of competence were developed based on categorization of the four pillars of education UNESCO (1977) consisting of learning to know, learning to do, learning to live together, and learning to be.

In their implementation, these elements are established in the Regulation of the Minister of National Education Number 045/U/2002 which should be made into the basis of curriculum development so that each course will contain these five elements. This is strengthened by Government Regulation Number 17 Year 2010 Paragraph 97 clause 3 about the Management and Implementation of Education, or the basis of group courses. In addition, the “mistake” is made in the grouping of these courses to become Personality Development Courses (MPK), Knowledge and Skills Courses (MKK), Working Behavior Courses (MPB), Working Expertise Courses (MKB), and Societal Life Courses (MBB). It replaces the grouping of courses in Curriculum 1994: MKU, MKK I, and MKK II.

The Regulation of the Ministry of National Education Number 232/U/2000 and 045/U/2002 actually has been expired, considering that in 2003 Law Number 20 Year 2003 about National Education System was issued. Chapter X Paragraph 38 (4) of the law explains that the higher education framework and curriculum structure are developed by the concerned universities. For LPTKs, the curriculum is developed by referring to Law of National Education System Number 20 Year 2003, Government Decree Number 19 Year 2005 about the Standards of National Education, and Law Number 14 Year 2005 about Teachers and Lecturers containing some elements related to teacher competence. Teacher competence formulated in the Law Number 14 Year 2005 consists of: (1) pedagogic

competence, (2) professional competence, (3) social competence, and (4) personal competence. This competence formula still seems fragmented and cannot be directly used as the basis for developing the curriculum of teacher education. Therefore, standardized efforts to develop the curriculum of LPTK still need reformulation and confirmation of the wholeness of teacher competence which contains the four mentioned competencies.

As some legal products after the Decree of the Minister of National Education was issued, actually the curriculum was no longer relevant to be used as the basis for developing LPTK's curriculum. In the later development to produce graduates in every line, level, and type of education, the Indonesian Government Regulation Number 8 Year 2012 dated on 17 January 2012 about the Indonesian National Qualification Framework (KKNI) was issued as a basis.

On the basis of the analysis of the LPTK's curriculum course and by considering recommendation from Teacher Education Summit held from 14 to 16 December 2011 in Jakarta, the government through the Directorate General of Higher Education of the Ministry of Education and Culture developed a curriculum model of LPTK which was appropriate for present demand. The model is, for instance, the urgency to reapply character education and maximize the utilization of information and computer technology for learning, by referring to KKNI, and future to guarantee quality of candidates of professional educators.

## **6. Qualification Standard of Vocational High School Teachers**

Vocational high school teachers are educators who have the primary task of educating, teaching, guiding, directing, train, assess, and evaluate the students on



vocational education. Since vocational education has characteristics different from other types of education, vocational teachers also have different qualifications. Axman (2002: 10) states: “New teacher training programs in vocational education have to be developed that respond to the above challenges in vocational education.” The programs have to be as follows.

- a. Focusing on the relevance of in-service teacher training programs in vocational education for students, employers and teachers themselves;
- b. Forgetting the spoon-feeding of our own teachers and instead helping junior teachers to take their own process of learning-and becoming-teachers into their own hands;
- c. Combining theoretical and practical aspects of teaching in learning situations that have real-life importance and are fun;
- d. Making use of team work in teacher training and turning it into a powerful tool for teachers in their vocational schools;
- e. Developing new “ways of learning” and setting up new "cultures" in grading and testing, since new testing systems should be consistent with new training systems and compatible with training

The academic and competency qualification standards of vocational high school teachers based on the Regulation issued by the Minister of National Education of the Republic of Indonesia No. 16 of 2007 about the Academic and Competency Qualification Standards are as follows:

- a. Teachers’ Academic Qualification
  - 1) Teachers’ academic qualification acquired through formal education

Teachers in vocational high schools, vocational *madrasah aliyah*, or other equal types of high schools, should hold minimally a vocational diploma (D-IV) or bachelor degree (S1) from accredited study programs which are in line with the subjects they teach.

## 2) Teachers' Academic Qualification Acquired through Viability and Equivalence Test

The academic qualification required for a teacher candidate to be promoted to a teacher of special disciplines, which is essentially needed but not taught in universities, can be acquired through viability and equivalence test. The test, which should be passed by an individual having skills without certificates certifying his skills, can be conducted by universities given the authority to conduct the test.

### b. Teachers' Competency Standard

The teachers' competency standard is wholly developed from four main competencies: pedagogical, personal, social, and professional. Those competencies are integrated in the teacher's performance.

#### 1) Pedagogical Competency

a. Having thorough understanding of students' characteristics seen from physical, moral, spiritual, social, cultural, emotional, and intellectual aspects.

(1) Understanding students' characteristics related to physical, intellectual, social emotional, moral, spiritual, and socio-cultural background.

- (2) Identifying students' potentials in the subjects taught
- (3) Identifying students' initial learning ability in the subjects taught
- (4) Identifying students' learning difficulties in the subjects taught
- b. Mastering theories of learning and principles of teaching
  - (1) Understanding various learning theories and principles of teaching related to the subjects taught.
  - (2) Applying various teaching approaches, strategies, methods, and techniques creatively in the subjects taught.
- c. Developing curriculum related to the subjects taught
  - (1) Understanding principles of curriculum development.
  - (2) Determining goals of teaching.
  - (3) Determining appropriate teaching experience to achieve goals of teaching.
  - (4) Selecting teaching materials related to experience and goals of.
  - (5) Organizing teaching materials correctly in accordance with the selected approaches and students' characteristics.
  - (6) Developing indicators and instrument of teaching.
- d. Conducting teaching
  - (1) Understanding principles of planning teaching.
  - (2) Developing components of lesson plans.
  - (3) Arranging complete teaching plans, for activities in classes, laboratories, or fields.

- (4) Conducting teaching in classes, laboratories, and fields by paying attention to presupposed safety standards.
- (5) Using relevant teaching media and learning sources to students' characteristics and the subjects taught to achieve the teaching goals as a whole.
- (6) Making transactional decisions in teaching processes in accordance with the situation.
- e. Applying information and communication technology for the sake of teaching
  - (1) Applying information and communication technology in the subjects taught.
- f. Facilitating the development of students' potentials (actualizing various potentials they have)
  - (1) Providing various learning activities to encourage students to achieve their best.
  - (2) Providing various learning activities to actualize students' potentials, including their creativity.
- g. Communicating effectively, emphatically, and politely with students
  - (1) Understanding various effective, emphatic, and polite communication strategies in oral, written, or other forms of communication.
  - (2) Communicating effectively, emphatically, and politely with the students by using specific language to interact in any educative

activities and games. The communication is achieved through cyclical development of (a) preparation of the student's psychological condition to take part in the games through persuasion and examples, (b) invitation to students to take part, (c) students' responses to teacher's invitation, and (d) teacher's reaction to the students' responses, etc.

h. Conducting assessment and evaluation of teaching processes and results

- (1) Understanding principles of the assessment and evaluation of teaching processes and results in accordance with the characteristics of the subjects taught.
- (2) Determining aspects of teaching processes and results which are important to be assessed and evaluated in accordance with the characteristics of the subjects taught.
- (3) Determining procedures of assessment and evaluation of the teaching processes and results.
- (4) Developing instruments of assessment and evaluation of the teaching processes and results.
- (5) Administering assessment of teaching processes and results continuously by implementing various instruments.
- (6) Analyzing results of assessment of teaching processes and results for various purposes.
- (7) Evaluating teaching processes and results.

i. Making use of results of assessment and evaluation for the sake of teaching.

(1) Using information of results of assessment and evaluation for determining learning completeness.

(2) Using information of results of the assessment and evaluation for planning remedial and enrichment programs.

(3) Communicating results of assessment and evaluation with stakeholders.

(4) Using information of results of assessment and evaluation for improving the quality of teaching

j. Doing reflective actions to improve the quality of teaching.

(1) Conducting reflections on teaching processes which have been performed.

(2) Making use results of reflections to improve and develop teaching processes of the subjects taught.

(3) Conducting class action research to improve the quality of teaching process of the subjects taught.

## 2. Personal Competency

a. Acting in accordance with norms of religion, laws, social, and Indonesian national culture.

(1) Appreciating the students without discriminating them due to their beliefs, tribes, traditional customs, origins, and genders.

- (2) Acting in accordance with norm or religion, norms of laws and social norms applied in society, and diverse Indonesian national cultures.
- b. Showing themselves as honest individuals with noble character who become role models for students and society
  - (1) Behaving honestly, firmly, and humanly.
  - (2) Acting out behaviour reflecting piety and noble character.
  - (3) Acting out behaviour which can be taken as a role model for the students and members of surrounding society.
- c. Showing themselves as steady, stable, mature, wise, and authoritative individuals
  - (1) Showing themselves as steady and stable individuals.
  - (2) Showing themselves as mature, wise, and authoritative individuals.
- d. Showing high sense of work ethic and responsibility, pride of being teachers, and confidence
  - (1) Showing high sense of work ethic and responsibility.
  - (2) Being proud to be teachers and having confidence of themselves.
  - (3) Working autonomously and professionally.
- e. Highly respecting the code of professional ethics for teachers.
  - (1) Understanding the code of professional ethics for teachers.
  - (2) Applying the code of professional ethics for teachers.
  - (3) Acting in accordance with the code of professional ethics for teachers.

### 3. Social Competence

- a. Acting inclusively and objectively and not making any discrimination based on genders, religions, races, physical conditions, family background, and socio-economic status.

- (1) Acting inclusively and objectively towards the students, colleagues, and surrounding societies when conducting learning processes.

- (2) Not discriminating the students, colleagues, students' parents, and surrounding societies based on their religions, races, genders, family background, and social-economical status.

- b. Communicating effectively, emphatically, and politely with peer teachers, academic staff, parents, and society.

- (1) Communicating effectively, emphatically, and politely with peer teachers and other scientific communities.

- (2) Communicating effectively, emphatically, and politely with students' parents and societies about the learning programs and students' progress.

- (3) Encouraging students' parents and society to participate in teaching programs and in solving any problems related to students' learning difficulties.

- c. Adapting in any working place in the entire regions of the Republic of Indonesia which have diverse social and cultural characteristics.

- (1) Adapting in the working environment to improve their effectiveness as educators.



(2) Conducting various programs in the working environment to develop and improve the quality of education in the pertinent areas.

d. Communicating with the community of the same profession and communities of other professions through oral, written, or other forms of communication.

(1) Communicating with colleagues, scientists, and other scientific communities through various media for improving the quality of teaching

(2) Communicating teaching innovation with the communities of the same profession through oral, written, or other forms of communication.

#### 4. Professional Competence

Mastering the scientific materials, structures, concepts, and mindset which support the subjects taught.

a. Mastering the competency standards and the required basic competency of the subjects taught.

(1) Understanding the competency standards of the subjects taught.

(2) Understanding the required basic competence of the subjects taught.

(3) Understanding the teaching goals of the subjects taught.

b. Developing teaching materials of the subjects taught creatively.

(1) Selecting teaching materials of the subjects in charge in accordance with the levels of students' development.

- (2) Developing teaching materials of the subjects in charge creatively in accordance with the levels of students' development.
- c. Developing professionalism continuously by implementing reflective actions.
  - (1) Doing reflections towards self-performance continuously.
  - (2) Making use of the results of the reflection to improve professionalism.
  - (3) Conducting class action research to improve professionalism.
  - (4) Being up-to-date with teaching from various sources.
- d. Using information and communication technology for self-development.
  - (1) Using information and communication technology for communication.
  - (2) Using information and communication technology for self-development.

## **7. Work Motivation**

Motivation is something which affects one's performance and thus, many institutions, organizations, and working organizations pay attention to it. It also greatly affects the goal attainment of an organization. This is in line with the statement of Yudhvir & Sunita (2012: 57) who write "motivation is an important element in understanding, studying and analyzing human behavior. It helps of an executive or a manager to identify the motives which influence the behavior of

employee at work to attain organizational objectives.” Some definitions of motivation from some experts are explained as follows.

According to Middlemist & Hitt (1988: 144), motivation is “the force acting on and coming from within a person that account, in part, for the willful direction of one’s efforts toward the achievement of specific goals.” Furthermore, Miner (1998: 158) defines motivation as “those processes within an individual that stimulate behavior and channel it in ways that should benefit the organization as a whole”. Another definition is stated by Schunk et al. (2010: 4). They write, “Motivation is the process whereby a goal-directed activity is instigated and sustained.” On the other hand, Yudhvir & Sunita (2012: 57) state that motivation is a personal and internal feeling. The feeling arises from needs wants. Human needs are unlimited. Fulfillment of one set of needs give rise to the other needs. Therefore, motivation is a continuous process. Based on these definitions, it can be concluded that motivation is personal feeling from inside a person in fulfilling needs and attainment of certain urgent and continuous goals. As a result, motivation emerges when an individual feels certain needs or wants to reach a certain goal, individual or organizational goal.

Another definition is stated by John (1983) who believes that motivation means three things: the person work hard, the person keeps at his or her work, and the person direct his or her behavior toward appropriate goals. Furthermore, Hoy & Miskel (2005: 157) state that “motivation is generally defined as an internal state that stimulates, directs, and maintains behaviour.” While Lunenburg & Ornstein (2000: 89) note three common aspects of motivation: effort, persistence,

and direction. Therefore, the motivation of a person can be identified from his/her hardwork in conducting and keeping quality of works for attaining certain goals. In other words, it can be observed from efforts, diligence, and goal attainment.

If motivation is related to the area of work, Miskel & Hoy, 2005: 157) define it as “a set of energetic process that originate both within as well as beyond an individual a being to initiate work-related behavior, and to determine its form, direction, intensity, and duration.”

According to Gibson (1996) and Luthan (1996), theory of motivation can be divided into two groups: content theory and process theory. Content theory grounds its approach on factors of needs and individual satisfaction which cause a person to act and behave in a certain way. This theory focuses on factors inside a person which strengthen, point, support, and stop his/her behavior. This theory tries to reveal factors causing the fulfillment of both material and nonmaterial needs. On the other hand, the process theory focuses on how to strengthen, point, maintain, and stop an individual's behavior so that he/she will work hard for his/her future. Therefore, motivation will increase if an expectation is reached, conversely it will decrease if the expectation is not reached.

#### a. Content Theory

##### 1) Need Hierarchy Theory

The Need Hierarchy Theory explained by Abraham Maslow is very well known and widely used by researchers to reveal motivation in an organization. Maslow (Lunenburg & Ornstein, 2000) classifies five elements which underlie human needs as follows:

- a) Physiological needs, which include needs for foods, water, and housing
- b) Safety needs, which include needs for protection from danger, threats, deficiency, and anxiousness
- c) Social needs, which include needs for relationship to others, being accepted in a group, friendship, and affection.
- d) Esteem needs, which include needs for self-esteem or how other people can appreciate him/her.
- e) Self-actualization needs, which include development of self-potential and show his/her skills/expertise/and potential.

## 2) Motivation-Hygiene Theory/Two-Factor Theory

Frederick Herzberg develops a unique and interesting theory of motivation built from Maslow's theory. This theory is known as the motivation-hygiene theory. Related to it, Herzberg tries to determine the factors causing motivation by paying attention to area of work to identify factors causing an individual to behave positively or negatively towards their tasks. He also reduces five levels in Maslow's motivation theory into two levels namely:

### a) Hygiene needs (dissatisfiers)

Hygiene needs (dissatisfiers) are equivalent to Maslow's theory in the low level. In this level, something is functioned to cut down dissatisfaction but unfortunately, it does not cause satisfaction.

### b) Motivation needs (satisfiers)

Motivation needs (satisfiers) is equivalent to Maslow's theory in high level.

### 3) Existence Relatedness Growth Theory (ERG Theory)

Existence Relatedness Growth Theory founded by Clayton Alderfer explains that:

- a) Existence needs comprise all forms of physiological and material desires such as food, clothing, and shelter.
- b) Relatedness needs include all those that involve interpersonal relationship with others – supervisors, colleagues, subordinates, family, friends, and so on.
- c) Growth needs concern the individual's intrinsic desire to grow, develop, and fulfill one's potential.

### 4) McClelland's Achievement Motivation Theory

McClelland's Achievement Motivation theory reveals that employees have spare potential energy. How this energy is released or used depends on someone's motivation, situation, and available opportunities. McClelland states that somebody's motivation is basically determined by three needs: (1) needs for achievement (n-Ach): feeling of responsibility to tasks, finding solution to a problem, needs for high achievement; (2) needs for affiliation (n-Af): having relationship to others; (3) needs for power (n-Pow): influencing and controlling others.

Based on some of these theories, it can be concluded that motivation is influenced by two factors: factors that originate from within (internal) and factors that come from outside (external) as shown in Table 3.

**Table 3. Factors Affecting Motivation**

No.	Factors	Component
1.	Internal	<ul style="list-style-type: none"><li>▪ Achievement</li><li>▪ Recognition</li><li>▪ Work itself</li><li>▪ Responsibility</li><li>▪ The opportunity for self-development</li></ul>
2.	External	<ul style="list-style-type: none"><li>▪ Status in organization</li><li>▪ Work result</li><li>▪ Relationships with colleagues</li><li>▪ Supervision applied</li><li>▪ Organization's policy and working conditions</li><li>▪ Administration systems and rewards</li></ul>

## **8. Teacher Performance**

Teacher performance refers to teacher behavior in the classroom that can be influenced by several factors. Teacher performance is influenced not only by its competence but also by other factors (context I-external) that may influence the behavior of the teacher in the classroom. Likewise, the learning experience of students who are not solely influenced by the quality of performance as well, but is also influenced by characteristics of students (context II-internal) in the classroom. Medley, et al. (1984: 19-21). The assessment of teacher performance can be used to decide whether teachers require further training in the form of in-service training to increase the competence or not. Furthermore, Medley, et al. (1984: 114) define three levels of competence of teachers to work, namely: (1) teaching skills, (2) instructional strategy, (3) defining objectives. Teaching skills can be seen from how teachers implement lesson plans that have been prepared. This skill is the lowest level. The second level in teacher competence is the ability

to develop lesson plans or instructional strategies that will produce student learning outcomes. Meanwhile the highest level is how teachers can determine the purpose of the teaching undertaken.

Related to the development of teacher performance, Jones et al. (2006) write that ideally, the development of a teacher's performance is part of a continuous process of managing performance that can be done individually or by all teachers in the school. Furthermore Jones et al. (2006: 26-28) identify three ways to fulfill needs of teachers, namely: (1) self-identification, (2) formal identification, and informal identification.

Sanjaya (2005: 13) states, "The performance of teachers is associated with the task of planning, learning management, and assessment of student learning outcomes." As a planner, the teacher should be able to design learning in accordance with the conditions that exist in the field. As a manager, the teacher should be able to create a conducive learning environment so that students can learn well. As an evaluator, a teacher must be able to carry out the assessment process and student learning outcomes.

Meanwhile, in the perspective of education policy, the Ministry of National Education (2008) states that indicators of teacher performance appraisal are conducted in three areas: program planning of teaching activities, teaching implementation, and evaluation/assessment of learning. Planning the teaching activities is related to the ability of teachers to master teaching materials seen from the development of the syllabus and lesson plan. The teaching activity is a core activity that marks the classroom management activities, the use of media



and teaching resources, the use of methods and teaching strategies. Evaluation/assessment of learning is an activity to determine the achievement of teaching objectives and the teaching process has been done using different types and appropriate evaluation methods. Furthermore, in Book 2 Guidelines on Teacher Performance Assessment, Ministry of National Education (2010c: 5) states that the assessment of teacher performance related to the implementation of the teaching process for teacher classroom activities include planning and implementing learning, evaluate and assess, analyze the results of the assessment, and implement follow-up assessment.

Based on the definition and the description, it can be formulated that teacher performance is a reflection of the competency of teachers in performing basic tasks in accordance with their authority and responsibility. Teacher performance assessment in vocational schools can be done by school principals and students. Principals as leaders can provide a comprehensive assessment, while students can observe directly when teachers teach in the classroom. Assessment by the principals on teacher performance can be done through: questionnaires, interviews, observation, and portfolios. While student assessment of teacher performance can be done through: questionnaires and interviews. In this study, the performance assessment of teachers by principals and student assessment are conducted through questionnaires and interviews. Performance assessment of teachers by school principal consists of: teacher competence, the ability to complete the school administration, contribution to vocational school, as well as creativity and innovation. Performance assessment of teachers by student consists

of: mastery of subject matter, teaching media, teaching strategy, and evaluation and assessment.

## **9. The Quality of Education**

Quality relates to the assessment of success in fulfilling the standards and criteria established. The quality of education can be examined from various viewpoints of the various aspects of the education system. LPTK as the concept of quality in higher education institutions refer to the National Standard of Higher Education.

Quality of education must be planned and committed together so as to achieve the progress that is based on the planned changes. Semiawan (Supriadi, 2003) states, the improving education quality can be achieved through two strategies, namely the improvement of quality-oriented education and skills in terms of mental and physical (dexterity) broad-based, and quality improvement special education more academically oriented.

Based on the report submitted by the National Commission on Education Ministry of Education (2001) there are four factors that affect the achievement of the quality of education. First, the availability of qualified teachers who are able to involve students in the effective teaching and learning in accordance with facilities and the existing situation. Secondly, the school management is able to utilize all the resources available. Third, education quality management should be conducive, effective and efficient, to be followed by public participation, government, and also the school itself. Fourth, the social cohesion that is able to

accommodate the growth of a variety of cultures and customs of Indonesia so as to support the achievement of educational goals.

Based on these opinions, it can be concluded that the quality of education in LPTK can be seen from how LPTK is able to achieve the goals set by the utilization of all its resources. The criteria used to find out the quality of education in LPTK are based on the National Higher Education Standards (SNPT).

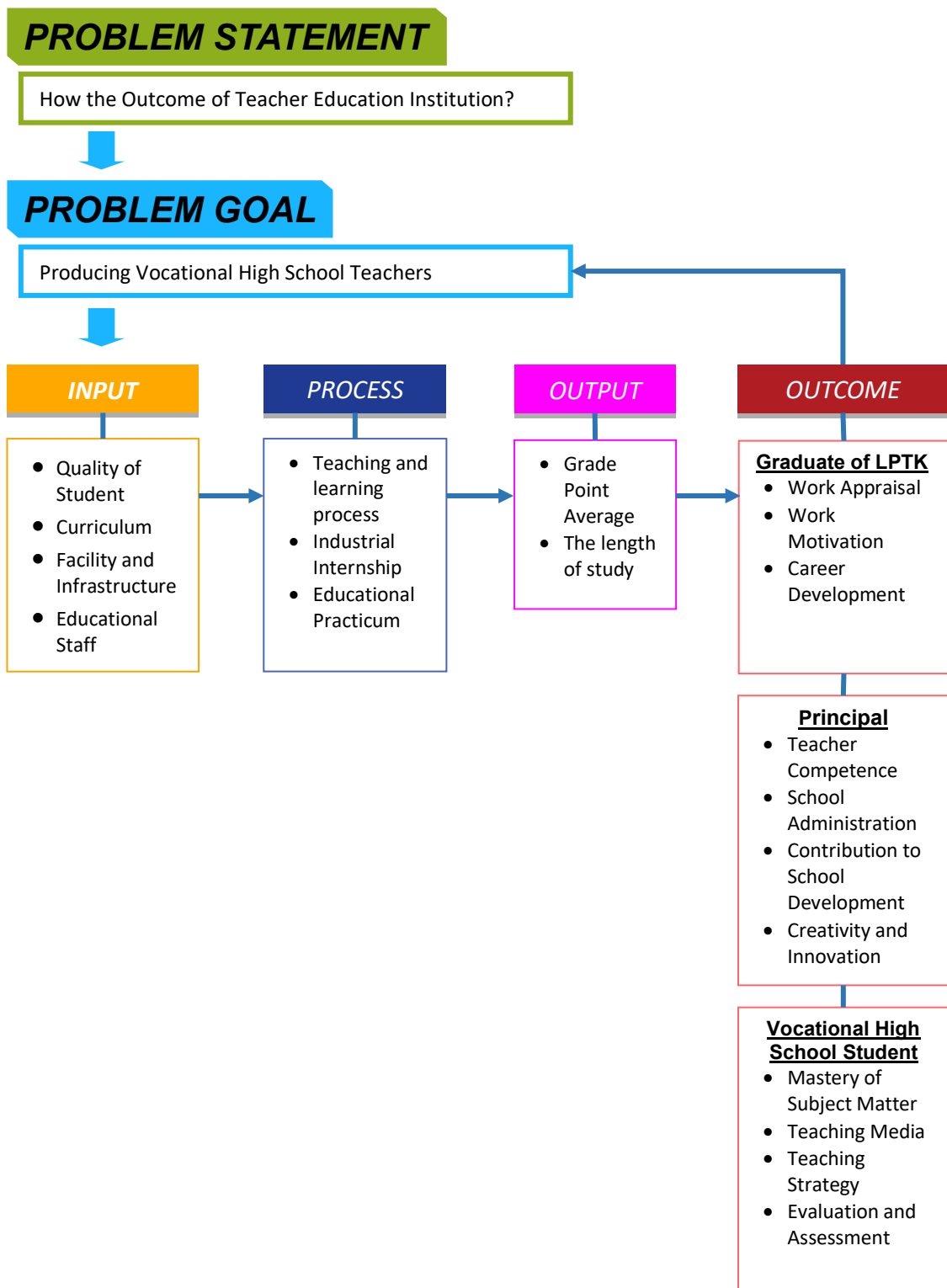
## **B. Conceptual Framework**

Teacher education institution (LPTK) which has responsibility to educate candidate of teachers have a challenge to actively participate in increasing the quality of education in Indonesia. This is because LPTK is the place where candidates of teachers are educated and prepared. In observing the goals attainment of LPTK, an evaluation needs to be conducted in which the evaluation is a method to increase the quality of education in LPTK. Some methods of evaluation can be used, however, to observe a program comprehensively by using an outcome evaluation method. By conducting an outcome evaluation, factors contributing to the outcome of an LPTK's educational program can be identified.

Based on an initial study conducted by the researcher, it can be concluded that up until now, an evaluation towards the outcome of teacher education institution (LPTK) is rarely conducted. Seeing this condition, the researcher thinks that a specific evaluation needs to be conducted to identify the outcome of the result of the implementation of education in LPTK.

The outcome of LPTK is determined by some factors including inputs (quality of students, curriculum, facilities and infrastructure, and education staff), process or activities (teaching-learning process, industrial internship, and educational practicum), outputs (graduate point average/GPA and length of study). The outcomes which will be revealed in this research include 11 variables. The outcome based on the opinion of LPTK graduates consists of three aspects namely: work appraisal, work motivation, and career development. The principal gives the assessment about the outcome of LPTK. The assessment consists of four aspects namely: competence of teachers in teaching, the ability to complete the school administration, the contribution to the school development, and creativity and innovation. The students of vocational high schools give the assessment about the outcome of LPTK. The assessment consists of four aspects namely: mastery of subject-matter, teaching media, teaching strategy, and evaluation and assessment.

Meanwhile, the conceptual framework based on the logic model is described in Figure 1:



**Figure 1. Conceptual Framework of the Outcome Evaluation**

Description:

1. Quality of student is a precondition possessed when entering LPTK students in terms of academic ability and mental readiness.
2. The curriculum is a set of educational programs provided by LPTK contain lesson plan that will be given to student teachers at Bachelor's degree (S-1).
3. Facility and infrastructure is anything that serves as the main support in the implementation of the educational process in LPTK.
4. Educational staff are academic personnel in charge of planning, implementing the learning process, assessing the results of learning, coaching and training, and research and community service.
5. The teaching learning process is learning activities carried out in LPTK which includes learning the theory and practice in the laboratory or workshop.
6. Industrial internship is a practice course that aims to provide supplies to students with real experience in the industry. Industry practice is also used as a quality control on the fulfillment of student competencies as required by the industry.
7. Educational practicum is practices aimed to provide supplies to students with teaching experience in vocational high school (VHS). Educational Practicum is also used as a quality control on the fulfillment of student teaching competencies as required.
8. Grade Point Average (GPA) is the average value of learning outcomes that describe the achievement of competence for taking Bachelor's degree (S-1) in LPTK.

9. The length of study is the time used by the students to complete the study Bachelor's degree (S-1) in LPTK.
10. Work Appraisal is awards received by graduates for a profession LPTK vocational high school (VHS) teacher.
11. Work Motivation is the impulse in a person who is affected by internal and external factors to carry out duties as a vocational teacher.
12. Career Development is the process of improving the ability of the work in order to achieve a career goal in vocational education.
13. Teacher competence is a competency that must be owned by teachers in carrying out their duties.
14. School administration is the ability of the graduates of LPTK to finish school administration.
15. Contribution to school development is the contribution made to develop vocational graduates LPTK where the graduates found work.
16. Creativity and innovation is the ability to develop new ideas and new methods of solving problems and finding opportunities for the advancement of vocational.
17. Mastery of subject matter is the ability of the graduates of LPTK in mastering any material given to students of vocational education.
18. Teaching media is the ability of the graduates of LPTK in developing and utilizing media in learning in vocational high school (VHS).
19. Teaching strategy is the ability of the graduates of LPTK in applying appropriate learning strategies in vocational high school (VHS).

20. Evaluation and assessment is the ability of the graduates of LPTK in the evaluation and assessment of learning outcomes obtained vocational students.

### **C. Research Questions**

Based on the conceptual framework and theoretical review, the research questions are formulated as follows:

1. What is the input of conducting education in teacher education institutions (LPTK), especially those which produce technology and engineering teachers, like?
2. What is the process of conducting education in teacher education institutions (LPTK), especially those which produce technology and engineering teachers, like?
3. What is the output of conducting education in teacher education institutions (LPTK), especially those which produce technology and engineering teachers, like?
4. What are the indicators of the outcome of teacher education institutions, especially those which produce technology and engineering teachers?
5. What are the outcomes of conducting education in teacher education institutions (LPTK), especially those which produce technology and engineering teachers based on graduates' assessment, like?
6. What are the outcomes of conducting education in teacher education institutions (LPTK), especially those which produce technology and engineering teachers based on schools principal assessment, like?



7. What are the outcomes of conducting education in teacher education institutions (LPTK), especially which produce technology and engineering teachers based on students' assessment, like?
8. What are the related aspects of the outcome of teacher education institutions, especially those which produce technology and engineering teachers?

### **CHAPTER III**

#### **RESEARCH METHOD**

This research aims to reveal the quality of graduates of teacher education institution (LPTK) as it has a significant role in preparing pre-service teacher and as the organizer of professional education for pre-service teacher (PPG). From the evaluation of the outcome, it was expected to gain more information to improve the quality of teacher education institutions so that it can provide highly qualified teachers with a good competence and high competitiveness.

This research is the evaluation of the graduates of teacher education institutions working as a teacher in a vocational school of technology and industry.

#### **A. Research Type and Design**

##### **1. Research Type**

This research is evaluation research. It was designed to evaluate the outcomes of teacher education institutions and to reveal the supporting factors and obstacles in the organization of the teacher education institutions. The evaluation was expected to be a solution to developing programs, making policies, and making up the practical programs within the institution.

The research investigated latent variable and observed variable of a construction of education in teacher education institution related to the input, process, and output. The input is the condition of the graduates when they were

studying at the institution. The process is the learning-teaching process while the graduates were in the institution. The output is when the graduates finished their study.

## **2. Research Design**

The research was designed with summative evaluation method with a logic model. The method was used to evaluate the program that had been done before. Subsequently, the use of logic model was based on the idea from Alkin and Frecthling who recommend the logic model method to be used in the evaluation research.

### **B. Research Approach**

This evaluation research used some criteria to determine the assessment. The level of conformity between the program and the outcome was the criteria used to determine the assessment. The research focused on what the graduates get or feel when they teach in the school, the assessment of the principal of the performance of the graduates, and the student assessment about the performance of the graduates.

Based on the limitation of the problem, the approaches used are qualitative and quantitative approaches. The quantitative approach was used to collect the descriptive data, while the qualitative approach was applied to get more detailed explanation to elucidate and complete the quantitative data.

The research consisted of some activities including preparation, data collection, data analysis, and the report writing. There are some procedures of the research:

1. Preparation was about the organization of the activities so that it could run well. There were some activities done in the preparation: (a) making proposal, (b) managing administration and permission, (c) doing observational study, (d) selecting subject, object and the research respondent, (e) arranging the schedule, and (f) making the research instrument.
2. Data collection was done to collect both quantitative and qualitative data. The activities done in this stage were: (a) collecting data from the respondents (the teachers, the principal, and the students) by distributing the questionnaires and interviews, (b) putting the data into some categories, (c) verifying the data, (d) documenting the data, and (e) verifying the final data.
3. Data analysis consisted of: (a) analyzing the initial data, (b) filtering and codifying the data, (c) analyzing the data, and (d) interpreting the data.
4. Report writing consisted of some activities including: (a) presenting the result of the research, (b) discussing the result, (c) making final conclusion, and (d) making recommendation.

### **C. Time and Place**

The research was conducted in Yogyakarta Special Territory and Central Java Province where the most of graduates work. The reasons for the selection of the two provinces as the location of the research are that: 1) there are various

vocational high schools within the two regions (public and private schools), 2) the condition of the city (rural city) is conducive, and (3) the graduates of YSU are mostly representative.

From the selected areas, it was expected that the data taken could show the real information about the outcome of the teacher education institutions, especially vocational school teachers. The research was conducted from October 2014 to November 2015.

#### **D. Population and Sample**

Population in this study was graduated from the Faculty of Engineering Yogyakarta State University from 2001 to 2010. Total population of 1,558 people coming from 6 departments namely: Electrical Engineering Education, Electronic Engineering Education, Mechanical Engineering Education, Automotive Engineering Education, Civil and Planning Engineering Education, and Culinary and Fashion Education.

The sampling technique used in this research was purposive sampling technique by taking the graduates who pursued the profession as a teacher at the vocational high school. The calculation of an adequate sample size was determined by Nomogram Harry King with an error rate of 5%. Based on Nomogram Harry King, the number of sample used was 19% of the population. Counting of the number of the sample is as follows:

$$N = 19\% \times 1,558 = 296 \text{ people.}$$

Furthermore, from the number of samples that have obtained, the researchers could determine the respondent. Respondents in this study were graduated from LPTK into vocational school teachers, the principal (direct supervisor of the graduate teacher LPTK), and vocational students (students who take the study undertaken by graduate teachers LPTK).

## **E. Data Collecting Technique and Research Instrument**

### **1. Data Collecting Technique**

#### **a. Quantitative Data Collecting**

The quantitative data which are in form of numeral were taken from the measurement process so that instrument with scale is needed. The instrument applied to collect the quantitative data was a questionnaire with Likert scale 1 to 4. The quantitative data were collected through questionnaire to the respondents. The quantitative data used to reveal the outcome of LPTK and the factors that influence the outcome. The quantitative data obtained by conducting questionnaire with three groups of respondents namely: graduate LPTK, principals, and students of vocational high school.

#### **b. Qualitative Data Collecting**

Qualitative data collection is intended to obtain information and support the quantitative data. Qualitative data were collected through in-depth interviews to the respondents. The quantitative data used to reveal the outcome of LPTK and the factors that influence the outcome. The qualitative data obtained by

conducting interviews with three groups of respondents namely: graduate LPTK, principals, and students of vocational high school.

## **2. Research Instrument**

Every respondent in this research was well observed with the some different instrument. The data collecting instrument used were a structured questionnaire and the interview guidelines. The main instrument was a well developed/ structured questionnaire with indicators and questions. There were four steps to get good instruments: 1) Formulating construction based on the theoretical review, 2) developing the instrument, 3) making the description of the instrument, and 4) writing the instrument item.

The information needed was: (1) input from the LPTK, (2) education process activity in the LPTK, (3) the output of the LPTK, and (4) outcome of the LPTK graduates. The sources of the information were the graduates of LPTK (teachers of vocational high schools), the principals, and the students.

The types of the data were qualitative and quantitative. Table 4 shows the structure of the data needed to evaluate the outcome of the institutions.

**Table 4. The Structure of Research Data**

Dimension	Aspect	Method of Data Collection	Source of Data
Input	<ul style="list-style-type: none"> <li>▪ Quality of student.</li> <li>▪ Curriculum.</li> <li>▪ Facility and infrastructure.</li> <li>▪ Educational Staff.</li> </ul>	Document study Questionnaire Interview	Database in FT UNY Graduate of FT UNY (2001- 2010)
Process	<ul style="list-style-type: none"> <li>▪ Teaching-learning process.</li> <li>▪ Industrial Internship.</li> <li>▪ Educational Practicum.</li> </ul>	Questionnaire Interview	Graduate of FT UNY (2001- 2010)
Output	<ul style="list-style-type: none"> <li>▪ GPA.</li> <li>▪ Length of study.</li> </ul>	Questionnaire	Graduate of FT UNY (2001- 2010)
Outcomes	<ul style="list-style-type: none"> <li>▪ Work appraisal.</li> <li>▪ Work motivation</li> <li>▪ Career Development.</li> </ul>	Questionnaire Interview	Graduate of FT UNY (2001- 2010)
	<ul style="list-style-type: none"> <li>▪ Teacher competence of the graduates.</li> <li>▪ School Administration.</li> <li>▪ Contribution to school development.</li> <li>▪ Creativity and innovation.</li> </ul>	Questionnaire Interview	Principal
	<ul style="list-style-type: none"> <li>▪ Mastery of subject matter.</li> <li>▪ Teaching media.</li> <li>▪ Teaching strategy.</li> <li>▪ Evaluation and assessment.</li> </ul>	Questionnaire Interview	Student of vocational high school



The questionnaire was used to explore the dimension of input, process, output and outcome (work appraisal, work motivation, career development, teacher competence, school administration, contribution to school development, creativity and innovation, mastery of subject matter, teaching media, teaching strategy, and evaluation and assessment). Document study was done to obtain the alumni data, grade point average (GPA) and length of study. The interview was used to get the supporting data of the aspect of the research.

The research instrument was based on the theoretical review and the previous studies related to the research in order to determine the aspect needed to explore precisely and timely. From the theoretical review and the result of the previous studies, some operational definitions, criteria, and indicators defined into some items of assessment tool matrix were formulated.

In developing the outcome evaluation instrument, the researcher needed to identify the dimension, aspects and indicator of quality of the institution. In this phase, there were two approaches: 1) focus group discussion, and 2) peer review.

#### **a. Focus Group Discussion**

The researcher took some panelists based on their expertise: education evaluation experts and vocational education experts. The panelists were asked to assess and give feedback to each component and indicator of the evaluation.

There are some panelists of the forum group discussion (FGD):

**Table 5. The List of Forum Group Discussion Participants**

No	Forum Group Discussion Participants		
	Name of Experts	Expertise	Position
1.	Prof. Djemari Mardapi, Ph.D	Evaluation and assessment	Head of PEP Department (Doctoral program of Graduate School YSU). Lecturer of Graduate School YSU
2.	Prof. Soenarto, Ph.D	Evaluation and vocational education	Head of TVE Department (Doctoral program of Graduate School YSU). Lecturer of PPS YSU
3.	Prof. Dr. Herminarto Sofyan, M.Pd	Vocational education management	Lecturer of Graduate School YSU
4.	Prof. Dr. Badrun Kartowagiran, M.Pd	Evaluation and assessment	Lecturer of Graduate School YSU
5.	Prof. Dr. Eko Hariadi, M.Pd	Education evaluation	Dean of Faculty of Engineering State University of Surabaya. Lecturer of State University of Surabaya.
6.	Dr. Nanik Estidarsani, M.Pd	Education evaluation	Lecturer of State University of Surabaya.
7.	Dr. Putu Sudira, M.Pd	Vocational education	Lecturer of Graduate School YSU

### **b. Peer Review**

Peer review was held to obtain content validity quantified with Aiken statistics. In this step, the researcher asked the experts to fill in the accuracy score of instrument items. Then, the researcher analyzed it.

### **F. Instrument Validity and Reliability**

Data quality is determined by the quality of the instrument used for data collection. An instrument is said to be qualified if they meet the requirements of validity and reliability. To determine the validity and reliability of the instrument, researchers tested the instrument. Number of trial subjects is set by considering the objectives and one of the analytical techniques used the CFA. Subject trial consisted of 94 teachers and 22 principals to assess the 87 teachers and 100 students. The use of rules of thumb to the analysis of the factors put forward by Barrett and Kline (1981: 32), Mac Callum, Widaman, Zhang & Hong (1999: 85) suggests a sample rate and indicators of 3:1 with a minimum sample size of 50 (Arrindell & Van Der Ende; 1985: 167). Validity and reliability of the instrument is presented as follows:

#### **1. Instrument Validity**

Validity means how accurate the instrument can measure the data. The validity used in the research is content validity and construct validity. Content validity is used to verify the feasibility and the applicability of the instrument using the rational analysis by the experts. The instrument can be considered meeting the requirement of content validity if the element of the instrument is the

representative of the construct that is suitable with the purpose of the measurement. Construct validity is used to testify how deep the instrument can explore the construct to be measured. The instrument that can measure the construct of the theory or defined circumstance is considered as the instrument that meets the construct validity. Instruments can be said to have construct validity if the instrument can be used to measure symptoms to construct theories or symptoms that are defined, and then elaborated in the form of a grid instrument.

a. Content Validity

The content validity was taken through collecting the opinion of the experts and then calculated the content validity coefficient. The instrument draft then was given to the experts to assess with the scale of 1-5. It was assessed by seven experts of education evaluation and vocational education. After being scored, it was analyzed with the Aiken's statistics V (1985: 133) that was formulated as follows:

$$V = \frac{\sum_{i=1}^n s_i}{n(c - 1)}$$

S which is given by subject-matter experts (r) minus the lowest validity value (lo) and c is the highest validity value.

Table 6 shows the content validity of the instrument.

**Table 6. Content Validity of the Instrument**

Item	V	Detail	Item	V	Detail	Item	V	Detail
IA.1	0.857	Valid	IIIA.1	0.929	Valid	TComp_5	0.964	Valid
IA.2	0.964	Valid	IIIA.2	0.893	Valid	TComp_6	0.964	Valid
IA.3	0.857	Valid	IVA.1	0.679	Invalid	TComp_7	0.893	Valid
IA.4	0.964	Valid	IVA.2	0.857	Valid	TComp_8	0.893	Valid
IA.5	0.821	Valid	IVA.3	0.857	Valid	TComp_9	0.964	Valid
IB.1	0.893	Valid	IVA.4	0.893	Valid	SAdm_1	0.964	Valid
IB.2	0.893	Valid	IVA.5	0.893	Valid	SAdm_2	0.964	Valid
IB.3	0.857	Valid	IVB.1	0.821	Valid	SAdm_3	0.964	Valid
IB.4	0.867	Valid	IVB.2	0.857	Valid	SAdm_4	0.857	Valid
IC.1	0.857	Valid	IVB.3	0.857	Valid	SAdm_5	0.929	Valid
IC.2	0.929	Valid	IVB.4	0.857	Valid	ContSD_1	0.750	Valid
IC.3	0.929	Valid	IVB.5	0.786	Valid	ContSD_2	0.964	Valid
IC.4	0.893	Valid	IVB.6	0.857	Valid	ContSD_3	0.964	Valid
IC.5	0.964	Valid	IVB.7	0.857	Valid	ContSD_4	0.929	Valid
IC.6	0.964	Valid	IVB.8	0.857	Valid	ContSD_5	0.964	Valid
IC.7	0.964	Valid	IVB.9	0.821	Valid	ContSD_6	0.929	Valid
IC.8	0.964	Valid	IVB.10	0.893	Valid	CreInn_1	0.929	Valid
IC.9	0.964	Valid	IVB.11	0.857	Valid	CreInn_2	0.964	Valid
IC.10	0.964	Valid	IVB.12	0.893	Valid	CreInn_3	0.964	Valid
IC.11	0.857	Valid	IVB.13	0.857	Valid	CreInn_4	0.964	Valid
IC.12	0.929	Valid	IVB.14	0.929	Valid	Master_1	0.964	Valid
IIA.1	0.857	Valid	IVB.15	0.929	Valid	Master_2	1.000	Valid
IIA.2	0.857	Valid	IVB.16	0.964	Valid	Master_3	0.964	Valid
IIA.3	0.821	Valid	IVC.1	0.857	Valid	Master_4	1.000	Valid
IIA.4	0.821	Valid	IVC.2	0.929	Valid	Med_1	0.929	Valid
IIA.5	0.964	Valid	IVC.3	0.821	Valid	Med_2	0.929	Valid
IIA.6	0.964	Valid	IVC.4	0.929	Valid	Med_3	0.964	Valid
IIA.7	0.929	Valid	IVC.5	0.964	Valid	Med_4	0.964	Valid
IIA.8	0.964	Valid	IVC.6	0.964	Valid	Stra_1	0.964	Valid
IIA.9	0.964	Valid	IVC.7	0.964	Valid	Stra_2	0.964	Valid
IIB.1	0.643	Invalid	IVC.8	0.964	Valid	Stra_3	0.964	Valid
IIB.2	0.786	Valid	IVC.9	0.964	Valid	Stra_4	0.929	Valid
IIB.3	0.929	Valid	IVC.10	0.929	Valid	Stra_5	0.929	Valid
IIB.4	0.964	Valid	IVC.11	0.964	Valid	Stra_6	1.000	Valid
IIC.1	0.929	Valid	IVC.12	0.929	Valid	EvAss_1	1.000	Valid
IIC.2	0.964	Valid	IVC.13	0.929	Valid	EvAss_2	0.929	Valid
IIC.3	0.964	Valid	TComp_1	0.893	Valid	EvAss_3	0.929	Valid
IIC.4	0.964	Valid	TComp_2	0.893	Valid	EvAss_4	1.000	Valid
IIC.5	0.929	Valid	TComp_3	0.929	Valid	EvAss_5	0.964	Valid
			TComp_4	0.929	Valid	EvAss_6	1.000	Valid

Table 6 shows the 117 item have value of validity coefficient (Aiken index)  $\geq$  0.75 while 2 item (IIB.1 and IVA.1) have value of validity coefficient (Aiken

index) < 0.75. Based on the analysis, 117 item have good validity and can be use as effective tools in measuring.

#### b. Construct Validity

The instrument construct validity testing used the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The EFA test was analyzed with SPSS program for window version 20. KMO and Bartlett's test was carried out before the EFA test to draw the line of the sample. The instrument can be considered to meet the minimum sufficiency of sample if  $KMO > 0.05$  with  $p\text{-value} < 0.05$ . The value shows that the metrics data are correlated so that they can be used to analyze the factor. To see the validity for each item of questions, we can look to the output of SPSS criteria used. The item can be considered as valid if the loading factor is bigger than 0.3 (If  $> 0.3$ ). The Results of the *Exploratory Factor Analysis (EFA)* in Appendices D page 219-245.

Confirmatory Factor Analysis (CFA) can be used to determine the validity; the way is to look at the amount of loading factor of each item instrument. An item is said to have good validity to construct or variable latent if: (a) the loading factor value-t is greater than the critical value ( $t\text{-value} \geq 1.96$ ) (Doll, Xia, and Torkzadeh, 1994: 458; hair et al., 2009); and (b) standardized factor loadings  $\geq 0.3$  (Gorsuch, 2003: 210; Mooi & M. Sarstedt, 2011: 215). The results of the CFA running in Appendices E page 246-311.

Here are the results of instrument testing such as the analysis of validity to five packages of instruments, namely: the input instrument, process instruments,

instruments of outcome (opinions of teachers), the performance of teachers (principal assessment), the performance of teachers in teaching (student assessment).

**Table 7. Construct Validity of Input Instrument**

Factor	Item	Second Order CFA		Category
		LF	t-Val	
QoS	IA_2	0.55	***	Valid
	IA_4	0.64	4.77	Valid
	IA_5	0.55	4.31	Valid
Curr	IB_2	0.67	***	Valid
	IB_3	0.63	5.58	Valid
	IB_4	0.64	5.64	Valid
FacInf	IC_2	0.71	***	Valid
	IC_4	0.62	5.74	Valid
	IC_5	0.54	5.00	Valid
	IC_6	0.51	4.70	Valid
	IC_7	0.63	5.82	Valid
	IC_8	0.46	4.25	Valid
	IC_9	0.44	4.09	Valid
	IC_10	0.64	5.92	Valid
	IC_12	0.66	6.08	Valid
EduStaff	ID_1	0.77	***	Valid
	ID_2	0.60	5.83	Valid
	ID_4	0.64	6.32	Valid

The results of the analysis of second order CFA in Table 7 shows that all the items on the aspects of QoS (quality of student), Curr (curriculum), FacInf (facility and infrastructure), and EduStaff (educational staff) have a loading factor greater than 0.3 ( $lf > 0.3$ ) and t-val greater than 1.96 ( $tval > 1.96$ ) so that all items are valid.

**Table 8. Construct Validity of Process Instrument**

Factor	Item	Second Order CFA		Category
		LF	t-Val	
TLP	IIA_1	0.83	***	Valid
	IIA_2	0.66	7.08	Valid
	IIA_3	0.88	10.78	Valid
	IIA_4	0.82	9.56	Valid
	IIA_5	0.79	9.06	Valid
	IIA_6	0.64	6.82	Valid
	IIA_7	0.78	8.80	Valid
	IIA_8	0.80	9.17	Valid
	IIA_9	0.84	9.84	Valid
IndInt	IIB_1	1.00	***	Valid
	IIB_2	0.85	15.56	Valid
	IIB_3	0.51	5.75	Valid
EdPrac	IIC_1	0.67	***	Valid
	IIC_2	0.72	5.78	Valid
	IIC_3	0.62	5.08	Valid
	IIC_4	0.83	6.22	Valid

The results of the analysis of second order CFA in Table 8 shows that all the items on the aspects of TLP (teaching-learning process), IndInt (industrial internship (IndInt), and EduPrac (educational practicum) have a loading factor greater than 0.3 ( $lf > 0.3$ ) and t-val greater than 1.96 ( $tval > 1.96$ ) so that all items are valid.



**Table 9. Construct Validity of Outcome Instrument  
(Respondent: Graduates of LPTK)**

Factor	Item	Second Order CFA		Category
		LF	t-Val	
W App	IVA_1	0.66	***	Valid
	IVA_2	0.67	5.91	Valid
	IVA_3	0.58	5.24	Valid
W Mot	IVB_2	0.77	***	Valid
	IVB_4	0.63	6.35	Valid
	IVB_5	0.76	7.90	Valid
	IVB_7	0.65	6.54	Valid
	IVB_8	0.61	6.10	Valid
	IVB_9	0.72	7.42	Valid
	IVB_10	0.66	6.68	Valid
	IVB_11	0.59	5.89	Valid
	IVB_13	0.72	7.46	Valid
	IVB_14	0.73	7.53	Valid
	IVB_15	0.69	7.09	Valid
CarDev	IVC_1	0.73	***	Valid
	IVC_2	0.66	6.45	Valid
	IVC_3	0.72	6.99	Valid
	IVC_4	0.72	7.05	Valid
	IVC_5	0.65	6.35	Valid
	IVC_6	0.69	6.74	Valid
	IVC_7	0.73	7.09	Valid
	IVC_8	0.71	6.97	Valid
	IVC_9	0.69	6.73	Valid
	IVC_11	0.69	6.71	Valid
	IVC_12	0.72	7.00	Valid
	IVC_13	0.73	7.15	Valid

The results of the analysis of second order CFA in Table 9 shows that all the items on the aspects of WApp (work appraisal), WMot (motivation), and CarDev (career development) have a loading factor greater than 0.3 ( $lf > 0.3$ ) and t-val greater than 1.96 ( $tval > 1.96$ ) so that all items are valid.

**Table 10. Construct Validity of Outcome Instrument  
(Respondent: Principals)**

Factor	Item	Second Order CFA		Category
		LF	t-Val	
TC	TC_1	0.66	***	Valid
	TC_2	0.80	9.53	Valid
	TC_3	0.83	6.41	Valid
	TC_4	0.82	6.38	Valid
	TC_5	0.61	5.04	Valid
	TC_6	0.68	5.48	Valid
	TC_8	0.73	5.84	Valid
	TC_9	0.72	5.80	Valid
SAdm	SA_1	0.63	***	Valid
	SA_2	0.94	6.99	Valid
	SA_3	0.90	6.81	Valid
	SA_4	0.58	15.49	Valid
	SA_5	0.91	6.84	Valid
ContSD	CiS_1	0.92	***	Valid
	CiS_2	0.92	12.93	Valid
	CiS_3	0.67	7.41	Valid
	CiS_4	0.66	7.28	Valid
	CiS_5	0.52	5.27	Valid
	CiS_6	0.63	6.73	Valid
CreInn	CI_1	0.80	***	Valid
	CI_2	0.65	5.44	Valid
	CI_3	0.71	5.81	Valid
	CI_4	0.53	4.47	Valid

The results of the analysis of second order CFA in Table 10 shows that all the items on the aspects of TComp (teachers' competence), SAdm (school administration), ContSD (contribution to school development), and CreInn (creativity and innovation) have a loading factor greater than 0.3 ( $lf > 0.3$ ) and t-val greater than 1.96 ( $tval > 1.96$ ) so that all items are valid.

**Table 11. Construct Validity of Outcome Instrument  
(Respondent: Students)**

Factor	Item	Second Order CFA		Category
		LF	t-Val	
Master	Mat_1	0.55	***	Valid
	Mat_2	0.58	4.11	Valid
	Mat_3	0.60	4.23	Valid
	Mat_4	0.81	4.66	Valid
Med	Med_1	0.72	***	Valid
	Med_2	0.81	7.64	Valid
	Med_3	0.81	7.64	Valid
	Med_4	0.86	8.01	Valid
Stra	Stra_1	0.76	***	Valid
	Stra_2	0.35	3.13	Valid
	Stra_3	0.83	6.61	Valid
	Stra_5	0.50	4.50	Valid
	Stra_6	0.55	4.90	Valid
EvAss	EvAss_1	0.60	***	Valid
	EvAss_2	0.55	3.78	Valid
	EvAss_4	0.57	3.84	Valid
	EvAss_5	0.46	3.36	Valid
	EvAss_6	0.51	3.58	Valid

The results of the analysis of second order CFA in Table 11 shows that all the items on the aspects of Master (mastery of subject matter), Med (teaching media), Stra (teaching strategy) and EvAss (evaluation and assessment) have a loading factor greater than 0.3 ( $lf > 0.3$ ) and t-val greater than 1.96 ( $tval > 1.96$ ) so that all items are valid.

## 2. Instrument Reliability

The reliability is the consistency of respondents' answers. The instrument reliability is also the consistency level of the result of the measurement on

different subjects in different times or on different subjects and on the same instruments. The instrument reliability can be determined by Lisrel 8.8 program. To know the instrument reliability, we can consider the construct reliability (CR). The criteria used to determine the instrument reliability is if  $CR \geq 0.6$  provided that the other indicator has higher reliability value (Hair et al., 2009)

$$CR = \frac{(\sum_{i=1}^n L_i)^2}{(\sum_{i=1}^n L_i)^2 + (\sum_{i=1}^n e_i)}$$

Where

CR : value of construct reliability,

L : the loading factor value, and

e : error variance.

The CFA analysis can be used to determine reliability of the instrument. The reliability of the instrument can be determined by looking at the value of each item of the loading factor and error variance. To determine the reliability of the instrument the researcher used the results of the calculations of the construct reliability (CR) based on the results of running the CFA. Here are the results of instrument testing such as the analysis of reliability to three packages of instruments, namely: the input instrument, process instruments, outcome instrument (opinions of teachers), the performance of teachers (principals assessment), the performance of teacher in teaching (students assessment).

Table 12, 13, 14, 15, and 16 shows the reliability of input instrument, process instrument, and outcome instrument.

**Table 12. Reliability of Input Instrument**

Factor	Item	Second Order CFA			Category
		LF	Error	CR	
QoS	IA_2	0.55	0.58	0.62	Reliable
	IA_4	0.64	0.68		
	IA_5	0.55	0.63		
Curr	IB_2	0.67	0.58	0.66	Reliable
	IB_3	0.63	0.75		
	IB_4	0.64	0.60		
FacInf	IC_2	0.71	0.66	0.79	Reliable
	IC_4	0.62	0.88		
	IC_5	0.54	0.79		
	IC_6	0.51	1.07		
	IC_7	0.63	0.70		
	IC_8	0.46	0.98		
	IC_9	0.44	0.79		
	IC_10	0.64	0.74		
	IC_12	0.66	0.65		
EduStaff	ID_1	0.77	0.63	0.64	Reliable
	ID_2	0.60	0.93		
	ID_4	0.64	0.70		

The results of the analysis of second order CFA in Table 12 shows that the aspects of the QoS (Quality of Student), Curr (curriculum), FacInf (facility and infrastructure), and EduStaff (educational staff) have a value of construct reliability greater than or equal 0.6 ( $CR \geq 0.6$ ) so that the instrument are reliable.

**Table 13. Reliability of Process Instrument**

Factor	Item	Second Order CFA			Category
		LF	Error	CR	
TLP	IIA_1	0.83	0.20	0.98	Reliable
	IIA_2	0.66	0.14		
	IIA_3	0.88	0.12		
	IIA_4	0.82	0.20		
	IIA_5	0.79	0.07		
	IIA_6	0.64	0.13		
	IIA_7	0.78	0.10		
	IIA_8	0.80	0.09		
	IIA_9	0.84	0.07		
IndInt	IIB_1	1.00	0.00	0.93	Reliable
	IIB_2	0.85	0.12		
	IIB_3	0.51	0.29		
EdPrac	IIC_1	0.67	0.19	0.91	Reliable
	IIC_2	0.72	0.20		
	IIC_3	0.62	0.28		
	IIC_4	0.83	0.11		

The results of the analysis of second order CFA in Table 13 show that all the items on the aspects of TLP (teaching learning process), IndInt (industrial internship (IndInt), and EduPrac (educational practicum) have a value of construct reliability greater than or equal 0.6 ( $CR \geq 0.6$ ) so that the instrument are reliable.

**Table 14. Reliability Outcome Instrument  
(Respondents: Graduate of LPTK)**

Factor	Item	Second Order CFA			Category
		LF	Error	CR	
W App	IVA_1	0.66	0.31	0.70	Reliable
	IVA_2	0.67	0.74		
	IVA_3	0.58	0.55		
W Mot	IVB_2	0.77	0.41	0.82	Reliable
	IVB_4	0.63	0.55		
	IVB_5	0.76	0.53		
	IVB_7	0.65	0.56		
	IVB_8	0.61	0.66		
	IVB_9	0.72	0.63		
	IVB_10	0.66	0.78		
	IVB_11	0.59	0.53		
	IVB_13	0.72	0.43		
	IVB_14	0.73	0.62		
	IVB_15	0.69	0.52		
CarDev	IVC_1	0.73	0.64	0.91	Reliable
	IVC_2	0.66	0.68		
	IVC_3	0.72	0.61		
	IVC_4	0.72	0.78		
	IVC_5	0.65	0.50		
	IVC_6	0.69	0.31		
	IVC_7	0.73	0.63		
	IVC_8	0.71	0.53		
	IVC_9	0.69	0.70		
	IVC_11	0.69	0.50		
	IVC_12	0.72	0.58		
	IVC_13	0.73	0.71		

The results of the analysis of second order CFA in Table 14 shows that all the items on the aspects of WApp (work appraisal), WMot (motivation), and CarDev (career development) have a value of construct reliability greater than or equal 0.6 ( $CR \geq 0.6$ ) so that the instrument are reliable.

**Table 15. Reliability Outcome Instrument  
(Respondents: Principal)**

Factor	Item	Second Order CFA			Category
		LF	Error	CR	
TC	TC_1	0.66	0.14	0.97	Reliable
	TC_2	0.80	0.10		
	TC_3	0.83	0.10		
	TC_4	0.82	0.10		
	TC_5	0.61	0.18		
	TC_6	0.68	0.17		
	TC_8	0.73	0.14		
	TC_9	0.72	0.17		
SAdm	SA_1	0.63	0.15	0.97	Reliable
	SA_2	0.94	0.04		
	SA_3	0.90	0.07		
	SA_4	0.58	0.16		
	SA_5	0.91	0.07		
ContSD	CiS_1	0.92	0.04	0.96	Reliable
	CiS_2	0.92	0.03		
	CiS_3	0.67	0.14		
	CiS_4	0.66	0.16		
	CiS_5	0.52	0.16		
	CiS_6	0.63	0.17		
CreInn	CI_1	0.80	0.10	0.95	Reliable
	CI_2	0.65	0.10		
	CI_3	0.71	0.11		
	CI_4	0.53	0.10		

The results of the analysis of second order CFA in Table 15 shows that all the items on the aspects of TComp (teachers' competence), SAdm (school administration), ContSD (contribution to school development) and CreInn (creativity and innovation) have a value of construct reliability greater than or equal 0.6 ( $CR \geq 0.6$ ) so that the instrument are reliable.



**Table 16. Reliability Outcome Instrument  
(Respondents: Students)**

Factor	Item	Second Order CFA			Category
		LF	Error	CR	
Master	Mat_1	0.55	0.21	0.90	Reliable
	Mat_2	0.58	0.23		
	Mat_3	0.60	0.18		
	Mat_4	0.81	0.11		
Med	Med_1	0.72	0.12	0.96	Reliable
	Med_2	0.81	0.10		
	Med_3	0.81	0.14		
	Med_4	0.86	0.12		
Stra	Stra_1	0.76	0.11	0.90	Reliable
	Stra_2	0.35	0.23		
	Stra_3	0.83	0.10		
	Stra_5	0.50	0.22		
	Stra_6	0.55	0.30		
EvAss	EvAss_1	0.60	0.18	0.72	Reliable
	EvAss_2	0.55	0.29		
	EvAss_4	0.57	0.19		
	EvAss_5	0.46	0.28		
	EvAss_6	0.51	0.26		

The results of the analysis of second order CFA in Table 16 shows that all the items on the aspects of Master (mastery of subject matter), Med (teaching media), Stra (teaching strategy) and EvAss (evaluation and assessment) have a value of construct reliability greater than or equal 0.6 ( $CR \geq 0.6$ ) so that the instrument are reliable.

## G. Data Analysis Technique

The data analysis technique used in the research is descriptive quantitative. The descriptive analysis technique is presented in the form of (a) variable of frequency distribution, (b) central tendency measure (mean, median, and mode), and (c) data variability (standard of deviation).

While the result of the frequency distribution analysis is tabulated in the form of distribution table of category so that the tendency of the variable is known. The tendency criteria of measurement result can be arranged by considering the central tendency value, the score of each variable, and based on normal distribution.

Tendency result of measurement is categorized into some types of data as can be seen in the following Table 17.

**Table 17**  
**The Category of the Tendency Result of Measurement.**

Criteria	Category
$X \geq (\mu + 1.\sigma)$	Very Good
$(\mu + 1.\sigma) > X \geq \mu$	Good
$\mu - > X \geq (\mu - 1.\sigma)$	Fair
$X < (\mu - 1.\sigma)$	Poor

Description:

$\mu$  : mean

$\sigma$  : standard of deviation

X : scores achieved

(Djemari Mardapi, 2012: 162)

This formula to compute the mean and standard of deviation are:

$$\mu = 1/2 \text{ (the highest score + the lowest score)}$$

$$\sigma = 1/6 \text{ (the highest ideal score – the lowest ideal score)}$$

## H. Criteria

There is a list of outcome indicators as can be seen in the following table.

**Table 18. The Outcome Indicators**

No	Outcome Components	Indicators
1	Work Appraisal	A total of 75% graduates have good work appraisal.
2.	Work motivation	A total of 75% graduates have good work motivation.
3.	Career development	A total of 75% graduates have good career development.
4.	Teacher competence	A total of 75% graduates have good teacher competence.
5.	School Administration	A total of 75% graduates have good ability in school administration.
6.	Contribution to school development	A total of 75% graduates have good contribution to school.
7.	Creativity and innovation	A total of 75% graduates have good creativity and innovation.
8.	Mastery of subject matter.	A total of 75% graduates have a good mastery of subject matter.
9.	Teaching media	A total of 75% graduates have good teaching media.
10.	Teaching strategy	A total of 75% graduates have good teaching strategy.
11.	Evaluation and assessment	A total of 75% graduates have good evaluation and assessment.

## **CHAPTER IV**

### **FINDINGS AND DISCUSSION**

Teacher education institution (Indonesian= LPTK) is an institution which produces pre-service teachers and professional teachers, and which plays a significant role in improving the quality of teachers as teachers are mostly provided by LPTK. With regard to the Regulation about national education No. 8 2009, LPTK is a place to organize and provide professional education for pre-service teachers (PPG). According to Law No. 14 2005 chapter 1 code 14, LPTK has legal authority from the government to organize pre-service education program on the level of formal early-childhood education, elementary education and/or secondary education and also to develop pedagogical and non-pedagogical science. Pre-service teacher education can support the development of schools as well. This implies that the better pre-service teacher education, the better our education institution will be.

One of the reputable and prominent LPTK's in Indonesia is State University of Yogyakarta (UNY) that was known as Pedagogic and Pre-Service Teacher Institute (IKIP). UNY is one of the high quality LPTK's in Indonesia and has produced a great number of teachers including vocational high school (Indonesian = SMK) teachers. Faculty of Engineering is one of the faculties in UNY that has produced vocational school teachers in Indonesia. It has six departments including electrical engineering education, electronics engineering education, mechanical engineering education, automotive engineering education, civil and planning engineering education, culinary and fashion education.

The following are the data description, analysis of the finding, discussion, and constraints of this study.

#### **A. Finding Description**

The evaluation attempted to survey the graduates of UNY as one of the LPTK's under study. It focuses on measuring the quality of LPTK's. To get the deeper analysis, the researcher reveals the component of the input, process, and output based on the assessment of the graduates. The outcome of education was also based on the assessment of teachers and the principals of the schools where the graduates are teaching.

Data verification was done before the data analysis to make sure the data were valid. It was done by verifying the survey that had been filled in by the respondents. If data were incomplete, then the respondent was asked to rework it. The qualitative data verification was done by the member checking. It was performed by creating the result of the interview document and by asking the respondents to verify the validity of the data taken from the respondents during the interview and then they were asked to give their signatures on the interview result sheet.

The data collection was done in vocational schools of technology and industry in Yogyakarta Special Territory and Central Java Province. The respondents were 296 teachers, 62 principals, and 4,428 students.

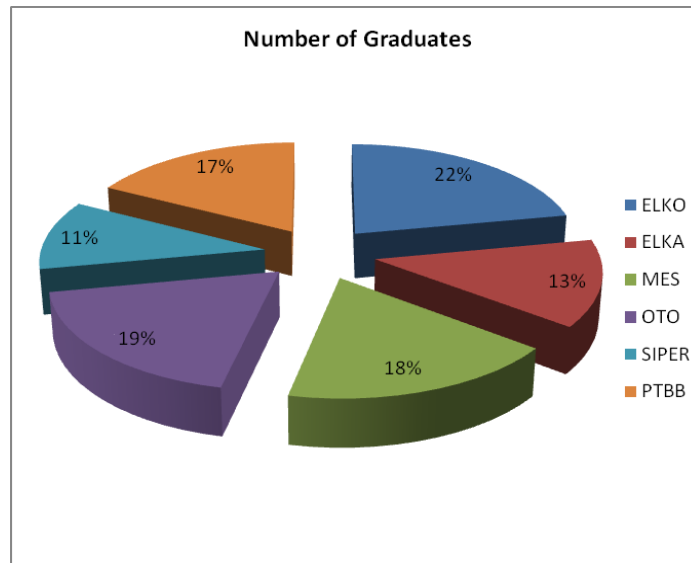
The teachers who are the subject of this research are the graduates of the six above mentioned departments at the Faculty of Engineering, Yogyakarta State

University. The following table shows the detailed number of the teachers and the departments they are graduates from.

**Table 19. The Number of the Graduates under Study and the Departments they Graduated from**

Department	Code	Total (person)
Electrical Engineering Education	ELKO	65
Electronics Engineering Education	ELKA	40
Mechanical Engineering Education	MES	53
Automotive Engineering Education	OTO	55
Civil and Planning Engineering Education,	SIPER	32
Culinary and Fashion Education	PTBB	51
<b>Total</b>		<b>296</b>

The percentage of the graduates as respondents of the research is shown in Figure 2 below.

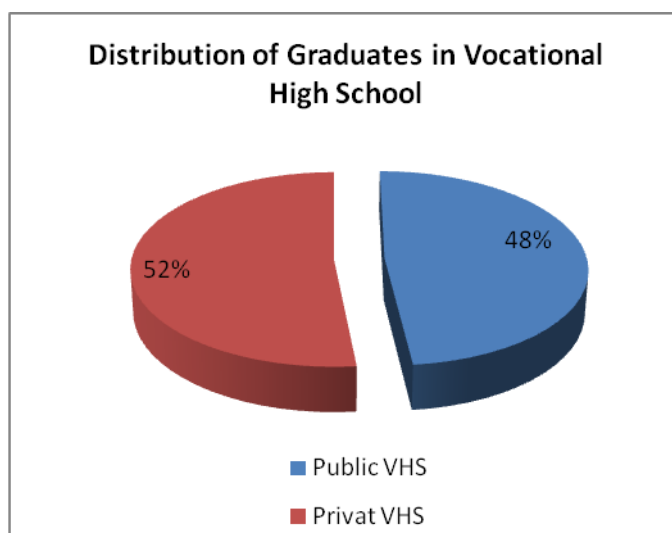


**Figure 2. Total of Graduates under Study of Each Department**

The data collection was done at vocational high schools (Indonesian= SMK) in Yogyakarta Special Territory and Central Java Province. Table 20 shows the detail of the locations of data collection based on the school status.

**Table 20. The Location of Data Collection**

<b>The Type of Vocational High School</b>	<b>Number of Schools</b>
Public vocational high school	30
Private vocational high school	32
<b>Total</b>	<b>62</b>



**Figure 3. Distribution of Graduates under Study in Vocational High School**

The following description is the result of the study for each dimension (input, process, output, and outcome).

## 1. Input Dimension

The input dimension was used to get the real condition at the beginning of the pre-service teachers graduated from Faculty of Engineering, UNY. The data description of the input dimension consists of four aspects: student quality (QoS), curriculum (Curr), facility and infrastructure (Facinf), and educational staff (EduStaff).

The data were collected through a questionnaire distributed to 296 SMK teachers who are the graduates of Faculty of Engineering, UNY. The questionnaire was used to get the information of the input dimension. It consists of 18 questions as follows:

**Table 21. List of Questions in the Input Dimension**

Aspects	Symbol	Number of Items
Student Quality	QoS	3
Curriculum	Curr	3
Facility and Infrastructure	FacInf	9
Educational Staff	EduStaff	3
Total		18

The data include the value of mean, median, mode, standard deviation, variance, and maximum value.

Based on the descriptive analysis by using SPSS 20.0, the result is as follows.



**Table 22. The Result of Descriptive Analysis: Input Dimension**

		Student Quality	Curriculum	Facility & Infrastructure	Educational Staff
N	Valid	296	296	296	296
	Missing	0	0	0	0
Mean		2.8727	3.2329	2.9764	3.2004
Median		3.0000	3.3300	3.0000	3.3330
Mode		3.00	3.33	3.00	3.33
Std. Deviation		.37826	.31847	.27753	.31350
Variance		.143	.101	.077	.098
Minimum		2.00	2.33	2.22	2.33
Maximum		3.67	4.00	3.89	4.00

## 2. Process Dimension

The process dimension was used to reveal the condition when the graduates studied at Faculty of Engineering, UNY. The data description consists of three aspects: teaching-learning process (TLP), industrial internship (IndInt), and teaching practicum (EduPract).

The data were gathered through a questionnaire distributed to 296 SMK teachers who are the graduates of Faculty of Engineering, UNY. The questionnaire was used to get the information of process dimension. It consists of 16 questions as can be seen in the following Table 23.

**Table 23. List of Questions in the Process Dimensions**

Aspects	Symbol	Number of Items
Teaching-learning process	TLP	9
Industrial Internship	IndInt	3
Educational practicum	EduPrac	4
Total		16

The data include the value of mean, median, mode, standard deviation, variance, and maximum value.

Based on the descriptive analysis by using SPSS 20.0, the result is as follows.

**Table 24. The Result of Descriptive Analysis:  
Process Dimension**

		Teaching and Learning Process	Industrial Internship	Educational Practicum
N	Valid	296	296	296
	Missing	0	0	0
Mean		3.1556	3.0810	3.5828
Median		3.2200	3.0000	3.5000
Mode		3.22	3.00	3.50
Std. Deviation		.20225	.37952	.27291
Variance		.041	.144	.074
Minimum		2.33	2.00	2.75
Maximum		4.00	4.00	4.00

### 3. Output Dimension

The output dimension was used to get the condition of the graduates after graduating from the university. The data description of the output dimension consists of two aspects: grade point average (GPA) and length of study/study period.

The data were gathered through a questionnaire distributed to 296 SMK teachers who are the graduates of Faculty of Engineering, UNY. The questionnaire was used to get the information of output dimension. It consists of two questions as can be seen in the following Table 25.

**Table 25. List of Questions in the Output Dimensions**

Aspect	Symbol	Number of items
Grade Point Average	GPA	1
The Length of Study	LoS	1
Total		2

The data include the value of mean, median, mode, standard deviation, variance, and maximum value.

Based on the descriptive analysis by using SPSS 20.0, the result is as follows

**Table 26. The Result of Descriptive Analysis:  
Output Dimension**

	Grade Point Average	The Length of Study
N Valid	296	296
Missing	0	0
Mean	3.0574	2.0304
Median	3.0000	2.0000
Mode	3.00	2.00
Std. Deviation	.49411	.80828
Variance	.244	.653
Minimum	2.00	1.00
Maximum	4.00	4.00

#### 4. Outcome Dimension

The outcome dimension was used to get the information about the condition of the graduates (the teachers under study) after completing their study over a period of 5 to 15 years. The data were in the form of opinions from the teachers, principals, and the students taught by the teachers.

a. The Teachers' Opinions

The data description of the outcome dimension was based on the opinions of the teachers, consisting of three aspects: work appraisal (WApp), work motivation (WMot), and career development (CarDev).

The data were gathered through a questionnaire distributed to 296 SMK teachers who are the graduates of Faculty of Engineering, UNY. The questionnaire was used to get the information of outcome dimension. It consists of 26 questions as can be seen in the following table.

**Table 27. List of Questions in the Outcome Dimension Based on Teachers' Opinion**

Aspect	Symbol	Number of item
Work Appraisal	WApp	3
Work Motivation	WMot	11
Career Development	CarDev	12
Total		26

Based on the descriptive analysis, the result is as follows.

**Table 28. The Result of Descriptive Analysis: Outcome Dimension Based on Teachers' Opinion**

	Work Appraisal	Work Motivation	Career Development
N Valid	296	296	296
N Missing	0	0	0
Mean	2.9336	3.2138	2.9263
Median	3.0000	3.1820	2.9170
Mode	3.00	3.09	2.92
Std. Deviation	.57287	.27765	.31598
Variance	.328	.077	.100
Minimum	1.33	2.27	2.08
Maximum	4.00	3.91	3.92

b. Principal Assessment

The data in the outcome dimension based on the principal assessment consist of four aspects: teacher competence, school administration stuff, teachers' contribution to school development, and creativity and innovation.

The data were collected through a questionnaire distributed to 62 principals to assess 296 teachers who are LPTK graduates. The questionnaire was used to get the information about the outcome dimension based on the principal assessment. It consists of 23 questions as can be seen in the following table.

**Table 29. List of Questions in the Outcome Dimension Based on Principals' Assessment**

Aspects	Symbol	Number of items
Teacher Competence	T Comp	8
School Administration	SAdm	5
Contribution to School Development	ContSD	6
Cretativity and Innovation	CreInn	4
Total		23

The data include the value of mean, median, mode, standard deviation, variance, and maximum value.

Based on the descriptive analysis by using SPSS 20.0, the result is as follows.

**Table 30. The Result of Descriptive Analysis:  
Outcome Dimension Based on the Principal Assessment**

		Teacher Competencies	School Administration	Contribution to School	Creativity & Innovation
N	Valid	296	296	296	296
	Missing	0	0	0	0
Mean		3.6220	3.3743	3.4701	3.1774
Median		3.6250	3.4000	3.5000	3.0000
Mode		3.63	3.40	3.50	3.00
Std. Deviation		.29210	.32835	.34978	.38921
Variance		.085	.108	.122	.151
Minimum		2.63	2.40	2.00	2.25
Maximum		4.00	4.00	4.00	4.00

c. Student Assessment

The data in outcome dimension based on the student assessment are grouped into four aspects: mastery of subject matter, teaching media used, teaching strategy used, evaluation, and assessment.

The data were collected through a questionnaire distributed to 4,428 students taught by the teachers under study. The questionnaire was used to get the information of outcome dimension based on the principal assessment. It consists of 23 questions as can be seen in the following table.

**Table 31. List of Questions in the Outcome Dimension  
Based on Students' Assessment**

Aspects	Symbol	Number of items
Mastery of subject matter	Mat	4
Teaching media	Med	4
Teaching strategy	Stra	5
Evaluation and assessment	EvAss	5
Total		18

The data include the value of mean, median, mode, standard deviation, variance, and maximum value.

Based on the descriptive analysis by using SPSS 20.0, the result is as follows.

**Table 32. The Result of Descriptive Analysis: Outcome Dimension Based on the Vocational Students' Assessment**

	Mastery of Subject Matter	Teaching Media	Teaching Strategy	Evaluation & Assessment
N Valid	4428	4428	4428	4428
N Missing	0	0	0	0
Mean	3.3213	3.1050	3.2119	3.1346
Median	3.2500	3.0000	3.2000	3.2000
Mode	3.00	3.00	3.00	3.00
Std. Deviation	.38879	.37398	.42495	.41534
Variance	.151	.140	.181	.173
Minimum	1.00	1.00	1.00	.40
Maximum	4.00	4.00	4.00	4.00

## B. Analysis

The following is the analysis of the data of the four dimensions (input, process, output, and outcomes). It is in the form of the trend analysis which is categorized in to four categories: very good, good, fairly, and poor. The trend analysis was done through the analysis of the data obtained by categorizing them in to four categories as can be seen in Table 15.

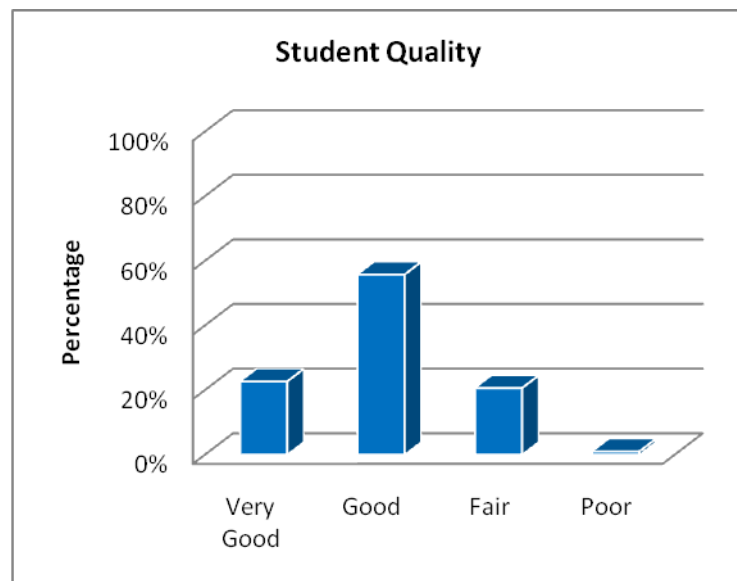
### 1. Input Dimension

Based on the data in Table 22, it can be concluded that the trend of the measurement in the student quality aspect as shown in Table 33.

**Table 33. The Trend of Measurement of Input Dimension  
(Aspect: Student Quality)**

Category	Number of Respondents	Percentage
Very Good	67	22.64%
Good	165	55.74%
Fair	61	20.61%
Poor	3	1.01%
Total	296	100.00%

The frequency distribution of the data of quality student aspect is given in the form of histogram as shown in Figure 4.



**Figure 4. The Frequency Distribution of  
the Data of Student Quality Aspect.**

The condition of the students consists of two indicators: 1) academic skill, and 2) lecturer readiness. The results of the analysis of the students' condition



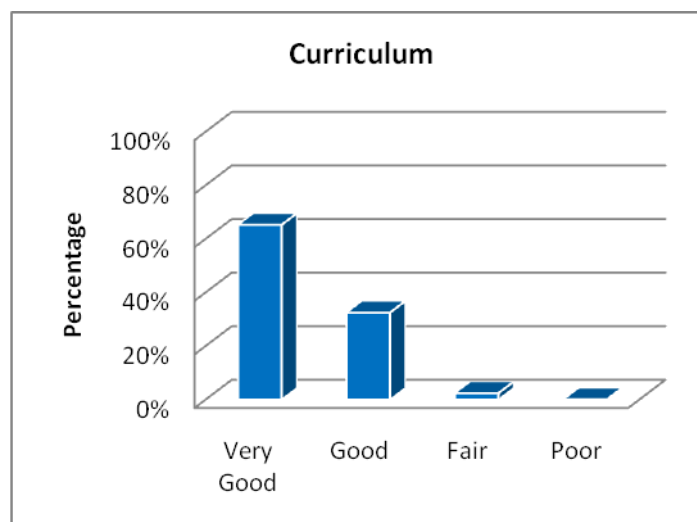
shows that 22.64% are very good students, 55.74% are good students, 20.61% are fairly good students, and 1.01% are poor students.

Based on the data in Table 22, it can be concluded that the trend of the measurement in the curriculum aspect is as shown in Table 34.

**Table 34. The Trend of Measurement Input Dimension  
(Aspect: Curriculum)**

Category	Number of Respondents	Percentage
Very Good	193	65.20%
Good	96	32.43%
Fair	7	2.36%
Poor	0	0%
Total	296	100.00%

The frequency distribution of the data of curriculum aspect is given in the form of histogram as shown in Figure 5.



**Figure 5. The Frequency Distribution of the Data of Curriculum Aspect**

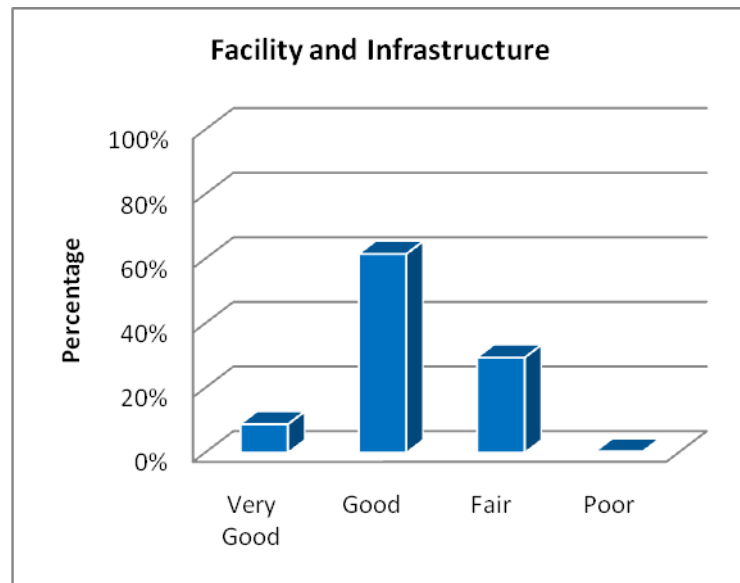
The coverage of the curriculum consists of three indicators: 1) personal development subject; 2) core background knowledge and skill subject; and 3) product skill subject. The opinion of the graduates about the curriculum is shown in Table 10. Based on Table 34, as many as 65.20% respondents state that it is very good, 32.43% state that it is good, 2.36 % state that it is fair, and none states that it is poor.

Based on the data in Table 22, it can be concluded that the trend of the measurement in the facility and infrastructure aspect is as shown in Table 35.

**Table 35. The Trend of Measurement Input Dimension  
(Aspect: Facility and Infrastructure)**

Category	Number of Respondents	Percentage
Very Good	26	8.78%
Good	182	61.49%
Fair	87	29.39%
Poor	1	0.34%
Total	296	100.00%

The Frequency distribution of the data of facility and infrastructure aspect is given in the form of histogram as shown in Figure 6.



**Figure 6. The Frequency Distribution of the Data of Facility and Infrastructure Aspect**

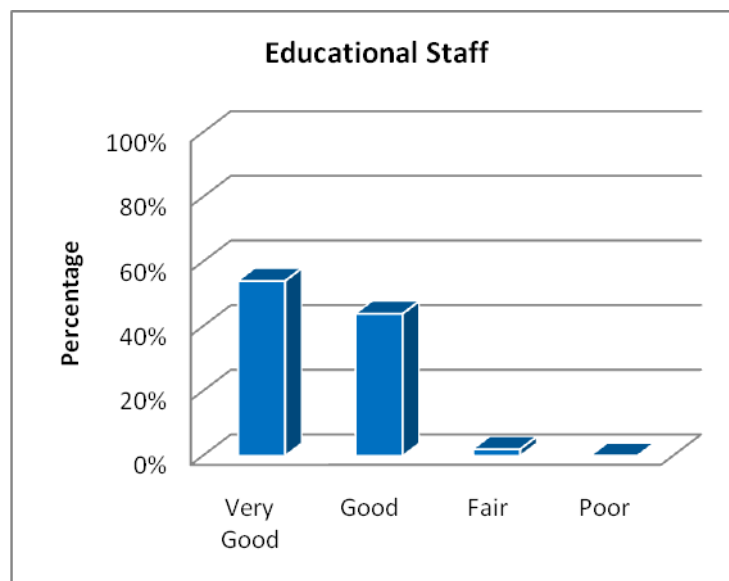
The condition of the facility and infrastructure consists of five indicators: 1) the availability of theory learning room; 2) the availability of the practicum room; 3) the availability of practicum equipment; 4) the availability of learning resources and 5) the supporting facility. The opinion about the facility and infrastructure is shown in Table 35, which shows that 8.78% respondents believe that the facilities and infrastructures are very good, 61.49% consider it is good, 29.39% take it as fair, and 0.34% feel it is still poor.

Based on the data in Table 22, it can be concluded that the trend of the measurement in the education staff aspect is as shown in Table 36.

**Table 36. The Trend of Measurement Input Dimension  
(Aspect: Educational Staff)**

Category	Number of Respondents	Percentage
Very Good	160	54.05%
Good	130	43.92%
Fair	6	2.03%
Poor	0	0.00%
Total	296	100.00%

The Frequency distribution of the data of educational staff aspect is given in the form of histogram as shown in Figure 7.



**Figure 7. The Frequency Distribution of  
the Data of Educational Staff Aspect**

The condition of the educational staff consists of two indicators: 1) having competence in conveying the materials; 2) the use of learning source to support in achieving learning goals. The opinion about the education staff is shown in Table

36, which shows that 54.05% respondents believe that the educational staff are very good, 43.92% consider it is good, 2.03% take it as fair, and none states that it is poor.

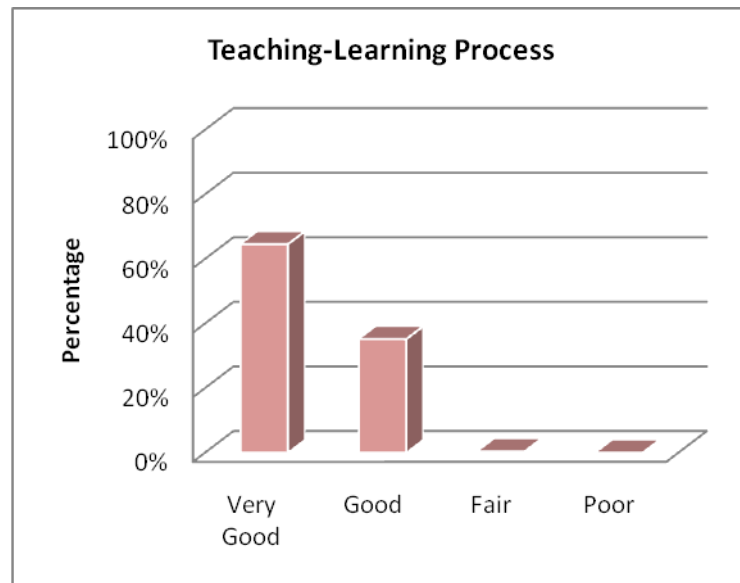
## 2. Process Dimension

Based on the data in Table 24, it can be concluded that the trend of the measurement in the teaching-learning process aspect is as shown in Table 37.

**Table 37. The Trend of Measurement Process Dimension  
(Aspect: Teaching-Learning Process)**

Category	Number of Respondents	Percentage
Very Good	191	64.53%
Good	104	35.14%
Fair	1	0.34%
Poor	0	0%
Total	296	100.00%

The Frequency distribution of the data of teaching-learning process aspect is given in the form of histogram as shown in Figure 8.



**Figure 8. The Frequency Distribution of the Data of Teaching-Learning Process Aspect**

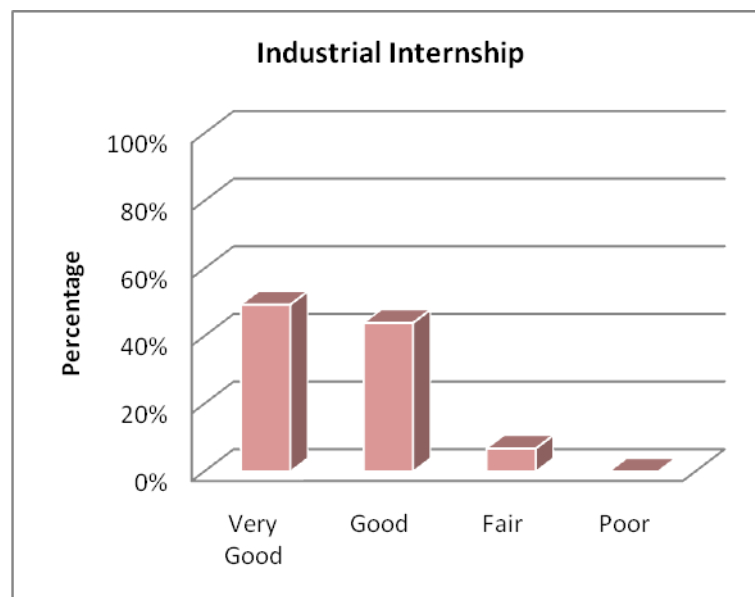
The teaching-learning process aspect consists of two indicators: 1) the accomplishment of the theoretical learning objective; and 2) the accomplishment of practicum learning objective. The teachers' opinion of the teaching and learning process is shown in Table 37, based on which the percentages of the opinions the LPTK's graduate about the teaching-learning process are as follows: 64.53% think that it is very good, 35.14% state that it is good, 0.34% say that it is fair, and 0% think that it is poor.

Based on the data in Table 24, it can be concluded that the trend of the measurement in the industrial internship aspect is as shown in Table 38.

**Table 38. The Trend of Measurement Process Dimension  
(Aspect: Industrial Internship)**

Category	Number of Respondents	Percentage
Very Good	122	41.22%
Good	153	51.69%
Fair	20	6.76%
Poor	1	0.34%
Total	296	100.00%

The frequency distribution of the data of industrial internship aspect is given in the form of histogram as shown in Figure 9.



**Figure 9. The Frequency Distribution of the Data of Industrial Internship Aspect**

Industrial internship consists of only one indicator which is the accomplishment of industrial internship objective. The opinion of the teachers (who are LPTK's graduates) about the industrial internship is shown in Table 38.

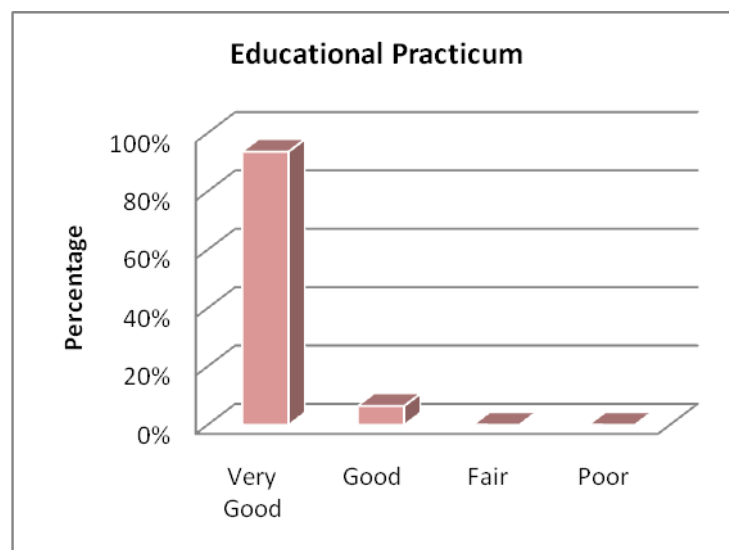
Based on Table 38, the percentage of the opinions of the teachers about industrial internship are as follows: 41.22% graduates state that it is very good, 51.69% state that it is good, 6.76% state that it is fair, and 0.34% state that it is poor.

Based on the data in Table 24, it can be concluded that the trend of the measurement in the educational practicum aspect as shown in Table 39.

**Table 39. The Trend of Measurement Process Dimension  
(Aspect: Educational Practicum)**

Category	Number of Respondents	Percentage
Very Good	277	93.58%
Good	19	6.42%
Fair	0	0%
Poor	0	0%
Total	296	100.00%

The Frequency distribution of the data of educational practicum aspect is given in the form of histogram as shown in Figure 10.



**Figure 10. The Frequency Distribution of  
the Data of Educational Practicum Aspect**



The educational practicum aspect consists of one indicator which is the accomplishment of the teaching practicum objective. The opinion of the teachers about the teaching practicum is shown in Table 39, based on which the percentages of the opinions of the teachers (who are LPTK's graduates) about educational practicum is as follows: 93.58% teachers state that it is very good, 6.42% state that it is good, and none states that it is fair nor poor.

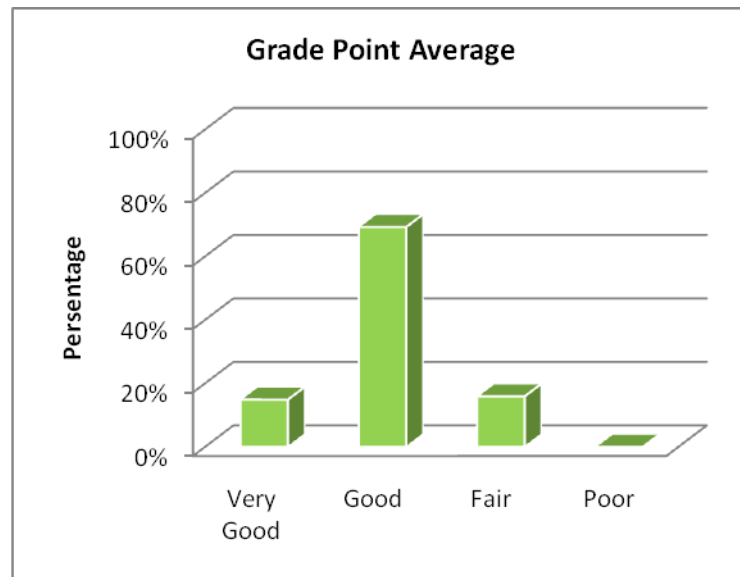
### 3. Output Dimension

Based on the data in Table 26, it can be concluded that the trend of the measurement in the grade point average is as shown in Table 40.

**Table 40. The Trend of Measurement Output Dimension  
(Aspect: Grade Point Average)**

Category	Number of Respondents	Percentage
Very Good	44	14.86%
Good	205	69.26%
Fair	47	15.88%
Poor	0	0%
Total	296	100.00%

The frequency distribution of the data of grade point average (GPA) aspect is given in the form of histogram as shown in Figure 11.



**Figure 11. The Frequency Distribution of the Data on Grade Point Average**

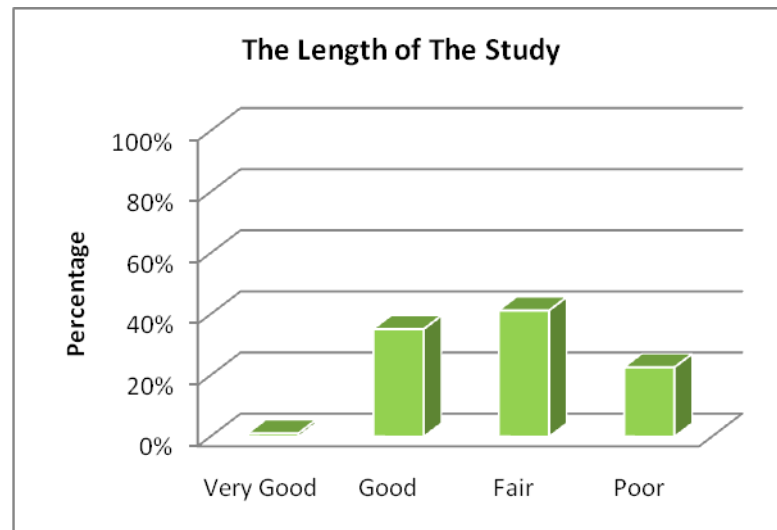
The GPA is used as the indicator of the mastery level of knowledge and skill after finishing the study in LPTK. Table 40 shows the GPA distribution: 14.86% is very good, 69.26% is good, 15.88% is fair, and 0% is poor.

Based on the data in Table 26, it can be concluded that the trend of the measurement in the length of the study aspect is as shown in Table 41.

**Table 41. The Trend of the Measurement of Output Dimension (Aspect: Length of Study)**

Category	Number of Respondents	Percentage
Very Good	3	1.01%
Good	104	35.14%
Fair	122	41.22%
Poor	67	22.64%
Total	296	100.00%

The frequency distribution of the data of length of study aspect is given in the form of histogram as shown in Figure 12.



**Figure 12. The Frequency Distribution of Length of Study**

The length of study was used to know the time needed to complete the study in LPTK. Table 41 shows the length of study as follows: 1.01% is very good, 35.14% is good, 41.22% is fair, and 22.64% is poor.

#### 4. Outcome Dimension

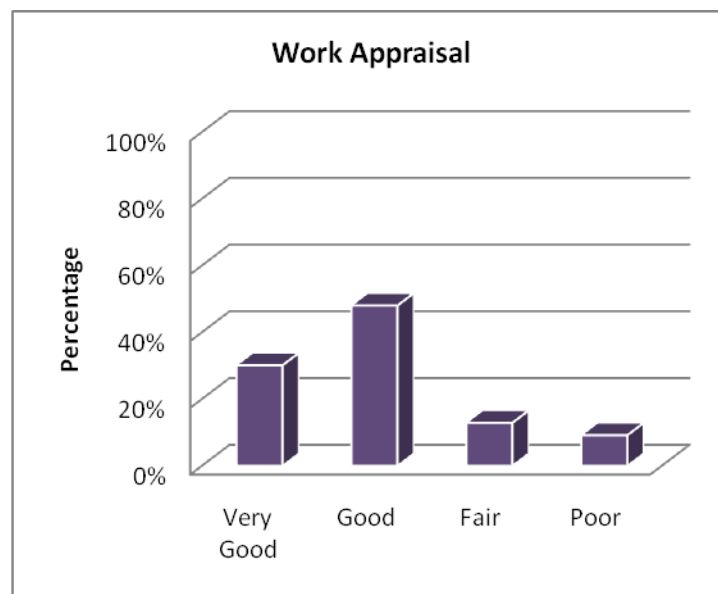
##### a. The Graduates' Opinion

Based on the data in Table 28, it can be concluded that that the trend of the measurement in the work appraisal aspect is as shown in Table 42.

**Table 42. The Trend of the Measurement of Outcome Dimension (Aspect: Work Appraisal)**

Category	Number of Respondents	Percentage
Very Good	89	30.07%
Good	142	47.97%
Fair	38	12.84%
Poor	27	9.12%
Total	296	100.00%

The frequency distribution of the data of work appraisal aspect is given in the form of histogram as shown in Figure 13.



**Figure 13. The Frequency Distribution of the Work Appraisal Aspect**

The work appraisal aspect consists of two indicators: 1) the wage, and 2) the achievement award. Based on Table 42, the percentages of the opinions the teachers (who are LPTK's graduates) about the work appraisal are as follows:

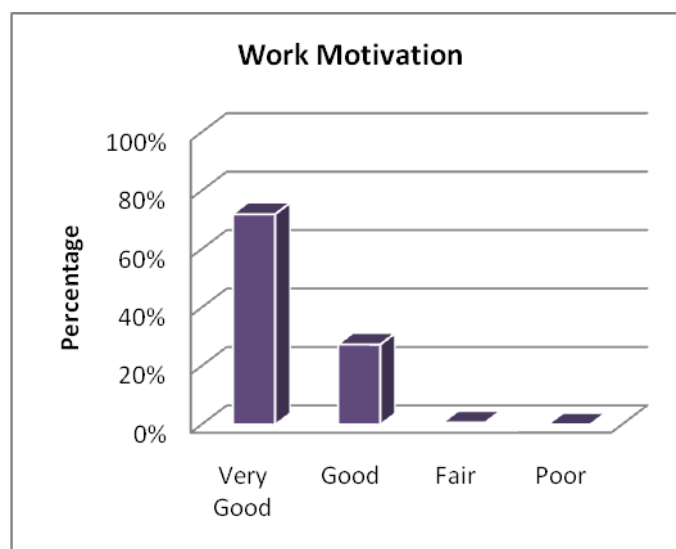
30.07% teachers state that it is very good, 47.97% state that it is good, 12.84% state that it is fair, and 9.12% state that it is poor.

Based on the data in Table 28, it can be concluded that the trend of the measurement in the work motivation aspect is as shown in Table 43.

**Table 43. The Trend of the Measurement of Outcome Dimension (Aspect: Work Motivation)**

Category	Number of Respondents	Percentage
Very Good	213	71.96 %
Good	81	27.36 %
Fair	2	0.68 %
Poor	0	0.00 %
Total	296	100.00%

The frequency distribution of the data on work motivation aspect is given in the form of histogram as shown in Figure 14.



**Figure 14. The Frequency Distribution of Work Motivation**

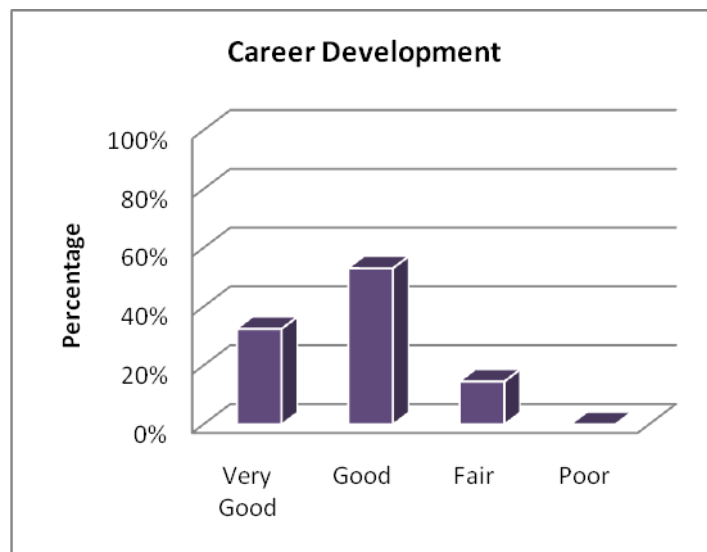
The motivation aspect consists of two indicators: 1) outer motivation and 2) inner motivation. The opinion from the teachers under study about motivation can be seen in Table 43, based on which the percentages of the opinions of the teachers (who are LPTK's graduates) about the work motivation are as follows: 71.96% teachers state that it is very good, 27.36% state that it is good, 0.68% state that it is fair, and none states that it is poor.

Based on the data in Table 28, it can be concluded that the trend of the measurement in the career development aspect is as shown in Table 38.

**Table 44. The Trend of the Measurement of Outcome Dimension  
(Aspect: Career Development)**

Category	Number of Respondents	Percentage
Very Good	96	32.43%
Good	157	53.04%
Fair	43	14.53%
Poor	0	0%
Total	296	100.00%

The frequency distribution of the data of career development aspect is given in the form of histogram as shown in Figure 15.



**Figure 15. The Frequency Distribution of the Career Development Aspect**

The career development aspect consists of four indicators: 1) responsibility, 2) status, 3) authority, and 4) achievement. The opinions of the teachers about their career development can be seen in Table 44, based on which the percentages of the opinion the teachers (LPTK's graduates) about their career development are as follows: 32.43% teachers state that it is very good, 53.04% state that it is good, 14.53% state that it is fair, and none states that it is poor.

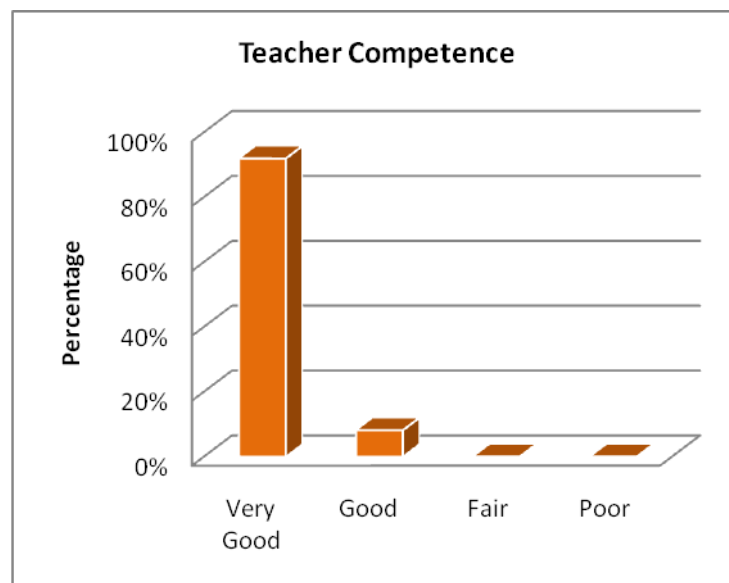
#### b. The Principals' Assessment

The following is the analysis of the trend analysis of data measurement based on the principals' opinions on the aspect of: teacher competence, school administration, contribution to the school development, and innovation. Based on the data in Table 30, it can be concluded that the trend of the measurement in the teacher competence aspect is as shown in Table 45.

**Table 45. The Trend of the Measurement of Outcome Dimension (Aspect: Teacher Competence)**

Category	The Number of Teachers Assessed	Percentage
Very Good	272	91.89%
Good	24	8.11%
Fair	0	0%
Poor	0	0%
Total	296	100.00%

The frequency distribution of the data of teacher competence aspect is given in the form of histogram as shown in Figure 16.



**Figure 16. The Frequency Distribution of the Teacher Competence Aspect**

The teacher competence aspect consists of four indicators: 1) pedagogical competence, 2) personality competence, 3) social competence, and 4) professional competence. The principal assessment can be seen in Table 45, based on which the percentages of the principal assessment about the teacher competence are as



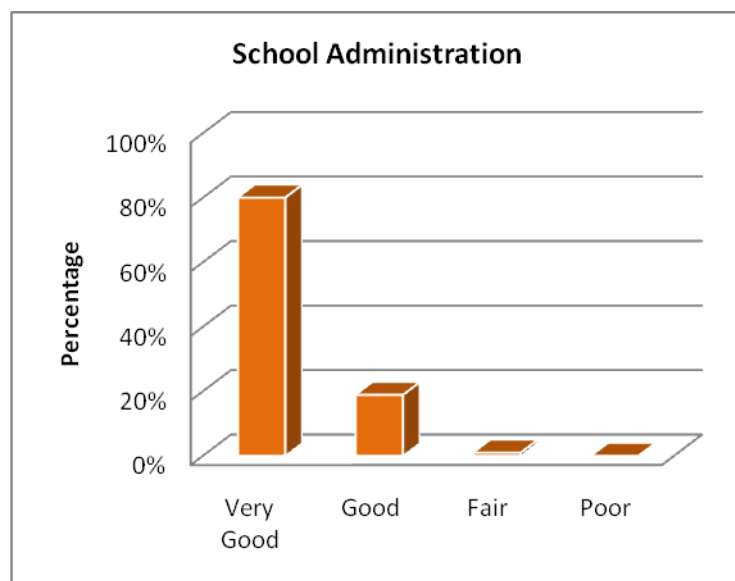
follows: 91.89% principals state that it is very good, 8.11% state that it is good, and none states that it is fair or poor.

Based on the data in Table 30, it can be concluded that the trend of the measurement in the ability in school administration is as shown in Table 46.

**Table 46. The Trend of the Measurement of Outcome Dimension (Aspect: School Administration)**

Category	The Number of Teachers Assessed	Percentage
Very Good	237	80.07%
Good	56	18.92%
Fair	3	1.01%
Poor	0	0%
Total	296	100.00%

The frequency distribution of the data of school administration aspect is given in the form of histogram as shown in Figure 17.



**Figure 17. The Frequency Distribution of the School Administration Aspect**

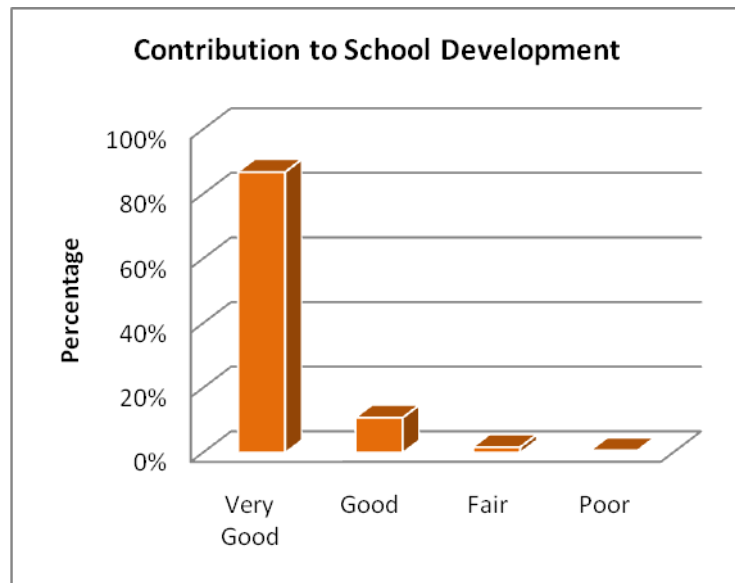
The aspect of ability to handle school administration consists of two indicators: 1) the ability to handle lesson plan and 2) the ability to handle the other school administration work. The principal assessment about the ability to do the school administration can be seen in Table 46, based on which the percentages of the principal assessment about the school administration are as follows: 80.07% principals under study state that it is very good, 18.92% state that it is good, 1.01% state that it is fair, and none states that it is poor.

Based on the data in Table 30, it can be concluded that the trend of the measurement in the contribution in the school aspect is as shown in Table 47.

**Table 47. The Trend of the Measurement of Outcome Dimension (Aspect: Contribution to School Development)**

Category	The Number of Teachers Assessed	Percentage
Very Good	257	86.82%
Good	32	10.81%
Fair	5	1.69%
Poor	2	0.68%
Total	296	100.00%

The frequency distribution of the data of contribution-to-school aspect is given in the form of histogram as shown in Figure 18.



**Figure 18. The Frequency Distribution of the Contribution-to-School Aspect**

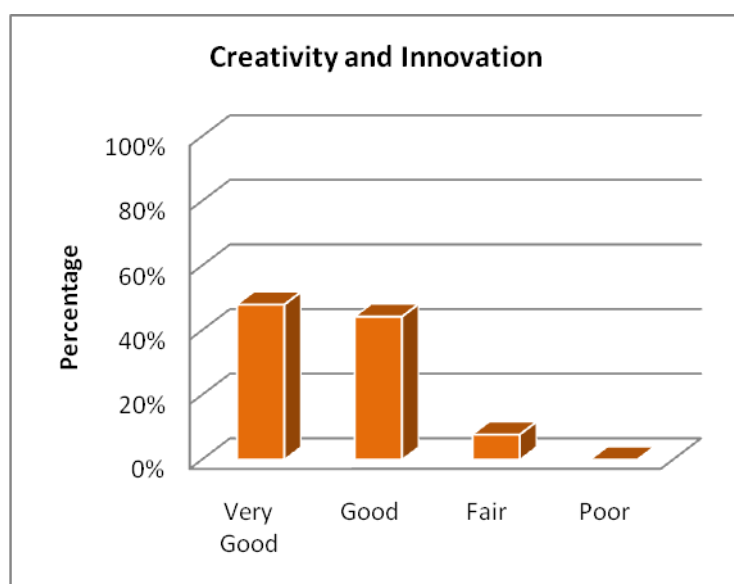
The contribution-to-school aspect consists of three indicators: 1) being a high quality human resource; 2) having loyalty in the school development and 3) giving guiding action to develop the student potential. The principal assessment about the contribution-to-school aspect can be seen in Table 47, based on which the percentages of the principal assessment about the school development are as follows: 86.82% principals state that it is very good, 10.81% state that it is good, 1.69% state that it is fair, and 0.68% state that it is poor.

Based on the data in Table 30, it can be concluded that the trend of the measurement in the creativity and innovation aspect is as shown in Table 48.

**Table 48. The Trend of the Measurement of Outcome Dimension (Aspect: Creativity and Innovation)**

Category	The Number of Teachers Assessed	Percentage
Very Good	142	47.97%
Good	131	44.26%
Fair	23	7.77%
Poor	0	0%
Total	296	100.00%

The frequency distribution of the data of the creativity and innovation aspect is given in the form of histogram as shown in Figure 19.



**Figure 19. The Frequency Distribution of the Creativity and Innovation Aspect**

The creativity and innovation aspect consists of two indicators: 1) creativity and 2) innovation. The principal assessment about the creativity and innovation can be seen in Table 48, based on which the percentages of the principal

assessment about the creativity and innovation are as follows: 47.97% principals under study state that it is very good, 44.26% state that it is good, 7.77% state that it is fair, and none states that it is poor.

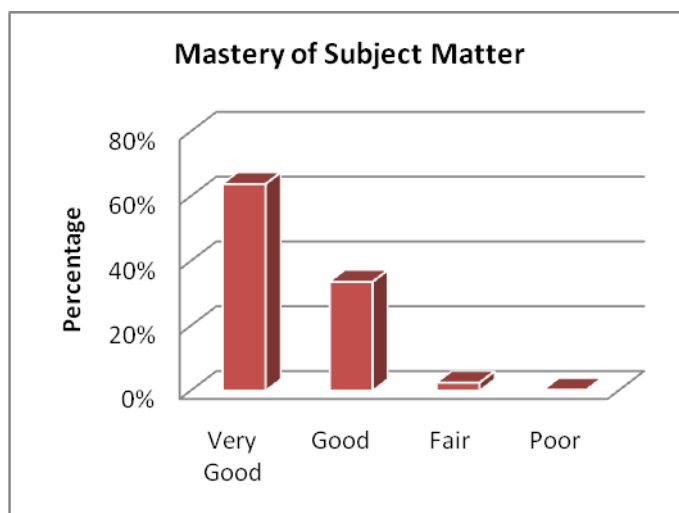
c. The Students' Assessment

The student assessment consists of: lesson mastery, teaching media used, learning strategy used, evaluation, and assessment. Based on the data in Table 32, it can be concluded that the trend of the measurement in outcome dimension for mastery of subject matter aspect is as shown in Table 49.

**Table 49. The Trend of the Measurement of Outcome Dimension (Aspect: Mastery of Subject-Matter)**

Category	Number of Respondents	Percentage
Very Good	2,824	63.78%
Good	1,487	33.58%
Fair	107	2.42%
Poor	10	0.23%
Total	4,428	100.00%

The frequency distribution of the data of the subject-matter mastery aspect is given in the form of histogram as shown in Figure 20.



**Figure 20. The Frequency Distribution of the Mastery of Subject Matter Aspect**

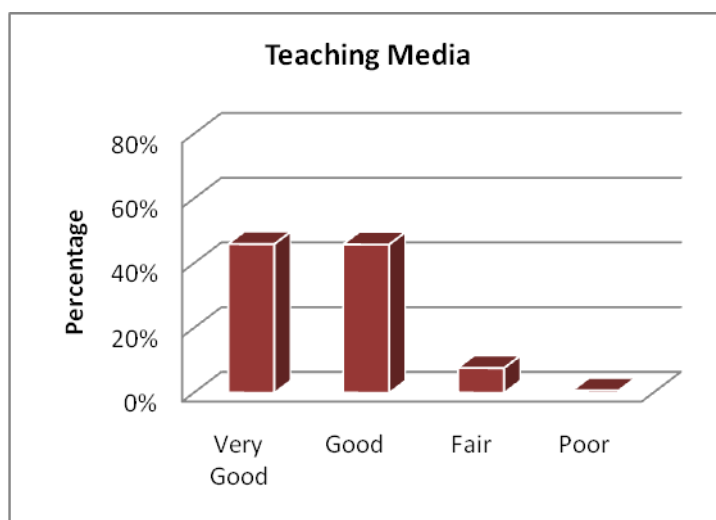
The subject-matter mastery aspect consists of two indicators: 1) ability to deliver the material and 2) ability to answer questions. Table 43 shows that 63.78% respondents (students) state that their teachers' subject-matter mastery is very good, 33.58% good, 2.42% fairly good and 0.23% poor.

Based on the data in Table 32, it can be concluded that the trend of the measurement in outcome dimension for teaching media aspect is as shown in Table 50.

**Table 50. The Trend of the Measurement of Outcome Dimension (Aspect: Teaching Media)**

Category	Number of Respondents	Percentage
Very Good	2,033	45.91%
Good	2,028	45.80%
Fair	337	7.61%
Poor	30	0.68%
Total	4,428	100.00%

The frequency distribution of the data of the teaching media aspect is given in the form of histogram as shown in Figure 21.



**Figure 21. The Frequency Distribution of the Teaching Media Aspect**

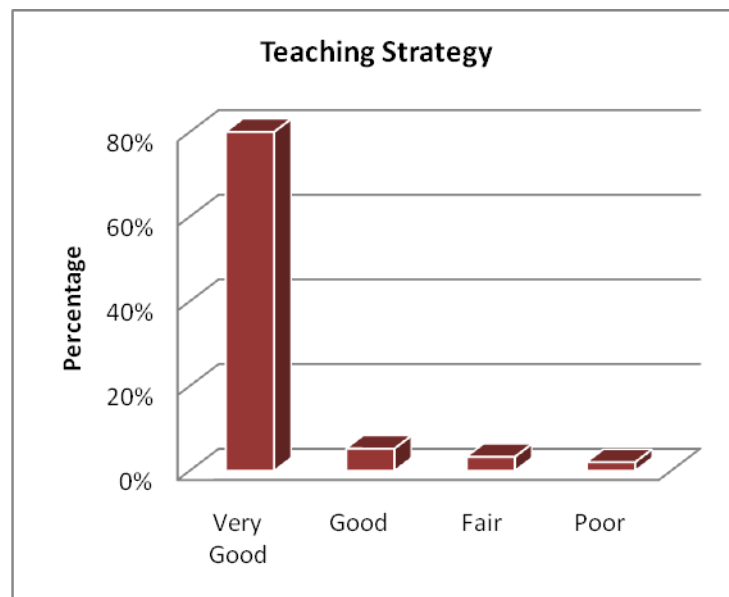
The teaching media aspect consists of two indicators: 1) media development in delivering the lesson and 2) the making of teaching media. Based on Table 43, the percentages of the student assessment about the teaching media are as follows: 45.91% students under study state that it is very good, 45.80% state that it is good, 7.61% state that it is fair, and 0.68% state that it is poor.

Based on the data in Table 32, it can be concluded that the trend of the measurement in outcomes dimension for teaching strategy aspect is as shown in Table 51.

**Table 51. The Trend of the Measurement of Outcome Dimension (Aspect: Teaching Strategy)**

Category	Number of Respondents	Percentage
Very Good	3,967	89.59%
Good	230	5.19%
Fair	143	3.23%
Poor	88	1.99%
Total	4,428	100.00%

The frequency distribution of the data of teaching strategy aspect is given in the form of histogram as shown in Figure 22.



**Figure 22. The Frequency Distribution of the Teaching Strategy Aspect**

The teaching strategy aspect consists of two indicators: 1) the teaching strategy based on subject and 2) the teaching strategy based on student condition. Based on Table 51, the percentages of the student assessment about the teaching strategy are as follows: 89.59% students under study state that it is very good,



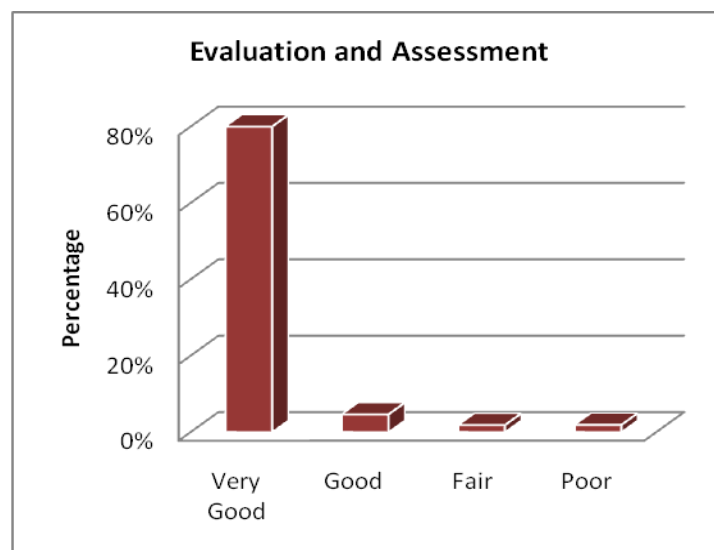
5.19% state that it is good, 3.23% state that it is fair, and 1.99% state that it is poor.

Based on the data in Table 32, it can be concluded that the trend of the measurement in outcomes dimension for evaluation and assessment aspect is as shown in Table 52.

**Table 52. The Trend of the Measurement of Outcome Dimension  
(Aspect: Evaluation and Assessment)**

Category	Number of Respondents	Percentage
Very Good	4,059	91.67%
Good	205	4.63%
Fair	81	1.83%
Poor	83	1.87%
Total	4,428	100.00%

The frequency distribution of the data of evaluation and assessment aspect is given in the form of histogram as shown in Figure 23.



**Figure 23. The Frequency Distribution of  
the Evaluation and Assessment Aspect**

The evaluation and assessment aspect consists of two indicators: 1) learning evaluation, and 2) feedback over the assignment given. The student assessment about their teachers' evaluation and assessment can be seen in Table 45, based on which the percentages of the student assessment about the evaluation and assessment are as follows: 91.67% students under study state that it is very good, 4.63% state that it is good, 1.83% state that it is fair, and 1.87% state that it is poor.

### **C. Finding Discussion**

The discussion is based on the data description given.

#### **1. Input dimension**

The input dimension consists of three aspects: student condition, curriculum, and facility and infrastructure. Each aspect is discussed as follows.

##### **a. Student Quality**

The student quality aspect gets the mean score of 2.8727 from the highest possible score of 4, median 3.00, mode 3.00, standard deviation 0.3783 and variance 0.1430. Viewed from the student quality aspect, the trend analysis shows that the quality of the student is as follows: 22.64% students under study are very good, 55.74% good, 20.61% fair and 1.01% poor. This may be due to the low animo to enter LPTK. The interview results of the interviews show that the respondents tend to choose LPTK because they think that their academic skill and knowledge are low, yet they want to go to university. Moreover, their mental readiness is low too. Their choice to go to LPTK is not because they want to be a

teacher. It is different from the recent condition as the certification policy implemented; the students tend to enter LPTK as their choice.

Based on the condition, it is necessary to improve the selection system of teachers, especially on the requirement aspect. This is in line with what Suyanto (2013) states that one of the considerations to improve the quality of teachers is on the strictness of the requirements of pre-service teachers of LPTK. The students applying LPTK must have adequate academic competence, suitable skill with the field of study and good mental condition.

The following are some suggestions regarding the student quality:

- 1) It is important to hold a skill test in entrance test based on the specific major the students choose. It aims to know what kind of ability they possess.
- 2) The psychological test is also needed to be administered. The test is important to get the psychological condition of the students especially about their mental state and motivation to study in LPTK.
- 3) Decision making of qualified score of national examination on mathematics, natural science, and English subjects can be important considerations to get a qualified and quality teacher based on the cognitive aspect, since a teacher must have good academic competence.

#### b. Curriculum

The curriculum aspect gets the mean score of 3.2329 from the highest possible score of 4, median 3.33, mode 3.33, standard deviation 0.3185 and variance 0.101. Viewed from the curriculum aspect, the result of the trend analysis

shows that the curriculum is as follows: 65.20% students under study state that it is very good, 32.43% state that it is good, 2.36% state that it fairly good and none of them states that it is poor. This indicates that the curriculum given is already suitable for the working condition. Based on the interview, the teachers suggested that the curriculum should accommodate skill spectrum needed in the real working condition. Besides, the character building should be started earlier and get the treatment like the other institutions that obligate the students to stay in dormitory. The curriculum used in LPTK should be developed together with the stakeholders periodically so that the imbalance between the skill and knowledge the students get in university and what the real working condition need can be minimized.

The curriculums applied by the research subject are Curriculums 1995, 1997, 2000 and 2002. In Curriculum 1995, it is stated that the placement target of graduates of the faculty of teacher education (FPTK) of IKIP (former name of UNY) is as vocational school teachers or education and training instructors or floor managers of workshops in industries depending on their fields of study. Curriculum 1995 consists of four competence element subjects: common ground subjects (12 credits), basic skill subjects (12 credits), skill subjects (136 credits). Total minimum credits that have to be taken by students are 160 semester credits. (FPTK IKIP Yogyakarta, 1996).

In Curriculum 1997, it is stated the graduates of FPTK IKIP are programmed to be vocational school teachers or education and training instructors or floor managers of workshops in industries depending on their fields of study.

Curriculum 1997 consists of four competence element subjects: common ground subjects (15 credits), basic skill I subjects (45 credits), basic skill II subjects (12 credits), skill I subjects (58 credits) and basic skill II subjects (14 credits). The total minimum credits that have to be taken by students are 144 semester credits. (FPTK IKIP Yogyakarta, 1999).

In Curriculum 2000, it is stated the graduates of FPTK IKIP are programmed to be vocational school teachers or education and training instructors or floor managers of workshops in industries depending on their fields of study.

Curriculum 2000 consists of four competence element subjects: common ground subjects (15 credits), basic skill I subjects (45 credits), basic skill II subjects (12 credits), skill I subjects (58 credits) and basic skill II subjects (14 credits). The total minimum credits that have to be taken by students is 144 semester credits. (FT UNY Yogyakarta, 1999).

Curriculum 2002 is based on competence. It is expected that it will provide graduates having competence that is suitable with the real working condition. The undergraduates of pedagogical program are pre-service teachers in vocational schools, education and training centers or in universities that are suitable with their fields of study.

Curriculum 2002 consists of five competence element subjects: personality development subjects (10 credits), knowledge and skill subjects (21 credits), product making skill subjects (54 credits), producing culture subjects (22 credits) and a social-living subject (3 credits). The total minimum credits that have to be taken by students are 144 semester credits. (FT UNY Yogyakarta, 2002).

The following are some suggestions regarding the curriculum:

- 1) Pedagogical subjects should be given more time and portion in the curriculum. These subjects make LPTK different from other education institutions. As a pre-service teacher producing institution, LPTK is expected to equip the graduates with pedagogical competence.
- 2) The curriculum should be developed along with the stakeholders so that it is suitable with the real working condition.
- 3) The character building should be integrated in the curriculum. The teacher character should be built early when they are in their study. It is very important as teachers become an important role model for their students.

c. Facility and Infrastructure

The facility and infrastructure aspect got the mean score of 2.9764 from the highest possible score of 4, median 3.00, mode 3.00, standard deviation 0.2775 and variance 0.0770. Viewed from the facility and infrastructure aspect, the trend analysis showed that the facility and infrastructure is as follows: 8.78% can be categorized as very good, 61.49% as good, 29.39% as fairly good, and 0.34% as poor. This shows that the facility and infrastructure could support the achievement of the competence. The interview result supports the data. It shows that although the facility and infrastructure is quite good, the maintenance of the practicum equipment is needed. In the laboratory/workshop, some tools cannot be used optimally.

Here are some suggestions regarding the facility and infrastructure:

- 1) The provision of the facility should be based on the objective of the competence achievement. It should meet the priority scale and consider the budget. It should focus on the need of the practicum instrument and the work safety and health equipment (K3).
- 2) The maintenance and repair of the facility and infrastructure should be improved. It has to be conducted periodically so that it can extend the limit of the lifetime of the equipment.
- 3) The use of technology and information should be improved. The information technology can be used to improve the efficiency and effectiveness of the teaching and the management of the institution.

d. Educational staff

The educational staff aspect got the mean score of 2.9355 from the highest possible score of 4, median 2.889, mode 3.00, standard deviation 0.2843 and variance 0.0810. Viewed from the educational staff aspect, the trend analysis showed that the facility and infrastructure is as follows: 54.05% can be categorized as very good, 43.92% as good, 2.03% as fairly good, and 1 none of them states that it is poor. This shows that the educational staff could support the achievement of the competence. The interview result supports the data. It shows that although the education staff is quite good.

Here are some suggestions regarding the education staff:

- 1) Lecturers/educators need to improve their competence in line with the field of study they teach.

- 2) Lecturers/educators need to condition the students to have achievement and own strong character.
- 3) Lecturers/educators are able in performing learning based on the rules of good learning to make them as ideal educators.
- 4) Lecturers/educators are able in applying various learning models so that the students experience directly about the strength and the weakness of each learning model.

## 2. Process Dimension

Process dimension consists of three aspects: teaching and learning process, industrial internship, and educational practicum, each of which is discussed below.

### a. Teaching-learning process

The teaching-learning process aspect got a mean score of 3.1556 from the highest possible score of 4, median 3.22, mode 3.22, standard deviation 0.2023 and variance 0.0410. Viewed from the teaching-learning process aspect, the trend analysis showed that the teaching and learning process is as follows: 64.53% can be categorized as very good, 35.14% as good, 0.34% as fairly good, and 0% as poor. This indicates that teaching-learning process in LPTK is good. In the interview, the respondents said that they could attend the class practically and theoretically well. The lesson they got could help them to achieve the expected competence. One thing that might be considered is that the teaching should use a variety of strategies and models. Besides, the theoretical subject to support



practicum should be in the previous semester so that the students can master the concept before they do the practicum.

Here are some suggestions regarding the teaching and learning process.

- 1) The implementation of a variety of strategies and models should be based on the characteristics of the subject. The suitable teaching strategy and model can help students to achieve the expected competence. The concerning problem is about the characteristic of the subject and the students. One of the strategies than can be applied in LPTK is contextual teaching and learning strategy. While the learning model that can be used is more varied, for instance project-based learning, problem-based learning, mind mapping, and blended learning.
- 2) The theoretical subject to support the practicum should be given in the previous semester so that the students can master the concept before they do the practicum.

b. Industrial internship

The industrial internship aspect got the mean score of 3.081 from the highest possible score of 4, median 3.00, mode 3.00, standard deviation 0.3795, and variance 0.1440. Viewed from the industrial internship aspect, the trend analysis showed that the industrial internship is as follows: 41.22% can be categorized as very good, 51.69% as good, 6.76% as fairly good and 0.34% as poor. This indicates that the internship needs improvement. Based on the interview, it can be concluded that the experiences from the industrial internship are determined by some factors: the openness of the industry in accepting the

interns, the readiness of the interns facing the real working condition, the communicative skill, negotiation skill, and creativity. The monitoring is rarely carried out by the university.

Here are some suggestions regarding the industrial internship.

- 1) The supplement to the students before the internship should be improved.
- 2) The monitoring and evaluation of the internship should be done periodically by both the industrial internship coordinator and the supervising lecturer.

c. Educational Practicum

The educational practicum aspect got the mean score of 3.5828 from the highest possible score of 4, median 3.50, mode 3.50, standard deviation 0.2729 and variance 0.074. Viewed from the educational practicum aspect, the trend analysis showed that the industrial internship is as follows: 93.58% can be categorized as very good, 6.42% as good, 0% as fairly good and 0% as poor. This indicates that the practicum is quite good. Based on the interview, the experiences the students got from the teaching practicum help them become a professional teacher. It can also measure the students' ability to teach. One semester doing the practicum adequately can cover the needs for teaching the whole package subject.

Here are some suggestions regarding the teaching practicum:

- 1) The duration which is minimally one semester is very helpful for the students to acquire the right experiences needed in teaching. In developed countries, the duration is longer than it is in Indonesia. For instance, in Germany, the practicum needs 3 to 4 semesters to finish. The vocational

teacher usually gets longer time, which is 4 months, as they are quite different from other teachers. The competence needed is much more considerable because the objective of vocational schools is to prepare a ready-to-work persons. As a consequence, the students need to take longer time to get more experiences.

- 2) The monitoring and evaluation of the educational practicum should be improved.

### 3. Output Dimension

Output dimension consists of two aspects: grade point average and length of study, each of which is discussed below.

#### a. Grade Point Average (GPA)

The grade point average got the mean score of 3.0574 from the highest possible score of 4, median 3.00, mode 3.00, standard deviation 0.4941, and variance 0.2440. Viewed from the grade point average, the trend analysis showed that the grade point average is as follows: 14.86% can be categorized as very good, 69.26% as good, 15.88% as fairly good and 0% as poor. This indicates that the range of GPA of the students on average is 3.26-3.50. Based on the interview, the GPA does reflect the students' real learning achievement. Notable thing related to this is about the remedial program. A well scheduled remedial program really helps them get more opportunities to increase their GPA with no apprehensiveness about the clash to other schedules.

Here are some suggestions regarding the GPA:

- 1) The remedial program should be scheduled well. A well scheduled remedial program really helps the students get more opportunities to increase their GPA. It will be good for the lecturer as well.
- 2) The students getting grade D must take a remedial program till they get grade C. This policy can support the learning mastery.

b. The Length of Study

The length of study aspect got the mean score of 2.0304 from the highest possible score of 4, median 2.00, mode 2.00, standard deviation 0.8083, and variance 0.6530. Viewed from the time for study aspect, the trend analysis showed that the time for study is as follows: 1.01% can be categorized as very good, 35.14% as good, 41.22% as fairly good and 22.64% as poor. This means that most of the students are fairly good in terms of the length of study which is about 4 to 6 years. From the interview, the length of study is quite long because the students need to make a product, to take industrial internship, to do educational practicum, and to do community service that takes at least 3 semesters.

Here are some suggestions regarding the length of study:

- 1) The technology/work product subject can be integrated to thesis. Some of the respondents got a dual degree. They will get two certificates which are undergraduate certificate and D-3 degree certificate. To get a D-3 certificate, they have to make a product. UNY has no more dual degree program. The work product is integrated into thesis writing. The students

can make product that can help learning activities. It automatically can shorten their length of study.

- 2) Community service can be taken simultaneously with educational practicum. It can improve the effectiveness of both programs. It will clearly help students to finish their study quicker.
- 3) The monitoring and evaluation by the lecturers need to be improved. By the end of the semester, the lecturer should collect the data of the students he or she supervises. This step will lead the students to find the right learning strategy so that it can improve the learning achievement and it can help them complete their study in time.
- 4) A counseling program needs to be conducted for the students having academic problems which will affect their motivation and learning achievement.

#### 4. Outcome Dimension

##### a. The Graduate' Opinion

###### 1) Work Appraisal.

The work appraisal aspect got the mean score of 2.9930 from the highest possible score of 4, median 3.00, mode 3.00, standard deviation 0.5729 and variance 0.3280. Viewed from the work appraisal aspect, the trend analysis showed that the reward is as follows: 30.07% can be categorized as very good, 47.97% as good, 12.84% as fairly good, and 9.12% as poor. This indicates that the recognition or award needs to be a concern. The information

from the interview shows that although financially they got good recognition, the satisfaction from academic awards like teacher achievement award, competition based on the skills, writing competition and so on is inadequate. The teachers feel that they need some more motivation. Some of them think that they are only in their comfort zone.

Here are some suggestions regarding the work appraisal aspect:

- a) LPTK needs to make a condition and atmosphere for the students to compete based on their knowledge and skill. The motivation needs to be strengthened so that when the students are in the real-working condition, they already have the motivation, enthusiasm, and confidence to be competitive.
- b) Students need to be guided to develop their potential and skills. It can be done through activities like those in student activity unit and student creativity program.

## 2) Work Motivation.

The work motivation aspect got the mean score of 3.2138 from the highest possible score of 4, median 3.1820, mode 3.1820, standard deviation 0.2777 and variance 0.7700. Viewed from the work motivation aspect, the trend analysis showed that the work motivation is as follows: 71.96% can be categorized as very good, 27.36% as good, 0.68% as fairly good, and 0% as poor. This indicates that the motivation is already good. Based on the interview, the students' motivation is mostly influenced by themselves, the

environment, and the principals, who really play an important role in motivating the students.

Here are some suggestions regarding the recognition aspect:

- a) Character building needs to be integrated in the curriculum of LPTK.

The better the building character is, the better the teacher will do their job.

- b) Promoting the strategic role of the teacher can significantly improve the quality of education. The awareness of the teachers (LPTK graduates) about their role as a teacher will improve their motivation.

### 3) Career Development

The career development aspect got the mean score of 2.9263 from the highest possible score of 4, median 2.9170, mode 2.9170, standard deviation 0.3160, and variance 0.1000. Viewed from the work motivation aspect, the trend analysis showed that the work motivation is as follows: 71.96% can be categorized as very good, 27.36% as good, 0.68% as fairly good, and 0% as poor. This indicates that the career development of the teachers (LPTK graduates) need to be improved. The results of the interview shows that the teachers' career development is influenced by the awareness of career development, opportunity, and principals' role. All those three aspects play an important role in the teachers' career development.

Here are some suggestions regarding the career development aspect:

- a) Career guiding needs to be conducted in LPTK. It is important to make the students get ready for their career development and understand what the best strategy and steps to achieve it.

b. The Principal Assessment

1) Teacher Competence

The teacher competence aspect got the mean score of 3.6220 from the highest possible score of 4, median 3.6250, mode 3.6300, standard deviation 0.2921 and variance 0.8500. Viewed from the teacher competence aspect, the trend analysis showed that the teacher competence is as follows: 91.89% can be categorized as very good, 8.11% as good, 0% as fairly good, and 0% as poor. This indicates that the competence most of the teachers graduating from LPTK (FT UNY) is good.

Here are some suggestions regarding the teacher competence aspect:

- a) The education in LPTK must refer to the competence standard of vocational teachers as stated in the Regulation of the Ministry of National Education of Republic of Indonesia No. 16 2007 about academic qualification standard and teacher competence in order to be a professional teacher.
- b) LPTK should improve the quality of education within it. A good quality process of education will provide quality and competitive graduates.



## 2) School Administration.

The school administration aspect got the mean score of 3.3743 from the highest possible score of 4, median 3.4000, mode 3.4000, standard deviation 0.3284, and variance 0.108. Viewed from the school administration aspect, the trend analysis showed that the school administration is as follows: 80.07% can be categorized as very good, 18.92% as good, 1.01% as fairly good, and 0% as poor. This indicates that the graduates are capable enough of handling the administration. Some teachers seem to need to get guidance. The administrative things may vary such as new student admission, laboratory administration, and grant budget management administration.

Here are some suggestions regarding the school administration:

- a) The students need to be accustomed to the administrative things in both learning and extracurricular administration.
- b) LPTK's need to increase the participation of the students in some activities like student creativity program (PKM). The student will get used to making proposal, holding scheduled programs, managing financial stuffs, and also making report. The experience will be beneficial to them.

## 3) Contribution to School Development

The contribution-to-school development aspect got the mean score of 3.4701 from the highest possible score of 4, median 3.5000, mode 3.5000, standard deviation 0.3498, and variance 0.122. Viewed from the contribution to school development aspect, the trend analysis showed that the teachers'

contribution to school development is as follows: 86.82% can be categorized as very good, 10.81% as good, 1.69% as fairly good, and 0.68% as poor. This indicates that the teachers' contribution is significantly good. Based on the interview, the teachers have contributed well towards the development of the institution. Their most obvious contribution is the loyalty that they give to the institution where they work. The concern is on the readiness of the teachers when they are asked to handle extracurricular activities. Some of them feel that they are not ready for it.

Here are some suggestions regarding the contribution towards the institution development:

- a) The students need to be obliged to join one or more extracurricular activities provided by the universities based on the skill they possess. It will help them to give more contribution to the school where they work later in their life.

#### 4) Creativity and Innovation.

The creativity and innovation aspect got the mean score of 3.1774 from the highest possible score of 4, median 3.000, mode 3.000, standard deviation 0.3892 and variance 0.151. Viewed from the creativity and innovation aspect, the trend analysis showed that the creativity and innovation is as follows: 47.97% can be categorized as very good, 44.26% as good, 7.77% as fairly good, and 0% as poor. This indicates that the creativity and innovation aspect need improvement. Most of the respondents have shown that they have already made innovation although more improvement is still needed.

Therefore LPTK needs to use a learning model to make an ideal condition to stimulate the students to be innovative and creative.

Here are some suggestions regarding the creativity and innovation:

- a) LPTK needs to use a learning model to make an ideal condition to stimulate the students to be innovative and creative. The subject dealing with this concept can use a mind mapping model. It will create more freedom for students to map the concept based on their creativity. It will also bring balance to the right and left brain so that it can improve their memorizing skill.
- b) LPTK should give more opportunities to the students to make innovation related to their own fields of study. The opportunities should be given periodically so that they can enhance the students' motivation to be innovative.

c. The Student Assessment

1) Mastery of Subject Matter

The mastery of subject matter aspect got the mean score of 3.3213 from the highest possible score of 4, median 3.2500, mode 3.0000, standard deviation 0.3888 and variance 0.151. Viewed from the mastery of subject matter aspect, the trend analysis showed that the mastery of subject matter is as follows: 63.78% can be categorized as very good, 33.58% as good, 2.42% as fairly good, and 0.23% as poor. This indicates that the teachers' mastery level of the lesson is good enough. Based on the interview with the students,

the teachers' mastery of the lesson will give impact directly to their teaching. It can improve the trust of the students, stimulate the students to be enthusiastic and even make the teachers look more charismatic. The information shows how important the lesson mastery is for teacher.

Here are some suggestions regarding the subject-matter mastery:

- a) The coverage of the lesson should be based on the real-working condition needed by the students. It should consider the expected competence of vocational graduates.
- b) The teaching-learning process could give knowledge and skill that is adaptive with the development of knowledge and technology.
- c) The life-long learning concept should be delivered to students so that they will always look for the new knowledge by using any available resources

## 2) The Teaching Media Used

The teaching media used aspect got the mean score of 3.1050 from the highest possible score of 4, median 3.0000, mode 3.0000, standard deviation 0.3740, and variance 0.140. Viewed from the teaching media used aspect, the trend analysis showed that the teaching media used is as follows: 45.91% can be categorized as very good, 45.80% as good, 7.61% as fairly good, and 0.68% as poor. This indicates that the use of teaching media is good. It really depends on the teachers. Some of the teachers use teaching media to help the students understand the lesson better, but some others still use the lecture method to give the lesson. The media used includes power point slide,

animation, and miniature. It gives us insight that the use of teaching media gives significant impact on the students' understanding of the lesson given by the teachers.

Here are some suggestions regarding the use of teaching media:

- a) The students need to be accustomed to a variety of teaching media. It is important for the graduates so that when they are preparing for their teaching, they can develop the appropriate teaching media by themselves. The teaching media should be interesting so that it can make the students more enthusiastic to the lesson.

### 3) The Teaching Strategy Used

The use of teaching strategy aspect got the mean score of 3.2119 from the highest possible score of 4, median 3.2000, mode 3.0000, standard deviation 0.4250, and variance 0.181. Viewed from the teaching strategy used aspect, the trend analysis showed that the teaching strategy used is as follows: 89.59% can be categorized as very good, 5.19% as good, 3.23% as fairly good, and 1.99% as poor. This indicates that the teachers use good teaching strategies. It was shown that the teachers can involve the students in their learning. The right teaching strategy can help the students achieve the expected competence. The selection of the teaching strategies must be based on the condition and characteristic of students and subjects.

Here are some suggestions regarding the use of teaching strategy:

- a) The use of various teaching strategies is needed to know the strengths and weaknesses of a teaching strategy. From their learning experiences,

the students can get comprehension of a strategy. It will be helpful when they become a teacher later in their life. They can apply the appropriate strategy based on the characteristic of the subjects they teach.

#### 4) The Evaluation and Assessment

The evaluation and assessment aspect got the mean score of 3.1346 from the highest possible score of 4, median 3.2000, mode 3.0000, standard deviation 0.4153, and variance 0.173. Viewed from the evaluation and assessment aspect, the trend analysis showed that the evaluation and assessment is as follows: 91.67% can be categorized as very good, 4.63% as good, 1.83% as fairly good, and 1.87% as poor. This indicates that the process of evaluation and assessment is good. In the interview, the students said that the evaluation and assessment done by the teachers was good. The teachers did the assessment objectively. Some of the assignments of the students were not returned to them. If the assignment had been returned to the students, they could have known exactly their mistakes and they could have corrected them. If the assignment had been returned to the students, they could have known exactly their mistakes and they could have corrected them.

Here are some suggestions regarding the evaluation and assessment:

- a) The teaching-learning process in LPTK should give information on how to do assessment and evaluation. The lecturers in LPTK should give the assessment and evaluation transparently and accountably. Besides, every task assessed must be returned to the students so that they can

know what their mistakes are. This will make the students do the same when they become a teacher.

#### **D. The Research Limitations**

The constraints and difficulties of the study can be seen as follows:

1. The subjects observed are the graduates of YSU so the finding cannot be generalized to the graduates from other universities.
2. The graduates that have got a job but do not report to LPTK can be possibly the subject of the research.
3. The research investigated only the graduates from 2001 to 2010.
4. The research is focused on the LPTK graduates who are teachers so it could not investigate the graduates who have other jobs in details.

## **CHAPTER V**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **A. Conclusions**

With regard to the research data and findings, three conclusions can be drawn.

1. The indicators used to reveal the outcome of education in LPTK include: work appraisal, work motivation, career development, competence in teaching-learning process, school administration, contribution to school development, creativity and innovation, subject-matter mastery, teaching media skill, teaching strategy skill, evaluation and assessment.
2. LPTK graduates are able to teach productive subject matter very well. The competence of: subject-matter mastery, teaching media, teaching strategy, as well as evaluation and assessment is categorized very good. Furthermore, the graduates carry out their duties in vocational high school very well. The ability to handle school administration and contribution to school development aspect are mostly categorized very good, while the creativity and innovation are mostly categorized good. Work motivation of the graduates is categorized very good, while the career development and work appraisal are mostly categorized good. The advantages possessed by LPTK graduates are subject-matter mastery and work motivation.
3. The evaluation results of related aspects of the outcomes show that: (a) the LPTK inputs on curriculum and educational staff aspect are mostly



categorized very good, however student quality and facility should be improved; (b) the LPTK process including: teaching-learning process in the classroom, industrial internship, and educational practicum is categorized very good; (c) the LPTK output shows that GPA average is in the range of 3 to 3.5 and the length of study is in the range of 4.5 to 5 years.

## **B. Implications**

1. The results of this study can be used as a basis for determining the policies associated with efforts to improve the quality of vocational teacher education institution.
2. The results of this study can be used as a basis for curriculum development in vocational teacher education institution.

## **C. Recommendations**

1. Teacher education institution needs to socialize to senior high schools and vocational high schools on the minimum competency of prospective learners of teacher education institution.
2. Community service can be taken simultaneously with educational practicum to improve the effectiveness of both programs and help students to finish their study.
3. The monitoring and evaluation of student academic progress by lecturers need to be improved, so students will be motivated to finish earlier.

4. Research proposals should be discussed in the education research methodology subject matter. It will clearly help students to finish their study more quickly.
5. A counseling program needs to be conducted for the students having academic problems, and it will increase their motivation and learning achievement.
6. Teacher education institution need to develop an academic atmosphere to compete the students based on their knowledge and skills. The motivation needs to be strengthened so that when the students are in the real-working condition, they already have the motivation, enthusiasm, and confidence to be competitive.
7. Students need to be guided to develop their potentials and skills, through student activity units and student creativity programs.

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# **APPENDIX A**

## **RESEARCH INSTRUMENT**

# RESEARCH INSTRUMENT CONSTRUCT

## (Respondent: Teacher)

DIMENSION	ASPECT	SUB ASPECT	INDICATOR	ITEM NUMBER	TOTAL ITEM	RESPONDENT
Input	Student Quality	Academic skill	Having academic skill needed.	1,2,3	3	Teacher
		Lecturer readiness	Having readiness to attend lecture	4,5	2	
	Curriculum	Personal development subject	Personal development subject taught is appropriate with the need	1	1	
		Core background knowledge and skill subject	Core background knowledge and skill subject taught is appropriate with the need	1	1	
		Product skill subject	Product skill subject taught is appropriate with the need	1	1	
	Facilities and infrastructure	The availability of theory learning room	There are sufficient rooms available for learning theory	1,2	2	

		The availability of the practicum room	There are sufficient rooms for practice learning	3,4	2	
		The availability of practicum equipment	There are sufficient equipment/materials for practice	5,6	2	
		The availability of learning resources and	There are sufficient learning source	7,8	2	
		The availability of the supporting facility	There are sufficient supporting facilities	9,10,11,12	4	
		Competence in conveying the materials	Having competence in conveying the materials	1,2	2	
		The use of learning source	The use of learning source to support in achieving learning goals	3	3	
		Teaching Learning Process	The theoretical learning	The accomplishment of the theoretical learning objective.	1,2,3,4,5	2
			The practicum learning	The accomplishment of practicum learning objective.	6,7,8,9,10	2
Process					Teacher	

	Industrial Internship	The industrial internship objective.	The accomplishment of industrial internship objective.	1,2,3	2	
	Educational Practicum	The teaching practicum objective	The accomplishment of the teaching practicum objective	1,2,3,4,5	2	
<b>Output</b>	Grade Point Average	Grade Point Average	GPA gained when finishing study.	1	1	Teacher
	Length of Study	Length of Study	Time to finish the study	2	1	
<b>Outcome</b>	Work Appraisal	Financial appreciation	Appreciation related to the welfare	1,2	2	Teacher
		Non-financial appreciation	Appreciation related to job performance while working as teacher.	3	1	
	Job Motivation	Outer motivation	Motivation coming at one's pleasure (from the inside)	1,2,3,4,7,8	5	
		Inner motivation	Motivation coming from the outside	5,6,9,10,11	5	
	Career Development	Responsibility	Improvement of job responsibility	1,2,9	3	
		Status	Improvement of job status	3,5,8	3	
		Authority	Improvement of job authority	6,7,	2	

		Achievement	Opportunity to improve self-quality	4,10,11,12	4	
Total instrument item						62

## RESEARCH INSTRUMENT CONSTRUCT

### (Respondent: Principal)

DIMENSION	ASPECT	SUB ASPECT	INDICATOR	ITEM NUMBER	TOTAL ITEM	RESPONDENT
Outcome	Teacher's competence	Pedagogical competence	Having proper pedagogy competence	1,2,3,4	4	Principal
		Personality competence	Having good personality with good example	5	1	
		Social competence	Caring about workplace environment	6,7	2	
		Professional competence	Giving participation to the activities supporting the profession	8	1	
	Skill in managing school administration	Managing school administration	Having ability in completing learning tools	1,2,3	3	Principal
			Having ability in finishing other school administration	4,5	2	
	Contribution to school development	Contribution to school development	Become asset of qualified human resource in the school	1,3	2	Principal
			Having loyalty in developing institution	2,4	2	

			Giving guidance to develop students' potential	5,6	2	
Creativity and innovation	Creativity		Having creativity in performing his job	1,2	2	Principal
	Innovation		Doing innovation in performing his job	3,4	2	
Total instrument item					23	



## RESEARCH INSTRUMENT CONSTRUCT

### (Respondent: Student)

DIMENSION	ASPECT	SUB ASPECT	INDICATOR	ITEM NUMBER	TOTAL ITEM	RESPONDENT
Outcome	Materials	Delivering lesson material	The ability to deliver the material	1,2	2	Student
		Answering students' questions	The ability to answer questions	3,4	2	
	Media	Learning Media	Skill in developing learning media to help students' understanding	5,6	2	Student
			Developing media for the application of knowledge and skill taught.	7,8	2	
	Strategy	Teaching strategy based on subject	Using learning strategy which is appropriate with the subjects' characteristics.	9,10,11	3	Student
		Teaching strategy based on students' condition	Using learning strategy which is appropriate with students' characteristics.	12,13	2	

	Evaluation	Learning evaluation	Giving evaluation to the subject taught	15, 16	3	Student
		Feedback over the assignment given	Giving feedback to the assignment given.	17, 18, 19	3	
Total Instrument item				18		

**QUESTIONNAIRE A  
(RESPONDENT: TEACHER)**

**THE TITLE OF THE RESEARCH  
“AN EVALUATION OF OUTCOME AS THE MAIN REQUIREMENT FOR  
IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTION”**

**Researcher:  
Nurhening Yuniarti, M.T**

**Supervisor:  
Prof. Dr. paed. habil. Gisela Wiesner  
Prof. Soenarto, Ph.D  
Prof. Djemari Mardapi, Ph.D**

**VOCATIONAL AND TECHNOLOGY EDUCATION STUDY PROGRAM  
GRADUATE SCHOOL  
YOGYAKARTA STATE UNIVERSITY  
&  
EDUCATIONAL TECHNOLOGY DEPARTMENT  
INSTITUTE OF VOCATIONAL EDUCATION  
FACULTY OF EDUCATION  
DRESDEN UNIVERSITY OF TECHNOLOGY**

## INTRODUCTION

Dear respectable teacher,

For the purpose of writing doctoral dissertation in State University of Yogyakarta to earn Education Doctorate degree (Dr.) in the Joint Degree program in Vocational and Technology Education Department at Yogyakarta State University and Dresden University of Technology, we hopefully expect you to fill out the questionnaire. The title of my research is *"An Evaluation of Outcome as the Main Requirement for Improving the Quality of Teacher Education Institution"*.

The questionnaire is solely used to obtain research data therefore there is no need for you to hesitate in answering based on real condition. Your answers are guaranteed to be confidential. The data is only used for the purpose of research issue hence it will not affect your result in study. Honesty in answering every single question would be precious information for the researcher.

Thank you for your willingness to participate and sparing your time filling out the questionnaire.

Promotor:

Prof. Dr. paed. habil. Gisela Wiesner.

Co. Promotor:

Prof. Soenarto, Ph.D

Prof. Djemari Mardapi, Ph.D

Yogyakarta, March 2015

Best Regards

Researcher

Nurhening Yuniarti

Email: [nurhening@gmail.com](mailto:nurhening@gmail.com)

CP: 082314379900

## RESPONDENT DATA

Name (optional) : .....

University Entering Year : .....

University Entrance Lane : SBMPTN / SM / PBU / .....

University Graduating Year : .....

Study Program : .....

Address : .....

Telephone Number : .....

Email : .....

### I. Education Input in LPTK

In the following are statements about input of LPTK (Teacher Education Institution) including your condition when you were studying in LPTK. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.

No	Statements	Answer			
<b>A</b>	<b>Quality of Students</b>				
1.	Mean score of National Examination (UN) I obtained is.... <input type="checkbox"/> Choose A if, the mean score of UN > 8 <input type="checkbox"/> Choose B if, $7 < \text{the mean score of UN} \leq 8$ <input type="checkbox"/> Choose C if, $6 < \text{the mean score of UN} \leq 7$ <input type="checkbox"/> Choose D if, the mean score of UN $\leq 6$	A	B	C	D
2.	Mean score of report cards (RC) value I obtained is.... <input type="checkbox"/> Choose A if, the mean score of RC > 8 <input type="checkbox"/> Choose B if, $7 < \text{the mean score of RC} \leq 8$ <input type="checkbox"/> Choose C if, $6 < \text{the mean score of RC} \leq 7$ <input type="checkbox"/> Choose D if, the mean score of RC $\leq 6$	SA	A	D	SD

3.	I study in LPTK consciously.	SA	A	D	SD
<b>B Curriculum</b>					
1.	The content of personal development subject given is appropriate with the work need.	SA	A	D	SD
2.	The content of core background knowledge and skill subject given is appropriate with the work need.	SA	A	D	SD
3.	The content of product skill subject given is appropriate with the work need.	SA	A	D	SD
<b>C Facilities and Infrastructure</b>					
1.	Theoretical/practical learning rooms are available in sufficient number.	SA	A	D	SD
2.	Theoretical/practical learning rooms are proper.	SA	A	D	SD
3.	Practical equipments are available in sufficient number.	SA	A	D	SD
4.	Practical equipments available are proper for learning.	SA	A	D	SD
5.	Materials for practice are available in sufficient number.	SA	A	D	SD
6.	Materials for practice are proper to be used in learning.	SA	A	D	SD
7.	Learning source in library is not relevant to the development of knowledge and technology*)	SA	A	D	SD
8.	Safety work equipments are available in sufficient number.	SA	A	D	SD
9.	Safety work equipments available do not fulfill the feasibility standard*).	SA	A	D	SD
10.	Information technology used to support learning.	SA	A	D	SD
<b>D. Educational Staff</b>					
1.	Teaching competence of education subject	SA	A	D	SD

	lecturers.				
2.	Teaching competence of technical subject lecturers.	SA	A	D	SD
3.	Lecturers' skill in using equipment/practical materials available to support learning.	SA	A	D	SD

## II. Education Process in LPTK

In the following are statements about education process in LPTK (Teacher Education Institution) when you were studying in LPTK. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.

No	Statements	Answers			
<b>A</b>	<b>Teaching-Learning Process</b>				
1.	I am able in understanding theoretical learning taught.	SA	A	D	SD
2.	The assignment given in theoretical learning is helpful in understanding materials.	SA	A	D	SD
3.	Learning outcome in theoretical learning is appropriate with learning goals expected.	SA	A	D	SD
4.	Feedback given in theoretical learning helps me in understanding learning.	SA	A	D	SD
5.	Assessment given in theoretical learning is appropriate with the characteristics of materials taught.	SA	A	D	SD
6.	I am able in understanding practical learning taught.	SA	A	D	SD
7.	The assignment given in practical learning is helpful in understanding materials.	SA	A	D	SD
8.	Learning outcome in practical learning is appropriate with learning goals expected.	SA	A	D	SD

9.	Feedback given in practical learning helps me in understanding learning	SA	A	D	SD
<b>B. Industrial Internship</b>					
1.	In Industrial Practice (PI), I perform job as the skill I have. The job I perform is.....	SA	A	D	SD
2.	The experience of Industrial Practice improves my confidence in teaching.	SA	A	D	SD
3.	Th experience of Industrial Practice supports my profession.	SA	A	D	SD
<b>C. Educational Practicum</b>					
1.	Experience in making learning media in Field Practice helps me in performing my profession as teacher.	SA	A	D	SD
2.	I did not get any experience in finishing school administration. *)	SA	A	D	SD
3.	Field Practice improves my ability in negotiation with other people.	SA	A	D	SD
4.	Field Practice helps me in solving the problems related to my profession as teacher.	SA	A	D	SD

### III. Education Output of LPTK

In the following are statements about education output of LPTK when you were studying in LPTK. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.

No	Statements	Answers				
A	Grade Point Average					
1.	Grade Point Average I obtained when I finished study is.	A	B	C	D	



	Answer choice: <input type="checkbox"/> Choose A if, $GPA > 3,25$ <input type="checkbox"/> Choose B if, $3,00 < GPA \leq 3,25$ <input type="checkbox"/> Choose C if, $2,75 < GPA \leq 3.00$ <input type="checkbox"/> Choose D if, $GPA \leq 2,75$				
<b>B</b>	<b>Length of Study/ Study Period</b>				
1.	Time used to finish study (length of study) Answer Choice: <input type="checkbox"/> Choose A if, $LoS \leq 4$ years <input type="checkbox"/> Choose B if, $4 \text{ years} < LoS \leq 4 \text{ years } 6 \text{ months}$ <input type="checkbox"/> Choose C if, $4 \text{ years } 6 \text{ months} < LoS \leq 5$ years <input type="checkbox"/> Choose D if, $LoS \geq 5$ years	A	B	C	D

#### IV. Education Outcome of LPTK

In the following are statements about education outcome of LPTK (Teacher Education Institution). This outcome reveals your condition after finishing study in LPTK and working in the real work. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.

No	Statements	Answers			
A	Appreciation Obtained				
1.	Are you certified as educator? <input type="checkbox"/> Choose A if, certified before 2014. <input type="checkbox"/> Choose B if, certified in 2014. <input type="checkbox"/> Choose C if, in the process of certification submission. <input type="checkbox"/> Choose D if, has not been certified.	A	B	C	D
2.	Salary got as teacher <input type="checkbox"/> Very worthy to meet the life need.	A	B	C	D

	<input type="checkbox"/> Worthy to meet the life need. <input type="checkbox"/> Worthy enough to meet the life need. <input type="checkbox"/> Less worthy to meet the life need.				
3.	As long as I teach as a vocational teacher, I got some appreciation as many as... <input type="checkbox"/> Choose A if more than 3 appreciation <input type="checkbox"/> Choose B if getting 2 to 3 appreciation <input type="checkbox"/> Choose C if getting 1 appreciation <input type="checkbox"/> Choose C if not getting any appreciation	SS	A	D	SD
<b>D Working Motivation</b>					
1.	I demand my self to improve my job position.	SA	A	D	SD
2.	I am excited if my work can be useful for others.	SA	A	D	SD
3.	I am excited if I can finish my work ontime.	SA	A	D	SD
4.	I have good relationship with superior officers.	SA	A	D	SD
5.	The monitoring done by my superior officer supports me to improve my job achievement.	SA	A	D	SD
6.	The organization rules in my workplace support the profession development.	SA	A	D	SD
7.	I am trying to improve my job performance.	SA	A	D	SD
8.	I work hard to get maximal result in each job.	SA	A	D	SD
9.	I am happy to get praise of the job I perform. <sup>*)</sup>	SA	A	D	SD
10.	Working as teacher is a form of my dedication in education field.	SA	A	D	SD
11.	My job as a teacher provides me opportunity to improve knowledge and skill.	SA	A	D	SD
<b>E Career Development</b>					
1.	My responsibility is higher than previously.	SA	A	D	SD
2.	The number of profession organization I join as..... <input type="checkbox"/> Choose A if joined in more than 2 organization	A	B	C	D

	<input type="checkbox"/> Choose B if joined in 2 organization <input type="checkbox"/> Choose C if joined in 1 organization <input type="checkbox"/> Choose D if not joined in organization				
3.	I have good influence in the workplace.	SA	A	D	SD
4.	The number of scientific work I produce every year is.... <input type="checkbox"/> Choose A if producing more than 3 work. <input type="checkbox"/> Choose B if producing 2 s/d 3 work. <input type="checkbox"/> Choose C if producing 1 work. <input type="checkbox"/> Choose D if no work.	A	B	C	D
5.	I have opportunity to get higher position.	SA	A	D	SD
6.	Job promotion I get is appropriate with my skill.	SA	A	D	SD
7.	The number of other duties I perform except teaching is as.... <input type="checkbox"/> Choose A if performing more than 2 duties <input type="checkbox"/> Choose B if performing 2 duties <input type="checkbox"/> Choose C if performing 1 duty <input type="checkbox"/> Choose D if no duty	A	B	C	D
8.	I have represented my superior officer to finish certain job.	SA	A	D	SD
9.	I do not get any opportunity to coordinate activities held by school.	SA	A	D	SD
10.	I am given opportunity by institution to continue my education to the higher level.	SA	A	D	SD
11.	My superior officer gives me opportunity to join to competition.	SA	A	D	SD
12.	I am given opportunity to follow short course as the skill I have.	SA	A	D	SD

*Please recheck to ensure that all points have been filled.  
Thank You.*

**QUESTIONNAIRE B**  
**(RESPONDENT: PRINCIPAL)**

**THE TITLE OF THE RESEARCH**  
**“AN EVALUATION OF OUTCOME AS THE MAIN REQUIREMENT FOR**  
**IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTION”**

**Researcher:**  
**Nurhening Yuniarti, M.T**

**Supervisor:**  
**Prof. Dr. paed. habil. Gisela Wiesner**  
**Prof. Soenarto, Ph.D**  
**Prof. Djemari Mardapi, Ph.D**

**VOCATIONAL AND TECHNOLOGY EDUCATION STUDY PROGRAM**  
**GRADUATE SCHOOL**  
**YOGYAKARTA STATE UNIVERSITY**  
**&**  
**EDUCATIONAL TECHNOLOGY DEPARTMENT**  
**INSTITUTE OF VOCATIONAL EDUCATION**  
**FACULTY OF EDUCATION**  
**DRESDEN UNIVERSITY OF TECHNOLOGY**

## INTRODUCTION

**Dear the Honorable Principal,**

For the purpose of writing doctoral dissertation in State University of Yogyakarta to earn Education Doctorate degree (Dr.) in the Joint Degree program in Vocational and Technology Education Department at Yogyakarta State University and Dresden University of Technology, we hopefully expect you to fill out the questionnaire. The title of my research is *"An Evaluation of Outcome as the Main Requirement for Improving the Quality of Teacher Education Institution"*.

The main purpose of the questionnaire is solely to obtain research data thus there is no need for you to hesitate in answering based on reality. Your responses are guaranteed to be confidential. The data will be used only for the purpose of the research therefore your honesty in answering every single question would be precious information for the researcher in the future.

Thank you for your willingness to participate and sparing your time filling out the questionnaire.

Promotor:

Prof. Dr. paed. habil. Gisela Wiesner.

Co. Promotor:

Prof. Soenarto, Ph.D

Prof. Djemari Mardapi, Ph.D

Yogyakarta, March 2015

Best Regards

Researcher

Nurhening Yuniarti

Email: [nurhening@gmail.com](mailto:nurhening@gmail.com)

CP: 082314379900

## RESPONDENT DATA

Name : .....

Vocational High School : .....

Telephone Number : .....

Teacher Assessed : .....

### Direction

1. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.
2. Score assessment category is 1, 2, 3, 4 as in the following.

minimum score      1                      2                      3                      4                      maximum score

No	Statements	Answer			
<b>A</b>	<b>Teacher Competence</b>				
1.	Skill in giving learning materials	1	2	3	4
2.	Skill in selecting appropriate learning strategy.	1	2	3	4
3.	Skill in managing teaching and learning both in the theoretical class and practical class well. .	1	2	3	4
4.	Skill in giving learning evaluation.	1	2	3	4
5.	Having good personality and being good example.	1	2	3	4
6.	Skill in having good communication with students in the learning process.	1	2	3	4
7.	Caring about the students' learning progress.	1	2	3	4
8.	Skill in using available resources to develop his profession.	1	2	3	4

## RESPONDENT DATA

Name : .....

Vocational High School : .....

Telephone Number : .....

Teacher Assessed : .....

### Direction

1. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.
2. Score assessment category is 1, 2, 3, 4 as in the following.

minimum score      1                      2                      3                      4                      maximum score

No	Statements	Answer			
<b>A</b>	<b>Teacher Competence</b>				
1.	Skill in giving learning materials	1	2	3	4
2.	Skill in selecting appropriate learning strategy.	1	2	3	4
3.	Skill in managing teaching and learning both in the theoretical class and practical class well.	1	2	3	4
4.	Skill in giving learning evaluation.	1	2	3	4
5.	Having good personality and being good example.	1	2	3	4
6.	Skill in having good communication with students in the learning process.	1	2	3	4
7.	Caring about the students' learning progress.	1	2	3	4
8.	Skill in using available resources to develop his profession.	1	2	3	4

<b>B</b>	<b>School Administration</b>				
1.	Finishing syllabus of the subject taught.	1	2	3	4
2.	Finishing lesson plan of the subject taught.	1	2	3	4
3.	Giving participation in developing school curriculum.	1	2	3	4
4.	Being able in performing duty as vice principal, lab coordinator, production unit or others.	1	2	3	4
5.	Implementing school administration rules.	1	2	3	4
<b>C</b>	<b>Contribution to School Development</b>				
1.	Being a high quality human resource.	1	2	3	4
2.	Having loyalty in developing school.	1	2	3	4
3.	Skill in school management.	1	2	3	4
4.	Having good behavior as a good model.	1	2	3	4
5.	Giving students guidance to develop their potential.	1	2	3	4
6.	Being active to participate in extracurricular activity.	1	2	3	4
<b>D</b>	<b>Creativity and Innovation</b>				
1.	Having creativity in performing his duty.	1	2	3	4
2.	Trying to solve all problems faced.	1	2	3	4
3.	Having ideas to supporting school development.	1	2	3	4
4.	Doing innovation of the skill mastered.	1	2	3	4

*Please recheck to ensure that all points have been filled.  
Thank You.*

..... 2015  
Respondent

.....



**QUESTIONNAIRE C**  
**(RESPONDENT: STUDENT)**

**THE TITLE OF THE RESEARCH**  
**“AN EVALUATION OF OUTCOME AS THE MAIN REQUIREMENT FOR**  
**IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTION”**

**Researcher:**  
**Nurhening Yuniarti, M.T**

**Supervisor:**  
**Prof. Dr. paed. habil. Gisela Wiesner**  
**Prof. Soenarto, Ph.D**  
**Prof. Djemari Mardapi, Ph.D**

**VOCATIONAL AND TECHNOLOGY EDUCATION STUDY PROGRAM**  
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**EDUCATIONAL TECHNOLOGY DEPARTMENT**  
**INSTITUTE OF VOCATIONAL EDUCATION**  
**FACULTY OF EDUCATION**  
**DRESDEN UNIVERSITY OF TECHNOLOGY**

## INTRODUCTION

Dear lovely students,

For the purpose of writing doctoral dissertation in State University of Yogyakarta to earn Education Doctorate degree (Dr.) in the Joint Degree program in Vocational and Technology Education Department at Yogyakarta State University and Dresden University of Technology, we hopefully expect you to fill out the questionnaire. The title of my research is *"An Evaluation of Outcome as the Main Requirement for Improving the Quality of Teacher Education Institution"*.

The questionnaire is solely used to obtain research data therefore there is no need for you to hesitate in answering based on real condition you might have experienced in. Your answers are guaranteed to be confidential and would be precious information for me as the researcher.

Thank you for your willingness to participate and sparing your time filling out the questionnaire.

Promotor:

Prof. Dr. paed. habil. Gisela Wiesner.

Co. Promotor:

Prof. Soenarto, Ph.D

Prof. Djemari Mardapi, Ph.D

Yogyakarta, March 2015

Researcher

Nurhening Yuniarti

Email: [nurhening@gmail.com](mailto:nurhening@gmail.com)

CP: 082314379900

## RESPONDEN DATA

Name (optional) : .....

Class : .....

Subject Matter : .....

Teacher's name : .....

### Directions:

In the following are statements about the teaching learning process. Give your response based on the real condition by giving cross mark (X) in the category scale provided in the right column.

Description of the score:

SD : strongly disagree.

D : disagree.

A : agree.

SA : strongly agree.

No	Statements	Answer			
1.	Teacher masters all materials taught.	SD	D	A	SA
2.	Teacher gives materials appropriate with learning content.	SD	D	A	SA
3.	All students' questions can be answered by teacher.	SD	D	A	SA
4.	Teacher is able to help students' difficulty in learning.	SD	D	A	SA
5.	Learning media used by teacher can help me in understanding materials	SD	D	A	SA
6.	Media used by teacher in teaching are interesting.	SD	D	A	SA
7.	Learning media used are appropriate with learning materials.	SD	D	A	SA
8.	Teacher gives examples in applying the materials taught in the real life.	SD	D	A	SA

9.	Learning approach used by teacher is suitable with the subject.	SD	D	A	SA
10	Teacher is able to teach subject both theoretically and practically well.	SD	D	A	SA
11.	Teacher is careless with the students' learning difficulty.	SD	D	A	SA
12.	Teacher applies various learning strategy to avoid boredom.	SD	D	A	SA
13.	The teacher's style in teaching is appropriate with the students' speed of learning.	SD	D	A	SA
14.	Teacher gives evaluation in the end of the subject.	SD	D	A	SA
15.	Teacher gives assessment objectively.	SD	D	A	SA
16.	Teacher gives are based on learning content.	SD	D	A	SA
17.	All assignments given is assessed by teacher.	SD	D	A	SA
18.	Teacher gives feedback to the students' work (test, result of practical work or other assignment).	SD	D	A	SA

*Please recheck to ensure that all points have been filled.  
Thank You.*

**INTERVIEW GUIDELINE  
(VOCATIONAL SCHOOL TEACHERS)**

**Identity of respondent**

Name : .....  
Institute : .....  
Email : .....  
Phone number : .....

**Questions:**

1. Why did you choose to study in LPTK?
2. In your opinion, what is the most dominant provision in taking up profession as a teacher?
3. What do you think about the facilities you had when you were studying in LPTK?
4. What kind of difficulties did you find during your study in LPTK?
5. When did you get your very first job?
6. When did you start to engage in the profession as a teacher?
7. What are subjects that you have ever taught?
8. Does teacher certification program encourage you to enrich your accomplishment?
9. What do you think about the job of a teacher?
10. What is your effort to build up your career?
11. Does your supervisor give you the chance to build up your career?
12. What kind of training have you ever joined?
13. Do you have any scientific publication? What are they?
14. Please mention some professional organization that you ever joined.
15. Besides teaching, what kind of duties that you have to work on?
16. What would you do to improve the school quality?

## INTERVIEW GUIDELINE (PRINCIPAL)

### Identity of Respondent

Name : .....  
Institute : .....  
Email : .....  
Phone Number: .....  
Subject : Teacher a.n. ....

### Questions:

1. How long have you been acquainted with the teacher?
2. How was his/her work ethic?
3. Is he/she able to develop himself/herself properly?
4. Does he/she have a good relationship with his/her colleague?
5. Has he/she fulfilled the four required competencies?
6. Is he/she able to finish the given duties properly?
7. Does he/she contribute to your institution improvement? In what extent?
8. In your opinion, what are skills that he/she is lack of?

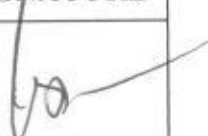




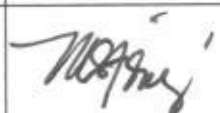

# **APPENDIX B**

## **FGD & EXPERT JUDGMENT**

# **ATTENDANCE LIST** **PARTICIPANTS OF FOCUS GROUP DISCUSSION**

Venue : Bale Ayu, Jln. Ipda Tut Harsono 58 Yogyakarta

Date : 24 January 2015

NO	NAME	SPECIALIZATION	INSTITUTION	SIGNATURE
1.	Prof. Djemari Mardapi, Ph.D	Evaluation and measurement education	Yogyakarta State University	
2.	Prof. Soenarto, Ph.D	Evaluation and vocational education	Yogyakarta State University	
3.	Prof. Dr. Herminarto Sofyan, M.Pd	Management of vocational education	Yogyakarta State University	
4.	Prof. Dr. Badrun Kartowagiran, M.Pd	Evaluation and measurement education	Yogyakarta State University	
5.	Prof. Dr. Eko Hariadi, M.Pd	Evaluation and measurement education	Surabaya State University	
6.	Dr. Nanik Estidarsani, M.Pd	Evaluation and measurement education	Surabaya State University	
7.	Dr. Putu Sudira, M.Pd	Vocational education	Yogyakarta State University	





KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS NEGERI YOGYAKARTA  
PROGRAM PASCASARJANA

Jalan Colombo Nomor 1 Yogyakarta 55281  
Telepon (0274) 550836 pesawat 229, Fax (0274) 520326  
Laman: pps.uny.ac.id E-mail: pps@uny.ac.id

FRM/PPs/34-00  
30 Juli 2010



**SURAT KETERANGAN VALIDASI**

Yang bertanda tangan di bawah ini:

Nama : Badrun Kartowigiran, Ph.D., Dr.  
Jabatan/Pekerjaan : Dosen PPS-UNY  
Instansi Asal : UNY

Menyatakan bahwa instrumen penelitian dengan judul:

Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education Institutions

dari mahasiswa:

Nama : Nurhening Yuniarti  
Program Studi : Pendidikan Teknologi dan Kejuruan  
NIM : 11702261006

(sudah siap/~~belum siap~~)\* dipergunakan untuk penelitian dengan menambahkan beberapa saran sebagai berikut:

1. File Review Lembar masukan
2. ....

Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagaimana mestinya.

Yogyakarta, 22 Feb 2015

Validator,

Badrun Kartowigiran

\*) coret yang tidak perlu



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Jalan Colombo Nomor 1 Yogyakarta 55281  
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FRM/PPs/34-00  
30 Juli 2010



**SURAT KETERANGAN VALIDASI**

Yang bertanda tangan di bawah ini:

Nama : Herminarto Sojyan  
Jabatan/Pekerjaan : Guru Besar / Dosen  
Instansi Asal : FT-UNY

Menyatakan bahwa instrumen penelitian dengan judul:

Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education  
Institutions

dari mahasiswa:

Nama : Nurhening Yuniarti  
Program Studi : Pendidikan Teknologi dan Kejuruan  
NIM : 11702261006

(sudah siap/~~belum siap~~)\* dipergunakan untuk penelitian dengan menambahkan beberapa saran sebagai berikut:

1. Siap lu lapang
2. \_\_\_\_\_

Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagaimana mestinya.

Yogyakarta, 28-2- 2015

Validator,

Herminarto Sojyan

\*) coret yang tidak perlu



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS NEGERI YOGYAKARTA  
PROGRAM PASCASARJANA

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Laman: pps.uny.ac.id E-mail: pps@uny.ac.id

FRM/PPs/34-00  
30 Juli 2010



**SURAT KETERANGAN VALIDASI**

Yang bertanda tangan di bawah ini:

Nama : EKO HARIADI  
Jabatan/Pekerjaan : DEKAN FT UNEJA  
Instansi Asal : UNEJA

Menyatakan bahwa instrumen penelitian dengan judul:

Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education Institutions

dari mahasiswa:

Nama : Nurhening Yuniarti  
Program Studi : Pendidikan Teknologi dan Kejuruan  
NIM : 11702261006


(sudah siap/~~belum siap~~)\* dipergunakan untuk penelitian dengan menambahkan beberapa saran sebagai berikut:

1. Angket buidoknya ada yang unfavorable, tidak semua favorable.
2. ....

Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagaimana mestinya.

Yogyakarta, ..... 2015

Validator,

  
ekohariadi

\*) coret yang tidak perlu



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS NEGERI YOGYAKARTA  
PROGRAM PASCASARJANA

Jalan Colombo Nomor 1 Yogyakarta 55281  
Telepon (0274) 550836 pesawat 229, Fax (0274) 520326  
Laman: pps.uny.ac.id E-mail: pps@uny.ac.id

FRM/PPs/34-00  
30 Juli 2010



SURAT KETERANGAN VALIDASI

Yang bertanda tangan di bawah ini:

Nama : Dr. Putu Sndira Mg.  
Jabatan/Pekerjaan : dozen PTK PPs UNY  
Instansi Asal : UNY

Menyatakan bahwa instrumen penelitian dengan judul:

Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education Institutions

dari mahasiswa:

Nama : Nurhening Yuniarti  
Program Studi : Pendidikan Teknologi dan Kejuruan  
NIM : 11702261006

(sudah siap/~~belum siap~~)\* dipergunakan untuk penelitian dengan menambahkan beberapa saran sebagai berikut:

1. format cetak dalam bentuk buku
2. ....

Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagaimana mestinya.

Yogyakarta, 26 - Feb 2015

Validator,

Dr. Putu Sndira

\*) coret yang tidak perlu



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS NEGERI YOGYAKARTA  
PROGRAM PASCASARJANA

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Laman: pps.uny.ac.id E-mail: pps@uny.ac.id

FRM/PPs/34-00  
30 Juli 2010



**SURAT KETERANGAN VALIDASI**

Yang bertanda tangan di bawah ini:

Nama : Namik Estidarsan  
Jabatan/Pekerjaan : Dosen  
Instansi Asal : Universitas Negeri Surabaya

Menyatakan bahwa instrumen penelitian dengan judul:

Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education Institutions

dari mahasiswa:

Nama : Nurhening Yuniarti  
Program Studi : Pendidikan Teknologi dan Kejuruan  
NIM : 11702261006

(sudah siap/~~belum siap~~)\* dipergunakan untuk penelitian dengan menambahkan beberapa saran sebagai berikut:

1. Perlu cross check antara <sup>instrumen</sup> proses dan outcome
2. Pada instr. outcome, bagaimana bila bukan sbg hasil bidang studi?
3. ....

Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagaimana mestinya.

Yogyakarta, ..... 2015

Validator,

Namik Estidarsan

\*) coret yang tidak perlu

**APPENDIX C**

**ASSESSMENT ON READABILITY OF  
THE INSTRUMENT**

# ASSESSMENT ON READABILITY OF INSTRUMENT ABOUT EDUCATION INPUT IN LPTK

(Validation by: Teachers)

## Directions:

1. You are expected to give assessment on the instrument about the condition of education input in LPTK.
2. The instrument covers four aspects: student quality, curriculum, facility, and education staff.
3. Please put a checklist mark (✓) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = instrument item is not suitable for use             |
| 2 = less appropriate   | = instrument item could be used with many corrections |
| 3 = appropriate enough | = instrument item could be used with some corrections |
| 4 = appropriate        | = instrument item could be used without correction    |
| 5 = very appropriate   | = instrument item is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Direction: Clarity upon instructions used in the instrument on education input in LPTK					
2.	Content of Instrument					
	a. Clarity upon indicator of student quality					
	b. Clarity upon indicator of curriculum					
	c. Clarity upon the indicator of facility					
	d. Clarity upon the indicator of education staff					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Statements and questions are comprehensible.					
4.	Writing format					
	a. Choice of fonts					
	b. Size of fonts					
	c. The use of punctuation marks					

Note:

.....  
.....

Yogyakarta, ..... 2015

Validator

(.....)

## ASSESSMENT ON READABILITY OF INSTRUMENT ABOUT EDUCATION PROCESS IN LPTK

(Validation by: Teachers)

### Directions:

1. You are expected to give assessment on the instrument about the education process in LPTK.
2. The instrument covers three aspects: student quality, curriculum, and facility.
3. Please put a checklist mark (√) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = instrument item is not suitable for use             |
| 2 = less appropriate   | = instrument item could be used with many corrections |
| 3 = appropriate enough | = instrument item could be used with some corrections |
| 4 = appropriate        | = instrument item could be used without correction    |
| 5 = very appropriate   | = instrument item is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Direction: Clarity upon instructions used in the instrument on education process in LPTK					
2.	Content of Instrument					
	a. Clarity upon indicator of teaching learning process					
	b. Clarity upon indicator of industrial internship					
	c. Clarity upon the indicator of educational practicum					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Statements and questions are comprehensible.					
4.	Writing format					
	a. Choice of fonts					
	b. Size of fonts					
	c. The use of punctuation marks					

Note:

.....

.....

Yogyakarta, ..... 2015

Validator

(.....)



# ASSESSMENT ON READABILITY OF INSTRUMENT ABOUT EDUCATION OUTPUT IN LPTK

(Validation by: Teachers)

## Directions:

1. You are expected to give assessment on the instrument about the condition of education output in LPTK.
2. The instrument covers two aspects: grade point average and length of study.
3. Please put a checklist mark (✓) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = instrument item is not suitable for use             |
| 2 = less appropriate   | = instrument item could be used with many corrections |
| 3 = appropriate enough | = instrument item could be used with some corrections |
| 4 = appropriate        | = instrument item could be used without correction    |
| 5 = very appropriate   | = instrument item is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Direction: Clarity upon instructions used in the instrument on education input in LPTK					
2.	Content of Instrument					
	a. Clarity upon indicator of grade point average					
	b. Clarity upon indicator of length of study					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Statements and questions are comprehensible.					
4.	Writing format					
	a. Choice of fonts					
	b. Size of fonts					
	c. The use of punctuation marks					

Note:

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Yogyakarta, ..... 2015

Validator

(.....)

# ASSESSMENT ON READABILITY OF INSTRUMENT ABOUT EDUCATION OUTCOME IN LPTK

(Validation by: Teachers)

## Directions:

1. You are expected to give assessment on the instrument about the condition of education outcome in LPTK.
2. The instrument covers three aspects: work appraisal, work motivation, and career development.
3. Please put a checklist mark (√) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = instrument item is not suitable for use             |
| 2 = less appropriate   | = instrument item could be used with many corrections |
| 3 = appropriate enough | = instrument item could be used with some corrections |
| 4 = appropriate        | = instrument item could be used without correction    |
| 5 = very appropriate   | = instrument item is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Direction: Clarity upon instructions used in the instrument on education input in LPTK					
2.	Content of Instrument					
	a. Clarity upon indicator of work appraisal					
	b. Clarity upon indicator of work motivation					
	c. Clarity upon the indicator of career development					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Statements and questions are comprehensible.					
4.	Writing format					
	a. Choice of fonts					
	b. Size of fonts					
	c. The use of punctuation marks					

Note:

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Yogyakarta, ..... 2015

Validator

(.....)

# ASSESSMENT ON READABILITY OF INSTRUMENT ABOUT EDUCATION OUTCOME IN LPTK

(Validation by: Principals)

## Directions:

1. You are expected to give assessment on the instrument about the condition of education outcome in LPTK.
2. The instrument covers four aspects: teacher competence, school administration, contribution in school, and creativity and innovation.
3. Please put a checklist mark (✓) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = instrument item is not suitable for use             |
| 2 = less appropriate   | = instrument item could be used with many corrections |
| 3 = appropriate enough | = instrument item could be used with some corrections |
| 4 = appropriate        | = instrument item could be used without correction    |
| 5 = very appropriate   | = instrument item is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Direction: Clarity upon instructions used in the instrument on education input in LPTK					
2.	Content of Instrument					
	a. Clarity upon indicator of teacher competence					
	b. Clarity upon indicator of school administration					
	c. Clarity upon the indicator of contribution in school					
	d. Clarity upon indicator of creativity and innovation					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Statements and questions are comprehensible.					
4.	Writing format					
	a. Choice of fonts					
	b. Size of fonts					
	c. The use of punctuation marks					

Note:

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.....

Yogyakarta, ..... 2015

Validator

(.....)

# ASSESSMENT ON READABILITY OF INSTRUMENT ABOUT EDUCATION OUTCOME IN LPTK

(Validation by: Students)

## Directions:

1. You are expected to give assessment on the instrument about the condition of education outcome in LPTK.
2. The instrument covers four aspects: mastery the subject matter, teaching media, teaching strategy, evaluation and assessment.
3. Please put a checklist mark (✓) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = instrument item is not suitable for use             |
| 2 = less appropriate   | = instrument item could be used with many corrections |
| 3 = appropriate enough | = instrument item could be used with some corrections |
| 4 = appropriate        | = instrument item could be used without correction    |
| 5 = very appropriate   | = instrument item is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Direction: Clarity upon instructions used in the instrument on education input in LPTK					
2.	Content of Instrument					
	a. Clarity upon indicator of mastery the subject matter					
	b. Clarity upon indicator of teaching media					
	c. Clarity upon the indicator of teaching strategy					
	d. Clarity upon indicator of evaluation and assessment					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Statements and questions are comprehensible.					
4.	Writing format					
	a. Choice of fonts					
	b. Size of fonts					
	c. The use of punctuation marks					

Note:

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.....

Yogyakarta, ..... 2015

Validator

(.....)

## ASSESSMENT ON EVALUATION GUIDELINE UPON EDUCATION OUTCOME IN LPTK

(Validation by: Experts on Evaluation, Experts on Education of Technology and Vocation)

### Directions:

1. You are expected to give assessment on evaluation guideline on education outcome in LPTK the researcher is developing on.
2. Please put a checklist mark (√) in the rating score column to give your assessment.

Description of the score:

- |                        |   |
|------------------------|---|
| 1 = inappropriate      | = guideline is not suitable for use             |
| 2 = less appropriate   | = guideline could be used with many corrections |
| 3 = appropriate enough | = guideline could be used with some corrections |
| 4 = appropriate        | = guideline without correction                  |
| 5 = very appropriate   | = guideline is ideal for use                    |

No.	Aspects	Rating Score				
		1	2	3	4	5
1.	Content of Guideline					
	Clarity upon directions used in the instrument of evaluation on education outcome in LPTK					
	a. Clarity upon general directions					
	b. Clarity upon steps of evaluation					
	c. Clarity upon recommendation of evaluation result					
	d. Clarity upon time of evaluation implementation					
	e. Clarity upon evaluation system					
	f. Clarity upon format of evaluation report					
3.	Language:					
	a. The use of proper and formal language as in standard Indonesian					
	b. Sentences are comprehensible.					
	c. Choice of fonts					
	d. Size of fonts used					
	e. The use of punctuation marks					

Note:

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 .....

Yogyakarta, ..... 2015

Validator

(.....)

# **APPENDIX D**

## **RESEARCH DATA**

**DATA: INPUT, PROCESS, AND OUTPUT**  
**RESPONDENT: LPTK GRADUATES**

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**DATA: OUTCOME**  
**RESPONDENT: LPTK GRADUATES**

NO	WApp			W/Mot											CarDev											
	1	2	3	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11	12
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13	4	2	4	2	3	4	4	3	2	3	3	4	4	3	3	3	3	2	3	2	3	3	4	4	4	4
14	4	1	4	3	3	4	4	3	3	3	3	4	4	3	3	3	3	3	3	2	3	4	2	4	4	4
15	4	1	3	3	3	4	4	3	2	3	3	3	4	2	3	2	2	3	3	3	2	2	3	2	3	3
16	4	1	3	3	3	3	4	4	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3	3
17	1	1	3	2	2	3	3	3	3	3	3	3	3	2	3	3	3	2	2	2	2	2	3	3	2	2
18	3	1	3	3	2	3	4	3	3	3	3	4	3	3	3	2	3	2	3	3	3	3	3	2	3	3
19	4	1	4	3	4	4	4	4	4	4	4	4	4	3	3	3	3	2	4	3	3	3	2	2	3	3
20	4	4	2	4	3	4	4	3	4	4	3	4	4	1	3	2	3	3	2	2	3	3	3	2	2	2
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...																										
294	3	1	3	3	2	3	3	3	3	3	3	3	3	2	3	2	3	2	3	3	3	3	3	3	3	3
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296	1	4	4	3	2	4	4	3	2	4	3	4	4	2	4	3	3	2	4	4	3	4	4	4	3	4



# DATA: OUTCOME

## RESPONDENT : PRINCIPALS

NO	TComp								SAdm					Cont-SD						CreInn			
	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4
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...																							
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296	4	4	3	4	3	3	4	3	3	4	3	3	3	4	4	3	4	3	3	3	4	3	3

**DATA: OUTCOME**  
**RESPONDENT: VOCATIONAL HIGH SCHOOL STUDENTS**

N	Master				Med				Stra					EvAss				
	1	2	3	4	1	2	3	4	1	2	3	4	5	1	2	3	4	5
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...																		
...																		
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4427	2	3	2	3	3	2	2	3	3	3	2	2	3	4	2	3	3	3
4428	2	3	3	3	3	2	3	2	3	3	3	3	4	3	2	3	2	3

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: CWB
Location	: School Principal Room of SMK N 1 Seyegan
Date	: Maret 24 <sup>th</sup> 2015
Time	: 08.30 – 10.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. Compared with the other teachers, UNY graduates are better in term of performance, discipline and work ethics.
- b. The competence that they have shown meets the needs of vocational school.
- c. They could accomplish practicum learning objective. It is evident on how they deliver lessons, explain/demonstrate and do learning evaluation.
- d. From the aspect of learning, the teachers need to improve the learning method. They tend to monotone and need to get some innovations in the learning method.
- e. Some of them on their own initiative built relationship with the industry and got MoU (Memorandum of Understanding) and followed by some cooperative activities, for example with ASTRA.
- f. Some of them have gained some achievement in the province level such as in the competition of electric car, learning media and building design.
- g. They demonstrate good loyalty to support school development.
- h. From the aspect of self development, they are actively joining some training programs offered. Some of them also continue their study.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK need to give more references about the learning method.
- b. LPTK need to improve the quality of education within the institute as a good quality teacher comes from a good quality institute of education.
- c. LPTK need to do evaluation to the graduates.
- d. LPTK need to encourage the students to be more creative.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: JMT
Location	: School Principal Room of PIRI I Yogyakarta
Date	: Maret 25 <sup>th</sup> 2015
Time	: 09.00 – 10.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. There is no need to question the competence of teacher graduated from UNY yet they need to specifically improve their character and social competence. They also should improve their environmental awareness as most of inspiring initiator are those who care about their environment.
- b. The administrative things like proposal making, correspondence and some other administrative knowledge and skill need to be improved.
- c. They need to think comprehensively and holistically as they tend to take one-sided perspective.
- d. Negotiation and communication skill with student parent, institution and also colleagues need to be improved. It is likely because of lack of organizational experiences of the graduates.
- e. Some of the teachers have shown good leadership skill, yet overall it is needed to improve.
- f. The loyalty is fairly satisfactory.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK needs to provide students with verbal communication skill.
- b. The skill given is needed to be more adaptable with the real teaching context.
- c. LPTK should integrate character education within the learning.
- d. LPTK should support the students to participate in student activity forum as they will improve leadership, negotiation and self control skill better.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: AGM
Location	: School Principal Room of SMK N 2 Depok
Date	: Maret 26 <sup>th</sup> 2015
Time	: 08.00 – 10.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. Most of the UNY graduates demonstrate good background knowledge and well adjust to the technology development.
- b. They also are smart and responsive in handling the situation at school.
- c. They possess stronger idealism than another teachers.
- d. They show better progress on their specific competence.
- e. They need to build better leadership skill within the school organization or class.
- f. The junior tend to get things instantly.
- g. The teachers graduated from the recent years seem to be different in term of ways of thinking than their seniors.
- h. They are not really good working under pressure. For instance: handling new student intake
- i. They show good loyalty.
- j. They already have awareness of self developing needs. They concern about some training programs.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK should put more concern on building social awareness in working place so that the teachers will be more responsive to the school condition.
- b. LPTK should get student to be prepared to any condition that teachers may encounter. It can be by giving the students some assignment that can exercise their mental to deal with targets.

- c. The subject taught should be problem-solving based in order to get the students more accustomed to problems. It will also make the learning more meaningful.
- d. LPTK should also highlight about school management system since the teachers will not only deal with teaching stuffs.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: ASW
Location	: School Principal Room of SMK N 3 Yogyakarta
Date	: Maret 27 <sup>th</sup> 2015
Time	: 11.00 – 12.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. One of distinctive good things shown by the UNY graduates is the enthusiasm they possess. They are actively participating some competitions and training programs.
- b. Their performance in delivering the lesson needs to improve. It is from the observation when they are teaching in the class. Some of them still need to improve their lesson delivery.
- c. They can cooperate will with the staff organizing administrative things at school.
- d. They have a high loyalty to the institute.
- e. Their relationship with the director, colleagues, teachers and also the school staffs is well managed. The school periodically hold activity like recitation activity door to door in order to build a real sense of kinship among the teachers and staffs that hopefully can take a positive impact to school progress.
- f. Most of them have demonstrated a good leadership and management skill so that some of them are selected to be the vice principal, department head and the likes.
- g. They also concern on their self developing needs. It can be seen on their participation on some training programs. Some of them even continue their study at their own expense.
- h. The school will always support the teacher profession development as it will give impact on the school development.

**2. The recommendation to LPTK providing vocational teachers:**

- a. The skill of media using needs to improve.
- b. On teaching-learning practicum especially on micro teaching, classroom management should become a real concern to make betterment of learning.
- c. LPTK should encourage the students to innovate more.



## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: MKH
Location	: Vice Principal Room of SMK N 2 Yogyakarta
Date	: April 8 <sup>th</sup> 2015
Time	: 09.00 – 11.30 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. In general, the UNY graduates are exceptionally good.
- b. They are good in managing the classroom learning.
- c. They can handle the administrative job from the school well.
- d. They have high loyalty to the school.
- e. Their relationship with the direction, colleagues, and staffs is well managed.
- f. Some of them demonstrate good leadership skill that make them get additional role of the school as vice principal or department head.
- g. They are very enthusiastic in joining training programs ditpsmk, P4TK, universities or from some other institutions. About the self development, they need to improve their knowledge and skill in the writing of paper. While about the study, they tend to consider for continuing their study as many factor are still considered as the problems like the time management and length of the study.
- h. The school really support the development of the teacher profession and give flexibility to teacher about the attendance. It is expected that the teacher can manage the time more effective. The teacher delegation to some training programs is based on the needs of the school.

### 2. The recommendation to LPTK providing vocational teachers:

- a. Leadership skill should be improved to respond the real working situation better.

- b. The education should be based on the heart-to-heart approach and should return to the real concept of education.
- c. LPTK should facilitate the students with the other skills that meet the school needs as vocational school now is expected to provide more than a workforce.
- d. Pedagogical science should be taught more and should be related to the real working context.
- e. LPTK should add learner psychology subject as they will mainly deal with the learners.
- f. Negotiating skill, public relation, and problem solving skill need to improve.
- g. LPTK should also build values like sincerity, care and trust.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: WPM
Location	: Principal Room of SMK Muhammadiyah Moyudan
Date	: April 10 <sup>th</sup> 2015
Time	: 08.00 – 09.30 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. In general, the graduates UNY has good quality. They are good in make preparation for teaching, building rapport with the students, using method and media of learning well.
- b. They have good loyalty to the school.
- c. They are very discipline and can cooperate well with the other teachers.
- d. They build a good relationship with the direction, other teachers and staffs as well.
- e. They are exceptionally good in the attitude and has never done something negative or against the law.
- f. Some of them demonstrate a good leadership skill.
- g. Most of them can finish their job well and become a quality role model.
- h. They are enthusiastic in joining some training programs. They has no sign yet to continue their study.
- i. The school support to their self development needs and encourage them to attend training program and continue their study.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK should highlight the use of discovery learning model.
- b. The student of LPTK needs to improve their skill on internet and technology.
- c. LPTK should encourage student to have distinctive excellence.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: BST
Location	: Principal Room of SMK Muhammadiyah Gamping
Date	: April 10 <sup>th</sup> 2015
Time	: 10.30 – 11.30 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. In general, the performance of the teachers from UNY is more excellent and energetic.
- b. In term of the service, they have managerial ability better and show higher loyalty to the school development.
- c. Some of them demonstrate good leadership skill that get them to additional position as the principal, vice principal and department head.
- d. They can make the student enthusiastic and get them well managed.
- e. They actively collaborate with the industry in practicum activities and the recruitment.
- f. There is a teacher of light vehicle engineering study program got certification from the national board of profession certification.
- g. They can help the students in the learning inside and outside the classroom.
- h. They are fully motivated in self development by joining the training programs.
- i. The school support the teachers to develop and to continue their study.
- j. They can be a good role model and show positive attitude.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK should have lab school to maximize the potential of the programs within.
- b. The synergy between LPTK and the school should be improved. LPTK can use alumni that has strategic role to bridge the connection.

- c. LPTK should formulate a simple strategy to make the teachers can transfer the knowledge simply yet practical.
- d. LPTK should use good model for creating an ideal teacher.
- e. LPTK should highlight on the character and value building and emphasize on the process rather than the mark. Then the remedial will be needed for those who are not competent yet.
- f. Holistic approach is needed to achieve 4 main teacher competences and should be upgraded and evaluated periodically.
- g. The mission should measurable and clear with all the indicators.
- h. LPTK should concern on recent issues like the challenge of ASEAN Free Trade Area (AFTA) and General Agreement on Tariffs and Trade (GATT).
- i. LPTK should treat the students to survive with all its limitation and problems.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: NSD
Location	: Principal Room of SMK N 1 Magelang
Date	: April 18 <sup>th</sup> 2015
Time	: 08.30 – 10.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. The UNY graduates can teach and educate well.
- b. They possess strong commitment and loyalty to the school.
- c. They are motivated and enthusiastic in attending educational training. Most of them get the training program from the universities, organizations or other institutes.
- d. They have to disseminate what they have got from the training to other teachers in order to bring broader and lasting effect to other teachers.
- e. They also get improvement from subject teacher conference.
- f. They need to build specific ideal character of teacher to improve their quality.
- g. They are well disciplined in doing their job. They can get along with the block system used by the school.
- h. They improve their knowledge and skill on method and media of learning to make the learning more enjoyable.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK should facilitate the students to be more persistent in facing any condition and problems to any real-working context.
- b. LPTK should put more concern on building character competence that sometimes clashes with the local culture. LPTK should be a bridge to solve the phenomenon.
- c. LPTK should be a good role model in some attitudes: persistent, persevering, inspiring, and loving.

- d. Industrial internship is significantly important to bring student in to the real working situation. Those experiences can help them to give real explanation in teaching.
- e. LPTK need to cooperate with vocational schools to make synergy in term of the programs.
- f. There should be a special recruitment of teacher as civil servant or pre-service teacher as teacher is quite different from the others.
- g. LPTK should encourage the students to innovate more.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: MYT
Location	: Principal Room of SMK Muhammadiyah 1 Bambanglipuro
Date	: April 21 <sup>th</sup> 2015
Time	: 13.00 – 14.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. The graduates of UNY are distinctively good and can handle the job responsibly.
- b. They demonstrate good leadership skill and it makes them get some other additional role such as being vice principal of curriculum and head of department.
- c. Some teachers are very innovative and annually present his/her innovation to regional planning board of Bantul. Some of his/her innovation are coconut climbing tool, multipurpose carrying tool and some other multipurpose tools.
- d. Their loyalty to the school is high. In the light of their hard work, our school is entrusted as authorized repair shop of HONDA which can handle 20-30 motor vehicle a day.
- e. They can give assistance to the students well inside or outside the classroom.
- f. Some teachers have strong motivation to upgrade his/her skills by joining training and the likes. Some others need some support to do so.
- g. The school are really supportive for the self development needs of the teachers. We endorse the teachers to join some training programs or continue their study.
- i. They demonstrate good attitude and have shown no negative deviation.



**2. The recommendation to LPTK providing vocational teachers:**

- a. LPTK should aware on the development of technology that rapidly increased. For instance, in the field of motorcycle engineering, it is recently broadly used motorcycle based on electronic system. Education world is mostly less updated to the development.
- b. LPTK should follow on the spectrum that has been set by the ministry to make more specific department or study program. All this time, the program study offered is still in general. For instance, LPTK have mechanical engineering or automotive engineering while the spectrum are motorcycle engineering, light vehicle engineering and the likes.
- c. LPTK should encourage the students to be more innovative.
- d. Classroom management mastery needs to be improved in micro teaching class and teaching practicum.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: WEY
Location	: Principal Room of SMK Ki Ageng Pemanahan
Date	: April 22 <sup>th</sup> 2015
Time	: 10.00 – 11.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. SMK Ki Ageng Pamanahan has been operating for 2 years and yet accredited.
- b. Most of the UNY graduates are very consistent in showing genuinely good performances to the development of the school.
- c. They demonstrate high loyalty to the management and direction.
- d. They are very loyal to school. It could be seen from what they have done; administering grade promotion test independently.
- e. They possess a good student management skill. It is evident when the students join some competitions of vocational school student, the teachers can give assistance to students although it has no relation with their background knowledge.
- f. They are motivated to develop. They are actively joining some training programs.
- g. They can be good role model colleagues as they have good characters.

### 2. The recommendation to LPTK providing vocational teachers:

- a. Industrial internship should be always given to the students of LPTK as they need the experiences from the real working context. The learning of LPTK should adapt the development of information and technology.
- b. It is also a critical phase for student to pass through to make theory they got and the practicum well balance.
- c. LPTK should upgrade student's discipline. If the students are accustomed to discipline way in their attitude, it will affect their performance.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: SRH
Location	: Principal Room of SMK N 1 Sanden
Date	: April 23 <sup>th</sup> 2015
Time	: 12.00 – 13.30 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. UNY graduates distinctively have better work ethics and loyalty than the other teachers.
- b. They can professionally teach and educate well.
- c. They show high loyalty to the school.
- d. They are really motivated to join some education training held by the government, universities or some other institutes. The assessor education program is one of favorable program for them.
- e. The expense of the study is being the biggest consideration for the teachers to continue their study.
- f. The school support the self development needs of the teachers. All of the time, the school delegates the teachers to participate in the training program.
- g. They show a very good attitude.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK should encourage the students to be more innovative dealing with the learning and technology so that it will help them when they handle jobs at school.
- b. Industrial Internship is critically needed for the students to gain more real experiences. It is expected for the student to get inspiration that can be useful for them at a later time.
- c. LPTK should expand their collaboration with the school so that the programs will meet the school needs.

- d. Innovative thinking should be nurtured and developed since they are at university.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: STH
Location	: Principal Room of SMK N 4 Yogyakarta
Date	: Mei 5 <sup>th</sup> 2015
Time	: 09.00 – 10.00 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. Commonly, the teachers graduated from FT UNY are more persistent. They can handle most of the school work. They are more prepared to be a teacher.
- b. They are commonly accommodating. They tend to have initiative in doing their job. In some certain condition, they are very responsive and do not need any order from the principal.
- c. The teachers have a good relationship with their seniors, fellow teachers and also the school staffs.
- d. They demonstrate a good loyalty to support the school development.
- e. The teacher should take a bit more care with the students.
- f. The information and technology mastery is already satisfying.
- g. The teachers actively join some personal development activities such as training from school or other places. They mostly join competence test of assessor training.
- h. Some teachers are highly motivated to continue their study, yet the recent curriculum (2013) makes their time restricted because of the additional teaching time for the teachers particularly about the evaluation.
- i. The school always support the personal development of the teachers and allocate fund on the assessor training from the certified institution.
- j. The teachers from FT UNY are less prepared if they are asked to teach or manage extracurricular activities such as: scout, Javanese additional course, catwalk training and so on.

**2. The recommendation to LPTK providing vocational teachers:**

- a. LPTK should focus on the main mission of it which is providing professional teacher. When the students are fully prepared to be a real professional teacher, the students will take it as their main purpose. They will professionally prepare it as their future job.
- b. LPTK should extend the duration of teaching practicum at school. The pre-service teacher will have a real experiences dealing with the students stuffs like student admission, student orientation (MOS), teaching-learning activities and the evaluation. Recently, the teaching practicum is only in approximately 2 months.
- c. LPTK need to concern more about building the social awareness. It is important for teacher to take care of the children.

## INTERVIEW RESULTS OF THE PRINCIPAL

Person	: DWS
Location	: Principal Room of SMK N 4 Yogyakarta
Date	: May 5 <sup>th</sup> 2015
Time	: 10.30 – 11.30 WIB
Condition	: quiet and comfortable

### 1. The viewpoint of the principal toward the teacher performance:

- a. In general, UNY graduates have good work ethics and can handle the job well.
- b. The teacher can manage the classroom well so that the learning can run very effective.
- c. Their relationship with the director, colleagues, teachers and also the school staffs is well managed.
- d. They are actively join some activities related with the self development like education training program held by the school and cooperated with other institutions (BTKP).
- e. The loyalty to school is high to support the development of the school.
- f. Some of the teachers are very responsive dealing with the running of the classroom learning. It is evident in what they have done to the school having limited facilities. Some of them even bring their own LCD to use in the class.
- g. The junior teachers tend to be less responsive. For instance, when the students are late, they tend to ignore it and let the students come in to the class. It should have treated differently to make the students get positive attitude.

### 2. The recommendation to LPTK providing vocational teachers:

- a. LPTK should expand the collaboration with the school and associate institution/ company more.

- b. LPTK should improve the quality of the educational development and quality assurance institute as it has strategic role on teacher certification.
- c. LPTK should integrate character building into the learning.



# **APPENDIX E**

## **EXPLORATORY FACTOR ANALYSIS**

GET

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DATASET NAME DataSet1 WINDOW=FRONT.
DATASET ACTIVATE DataSet1.
SAVE OUTFILE='D:\EFA Analysis\EFA_INPUT_Teacher.sav'
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IC_8 IC_9 IC_10 ID_1 ID_2 ID_3
/MISSING LISTWISE
/ANALYSIS IA_1 IA_2 IA_4 IA_5 IB_1 IB_2 IB_3 IC_2 IC_3 IC_4 IC_5 IC_6 IC_7
IC_8 IC_9 IC_10 ID_1 ID_2 ID_3
/PRINT INITIAL KMO AIC EXTRACTION ROTATION
/FORMAT BLANK(.50)
/PLOT EIGEN
/CRITERIA FACTORS(4) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

## Factor Analysis

[DataSet1] D:\EFA Analysis\EFA\_INPUT\_Teacher.sav

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.800
Bartlett's Test of Sphericity	Approx. Chi-Square	2552.243
	df	171
	Sig.	.000

# Anti-image Matrices

		QoS	QoS	QoS	QoS	Curr
Anti-image Covariance	QoS	.060	-.059	-.057	-.017	.014
	QoS	-.059	.066	.024	.006	-.016
	QoS	-.057	.024	.492	-.032	-.005
	QoS	-.017	.006	-.032	.867	-.023
	Curr	.014	-.016	-.005	-.023	.045
	Curr	-.026	.028	.007	.017	-.053
	Curr	-.010	.012	.015	.031	-.053
	FacInf	.003	-.004	-.015	.012	.012
	FacInf	.001	-.002	-.002	.004	-.013
	FacInf	.006	-.007	-.009	.014	-.011
	FacInf	-.008	.007	.032	.012	.009
	FacInf	-.009	.010	-.016	.004	-.007
	FacInf	.005	-.007	-.001	-.003	.011
	FacInf	.001	-7.770E-005	.018	-.013	-.004
	FacInf	.023	-.022	-.043	-.023	.000
	FacInf	.002	.000	.004	-.018	-.001
	EduStaff	.002	-.006	-.017	.031	-.010
	EduStaff	.015	-.012	.010	.003	.030
	EduStaff	-.006	.010	.009	-.067	-.002
Anti-image Correlation	QoS	.512 <sup>a</sup>	-.940	-.332	-.075	.270
	QoS	-.940	.518 <sup>a</sup>	.131	.025	-.290
	QoS	-.332	.131	.763 <sup>a</sup>	-.049	-.037
	QoS	-.075	.025	-.049	.643 <sup>a</sup>	-.117
	Curr	.270	-.290	-.037	-.117	.522 <sup>a</sup>
	Curr	-.312	.319	.032	.053	-.751
	Curr	-.131	.149	.066	.107	-.791
	FacInf	.055	-.065	-.095	.058	.256
	FacInf	.007	-.021	-.009	.013	-.195
	FacInf	.087	-.104	-.051	.058	-.200
	FacInf	-.162	.145	.233	.063	.209
	FacInf	-.224	.238	-.143	.030	-.200
	FacInf	.103	-.127	-.004	-.014	.241
	FacInf	.025	-.002	.157	-.084	-.120
	FacInf	.316	-.294	-.208	-.082	-.005
	FacInf	.020	-.003	.013	-.040	-.009
	EduStaff	.015	-.050	-.049	.069	-.099
	EduStaff	.107	-.079	.024	.005	.245
	EduStaff	-.049	.086	.028	-.152	-.021

### Anti-image Matrices

		Curr	Curr	FacInf	FacInf	FacInf	FacInf
Anti-image Covariance	QoS	-.026	-.010	.003	.001	.006	-.008
	QoS	.028	.012	-.004	-.002	-.007	.007
	QoS	.007	.015	-.015	-.002	-.009	.032
	QoS	.017	.031	.012	.004	.014	.012
	Curr	-.053	-.053	.012	-.013	-.011	.009
	Curr	.113	.027	-.010	.011	.009	-.008
	Curr	.027	.098	-.016	.016	.013	-.010
	FacInf	-.010	-.016	.051	-.040	-.011	.007
	FacInf	.011	.016	-.040	.094	.014	-.005
	FacInf	.009	.013	-.011	.014	.069	-.029
	FacInf	-.008	-.010	.007	-.005	-.029	.039
	FacInf	.010	.007	.008	-.009	-.005	-.012
	FacInf	-.013	-.017	-.022	.032	.008	-.002
	FacInf	.003	.008	-.007	-.009	-.008	.010
	FacInf	-.005	.003	-.004	-.007	.016	-.042
	FacInf	-.007	.000	-.038	-.033	.006	-.008
	EduStaff	.008	.012	.014	.007	.005	-.004
	EduStaff	-.061	-.018	.001	-.017	-.007	.002
	EduStaff	.022	-.008	-.007	-.011	-.010	.004
Anti-image Correlation	QoS	-.312	-.131	.055	.007	.087	-.162
	QoS	.319	.149	-.065	-.021	-.104	.145
	QoS	.032	.066	-.095	-.009	-.051	.233
	QoS	.053	.107	.058	.013	.058	.063
	Curr	-.751	-.791	.256	-.195	-.200	.209
	Curr	.615 <sup>a</sup>	.254	-.127	.108	.103	-.116
	Curr	.254	.625 <sup>a</sup>	-.225	.171	.154	-.164
	FacInf	-.127	-.225	.858 <sup>a</sup>	-.585	-.188	.155
	FacInf	.108	.171	-.585	.869 <sup>a</sup>	.180	-.089
	FacInf	.103	.154	-.188	.180	.906 <sup>a</sup>	-.571
	FacInf	-.116	-.164	.155	-.089	-.571	.816 <sup>a</sup>
	FacInf	.188	.145	.229	-.180	-.132	-.378
	FacInf	-.179	-.256	-.447	.487	.136	-.047
	FacInf	.046	.156	-.195	-.185	-.178	.303
	FacInf	-.047	.037	-.054	-.077	.212	-.729
	FacInf	-.041	-.002	-.357	-.224	.047	-.086
	EduStaff	.052	.083	.134	.049	.041	-.044
	EduStaff	-.309	-.099	.006	-.095	-.048	.019
	EduStaff	.138	-.054	-.063	-.080	-.083	.049

# Anti-image Matrices

		FacInf	FacInf	FacInf	FacInf	FacInf
Anti-image Covariance	QoS	-.009	.005	.001	.023	.002
	QoS	.010	-.007	-7.770E-005	-.022	.000
	QoS	-.016	-.001	.018	-.043	.004
	QoS	.004	-.003	-.013	-.023	-.018
	Curr	-.007	.011	-.004	.000	-.001
	Curr	.010	-.013	.003	-.005	-.007
	Curr	.007	-.017	.008	.003	.000
	FacInf	.008	-.022	-.007	-.004	-.038
	FacInf	-.009	.032	-.009	-.007	-.033
	FacInf	-.005	.008	-.008	.016	.006
	FacInf	-.012	-.002	.010	-.042	-.008
	FacInf	.025	-.011	-.015	.011	-.006
	FacInf	-.011	.046	-.013	-.001	-.004
	FacInf	-.015	-.013	.027	-.010	.020
	FacInf	.011	-.001	-.010	.087	-.002
	FacInf	-.006	-.004	.020	-.002	.224
	EduStaff	.002	.008	-.011	-.002	-.022
	EduStaff	-.006	-.002	.008	.007	.035
	EduStaff	.000	-.013	.014	-.001	-.007
Anti-image Correlation	QoS	-.224	.103	.025	.316	.020
	QoS	.238	-.127	-.002	-.294	-.003
	QoS	-.143	-.004	.157	-.208	.013
	QoS	.030	-.014	-.084	-.082	-.040
	Curr	-.200	.241	-.120	-.005	-.009
	Curr	.188	-.179	.046	-.047	-.041
	Curr	.145	-.256	.156	.037	-.002
	FacInf	.229	-.447	-.195	-.054	-.357
	FacInf	-.180	.487	-.185	-.077	-.224
	FacInf	-.132	.136	-.178	.212	.047
	FacInf	-.378	-.047	.303	-.729	-.086
	FacInf	.866 <sup>a</sup>	-.329	-.573	.238	-.086
	FacInf	-.329	.870 <sup>a</sup>	-.359	-.014	-.038
	FacInf	-.573	-.359	.875 <sup>a</sup>	-.210	.249
	FacInf	.238	-.014	-.210	.858 <sup>a</sup>	-.014
	FacInf	-.086	-.038	.249	-.014	.941 <sup>a</sup>
	EduStaff	.024	.078	-.133	-.011	-.098
	EduStaff	-.068	-.015	.079	.041	.126
	EduStaff	-.002	-.132	.178	-.008	-.033

# Anti-image Matrices

		EduStaff	EduStaff	EduStaff
Anti-image Covariance	QoS	.002	.015	-.006
	QoS	-.006	-.012	.010
	QoS	-.017	.010	.009
	QoS	.031	.003	-.067
	Curr	-.010	.030	-.002
	Curr	.008	-.061	.022
	Curr	.012	-.018	-.008
	FacInf	.014	.001	-.007
	FacInf	.007	-.017	-.011
	FacInf	.005	-.007	-.010
	FacInf	-.004	.002	.004
	FacInf	.002	-.006	.000
	FacInf	.008	-.002	-.013
	FacInf	-.011	.008	.014
	FacInf	-.002	.007	-.001
	FacInf	-.022	.035	-.007
	EduStaff	.230	-.098	-.147
	EduStaff	-.098	.343	-.081
	EduStaff	-.147	-.081	.222
Anti-image Correlation	QoS	.015	.107	-.049
	QoS	-.050	-.079	.086
	QoS	-.049	.024	.028
	QoS	.069	.005	-.152
	Curr	-.099	.245	-.021
	Curr	.052	-.309	.138
	Curr	.083	-.099	-.054
	FacInf	.134	.006	-.063
	FacInf	.049	-.095	-.080
	FacInf	.041	-.048	-.083
	FacInf	-.044	.019	.049
	FacInf	.024	-.068	-.002
	FacInf	.078	-.015	-.132
	FacInf	-.133	.079	.178
	FacInf	-.011	.041	-.008
	FacInf	-.098	.126	-.033
	EduStaff	.671 <sup>a</sup>	-.348	-.652
	EduStaff	-.348	.735 <sup>a</sup>	-.294
	EduStaff	-.652	-.294	.688 <sup>a</sup>

a. Measures of Sampling Adequacy(MSA)

# Communalities

	Initial	Extraction
QoS	1.000	.906
QoS	1.000	.878
QoS	1.000	.665
QoS	1.000	.183
Curr	1.000	.965
Curr	1.000	.908
Curr	1.000	.913
FacInf	1.000	.892
FacInf	1.000	.834
FacInf	1.000	.885
FacInf	1.000	.885
FacInf	1.000	.930
FacInf	1.000	.892
FacInf	1.000	.926
FacInf	1.000	.840
FacInf	1.000	.704
EduStaff	1.000	.874
EduStaff	1.000	.798
EduStaff	1.000	.881

Extraction Method: Principal  
Component Analysis.

**Total Variance Explained**

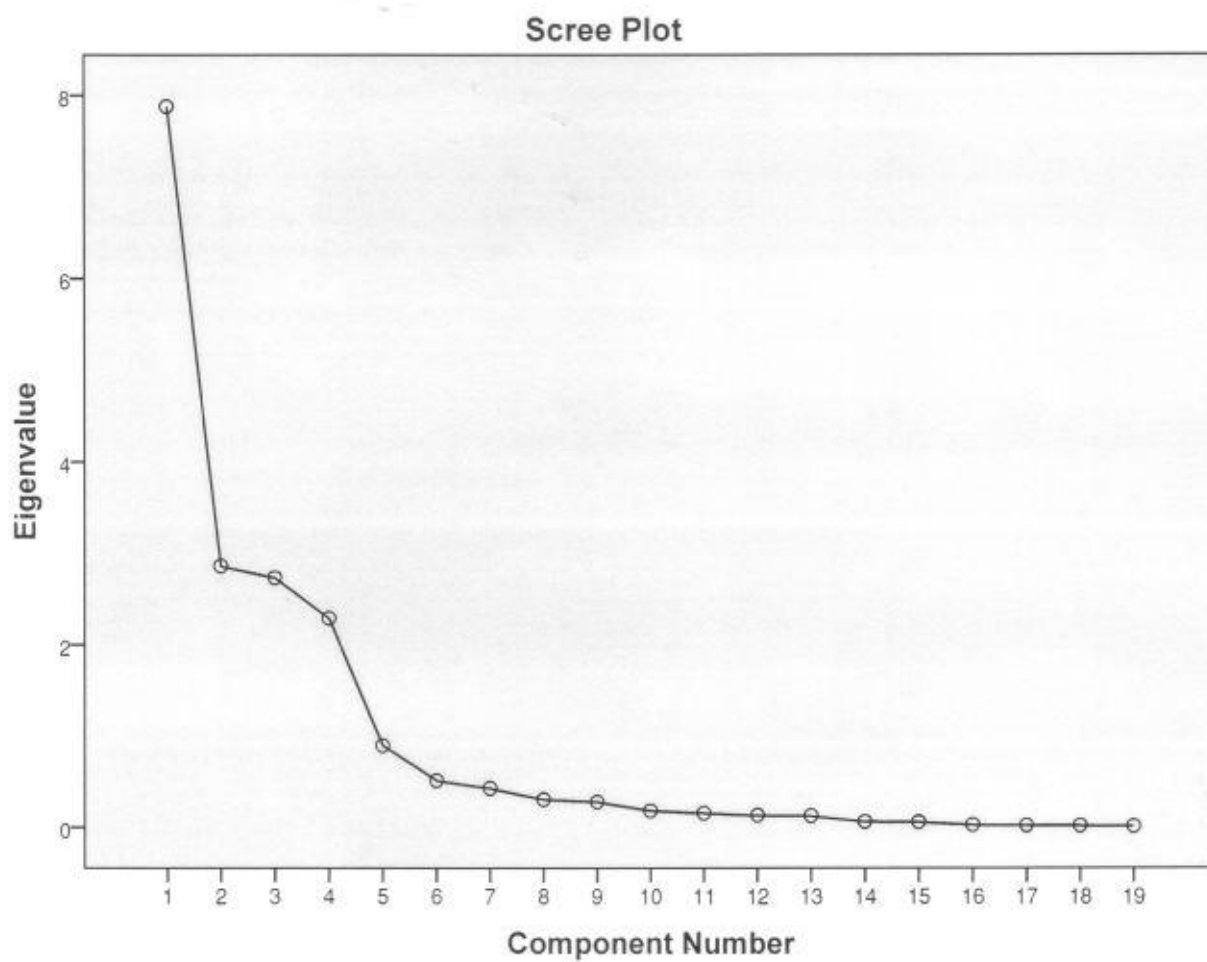
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.879	41.469	41.469	7.879	41.469	41.469
2	2.859	15.050	56.519	2.859	15.050	56.519
3	2.732	14.377	70.895	2.732	14.377	70.895
4	2.287	12.039	82.935	2.287	12.039	82.935
5	.895	4.713	87.647			
6	.514	2.704	90.352			
7	.429	2.260	92.612			
8	.308	1.622	94.234			
9	.281	1.479	95.713			
10	.185	.975	96.688			
11	.158	.833	97.521			
12	.134	.703	98.224			
13	.128	.671	98.895			
14	.065	.343	99.239			
15	.059	.312	99.551			
16	.029	.152	99.702			
17	.023	.119	99.821			
18	.020	.104	99.925			
19	.014	.075	100.000			



**Total Variance Explained**

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	7.769	40.892	40.892
2	2.806	14.769	55.661
3	2.602	13.696	69.356
4	2.580	13.579	82.935
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

Extraction Method: Principal Component Analysis.



Component Matrix<sup>a</sup>

	Component			
	1	2	3	4
QoS		.728		.583
QoS		.713		.579
QoS		.582		.508
QoS				
Curr			.936	
Curr			.912	
Curr			.928	
FacInf	.940			
FacInf	.909			
FacInf	.937			
FacInf	.931			
FacInf	.959			
FacInf	.941			
FacInf	.954			
FacInf	.910			
FacInf	.837			
EduStaff		-.655		.663
EduStaff		-.705		.544
EduStaff		-.694		.614

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
QoS				.944
QoS				.929
QoS				.804
QoS				
Curr		.976		
Curr		.948		
Curr		.953		
FacInf	.942			
FacInf	.908			
FacInf	.938			
FacInf	.938			
FacInf	.963			
FacInf	.941			
FacInf	.960			
FacInf	.916			
FacInf	.826			
EduStaff			.934	
EduStaff			.888	
EduStaff			.933	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

**Component Transformation Matrix**

Component	1	2	3	4
1	.990	.127	.047	.048
2	-.011	.093	-.726	.681
3	-.115	.976	-.040	-.179
4	-.086	.148	.685	.708

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

```

GET
  FILE='D:\EFA Analysis\EFA_PROCESS_Teacher.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
DATASET ACTIVATE DataSet1.
SAVE OUTFILE='D:\EFA Analysis\EFA_PROCESS_Teacher.sav'
  /COMPRESSED.
FACTOR
  /VARIABLES IIA_1 IIA_2 IIA_3 IIA_4 IIA_5 IIA_6 IIA_7 IIA_8 IIA_9 IIB_1 IIB_
2 IIB_3 IIC_1 IIC_2 IIC_3 IIC_4
  /MISSING LISTWISE
  /ANALYSIS IIA_1 IIA_2 IIA_3 IIA_4 IIA_5 IIA_6 IIA_7 IIA_8 IIA_9 IIB_1 IIB_2
IIB_3 IIC_1 IIC_2 IIC_3 IIC_4
  /PRINT INITIAL KMO AIC EXTRACTION ROTATION
  /FORMAT BLANK(.50)
  /PLOT EIGEN
  /CRITERIA FACTORS(3) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.

```

## Factor Analysis

[DataSet1] D:\EFA Analysis\EFA\_PROCESS\_Teacher.sav

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.860
Bartlett's Test of Sphericity	Approx. Chi-Square	1034.236
	df	120
	Sig.	.000

# Anti-image Matrices

		TLP	TLP	TLP	TLP	TLP	TLP
Anti-image Covariance	TLP	.289	-.071	-.077	-.028	-.061	.030
	TLP	-.071	.429	-.042	-.040	-.032	-.153
	TLP	-.077	-.042	.217	-.042	.018	-.018
	TLP	-.028	-.040	-.042	.324	-.049	-.002
	TLP	-.061	-.032	.018	-.049	.370	-.038
	TLP	.030	-.153	-.018	-.002	-.038	.406
	TLP	-.040	-.020	.037	-.012	-.015	-.029
	TLP	-.025	.080	-.053	-.092	-.019	-.014
	TLP	.016	-.009	-.089	.002	-.088	-.087
	IndInt	-.018	.012	.039	.004	.038	.040
	IndInt	-.020	-.023	-.040	.020	-.018	-.044
	IndInt	.023	-.057	.034	-.024	-.056	.037
	EduPrac	-.047	.045	.006	-.018	.008	.072
	EduPrac	.046	-.038	-.022	.004	.017	-.053
	EduPrac	-.026	-.001	.014	.011	.018	.061
	EduPrac	-.022	.002	-.068	-.040	-.030	.045
Anti-image Correlation	TLP	.938 <sup>a</sup>	-.202	-.308	-.090	-.186	.089
	TLP	-.202	.898 <sup>a</sup>	-.138	-.106	-.080	-.366
	TLP	-.308	-.138	.897 <sup>a</sup>	-.157	.063	-.062
	TLP	-.090	-.106	-.157	.951 <sup>a</sup>	-.140	-.007
	TLP	-.186	-.080	.063	-.140	.944 <sup>a</sup>	-.098
	TLP	.089	-.366	-.062	-.007	-.098	.878 <sup>a</sup>
	TLP	-.139	-.056	.147	-.038	-.045	-.085
	TLP	-.094	.249	-.230	-.327	-.065	-.043
	TLP	.057	-.026	-.379	.009	-.287	-.270
	IndInt	-.073	.040	.178	.017	.133	.134
	IndInt	-.076	-.074	-.179	.074	-.061	-.145
	IndInt	.053	-.107	.089	-.052	-.112	.071
	EduPrac	-.117	.092	.017	-.042	.017	.151
	EduPrac	.125	-.085	-.068	.010	.040	-.122
	EduPrac	-.062	-.003	.038	.026	.039	.126
	EduPrac	-.066	.005	-.233	-.112	-.079	.113

# Anti-image Matrices

		TLP	TLP	TLP	IndInt	IndInt	IndInt
Anti-image Covariance	TLP	-.040	-.025	.016	-.018	-.020	.023
	TLP	-.020	.080	-.009	.012	-.023	-.057
	TLP	.037	-.053	-.089	.039	-.040	.034
	TLP	-.012	-.092	.002	.004	.020	-.024
	TLP	-.015	-.019	-.088	.038	-.018	-.056
	TLP	-.029	-.014	-.087	.040	-.044	.037
	TLP	.290	-.135	-.052	.018	-.016	-.041
	TLP	-.135	.243	.000	-.014	.005	.002
	TLP	-.052	.000	.255	-.070	.073	.004
	IndInt	.018	-.014	-.070	.221	-.183	-.103
	IndInt	-.016	.005	.073	-.183	.228	-.001
	IndInt	-.041	.002	.004	-.103	-.001	.667
	EduPrac	-.002	.024	-.011	.039	-.040	-.042
	EduPrac	.049	-.056	.067	-.017	.025	-.054
	EduPrac	.025	-.019	-.091	.035	-.054	.017
	EduPrac	-.049	.067	.005	-.042	.040	-.004
Anti-image Correlation	TLP	-.139	-.094	.057	-.073	-.076	.053
	TLP	-.056	.249	-.026	.040	-.074	-.107
	TLP	.147	-.230	-.379	.178	-.179	.089
	TLP	-.038	-.327	.009	.017	.074	-.052
	TLP	-.045	-.065	-.287	.133	-.061	-.112
	TLP	-.085	-.043	-.270	.134	-.145	.071
	TLP	.898 <sup>a</sup>	-.508	-.192	.071	-.062	-.093
	TLP	-.508	.864 <sup>a</sup>	-.001	-.059	.021	.004
	TLP	-.192	-.001	.863 <sup>a</sup>	-.295	.302	.009
	IndInt	.071	-.059	-.295	.602 <sup>a</sup>	-.815	-.268
	IndInt	-.062	.021	.302	-.815	.633 <sup>a</sup>	-.002
	IndInt	-.093	.004	.009	-.268	-.002	.881 <sup>a</sup>
	EduPrac	-.004	.065	-.029	.111	-.112	-.069
	EduPrac	.133	-.166	.194	-.053	.075	-.096
	EduPrac	.061	-.052	-.237	.097	-.148	.028
	EduPrac	-.146	.219	.015	-.143	.137	-.008

# Anti-image Matrices

		EduPrac	EduPrac	EduPrac	EduPrac
Anti-image Covariance	TLP	-.047	.046	-.026	-.022
	TLP	.045	-.038	-.001	.002
	TLP	.006	-.022	.014	-.068
	TLP	-.018	.004	.011	-.040
	TLP	.008	.017	.018	-.030
	TLP	.072	-.053	.061	.045
	TLP	-.002	.049	.025	-.049
	TLP	.024	-.056	-.019	.067
	TLP	-.011	.067	-.091	.005
	IndInt	.039	-.017	.035	-.042
	IndInt	-.040	.025	-.054	.040
	IndInt	-.042	-.054	.017	-.004
	EduPrac	.561	-.076	-.060	-.164
	EduPrac	-.076	.470	-.215	-.156
	EduPrac	-.060	-.215	.584	-.011
	EduPrac	-.164	-.156	-.011	.385
Anti-image Correlation	TLP	-.117	.125	-.062	-.066
	TLP	.092	-.085	-.003	.005
	TLP	.017	-.068	.038	-.233
	TLP	-.042	.010	.026	-.112
	TLP	.017	.040	.039	-.079
	TLP	.151	-.122	.126	.113
	TLP	-.004	.133	.061	-.146
	TLP	.065	-.166	-.052	.219
	TLP	-.029	.194	-.237	.015
	IndInt	.111	-.053	.097	-.143
	IndInt	-.112	.075	-.148	.137
	IndInt	-.069	-.096	.028	-.008
	EduPrac	.821 <sup>a</sup>	-.149	-.104	-.354
	EduPrac	-.149	.731 <sup>a</sup>	-.410	-.367
	EduPrac	-.104	-.410	.819 <sup>a</sup>	-.024
	EduPrac	-.354	-.367	-.024	.831 <sup>a</sup>

a. Measures of Sampling Adequacy(MSA)



### Communalities

	Initial	Extraction
TLP	1.000	.726
TLP	1.000	.533
TLP	1.000	.790
TLP	1.000	.714
TLP	1.000	.688
TLP	1.000	.620
TLP	1.000	.697
TLP	1.000	.689
TLP	1.000	.743
IndInt	1.000	.882
IndInt	1.000	.845
IndInt	1.000	.502
EduPrac	1.000	.636
EduPrac	1.000	.671
EduPrac	1.000	.534
EduPrac	1.000	.716

Extraction Method: Principal Component Analysis.

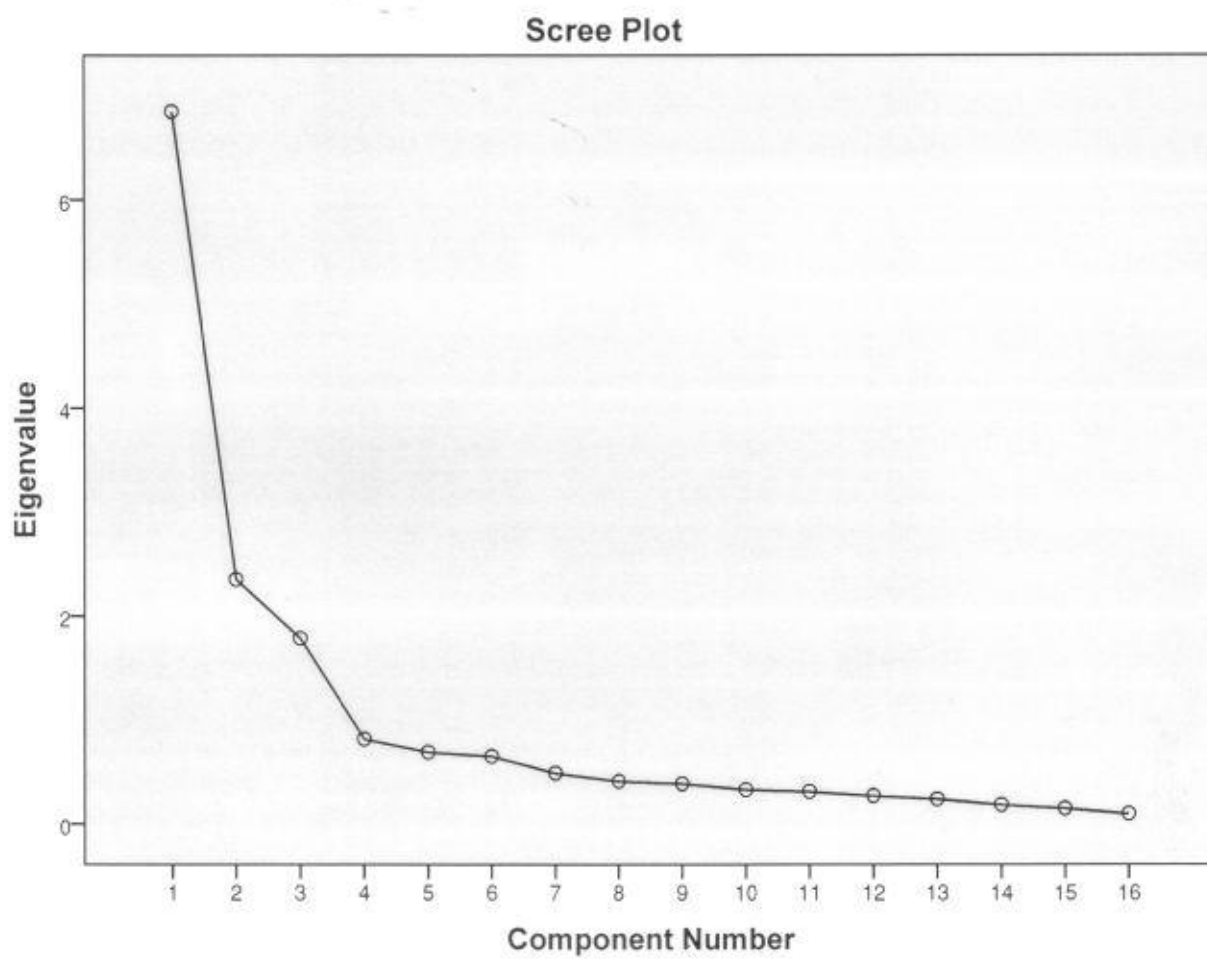
### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.849	42.804	42.804	6.849	42.804	42.804
2	2.354	14.713	57.517	2.354	14.713	57.517
3	1.784	11.151	68.667	1.784	11.151	68.667
4	.814	5.086	73.754			
5	.688	4.298	78.052			
6	.647	4.047	82.098			
7	.487	3.043	85.141			
8	.408	2.551	87.692			
9	.386	2.410	90.103			
10	.329	2.058	92.160			
11	.311	1.943	94.103			
12	.271	1.696	95.799			
13	.239	1.493	97.292			
14	.184	1.151	98.443			
15	.150	.937	99.380			
16	.099	.620	100.000			

# Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	5.914	36.962	36.962
2	2.754	17.210	54.172
3	2.319	14.495	68.667
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Extraction Method: Principal Component Analysis.



Component Matrix<sup>a</sup>

	Component		
	1	2	3
TLP	.851		
TLP	.702		
TLP	.874		
TLP	.816		
TLP	.786		
TLP	.641		
TLP	.795		
TLP	.803		
TLP	.820		
IndInt			.707
IndInt			.691
IndInt			
EduPrac		.620	
EduPrac		.602	
EduPrac			
EduPrac	.584		

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated Component Matrix<sup>a</sup>

	Component		
	1	2	3
TLP	.768		
TLP	.703		
TLP	.827		
TLP	.804		
TLP	.820		
TLP	.773		
TLP	.820		
TLP	.810		
TLP	.851		
IndInt			.931
IndInt			.904
IndInt			.671
EduPrac		.791	
EduPrac		.813	
EduPrac		.701	
EduPrac		.782	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.890	.363	.277
2	-.456	.730	.509
3	-.017	-.579	.815

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

```

GET
  FILE='D:\EFA Analysis\EFA_OUTCOME_Teacher.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
FACTOR
  /VARIABLES IVA_1 IVA_2 IVA_3 IVB_1 IVB_2 IVB_3 IVB_4 IVB_5 IVB_6 IVB_7 IVB_8 IVB_9 IVB_10 IVB_11 IVB_12
  /MISSING LISTWISE
  /ANALYSIS IVA_1 IVA_2 IVA_3 IVB_1 IVB_2 IVB_3 IVB_4 IVB_5 IVB_6 IVB_7 IVB_8 IVB_9 IVB_10 IVB_11 IVB_12
  /PRINT INITIAL KMO AIC EXTRACTION ROTATION
  /FORMAT BLANK(.50)
  /PLOT EIGEN
  /CRITERIA FACTORS(3) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.

```

## Factor Analysis

[DataSet1] D:\EFA Analysis\EFA\_OUTCOME\_Teacher.sav

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.876
Bartlett's Test of Sphericity	Approx. Chi-Square	3025.625
	df	465
	Sig.	.000

# Anti-image Matrices

		WApp	WApp	WApp	WMot	WMot	WMot
Anti-image Covariance	WApp	.502	-.119	-.178	-.059	-.019	-.020
	WApp	-.119	.545	-.175	.012	-.037	.011
	WApp	-.178	-.175	.594	.041	-.023	-.020
	WMot	-.059	.012	.041	.170	.013	-.040
	WMot	-.019	-.037	-.023	.013	.178	-.016
	WMot	-.020	.011	-.020	-.040	-.016	.163
	WMot	.010	-.037	.011	-.060	.001	-.068
	WMot	.012	.013	-.013	-.010	-.044	.023
	WMot	.059	-.090	-.033	-.014	-.037	-.016
	WMot	-.065	.011	.021	.014	.019	-.028
	WMot	.002	.058	-.021	-.009	-.002	-.023
	WMot	-.026	.001	.038	-.050	-.028	-.013
	WMot	.050	-.018	-.032	.001	.009	-.003
	WMot	.045	.007	.050	.007	.032	-.087
	WMot	.008	-2.199E-005	.026	-.003	-.088	.002
	WMot	-.038	-.066	-.046	.004	.089	.014
	WMot	.003	.013	-.007	-.007	-.001	.028
	WMot	.035	.029	-.013	-.037	-.045	-.055
	CarDev	-.019	-.005	.026	.017	.036	-.034
	CarDev	-.005	.000	-.024	-.016	-.018	.011
	CarDev	-.009	-.021	.020	-.009	.011	-.021
	CarDev	-.008	.018	.003	.020	-.018	.040
	CarDev	.028	-.028	-.014	-.009	-.019	.054
	CarDev	.049	-.003	-.043	-.005	-.001	.021
	CarDev	-.014	-.054	.033	.011	.056	-.023
	CarDev	.002	.033	.013	-.010	-.062	.008
	CarDev	-.013	.018	.024	-.009	-.015	-.020
	CarDev	-.003	-.058	.016	-.008	.010	.004
	CarDev	.036	-.033	.020	.030	.009	.008
	CarDev	-.031	.011	-.023	.027	.001	.012
	CarDev	-.009	.084	-.039	-.006	.010	.006
Anti-image Correlation	WApp	.733 <sup>a</sup>	-.227	-.326	-.202	-.064	-.069
	WApp	-.227	.553 <sup>a</sup>	-.308	.039	-.120	.037
	WApp	-.326	-.308	.584 <sup>a</sup>	.130	-.070	-.064
	WMot	-.202	.039	.130	.901 <sup>a</sup>	.077	-.241
	WMot	-.064	-.120	-.070	.077	.740 <sup>a</sup>	-.095
	WMot	-.069	.037	-.064	-.241	-.095	.854 <sup>a</sup>
	WMot	.034	-.127	.037	-.368	.009	-.427
	WMot	.042	.041	-.041	-.057	-.247	.136

# Anti-image Matrices

		WMot	WMot	WMot	WMot	WMot	WMot
Anti-image Covariance	WApp	.010	.012	.059	-.065	.002	-.026
	WApp	-.037	.013	-.090	.011	.058	.001
	WApp	.011	-.013	-.033	.021	-.021	.038
	WMot	-.060	-.010	-.014	.014	-.009	-.050
	WMot	.001	-.044	-.037	.019	-.002	-.028
	WMot	-.068	.023	-.016	-.028	-.023	-.013
	WMot	.155	-.028	.066	-.013	-.003	.025
	WMot	-.028	.178	-.073	-.018	-.100	-.014
	WMot	.066	-.073	.590	-.003	.070	.027
	WMot	-.013	-.018	-.003	.229	-.015	-.031
	WMot	-.003	-.100	.070	-.015	.250	.015
	WMot	.025	-.014	.027	-.031	.015	.165
	WMot	-.022	.010	-.012	-.056	-.014	-.070
	WMot	.025	-.013	-.008	.046	.019	.031
	WMot	.016	-.061	.079	.012	.032	.025
	WMot	.009	-.023	-.079	.027	-.088	-.038
	WMot	-.031	.072	-.096	-.043	-.070	-.025
	WMot	.076	-.010	.076	.021	.015	.072
	CarDev	.015	-.047	-.023	.009	.002	-.013
	CarDev	.002	.020	.034	-.004	.007	.016
	CarDev	.011	.014	-.045	.000	-.023	.005
	CarDev	-.042	-.022	-.020	.002	.047	-.008
	CarDev	-.025	.026	.049	-.034	-.007	-.024
	CarDev	.011	-.010	.066	-.026	-.028	.001
	CarDev	.006	-.015	-.011	.015	.012	-.024
	CarDev	.006	.005	-.003	-.019	.028	.038
	CarDev	-.007	.028	.002	.000	-.017	.037
	CarDev	.028	-.033	-.004	.010	-.005	-.006
	CarDev	-.016	.001	.023	-.006	-.020	-.027
	CarDev	-.015	-.012	.014	.024	.018	-.036
	CarDev	-.030	.042	-.077	.005	-.019	-.004
Anti-image Correlation	WApp	.034	.042	.108	-.191	.006	-.091
	WApp	-.127	.041	-.158	.030	.157	.002
	WApp	.037	-.041	-.056	.057	-.056	.122
	WMot	-.368	-.057	-.043	.069	-.044	-.300
	WMot	.009	-.247	-.114	.092	-.008	-.163
	WMot	-.427	.136	-.050	-.143	-.114	-.081
	WMot	.851 <sup>a</sup>	-.170	.218	-.070	-.017	.155
	WMot	-.170	.785 <sup>a</sup>	-.224	-.090	-.475	-.081



# Anti-image Matrices

		WMot	WMot	WMot	WMot	WMot	WMot
Anti-image Covariance	WApp	.050	.045	.008	-.038	.003	.035
	WApp	-.018	.007	-2.199E-005	-.066	.013	.029
	WApp	-.032	.050	.026	-.046	-.007	-.013
	WMot	.001	.007	-.003	.004	-.007	-.037
	WMot	.009	.032	-.088	.089	-.001	-.045
	WMot	-.003	-.087	.002	.014	.028	-.055
	WMot	-.022	.025	.016	.009	-.031	.076
	WMot	.010	-.013	-.061	-.023	.072	-.010
	WMot	-.012	-.008	.079	-.079	-.096	.076
	WMot	-.056	.046	.012	.027	-.043	.021
	WMot	-.014	.019	.032	-.088	-.070	.015
	WMot	-.070	.031	.025	-.038	-.025	.072
	WMot	.123	-.067	-.015	.027	-.011	-.010
	WMot	-.067	.427	-.051	-.038	.017	.017
	WMot	-.015	-.051	.133	-.054	-.086	.067
	WMot	.027	-.038	-.054	.665	.035	-.090
	WMot	-.011	.017	-.086	.035	.242	-.180
	WMot	-.010	.017	.067	-.090	-.180	.548
	CarDev	.017	.010	-.003	.032	-.018	.001
	CarDev	-.005	.001	.009	-.065	-.002	.021
	CarDev	.006	.002	-.014	.036	.011	-.011
	CarDev	-.009	-.024	.018	.002	.004	-.035
	CarDev	.029	-.066	-.009	-.013	.014	-.059
	CarDev	.001	-.034	.004	.017	.003	.003
	CarDev	.013	.012	-.016	.030	-.018	-.028
	CarDev	-.025	-.003	.027	-.039	.000	.025
	CarDev	-.014	.031	-.004	-.040	.019	.028
	CarDev	-.011	-.015	.008	.034	-.007	-.009
	CarDev	.027	.027	-.004	-.031	-.010	-.011
	CarDev	.001	-.024	.001	.049	.011	-.048
	CarDev	-.002	.016	-.030	-.024	.027	.005
Anti-image Correlation	WApp	.199	.098	.029	-.065	.009	.067
	WApp	-.071	.015	-8.151E-005	-.110	.037	.052
	WApp	-.119	.099	.093	-.073	-.020	-.024
	WMot	.010	.028	-.023	.011	-.036	-.120
	WMot	.063	.118	-.574	.257	-.005	-.145
	WMot	-.019	-.330	.017	.042	.142	-.185
	WMot	-.161	.096	.113	.029	-.157	.261
	WMot	.071	-.048	-.396	-.067	.346	-.032

# Anti-image Matrices

		CarDev	CarDev	CarDev	CarDev	CarDev	CarDev
Anti-image Covariance	WApp	-.019	-.005	-.009	-.008	.028	.049
	WApp	-.005	.000	-.021	.018	-.028	-.003
	WApp	.026	-.024	.020	.003	-.014	-.043
	WMot	.017	-.016	-.009	.020	-.009	-.005
	WMot	.036	-.018	.011	-.018	-.019	-.001
	WMot	-.034	.011	-.021	.040	.054	.021
	WMot	.015	.002	.011	-.042	-.025	.011
	WMot	-.047	.020	.014	-.022	.026	-.010
	WMot	-.023	.034	-.045	-.020	.049	.066
	WMot	.009	-.004	.000	.002	-.034	-.026
	WMot	.002	.007	-.023	.047	-.007	-.028
	WMot	-.013	.016	.005	-.008	-.024	.001
	WMot	.017	-.005	.006	-.009	.029	.001
	WMot	.010	.001	.002	-.024	-.066	-.034
	WMot	-.003	.009	-.014	.018	-.009	.004
	WMot	.032	-.065	.036	.002	-.013	.017
	WMot	-.018	-.002	.011	.004	.014	.003
	WMot	.001	.021	-.011	-.035	-.059	.003
	CarDev	.145	-.067	-.004	-.019	-.036	.005
	CarDev	-.067	.101	-.034	-.014	-.014	.003
	CarDev	-.004	-.034	.108	-.041	.011	-.045
	CarDev	-.019	-.014	-.041	.223	-.030	-.013
	CarDev	-.036	-.014	.011	-.030	.313	-.017
	CarDev	.005	.003	-.045	-.013	-.017	.120
	CarDev	.015	-.013	.018	-.023	-.013	-.042
	CarDev	-.027	-.003	-.006	.038	.015	-.004
	CarDev	-.014	.017	.017	-.041	-.065	-.009
	CarDev	.009	.004	.002	-.011	.020	-.001
	CarDev	.021	-.020	-.023	.001	.012	.019
	CarDev	-.002	-.016	-.012	.024	.017	-.004
	CarDev	-.007	.007	-.013	.002	-.010	-.008
Anti-image Correlation	WApp	-.071	-.024	-.040	-.025	.070	.201
	WApp	-.018	.002	-.085	.053	-.067	-.013
	WApp	.087	-.098	.078	.007	-.032	-.162
	WMot	.109	-.119	-.063	.100	-.040	-.032
	WMot	.222	-.137	.077	-.093	-.080	-.006
	WMot	-.224	.089	-.158	.211	.238	.153
	WMot	.099	.016	.084	-.226	-.112	.083
	WMot	-.291	.152	.102	-.110	.109	-.067

# Anti-image Matrices

		CarDev	CarDev	CarDev	CarDev	CarDev	CarDev
Anti-image Covariance	WApp	-.014	.002	-.013	-.003	.036	-.031
	WApp	-.054	.033	.018	-.058	-.033	.011
	WApp	.033	.013	.024	.016	.020	-.023
	WMot	.011	-.010	-.009	-.008	.030	.027
	WMot	.056	-.062	-.015	.010	.009	.001
	WMot	-.023	.008	-.020	.004	.008	.012
	WMot	.006	.006	-.007	.028	-.016	-.015
	WMot	-.015	.005	.028	-.033	.001	-.012
	WMot	-.011	-.003	.002	-.004	.023	.014
	WMot	.015	-.019	.000	.010	-.006	.024
	WMot	.012	.028	-.017	-.005	-.020	.018
	WMot	-.024	.038	.037	-.006	-.027	-.036
	WMot	.013	-.025	-.014	-.011	.027	.001
	WMot	.012	-.003	.031	-.015	.027	-.024
	WMot	-.016	.027	-.004	.008	-.004	.001
	WMot	.030	-.039	-.040	.034	-.031	.049
	WMot	-.018	.000	.019	-.007	-.010	.011
	WMot	-.028	.025	.028	-.009	-.011	-.048
	CarDev	.015	-.027	-.014	.009	.021	-.002
	CarDev	-.013	-.003	.017	.004	-.020	-.016
	CarDev	.018	-.006	.017	.002	-.023	-.012
	CarDev	-.023	.038	-.041	-.011	.001	.024
	CarDev	-.013	.015	-.065	.020	.012	.017
	CarDev	-.042	-.004	-.009	-.001	.019	-.004
	CarDev	.105	-.053	.001	-.002	-.019	.014
	CarDev	-.053	.097	-.025	-.008	.007	-.004
	CarDev	.001	-.025	.119	-.026	-.028	-.035
	CarDev	-.002	-.008	-.026	.103	-.023	-.022
	CarDev	-.019	.007	-.028	-.023	.159	-.021
	CarDev	.014	-.004	-.035	-.022	-.021	.110
	CarDev	-.010	-.012	.015	-.038	-.013	-.023
Anti-image Correlation	WApp	-.059	.009	-.051	-.011	.127	-.134
	WApp	-.226	.144	.069	-.245	-.112	.044
	WApp	.131	.055	.090	.066	.065	-.090
	WMot	.079	-.075	-.064	-.062	.181	.200
	WMot	.409	-.468	-.100	.076	.054	.007
	WMot	-.178	.066	-.147	.029	.049	.088
	WMot	.046	.047	-.053	.223	-.104	-.113
	WMot	-.112	.040	.194	-.242	.007	-.083

# Anti-image Matrices

		CarDev
Anti-image Covariance	WApp	-.009
	WApp	.084
	WApp	-.039
	WMot	-.006
	WMot	.010
	WMot	.006
	WMot	-.030
	WMot	.042
	WMot	-.077
	WMot	.005
	WMot	-.019
	WMot	-.004
	WMot	-.002
	WMot	.016
	WMot	-.030
	WMot	-.024
	WMot	.027
	WMot	.005
	CarDev	-.007
	CarDev	.007
	CarDev	-.013
	CarDev	.002
	CarDev	-.010
	CarDev	-.008
	CarDev	-.010
	CarDev	-.012
	CarDev	.015
	CarDev	-.038
	CarDev	-.013
	CarDev	-.023
	CarDev	.094
Anti-image Correlation	WApp	-.042
	WApp	.372
	WApp	-.163
	WMot	-.048
	WMot	.075
	WMot	.045
	WMot	-.246
	WMot	.325

# Anti-image Matrices

	WApp	WApp	WApp	WMot	WMot	WMot
WMot	.108	-.158	-.056	-.043	-.114	-.050
WMot	-.191	.030	.057	.069	.092	-.143
WMot	.006	.157	-.056	-.044	-.008	-.114
WMot	-.091	.002	.122	-.300	-.163	-.081
WMot	.199	-.071	-.119	.010	.063	-.019
WMot	.098	.015	.099	.028	.118	-.330
WMot	.029	-8.151E-005	.093	-.023	-.574	.017
WMot	-.065	-.110	-.073	.011	.257	.042
WMot	.009	.037	-.020	-.036	-.005	.142
WMot	.067	.052	-.024	-.120	-.145	-.185
CarDev	-.071	-.018	.087	.109	.222	-.224
CarDev	-.024	.002	-.098	-.119	-.137	.089
CarDev	-.040	-.085	.078	-.063	.077	-.158
CarDev	-.025	.053	.007	.100	-.093	.211
CarDev	.070	-.067	-.032	-.040	-.080	.238
CarDev	.201	-.013	-.162	-.032	-.006	.153
CarDev	-.059	-.226	.131	.079	.409	-.178
CarDev	.009	.144	.055	-.075	-.468	.066
CarDev	-.051	.069	.090	-.064	-.100	-.147
CarDev	-.011	-.245	.066	-.062	.076	.029
CarDev	.127	-.112	.065	.181	.054	.049
CarDev	-.134	.044	-.090	.200	.007	.088
CarDev	-.042	.372	-.163	-.048	.075	.045

# Anti-image Matrices

	WMot	WMot	WMot	WMot	WMot	WMot
WMot	.218	-.224	.500 <sup>a</sup>	-.008	.181	.086
WMot	-.070	-.090	-.008	.918 <sup>a</sup>	-.064	-.158
WMot	-.017	-.475	.181	-.064	.866 <sup>a</sup>	.072
WMot	.155	-.081	.086	-.158	.072	.836 <sup>a</sup>
WMot	-.161	.071	-.045	-.333	-.078	-.493
WMot	.096	-.048	-.017	.146	.057	.118
WMot	.113	-.396	.283	.067	.177	.167
WMot	.029	-.067	-.127	.069	-.217	-.114
WMot	-.157	.346	-.254	-.182	-.284	-.127
WMot	.261	-.032	.134	.060	.040	.240
CarDev	.099	-.291	-.077	.051	.010	-.086
CarDev	.016	.152	.141	-.028	.045	.127
CarDev	.084	.102	-.179	.003	-.140	.041
CarDev	-.226	-.110	-.055	.008	.201	-.044
CarDev	-.112	.109	.113	-.127	-.026	-.107
CarDev	.083	-.067	.247	-.158	-.162	.006
CarDev	.046	-.112	-.045	.097	.077	-.179
CarDev	.047	.040	-.014	-.128	.177	.298
CarDev	-.053	.194	.007	-.003	-.098	.265
CarDev	.223	-.242	-.016	.067	-.034	-.044
CarDev	-.104	.007	.076	-.031	-.099	-.167
CarDev	-.113	-.083	.056	.154	.111	-.266
CarDev	-.246	.325	-.325	.035	-.126	-.029

# Anti-image Matrices

	WMot	WMot	WMot	WMot	WMot	WMot
WMot	-.045	-.017	.283	-.127	-.254	.134
WMot	-.333	.146	.067	.069	-.182	.060
WMot	-.078	.057	.177	-.217	-.284	.040
WMot	-.493	.118	.167	-.114	-.127	.240
WMot	.881 <sup>a</sup>	-.294	-.118	.093	-.062	-.040
WMot	-.294	.865 <sup>a</sup>	-.216	-.071	.053	.035
WMot	-.118	-.216	.772 <sup>a</sup>	-.181	-.477	.248
WMot	.093	-.071	-.181	.649 <sup>a</sup>	.087	-.149
WMot	-.062	.053	-.477	.087	.789 <sup>a</sup>	-.494
WMot	-.040	.035	.248	-.149	-.494	.599 <sup>a</sup>
CarDev	.124	.040	-.021	.103	-.095	.003
CarDev	-.047	.003	.075	-.250	-.013	.091
CarDev	.054	.010	-.120	.135	.070	-.045
CarDev	-.055	-.079	.105	.004	.016	-.101
CarDev	.148	-.180	-.044	-.028	.051	-.143
CarDev	.010	-.152	.032	.062	.015	.011
CarDev	.112	.055	-.136	.115	-.116	-.117
CarDev	-.228	-.014	.234	-.153	.001	.107
CarDev	-.117	.137	-.033	-.142	.110	.111
CarDev	-.102	-.069	.066	.132	-.043	-.038
CarDev	.196	.106	-.029	-.094	-.052	-.036
CarDev	.009	-.109	.010	.182	.067	-.197
CarDev	-.015	.082	-.266	-.094	.179	.024

# Anti-image Matrices

	CarDev	CarDev	CarDev	CarDev	CarDev	CarDev
WMot	-.077	.141	-.179	-.055	.113	.247
WMot	.051	-.028	.003	.008	-.127	-.158
WMot	.010	.045	-.140	.201	-.026	-.162
WMot	-.086	.127	.041	-.044	-.107	.006
WMot	.124	-.047	.054	-.055	.148	.010
WMot	.040	.003	.010	-.079	-.180	-.152
WMot	-.021	.075	-.120	.105	-.044	.032
WMot	.103	-.250	.135	.004	-.028	.062
WMot	-.095	-.013	.070	.016	.051	.015
WMot	.003	.091	-.045	-.101	-.143	.011
CarDev	.907 <sup>a</sup>	-.554	-.029	-.104	-.168	.038
CarDev	-.554	.913 <sup>a</sup>	-.327	-.091	-.078	.027
CarDev	-.029	-.327	.929 <sup>a</sup>	-.263	.060	-.392
CarDev	-.104	-.091	-.263	.931 <sup>a</sup>	-.115	-.080
CarDev	-.168	-.078	.060	-.115	.924 <sup>a</sup>	-.089
CarDev	.038	.027	-.392	-.080	-.089	.931 <sup>a</sup>
CarDev	.118	-.129	.173	-.148	-.073	-.374
CarDev	-.231	-.030	-.062	.255	.087	-.037
CarDev	-.103	.156	.153	-.253	-.336	-.073
CarDev	.076	.039	.017	-.073	.110	-.013
CarDev	.141	-.155	-.179	.006	.055	.136
CarDev	-.013	-.150	-.111	.152	.092	-.034
CarDev	-.063	.072	-.127	.011	-.061	-.073



# Anti-image Matrices

	CarDev	CarDev	CarDev	CarDev	CarDev	CarDev
WMot	-.045	-.014	.007	-.016	.076	.056
WMot	.097	-.128	-.003	.067	-.031	.154
WMot	.077	.177	-.098	-.034	-.099	.111
WMot	-.179	.298	.265	-.044	-.167	-.266
WMot	.112	-.228	-.117	-.102	.196	.009
WMot	.055	-.014	.137	-.069	.106	-.109
WMot	-.136	.234	-.033	.066	-.029	.010
WMot	.115	-.153	-.142	.132	-.094	.182
WMot	-.116	.001	.110	-.043	-.052	.067
WMot	-.117	.107	.111	-.038	-.036	-.197
CarDev	.118	-.231	-.103	.076	.141	-.013
CarDev	-.129	-.030	.156	.039	-.155	-.150
CarDev	.173	-.062	.153	.017	-.179	-.111
CarDev	-.148	.255	-.253	-.073	.006	.152
CarDev	-.073	.087	-.336	.110	.055	.092
CarDev	-.374	-.037	-.073	-.013	.136	-.034
CarDev	.890 <sup>a</sup>	-.524	.009	-.023	-.146	.134
CarDev	-.524	.884 <sup>a</sup>	-.229	-.077	.054	-.035
CarDev	.009	-.229	.912 <sup>a</sup>	-.231	-.202	-.308
CarDev	-.023	-.077	-.231	.937 <sup>a</sup>	-.176	-.210
CarDev	-.146	.054	-.202	-.176	.945 <sup>a</sup>	-.157
CarDev	.134	-.035	-.308	-.210	-.157	.930 <sup>a</sup>
CarDev	-.101	-.123	.139	-.390	-.105	-.228

# Anti-image Matrices

	CarDev
WMot	-.325
WMot	.035
WMot	-.126
WMot	-.029
WMot	-.015
WMot	.082
WMot	-.266
WMot	-.094
WMot	.179
WMot	.024
CarDev	-.063
CarDev	.072
CarDev	-.127
CarDev	.011
CarDev	-.061
CarDev	-.073
CarDev	-.101
CarDev	-.123
CarDev	.139
CarDev	-.390
CarDev	-.105
CarDev	-.228
CarDev	.902 <sup>a</sup>

a. Measures of Sampling Adequacy(MSA)

# Communalities

	Initial	Extraction
WApp	1.000	.677
WApp	1.000	.409
WApp	1.000	.460
WMot	1.000	.769
WMot	1.000	.449
WMot	1.000	.732
WMot	1.000	.734
WMot	1.000	.570
WMot	1.000	.106
WMot	1.000	.715
WMot	1.000	.632
WMot	1.000	.738
WMot	1.000	.817
WMot	1.000	.479
WMot	1.000	.629
WMot	1.000	.118
WMot	1.000	.564
WMot	1.000	.142
CarDev	1.000	.757
CarDev	1.000	.837
CarDev	1.000	.847
CarDev	1.000	.723
CarDev	1.000	.574
CarDev	1.000	.827
CarDev	1.000	.815
CarDev	1.000	.806
CarDev	1.000	.809
CarDev	1.000	.822
CarDev	1.000	.785
CarDev	1.000	.822
CarDev	1.000	.821

Extraction Method: Principal  
Component Analysis.

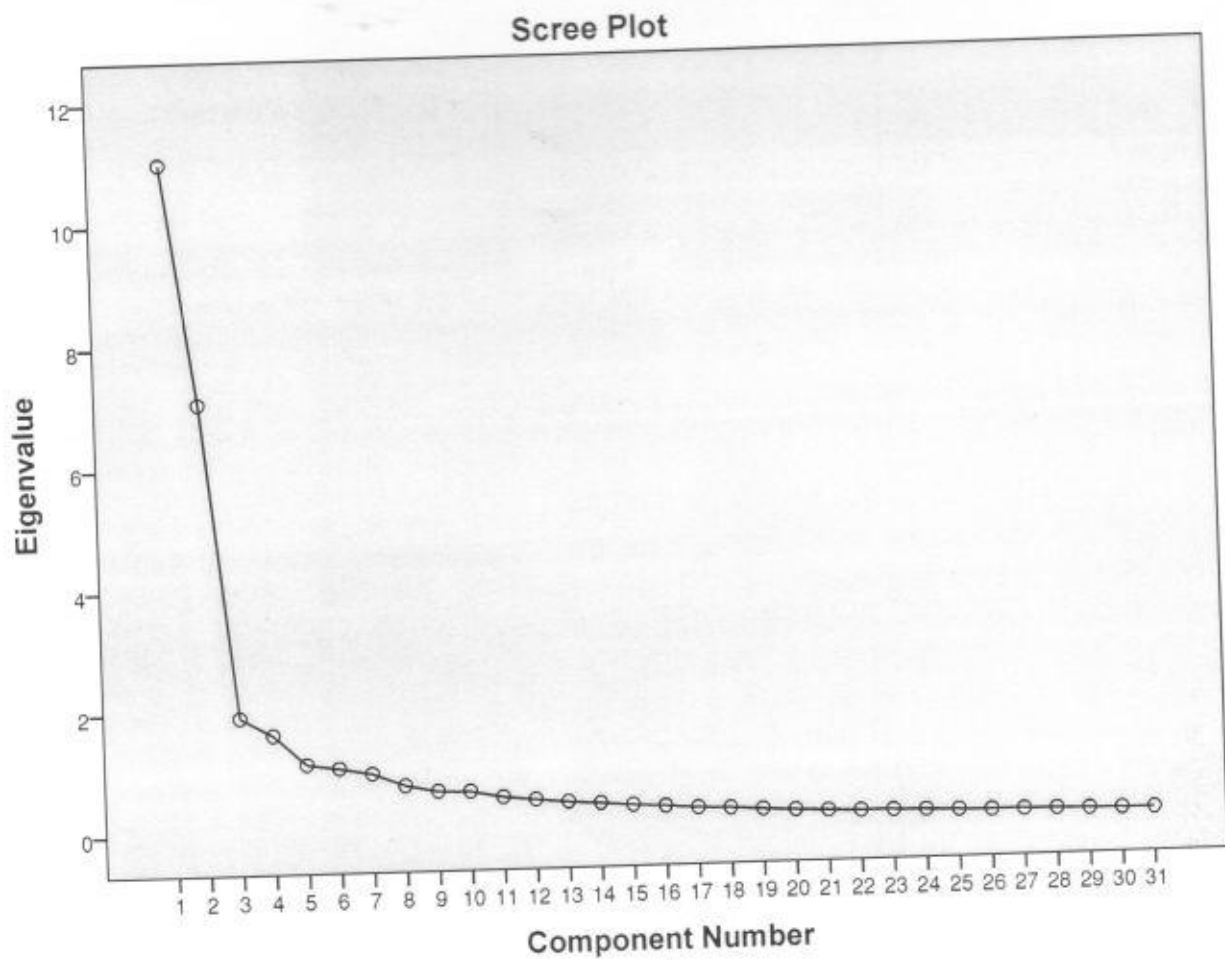
**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	11.011	35.520	35.520	11.011	35.520	35.520
2	7.062	22.781	58.302	7.062	22.781	58.302
3	1.908	6.156	64.458	1.908	6.156	64.458
4	1.611	5.197	69.654			
5	1.121	3.616	73.271			
6	1.045	3.372	76.643			
7	.947	3.054	79.697			
8	.744	2.399	82.096			
9	.636	2.053	84.149			
10	.621	2.004	86.153			
11	.519	1.675	87.828			
12	.465	1.500	89.328			
13	.413	1.333	90.661			
14	.377	1.216	91.877			
15	.333	1.074	92.951			
16	.299	.966	93.917			
17	.260	.838	94.755			
18	.238	.768	95.524			
19	.204	.659	96.183			
20	.176	.568	96.751			
21	.151	.487	97.238			
22	.132	.427	97.665			
23	.126	.406	98.071			
24	.114	.368	98.440			
25	.098	.316	98.755			
26	.084	.271	99.026			
27	.079	.253	99.279			
28	.072	.232	99.511			
29	.058	.188	99.699			
30	.050	.161	99.860			
31	.044	.140	100.000			

# Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	10.389	33.513	33.513
2	7.584	24.465	57.979
3	2.008	6.479	64.458
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Extraction Method: Principal Component Analysis.



Component Matrix<sup>a</sup>

	Component		
	1	2	3
WApp			.771
WApp			.600
WApp			.651
WMot		.817	
WMot		.568	
WMot		.784	
WMot		.767	
WMot		.641	
WMot			
WMot		.778	
WMot		.691	
WMot		.774	
WMot		.809	
WMot			
WMot		.613	
WMot			
WMot		.699	
WMot			
CarDev	.820		
CarDev	.810		
CarDev	.880		
CarDev	.797		
CarDev	.717		
CarDev	.886		
CarDev	.866		
CarDev	.871		
CarDev	.874		
CarDev	.895		
CarDev	.809		
CarDev	.869		
CarDev	.896		

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Rotated Component Matrix<sup>a</sup>

	Component		
	1	2	3
WApp			.781
WApp			.621
WApp			.666
WMot		.860	
WMot		.639	
WMot		.837	
WMot		.841	
WMot		.728	
WMot			
WMot		.837	
WMot		.783	
WMot		.848	
WMot		.900	
WMot		.598	
WMot		.714	
WMot			
WMot		.734	
WMot			
CarDev	.862		
CarDev	.895		
CarDev	.911		
CarDev	.849		
CarDev	.754		
CarDev	.892		
CarDev	.897		
CarDev	.888		
CarDev	.889		
CarDev	.882		
CarDev	.881		
CarDev	.895		
CarDev	.878		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.



Component Transformation Matrix

Component	1	2	3
1	.926	.365	.092
2	-.360	.931	-.067
3	-.110	.029	.994

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

```

/MISSING LISTWISE
/ANALYSIS TC_1 TC_2 TC_3 TC_4 TC_5 TC_6 TC_8 TC_9 SA_1 SA_2 SA_3 SA_4 SA_5
CIS_1 CIS_2 CIS_3 CIS_4 CIS_5 CIS_6 CI_1 CI_2 CI_3 CI_4
/PRINT INITIAL KMO AIC EXTRACTION ROTATION
/FORMAT BLANK(.50)
/PLOT EIGEN
/CRITERIA FACTORS(4) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.

```

## Factor Analysis

[DataSet2] D:\EFA Analysis\EFA\_OUTCOME\_Principal.sav

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.792
Bartlett's Test of Sphericity	Approx. Chi-Square	1750.332
	df	253
	Sig.	.000

# Anti-image Matrices

		TComp	TComp	TComp	TComp	TComp	TComp
Anti-image Covariance	TComp	.280	-.154	-.011	.003	-.059	.058
	TComp	-.154	.193	.008	-.059	.012	-.031
	TComp	-.011	.008	.179	-.112	-.026	-.061
	TComp	.003	-.059	-.112	.192	.007	.002
	TComp	-.059	.012	-.026	.007	.487	-.180
	TComp	.058	-.031	-.061	.002	-.180	.421
	TComp	.036	-.017	-.104	-.006	-.061	.050
	TComp	.000	-.056	.035	-.029	-.037	-.101
	SAdm	-.007	-.009	-.017	.014	-.021	.022
	SAdm	.037	-.043	.007	.017	.008	.009
	SAdm	-.031	.045	.030	-.044	.003	-.017
	SAdm	-.002	.015	.015	-.014	.034	-.027
	SAdm	.005	-.022	-.039	.037	.020	-.009
	ContSD	.007	-.002	-.014	.009	.007	.031
	ContSD	-.009	.015	-.002	-.005	-.031	.000
	ContSD	.022	-.007	.059	-.084	-.035	.004
	ContSD	.012	-.008	.019	-.008	.037	-.019
	ContSD	-.011	.002	-.021	.012	-.025	.016
	ContSD	-.027	-.003	.016	.016	.067	-.075
	CreInn	-.020	.030	-.008	-.019	-.013	.017
	CreInn	-.042	.059	.002	-.057	-.074	-.005
	CreInn	-.059	.018	.006	.024	-.042	-.011
	CreInn	.059	-.053	.024	.024	.050	-.039
Anti-image Correlation	TComp	.837 <sup>a</sup>	-.663	-.047	.013	-.159	.170
	TComp	-.663	.833 <sup>a</sup>	.044	-.307	.041	-.109
	TComp	-.047	.044	.838 <sup>a</sup>	-.600	-.089	-.221
	TComp	.013	-.307	-.600	.842 <sup>a</sup>	.024	.007
	TComp	-.159	.041	-.089	.024	.848 <sup>a</sup>	-.398
	TComp	.170	-.109	-.221	.007	-.398	.864 <sup>a</sup>
	TComp	.121	-.068	-.438	-.024	-.157	.138
	TComp	-.001	-.199	.128	-.104	-.082	-.240
	SAdm	-.055	-.080	-.160	.124	-.115	.134
	SAdm	.190	-.266	.043	.108	.031	.038
	SAdm	-.140	.241	.168	-.237	.009	-.061
	SAdm	-.011	.125	.129	-.117	.179	-.152
	SAdm	.026	-.130	-.236	.214	.072	-.036
	ContSD	.029	-.010	-.077	.051	.023	.113
	ContSD	-.041	.082	-.011	-.028	-.108	-.001
	ContSD	.065	-.026	.215	-.295	-.077	.009

# Anti-image Matrices

		TComp	TComp	SAdm	SAdm	SAdm	SAdm
Anti-image Covariance	TComp	.036	.000	-.007	.037	-.031	-.002
	TComp	-.017	-.056	-.009	-.043	.045	.015
	TComp	-.104	.035	-.017	.007	.030	.015
	TComp	-.006	-.029	.014	.017	-.044	-.014
	TComp	-.061	-.037	-.021	.008	.003	.034
	TComp	.050	-.101	.022	.009	-.017	-.027
	TComp	.311	-.034	.022	-.044	-.038	-.030
	TComp	-.034	.417	.010	-.019	.000	-.021
	SAdm	.022	.010	.066	-.029	-.015	-.064
	SAdm	-.044	-.019	-.029	.135	-.057	.024
	SAdm	-.038	.000	-.015	-.057	.178	.017
	SAdm	-.030	-.021	-.064	.024	.017	.072
	SAdm	.058	.021	.036	-.068	-.077	-.039
	ContSD	-.008	-.043	-.033	.036	-.036	.035
	ContSD	.033	-.001	.026	-.050	.032	-.034
	ContSD	-.031	.111	-.009	.003	.022	.010
	ContSD	-.044	.014	-.008	.017	.010	.014
	ContSD	.054	.012	.019	-.040	.010	-.025
	ContSD	-.077	-.040	-.011	.058	-.007	.023
	CreInn	.005	-.070	-.005	-.026	.026	.008
	CreInn	.105	-.016	-.025	-.013	-.036	.015
	CreInn	-.014	.057	.021	-.045	.044	-.032
	CreInn	-.081	.022	-.003	.077	-.041	.014
Anti-image Correlation	TComp	.121	-.001	-.055	.190	-.140	-.011
	TComp	-.068	-.199	-.080	-.266	.241	.125
	TComp	-.438	.128	-.160	.043	.168	.129
	TComp	-.024	-.104	.124	.108	-.237	-.117
	TComp	-.157	-.082	-.115	.031	.009	.179
	TComp	.138	-.240	.134	.038	-.061	-.152
	TComp	.825 <sup>a</sup>	-.094	.151	-.216	-.163	-.200
	TComp	-.094	.913 <sup>a</sup>	.061	-.081	.001	-.118
	SAdm	.151	.061	.717 <sup>a</sup>	-.310	-.140	-.926
	SAdm	-.216	-.081	-.310	.786 <sup>a</sup>	-.365	.245
	SAdm	-.163	.001	-.140	-.365	.833 <sup>a</sup>	.150
	SAdm	-.200	-.118	-.926	.245	.150	.675 <sup>a</sup>
	SAdm	.269	.085	.358	-.475	-.468	-.372
	ContSD	-.032	-.159	-.304	.233	-.204	.308
	ContSD	.142	-.003	.248	-.333	.186	-.311
	ContSD	-.085	.266	-.055	.013	.080	.059

# Anti-image Matrices

		SAdm	ContSD	ContSD	ContSD	ContSD	ContSD
Anti-image Covariance	TComp	.005	.007	-.009	.022	.012	-.011
	TComp	-.022	-.002	.015	-.007	-.008	.002
	TComp	-.039	-.014	-.002	.059	.019	-.021
	TComp	.037	.009	-.005	-.084	-.008	.012
	TComp	.020	.007	-.031	-.035	.037	-.025
	TComp	-.009	.031	.000	.004	-.019	.016
	TComp	.058	-.008	.033	-.031	-.044	.054
	TComp	.021	-.043	-.001	.111	.014	.012
	SAdm	.036	-.033	.026	-.009	-.008	.019
	SAdm	-.068	.036	-.050	.003	.017	-.040
	SAdm	-.077	-.036	.032	.022	.010	.010
	SAdm	-.039	.035	-.034	.010	.014	-.025
	SAdm	.152	-.017	.022	-.019	-.035	.039
	ContSD	-.017	.179	-.118	-.059	-.016	.000
	ContSD	.022	-.118	.169	-.047	-.067	.052
	ContSD	-.019	-.059	-.047	.418	.046	-.089
	ContSD	-.035	-.016	-.067	.046	.318	-.173
	ContSD	.039	.000	.052	-.089	-.173	.250
	ContSD	-.048	.003	-.065	-.005	.062	-.151
	CreInn	-.007	-.046	.071	-.021	-.079	.056
	CreInn	.008	-.004	.023	.008	-.057	4.559E-005
	CreInn	-.007	.010	.015	-.021	.032	.027
	CreInn	-.022	.026	-.090	.052	.073	-.054
Anti-image Correlation	TComp	.026	.029	-.041	.065	.041	-.043
	TComp	-.130	-.010	.082	-.026	-.034	-.007
	TComp	-.236	-.077	-.011	.215	.081	-.100
	TComp	.214	.051	-.028	-.295	-.034	.053
	TComp	.072	.023	-.108	-.077	.094	-.072
	TComp	-.036	.113	-.001	.009	-.053	.050
	TComp	.269	-.032	.142	-.085	-.139	.194
	TComp	.085	-.159	-.003	.266	.039	.036
	SAdm	.358	-.304	.248	-.055	-.056	.150
	SAdm	-.475	.233	-.333	.013	.084	-.218
	SAdm	-.468	-.204	.186	.080	.041	.049
	SAdm	-.372	.308	-.311	.059	.094	-.185
	SAdm	.774 <sup>a</sup>	-.103	.140	-.074	-.161	.200
	ContSD	-.103	.802 <sup>a</sup>	-.681	-.215	-.066	.002
	ContSD	.140	-.681	.720 <sup>a</sup>	-.175	-.288	.251
	ContSD	-.074	-.215	-.175	.827 <sup>a</sup>	.125	-.275

# Anti-image Matrices

		ContSD	CreInn	CreInn	CreInn	CreInn
Anti-image Covariance	TComp	-.027	-.020	-.042	-.059	.059
	TComp	-.003	.030	.059	.018	-.053
	TComp	.016	-.008	.002	.006	.024
	TComp	.016	-.019	-.057	.024	.024
	TComp	.067	-.013	-.074	-.042	.050
	TComp	-.075	.017	-.005	-.011	-.039
	TComp	-.077	.005	.105	-.014	-.081
	TComp	-.040	-.070	-.016	.057	.022
	SAdm	-.011	-.005	-.025	.021	-.003
	SAdm	.058	-.026	-.013	-.045	.077
	SAdm	-.007	.026	-.036	.044	-.041
	SAdm	.023	.008	.015	-.032	.014
	SAdm	-.048	-.007	.008	-.007	-.022
	ContSD	.003	-.046	-.004	.010	.026
	ContSD	-.065	.071	.023	.015	-.090
	ContSD	-.005	-.021	.008	-.021	.052
	ContSD	.062	-.079	-.057	.032	.073
	ContSD	-.151	.056	4.559E-005	.027	-.054
	ContSD	.256	-.053	.011	-.062	.055
	CreInn	-.053	.453	-.080	-.144	-.104
	CreInn	.011	-.080	.475	-.064	-.135
	CreInn	-.062	-.144	-.064	.456	-.161
	CreInn	.055	-.104	-.135	-.161	.567
Anti-image Correlation	TComp	-.100	-.057	-.116	-.166	.148
	TComp	-.011	.102	.195	.062	-.160
	TComp	.075	-.028	.006	.020	.074
	TComp	.074	-.065	-.187	.080	.072
	TComp	.189	-.027	-.155	-.089	.095
	TComp	-.227	.039	-.011	-.025	-.079
	TComp	-.273	.015	.273	-.036	-.194
	TComp	-.123	-.161	-.036	.130	.046
	SAdm	-.084	-.031	-.144	.119	-.014
	SAdm	.313	-.104	-.053	-.180	.279
	SAdm	-.034	.092	-.122	.154	-.130
	SAdm	.167	.045	.081	-.178	.067
	SAdm	-.244	-.028	.031	-.025	-.074
	ContSD	.016	-.162	-.013	.036	.082
	ContSD	-.314	.257	.081	.054	-.291
	ContSD	-.015	-.048	.018	-.047	.108

Anti-image Matrices

	TComp	TComp	TComp	TComp	TComp	TComp
ContSD	.041	-.034	.081	-.034	.094	-.053
ContSD	-.043	.007	-.100	.053	-.072	.050
ContSD	-.100	-.011	.075	.074	.189	-.227
CreInn	-.057	.102	-.028	-.065	-.027	.039
CreInn	-.116	.195	.006	-.187	-.155	-.011
CreInn	-.166	.062	.020	.080	-.089	-.025
CreInn	.148	-.160	.074	.072	.095	-.079

Anti-image Matrices

	TComp	TComp	SAdm	SAdm	SAdm	SAdm
ContSD	-.139	.039	-.056	.084	.041	.094
ContSD	.194	.036	.150	-.218	.049	-.185
ContSD	-.273	-.123	-.084	.313	-.034	.167
CreInn	.015	-.161	-.031	-.104	.092	.045
CreInn	.273	-.036	-.144	-.053	-.122	.081
CreInn	-.036	.130	.119	-.180	.154	-.178
CreInn	-.194	.046	-.014	.279	-.130	.067

Anti-image Matrices

	SAdm	ContSD	ContSD	ContSD	ContSD	ContSD
ContSD	-.161	-.066	-.288	.125	.777 <sup>a</sup>	-.612
ContSD	.200	.002	.251	-.275	-.612	.636 <sup>a</sup>
ContSD	-.244	.016	-.314	-.015	.218	-.596
CreInn	-.028	-.162	.257	-.048	-.208	.167
CreInn	.031	-.013	.081	.018	-.147	.000
CreInn	-.025	.036	.054	-.047	.084	.079
CreInn	-.074	.082	-.291	.108	.172	-.144

Anti-image Matrices

	ContSD	CreInn	CreInn	CreInn	CreInn
ContSD	.218	-.208	-.147	.084	.172
ContSD	-.596	.167	.000	.079	-.144
ContSD	.738 <sup>a</sup>	-.156	.030	-.183	.144
CreInn	-.156	.851 <sup>a</sup>	-.172	-.317	-.205
CreInn	.030	-.172	.838 <sup>a</sup>	-.137	-.261
CreInn	-.183	-.317	-.137	.794 <sup>a</sup>	-.316
CreInn	.144	-.205	-.261	-.316	.551 <sup>a</sup>

a. Measures of Sampling Adequacy(MSA)

# Communalities

	Initial	Extraction
TComp	1.000	.555
TComp	1.000	.703
TComp	1.000	.780
TComp	1.000	.759
TComp	1.000	.565
TComp	1.000	.549
TComp	1.000	.597
TComp	1.000	.559
SAdm	1.000	.715
SAdm	1.000	.823
SAdm	1.000	.736
SAdm	1.000	.645
SAdm	1.000	.747
ContSD	1.000	.719
ContSD	1.000	.729
ContSD	1.000	.601
ContSD	1.000	.670
ContSD	1.000	.677
ContSD	1.000	.696
CreInn	1.000	.642
CreInn	1.000	.544
CreInn	1.000	.672
CreInn	1.000	.608

Extraction Method: Principal  
Component Analysis.



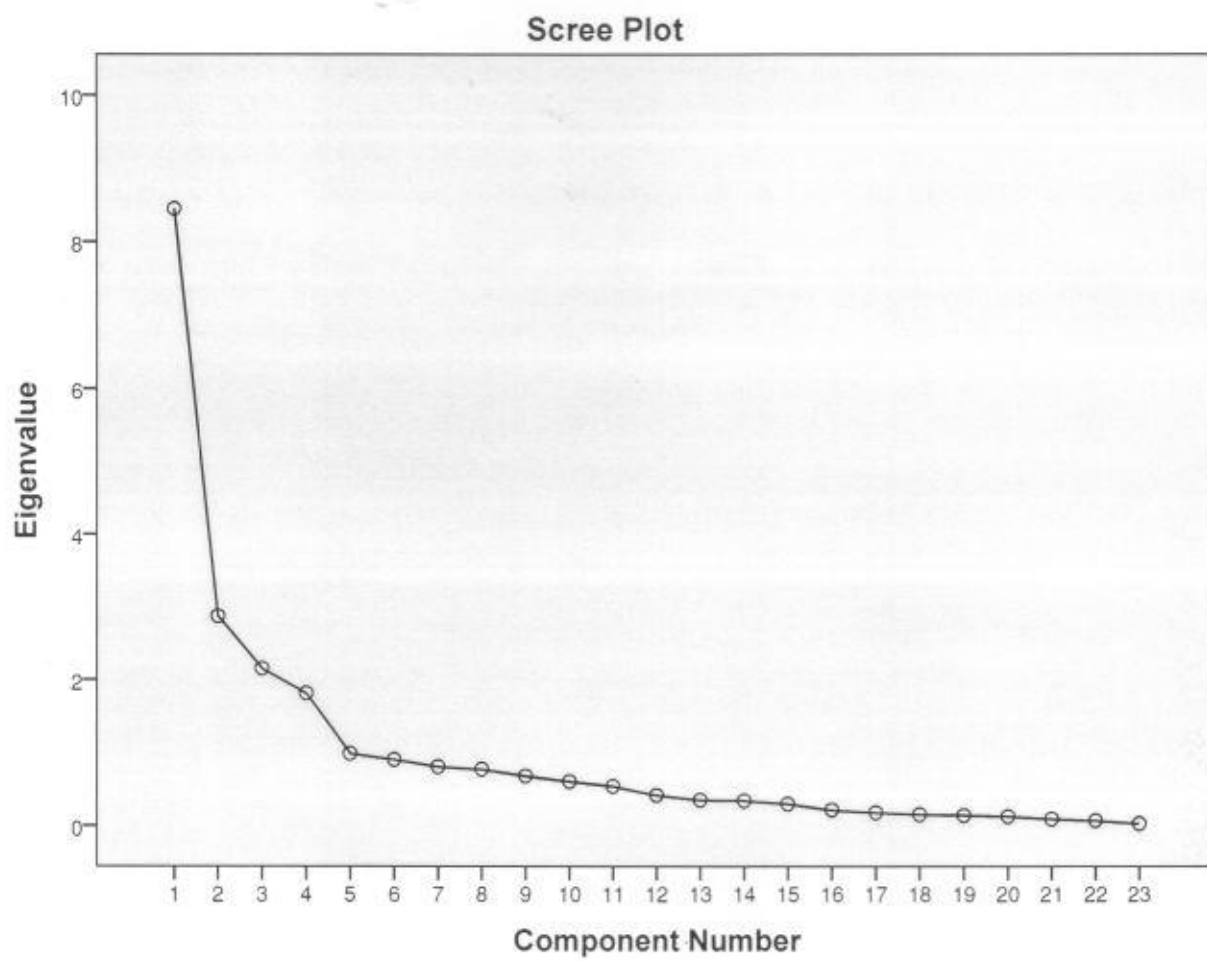
# Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.450	36.739	36.739	8.450	36.739	36.739
2	2.875	12.501	49.240	2.875	12.501	49.240
3	2.153	9.361	58.601	2.153	9.361	58.601
4	1.811	7.875	66.476	1.811	7.875	66.476
5	.984	4.276	70.753			
6	.899	3.909	74.662			
7	.802	3.488	78.150			
8	.769	3.342	81.493			
9	.679	2.951	84.444			
10	.604	2.627	87.071			
11	.540	2.347	89.418			
12	.419	1.823	91.241			
13	.352	1.532	92.773			
14	.343	1.491	94.263			
15	.299	1.298	95.561			
16	.217	.945	96.506			
17	.181	.785	97.291			
18	.154	.670	97.962			
19	.143	.623	98.584			
20	.129	.562	99.146			
21	.094	.408	99.554			
22	.072	.314	99.868			
23	.030	.132	100.000			

**Total Variance Explained**

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	4.879	21.212	21.212
2	4.062	17.662	38.874
3	3.928	17.079	55.953
4	2.420	10.523	66.476
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			

Extraction Method: Principal Component Analysis.



Component Matrix<sup>a</sup>

	Component			
	1	2	3	4
TComp	.674			
TComp	.747			
TComp	.748			
TComp	.724			
TComp	.516			
TComp	.618			
TComp	.688			
TComp	.691			
SAdm	.667			
SAdm	.721			
SAdm	.676			
SAdm	.626			
SAdm	.682			
ContSD	.659			
ContSD	.603	.572		
ContSD		.631		
ContSD	.503	.629		
ContSD		.727		
ContSD	.535	.616		
CreInn	.563			.520
CreInn				
CreInn				.600
CreInn				.695

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Rotated Component Matrix<sup>a</sup>

	Component			
	1	2	3	4
TComp	.676			
TComp	.767			
TComp	.830			
TComp	.832			
TComp	.721			
TComp	.684			
TComp	.699			
TComp	.663			
SAdm		.788		
SAdm		.855		
SAdm		.807		
SAdm		.755		
SAdm		.800		
ContSD			.751	
ContSD			.796	
ContSD			.762	
ContSD			.798	
ContSD			.812	
ContSD			.766	
CreInn				.707
CreInn				.639
CreInn				.785
CreInn				.772

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3	4
1	.653	.548	.437	.288
2	-.243	-.365	.892	-.107
3	-.715	.584	.089	.374
4	.061	-.474	-.073	.875

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

## FACTOR

```
/VARIABLES Master_1 Master_2 Master_3 Master_4 Med_1 Med_2 Med_3 Med_4 Stra_1 Stra_2 Stra_3 Stra_4 Stra_5 Stra_6 EvAs_1 EvAs_2 EvAs_3 EvAs_4 EvAs_5 EvAs_6
/MISSING LISTWISE
/ANALYSIS Master_1 Master_2 Master_3 Master_4 Med_1 Med_2 Med_3 Med_4 Stra_1 Stra_2 Stra_3 Stra_4 Stra_5 Stra_6 EvAs_1 EvAs_2 EvAs_3 EvAs_4 EvAs_5 EvAs_6
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/FORMAT BLANK(.50)
/PLOT EIGEN
/CRITERIA FACTORS(4) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

## Factor Analysis

[DataSet1] D:\EFA Analysis\EFA \_OUTCOME\_Students.sav

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.742
Bartlett's Test of Sphericity	Approx. Chi-Square	711.084
	df	190
	Sig.	.000

# Anti-image Matrices

		Master	Master	Master	Master	Media	Media
Anti-image Covariance	Master	.611	-.019	-.042	-.251	.004	.005
	Master	-.019	.589	-.169	-.130	.001	.032
	Master	-.042	-.169	.738	-.107	-.020	-.081
	Master	-.251	-.130	-.107	.544	-.032	-.004
	Media	.004	.001	-.020	-.032	.401	-.113
	Media	.005	.032	-.081	-.004	-.113	.306
	Media	.015	.074	.009	-.003	.038	-.150
	Media	-.029	-.116	.043	.068	-.138	-.005
	Strategy	.015	.005	.023	-.030	.030	-.043
	Strategy	.061	-.102	.007	-.009	-.022	-.055
	Strategy	-.022	.033	-.044	-.030	-.058	.036
	Strategy	-.201	-.054	-.048	.149	-.015	.034
	Strategy	.048	.052	-.019	-.051	-.015	.003
	Strategy	-.052	-.024	.036	-.012	.035	-.079
	EvAss	.034	.067	-.060	-.039	.012	.045
	EvAss	.020	-.110	.067	-.047	.014	-.014
	EvAss	-.067	-.158	.016	.071	.004	.040
	EvAss	.119	.066	-.070	-.100	.034	.020
	EvAss	-.031	.183	-.038	-.042	-.031	.017
	EvAss	-.039	-.059	.102	-.018	.014	-.095
Anti-image Correlation	Master	.682 <sup>a</sup>	-.031	-.063	-.435	.008	.012
	Master	-.031	.591 <sup>a</sup>	-.257	-.229	.002	.076

# Anti-image Matrices

		Media	Media	Strategy	Strategy	Strategy	Strategy
Anti-image Covariance	Master	.015	-.029	.015	.061	-.022	-.201
	Master	.074	-.116	.005	-.102	.033	-.054
	Master	.009	.043	.023	.007	-.044	-.048
	Master	-.003	.068	-.030	-.009	-.030	.149
	Media	.038	-.138	.030	-.022	-.058	-.015
	Media	-.150	-.005	-.043	-.055	.036	.034
	Media	.268	-.130	.053	.001	-.007	-.073
	Media	-.130	.242	-.051	.079	-.015	-.002
	Strategy	.053	-.051	.436	-.178	-.241	-.058
	Strategy	.001	.079	-.178	.680	.079	-.145
	Strategy	-.007	-.015	-.241	.079	.397	.022
	Strategy	-.073	-.002	-.058	-.145	.022	.615
	Strategy	.028	-.036	.093	-.015	-.107	-.105
	Strategy	.015	.039	-.053	-.032	-.027	-.013
	EvAss	-.031	-.041	.016	-.101	-.035	.063
	EvAss	-.058	.034	.002	.018	-.022	-.040
	EvAss	-.024	.008	.036	-.047	-.110	.026
	EvAss	.011	-.067	-.020	.006	.044	-.047
	EvAss	.030	-.019	-.042	.011	.073	.017
	EvAss	.044	-.013	.060	.028	-.054	-.015
Anti-image Correlation	Master	.038	-.076	.028	.095	-.045	-.328
	Master	.185	-.306	.010	-.161	.069	-.089



# Anti-image Matrices

		Strategy	Strategy	EvAss	EvAss	EvAss	EvAss
Anti-image Covariance	Master	.048	-.052	.034	.020	-.067	.119
	Master	.052	-.024	.067	-.110	-.158	.066
	Master	-.019	.036	-.060	.067	.016	-.070
	Master	-.051	-.012	-.039	-.047	.071	-.100
	Media	-.015	.035	.012	.014	.004	.034
	Media	.003	-.079	.045	-.014	.040	.020
	Media	.028	.015	-.031	-.058	-.024	.011
	Media	-.036	.039	-.041	.034	.008	-.067
	Strategy	.093	-.053	.016	.002	.036	-.020
	Strategy	-.015	-.032	-.101	.018	-.047	.006
	Strategy	-.107	-.027	-.035	-.022	-.110	.044
	Strategy	-.105	-.013	.063	-.040	.026	-.047
	Strategy	.457	-.237	-.001	.073	-.010	.067
	Strategy	-.237	.440	-.095	-.021	.003	-.096
	EvAss	-.001	-.095	.692	-.128	-.009	-.080
	EvAss	.073	-.021	-.128	.737	-.010	-.080
	EvAss	-.010	.003	-.009	-.010	.730	-.160
	EvAss	.067	-.096	-.080	-.080	-.160	.619
	EvAss	-.020	-.050	-.056	-.141	-.068	-.063
	EvAss	-.126	.126	-.058	-.070	-.043	-.161
Anti-image Correlation	Master	.090	-.101	.052	.030	-.100	.193
	Master	.101	-.047	.105	-.167	-.242	.110

# Anti-image Matrices

		EvAss	EvAss
Anti-image Covariance	Master	-.031	-.039
	Master	.183	-.059
	Master	-.038	.102
	Master	-.042	-.018
	Media	-.031	.014
	Media	.017	-.095
	Media	.030	.044
	Media	-.019	-.013
	Strategy	-.042	.060
	Strategy	.011	.028
	Strategy	.073	-.054
	Strategy	.017	-.015
	Strategy	-.020	-.126
	Strategy	-.050	.126
	EvAss	-.056	-.058
	EvAss	-.141	-.070
	EvAss	-.068	-.043
	EvAss	-.063	-.161
	EvAss	.746	-.100
	EvAss	-.100	.646
Anti-image Correlation	Master	-.046	-.062
	Master	.276	-.095

Anti-image Matrices

	Master	Master	Master	Master	Media	Media
Master	-.063	-.257	.759 <sup>a</sup>	-.169	-.038	-.170
Master	-.435	-.229	-.169	.677 <sup>a</sup>	-.068	-.009
Media	.008	.002	-.038	-.068	.836 <sup>a</sup>	-.322
Media	.012	.076	-.170	-.009	-.322	.783 <sup>a</sup>
Media	.038	.185	.019	-.009	.116	-.524
Media	-.076	-.306	.102	.187	-.443	-.017
Strategy	.028	.010	.041	-.062	.072	-.118
Strategy	.095	-.161	.010	-.015	-.042	-.120
Strategy	-.045	.069	-.082	-.065	-.145	.104
Strategy	-.328	-.089	-.071	.257	-.030	.079
Strategy	.090	.101	-.032	-.102	-.034	.008
Strategy	-.101	-.047	.062	-.025	.083	-.215
EvAss	.052	.105	-.084	-.064	.023	.098
EvAss	.030	-.167	.091	-.074	.025	-.030
EvAss	-.100	-.242	.022	.113	.008	.084
EvAss	.193	.110	-.104	-.172	.068	.046
EvAss	-.046	.276	-.051	-.066	-.057	.036
EvAss	-.062	-.095	.148	-.030	.028	-.214

Anti-image Matrices

	Media	Media	Strategy	Strategy	Strategy	Strategy
Master	.019	.102	.041	.010	-.082	-.071
Master	-.009	.187	-.062	-.015	-.065	.257
Media	.116	-.443	.072	-.042	-.145	-.030
Media	-.524	-.017	-.118	-.120	.104	.079
Media	.724 <sup>a</sup>	-.509	.156	.003	-.021	-.181
Media	-.509	.751 <sup>a</sup>	-.156	.195	-.049	-.006
Strategy	.156	-.156	.697 <sup>a</sup>	-.327	-.580	-.113
Strategy	.003	.195	-.327	.663 <sup>a</sup>	.153	-.225
Strategy	-.021	-.049	-.580	.153	.762 <sup>a</sup>	.044
Strategy	-.181	-.006	-.113	-.225	.044	.758 <sup>a</sup>
Strategy	.081	-.108	.207	-.027	-.250	-.198
Strategy	.043	.120	-.120	-.059	-.065	-.026
EvAss	-.073	-.099	.029	-.147	-.067	.097
EvAss	-.130	.081	.004	.026	-.041	-.059
EvAss	-.055	.019	.064	-.067	-.205	.039
EvAss	.028	-.172	-.039	.010	.088	-.076
EvAss	.066	-.045	-.074	.015	.133	.025
EvAss	.106	-.033	.114	.043	-.106	-.024

Anti-image Matrices

	Strategy	Strategy	EvAss	EvAss	EvAss	EvAss
Master	-.032	.062	-.084	.091	.022	-.104
Master	-.102	-.025	-.064	-.074	.113	-.172
Media	-.034	.083	.023	.025	.008	.068
Media	.008	-.215	.098	-.030	.084	.046
Media	.081	.043	-.073	-.130	-.055	.028
Media	-.108	.120	-.099	.081	.019	-.172
Strategy	.207	-.120	.029	.004	.064	-.039
Strategy	-.027	-.059	-.147	.026	-.067	.010
Strategy	-.250	-.065	-.067	-.041	-.205	.088
Strategy	-.198	-.026	.097	-.059	.039	-.076
Strategy	.713 <sup>a</sup>	-.529	-.001	.126	-.017	.126
Strategy	-.529	.745 <sup>a</sup>	-.172	-.036	.005	-.183
EvAss	-.001	-.172	.848 <sup>a</sup>	-.179	-.013	-.122
EvAss	.126	-.036	-.179	.795 <sup>a</sup>	-.014	-.119
EvAss	-.017	.005	-.013	-.014	.773 <sup>a</sup>	-.238
EvAss	.126	-.183	-.122	-.119	-.238	.743 <sup>a</sup>
EvAss	-.034	-.087	-.078	-.190	-.093	-.092
EvAss	-.232	.237	-.087	-.101	-.062	-.254

Anti-image Matrices

	EvAss	EvAss
Master	-.051	.148
Master	-.066	-.030
Media	-.057	.028
Media	.036	-.214
Media	.066	.106
Media	-.045	-.033
Strategy	-.074	.114
Strategy	.015	.043
Strategy	.133	-.106
Strategy	.025	-.024
Strategy	-.034	-.232
Strategy	-.087	.237
EvAss	-.078	-.087
EvAss	-.190	-.101
EvAss	-.093	-.062
EvAss	-.092	-.254
EvAss	.710 <sup>a</sup>	-.144
EvAss	-.144	.736 <sup>a</sup>

# Communalities

	Initial	Extraction
Master	1.000	.463
Master	1.000	.627
Master	1.000	.393
Master	1.000	.569
Media	1.000	.675
Media	1.000	.726
Media	1.000	.790
Media	1.000	.818
Strategy	1.000	.541
Strategy	1.000	.323
Strategy	1.000	.561
Strategy	1.000	.382
Strategy	1.000	.531
Strategy	1.000	.667
EvAss	1.000	.450
EvAss	1.000	.414
EvAss	1.000	.311
EvAss	1.000	.534
EvAss	1.000	.458
EvAss	1.000	.451

Extraction Method: Principal  
Component Analysis.

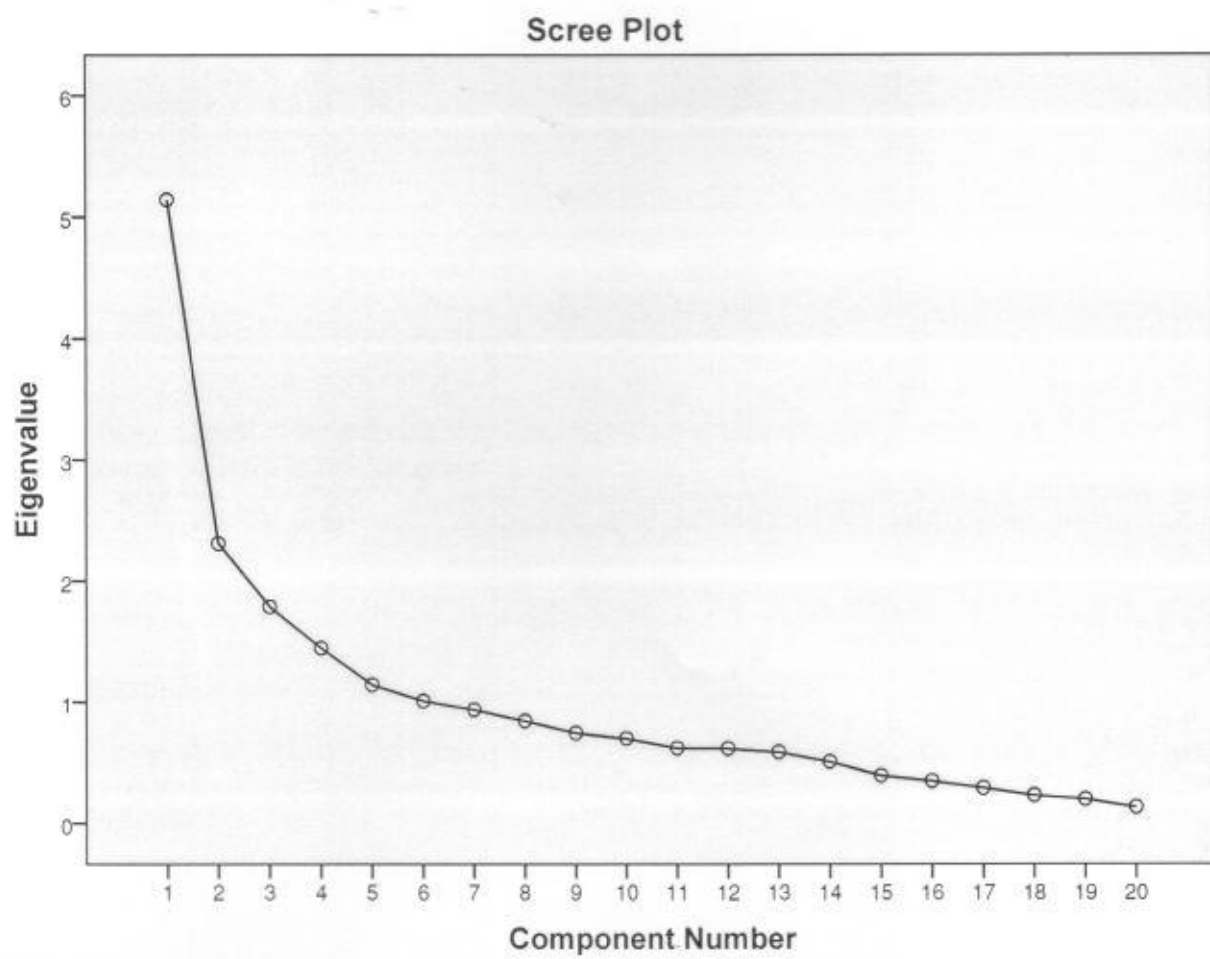
# Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.142	25.712	25.712	5.142	25.712	25.712
2	2.308	11.539	37.251	2.308	11.539	37.251
3	1.788	8.940	46.191	1.788	8.940	46.191
4	1.447	7.236	53.427	1.447	7.236	53.427
5	1.143	5.714	59.141			
6	1.010	5.049	64.190			
7	.938	4.688	68.879			
8	.845	4.223	73.101			
9	.745	3.724	76.825			
10	.699	3.495	80.320			
11	.620	3.099	83.420			
12	.617	3.084	86.503			
13	.588	2.940	89.443			
14	.509	2.545	91.988			
15	.394	1.970	93.957			
16	.349	1.743	95.701			
17	.292	1.462	97.163			
18	.231	1.157	98.320			
19	.201	1.005	99.325			
20	.135	.675	100.000			

# Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.243	16.216	16.216
2	2.761	13.804	30.020
3	2.505	12.525	42.545
4	2.177	10.883	53.427
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Extraction Method: Principal Component Analysis.





Component Matrix<sup>a</sup>

	Component			
	1	2	3	4
Master				
Master				.538
Master				
Master		.561		
Media	.641			
Media	.665	-.527		
Media	.564	-.686		
Media	.675	-.588		
Strategy	.572			
Strategy				
Strategy	.666			
Strategy	.526			
Strategy	.573			
Strategy	.580			
EvAss				
EvAss				
EvAss				
EvAss			.518	
EvAss			.587	
EvAss				

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Rotated Component Matrix<sup>a</sup>

	Component			
	1	2	3	4
Master				.639
Master				.780
Master				.599
Master				.634
Media	.788			
Media	.812			
Media	.876			
Media	.878			
Strategy		.689		
Strategy		.547		
Strategy		.649		
Strategy				
Strategy		.678		
Strategy		.766		
EvAss			.591	
EvAss			.609	
EvAss				
EvAss			.712	
EvAss			.644	
EvAss			.611	

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Component Transformation Matrix

Component	1	2	3	4
1	.580	.563	.461	.365
2	-.795	.381	.194	.431
3	-.157	-.220	.840	-.472
4	.084	-.700	.213	.677

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

GET

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FACTOR

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CiS\_1 CiS\_2 CiS\_3 CiS\_4 CiS\_5 CiS\_6 CI\_1 CI\_2 CI\_3 CI\_4

# **APPENDIX F**

## **CONFIRMATORY FACTOR ANALYSIS**

DATE: 12/22/2015

TIME: 3:54

LISREL 8.80

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file D:\CFA\_Analysis\INPUT.spj:

Raw Data from file 'D:\CFA\_Analysis\INPUT.psf'

Sample Size = 94

Latent Variables StudQua Curr FacInf EduStaff INPUT

IA\_2=StudQua

IA\_4=StudQua

IA\_5=StudQua

IB\_2=Curr

IB\_3=Curr

IB\_4=Curr

IC\_2=FacInf

IC\_4=FacInf

IC\_5=FacInf

IC\_6=FacInf

IC\_7=FacInf

IC\_8=FacInf

IC\_9=FacInf

IC\_10=FacInf

IC\_12=FacInf

ID\_1=EduStaff

ID\_2=EduStaff

ID\_4=EduStaff

StudQua Curr FacInf EduStaff = INPUT

options sc mi ADD=OFF

SET ERROR VARIANCE OF StudQua TO 0,001

SET ERROR VARIANCE OF Curr TO 0,001

SET ERROR VARIANCE OF FacInf TO 0,001

SET ERROR VARIANCE OF EduStaff TO 0,001

Relationships

Path Diagram

End of Problem

Sample Size = 94

## Covariance Matrix

	IA_2	IA_4	IA_5	IB_2	IB_3	IB_4
IA_2	0.84					
IA_4	0.19	1.45				
IA_5	0.16	0.60	0.90			
IB_2	0.33	0.55	0.47	1.06		
IB_3	0.40	0.56	0.39	0.52	1.26	
IB_4	0.40	0.40	0.28	0.42	0.39	1.01
IC_2	0.43	0.57	0.43	0.59	0.56	0.59
IC_4	0.35	0.66	0.40	0.54	0.56	0.46
IC_5	0.28	0.49	0.22	0.36	0.47	0.45
IC_6	0.31	0.71	0.28	0.41	0.37	0.32
IC_7	0.50	0.44	0.38	0.47	0.55	0.41
IC_8	0.38	0.16	0.15	0.35	0.27	0.30
IC_9	0.28	0.24	0.23	0.31	0.43	0.30
IC_10	0.30	0.63	0.45	0.45	0.55	0.43
IC_12	0.31	0.63	0.41	0.53	0.42	0.36
ID_1	0.53	0.70	0.49	0.63	0.62	0.71
ID_2	0.25	0.59	0.26	0.48	0.42	0.46
ID_4	0.41	0.55	0.30	0.44	0.60	0.52

## Covariance Matrix

	IC_2	IC_4	IC_5	IC_6	IC_7	IC_8
IC_2	1.33					
IC_4	0.54	1.44				
IC_5	0.40	0.29	1.12			
IC_6	0.51	0.35	0.57	1.44		
IC_7	0.59	0.63	0.40	0.39	1.17	
IC_8	0.56	0.38	0.32	0.33	0.37	1.24
IC_9	0.33	0.37	0.21	0.14	0.33	0.24
IC_10	0.52	0.68	0.41	0.45	0.44	0.25
IC_12	0.63	0.47	0.39	0.43	0.46	0.43
ID_1	0.80	0.69	0.50	0.54	0.60	0.64
ID_2	0.60	0.60	0.47	0.43	0.59	0.40
ID_4	0.55	0.47	0.47	0.48	0.30	0.25

## Covariance Matrix

	IC_9	IC_10	IC_12	ID_1	ID_2	ID_4
IC_9	0.98					
IC_10	0.30	1.25				
IC_12	0.20	0.44	1.15			
ID_1	0.49	0.75	0.65	1.53		
ID_2	0.24	0.49	0.74	0.60	1.45	
ID_4	0.36	0.57	0.54	0.66	0.51	1.19

Number of Iterations = 20

LISREL Estimates (Maximum Likelihood)

Measurement Equations

$$IA\_2 = 0.51 * StudQua, Errorvar. = 0.58, R^2 = 0.31$$

(0.089)  
6.56

$$IA\_4 = 0.77 * StudQua, Errorvar. = 0.86, R^2 = 0.41$$

(0.16)            (0.13)  
4.77            6.41

$$IA\_5 = 0.52 * StudQua, Errorvar. = 0.63, R^2 = 0.30$$

(0.12)            (0.096)  
4.31            6.56

$$IB\_2 = 0.69 * Curr, Errorvar. = 0.58, R^2 = 0.45$$

(0.092)  
6.33

$$IB\_3 = 0.71 * Curr, Errorvar. = 0.75, R^2 = 0.40$$

(0.13)            (0.12)  
5.58            6.42

$$IB\_4 = 0.64 * Curr, Errorvar. = 0.60, R^2 = 0.41$$

(0.11)            (0.093)  
5.64            6.41

$$IC\_2 = 0.82 * FacInf, Errorvar. = 0.66, R^2 = 0.50$$

(0.11)  
6.22

$$IC\_4 = 0.75 * FacInf, Errorvar. = 0.88, R^2 = 0.39$$

(0.13)            (0.14)  
5.74            6.44

$$IC\_5 = 0.57 * FacInf, Errorvar. = 0.79, R^2 = 0.29$$

(0.11)            (0.12)  
5.00            6.57

$$IC\_6 = 0.61 * FacInf, Errorvar. = 1.07, R^2 = 0.26$$

(0.13)            (0.16)  
4.70            6.61

$$IC\_7 = 0.68 * FacInf, Errorvar. = 0.71, R^2 = 0.40$$

(0.12)            (0.11)  
5.82            6.43

$$IC\_8 = 0.51 * FacInf, Errorvar. = 0.98, R^2 = 0.21$$

(0.12)            (0.15)  
4.25            6.66

$$IC\_9 = 0.44 * FacInf, Errorvar. = 0.79, R^2 = 0.20$$

(0.11)            (0.12)  
4.09            6.67

$$IC\_10 = 0.72 * FacInf, Errorvar. = 0.74, R^2 = 0.41$$

(0.12)            (0.12)  
5.92            6.40

$$IC\_12 = 0.71 * FacInf, Errorvar. = 0.65, R^2 = 0.44$$

(0.12)            (0.10)

6.08                  6.36

ID\_1 = 0.95\*EduStaff, Errorvar.= 0.63 , R<sup>2</sup> = 0.59  
                                  (0.11)  
                                  5.96

ID\_2 = 0.72\*EduStaff, Errorvar.= 0.93 , R<sup>2</sup> = 0.36  
                                  (0.12)                  (0.14)  
                                  5.83                  6.49

ID\_4 = 0.70\*EduStaff, Errorvar.= 0.70 , R<sup>2</sup> = 0.41  
                                  (0.11)                  (0.11)  
                                  6.32                  6.40

#### Structural Equations

StudQua = 1.00\*INPUT,, R<sup>2</sup> = 1.00  
                                  (0.18)  
                                  5.59

Curr = 1.00\*INPUT,, R<sup>2</sup> = 1.00  
                                  (0.14)  
                                  7.13

FacInf = 1.00\*INPUT,, R<sup>2</sup> = 1.00  
                                  (0.13)  
                                  7.65

EduStaff = 1.00\*INPUT,, R<sup>2</sup> = 1.00  
                                  (0.12)  
                                  8.58

#### Correlation Matrix of Independent Variables

INPUT  
 -----  
 1.00

#### Covariance Matrix of Latent Variables

	StudQua	Curr	FacInf	EduStaff	INPUT
StudQua	1.00				
Curr	1.00	1.00			
FacInf	1.00	1.00	1.00		
EduStaff	1.00	1.00	1.00	1.00	
INPUT	1.00	1.00	1.00	1.00	1.00

#### Goodness of Fit Statistics

Degrees of Freedom = 135  
 Minimum Fit Function Chi-Square = 152.61 (P = 0.14)  
 Normal Theory Weighted Least Squares Chi-Square = 147.84 (P = 0.21)  
 Estimated Non-centrality Parameter (NCP) = 12.84  
 90 Percent Confidence Interval for NCP = (0.0 ; 46.55)

Minimum Fit Function Value = 1.64  
 Population Discrepancy Function Value (F0) = 0.14  
 90 Percent Confidence Interval for F0 = (0.0 ; 0.50)  
 Root Mean Square Error of Approximation (RMSEA) = 0.032  
 90 Percent Confidence Interval for RMSEA = (0.0 ; 0.061)  
 P-Value for Test of Close Fit (RMSEA < 0.05) = 0.82

Expected Cross-Validation Index (ECVI) = 2.36  
 90 Percent Confidence Interval for ECVI = (2.23 ; 2.73)  
 ECVI for Saturated Model = 3.68  
 ECVI for Independence Model = 22.38

Chi-Square for Independence Model with 153 Degrees of Freedom = 2044.91

Independence AIC = 2080.91  
 Model AIC = 219.84  
 Saturated AIC = 342.00  
 Independence CAIC = 2144.69  
 Model CAIC = 347.40  
 Saturated CAIC = 947.90

Normed Fit Index (NFI) = 0.93  
 Non-Normed Fit Index (NNFI) = 0.99  
 Parsimony Normed Fit Index (PNFI) = 0.82  
 Comparative Fit Index (CFI) = 0.99  
 Incremental Fit Index (IFI) = 0.99  
 Relative Fit Index (RFI) = 0.92

Critical N (CN) = 108.34

Root Mean Square Residual (RMR) = 0.074  
 Standardized RMR = 0.061  
 Goodness of Fit Index (GFI) = 0.85  
 Adjusted Goodness of Fit Index (AGFI) = 0.81  
 Parsimony Goodness of Fit Index (PGFI) = 0.67

#### Modification Indices and Expected Change

No Non-Zero Modification Indices for LAMBDA-Y

No Non-Zero Modification Indices for BETA

No Non-Zero Modification Indices for GAMMA

No Non-Zero Modification Indices for PHI

#### Modification Indices for PSI

	StudQua	Curr	FacInf	EduStaff
StudQua	1.04			
Curr	0.39	0.29		
FacInf	0.77	0.05	0.97	
EduStaff	0.41	0.14	1.05	0.82

#### Expected Change for PSI

StudQua	Curr	FacInf	EduStaff
---------	------	--------	----------



StudQua	-0.13			
Curr	0.04	-0.05		
FacInf	0.05	-0.01	-0.05	
EduStaff	-0.04	0.02	0.04	-0.08

Standardized Expected Change for PSI

StudQua	-0.13			
Curr	0.04	-0.05		
FacInf	0.05	-0.01	-0.05	
EduStaff	-0.04	0.02	0.04	-0.08

The Modification Indices Suggest to Add an Error Covariance Between and Decrease in Chi-Square New Estimate

IA_4	IA_2	8.4	-0.23
ID_2	IC_12	9.5	0.27

Modification Indices for THETA-EPS

	IA_2	IA_4	IA_5	IB_2	IB_3	IB_4
IA_2	--					
IA_4	8.45	--				
IA_5	2.78	7.29	--			
IB_2	0.09	0.05	3.34	--		
IB_3	0.33	0.02	0.07	0.15	--	
IB_4	1.83	1.65	0.78	0.13	0.91	--
IC_2	0.03	0.63	0.00	0.11	0.08	1.00
IC_4	0.18	1.00	0.01	0.09	0.10	0.05
IC_5	0.05	0.31	1.22	0.30	0.68	1.59
IC_6	0.00	6.69	0.20	0.04	0.54	0.78
IC_7	6.12	1.17	0.11	0.00	0.74	0.16
IC_8	2.61	6.81	2.22	0.01	1.29	0.12
IC_9	0.77	1.34	0.00	0.00	2.33	0.10
IC_10	0.88	1.07	1.18	0.64	0.23	0.19
IC_12	0.66	1.43	0.33	0.54	1.43	2.33
ID_1	0.84	0.19	0.04	0.20	0.68	2.82
ID_2	2.33	0.19	2.45	0.04	1.25	0.00
ID_4	0.88	0.01	1.09	0.46	2.18	1.04

Modification Indices for THETA-EPS

	IC_2	IC_4	IC_5	IC_6	IC_7	IC_8
IC_2	--					
IC_4	1.07	--				
IC_5	1.01	3.01	--			
IC_6	0.01	1.22	5.82	--		
IC_7	0.27	2.37	0.02	0.11	--	
IC_8	3.01	0.00	0.08	0.02	0.05	--
IC_9	0.18	0.23	0.30	1.92	0.17	0.05
IC_10	1.04	3.44	0.01	0.00	0.56	1.85
IC_12	0.71	0.62	0.06	0.01	0.15	0.75
ID_1	0.08	0.08	0.51	0.25	0.81	4.22
ID_2	0.00	0.43	0.44	0.02	1.60	0.13
ID_4	0.16	0.58	0.85	0.40	7.17	1.85

Modification Indices for THETA-EPS

	IC_9	IC_10	IC_12	ID_1	ID_2	ID_4
IC_9	--					
IC_10	0.05	--				
IC_12	2.45	1.14	--			
ID_1	1.11	1.03	0.22	--		
ID_2	0.83	0.12	9.48	1.35	--	
ID_4	0.54	0.82	0.42	0.05	0.00	--

Expected Change for THETA-EPS

	IA_2	IA_4	IA_5	IB_2	IB_3	IB_4
IA_2	--					
IA_4	-0.23	--				
IA_5	-0.11	0.22	--			
IB_2	-0.02	0.02	0.12	--		
IB_3	0.04	0.01	0.02	0.03	--	
IB_4	0.09	-0.10	-0.06	-0.02	-0.07	--
IC_2	0.01	-0.07	0.00	0.02	-0.02	0.07
IC_4	-0.03	0.10	0.01	0.02	0.03	-0.02
IC_5	-0.02	0.05	-0.08	-0.04	0.07	0.10
IC_6	0.00	0.27	-0.04	-0.02	-0.07	-0.08
IC_7	0.17	-0.09	0.02	0.00	0.07	-0.03
IC_8	0.13	-0.26	-0.13	-0.01	-0.11	-0.03
IC_9	0.06	-0.10	0.00	0.00	0.13	0.02
IC_10	-0.07	0.09	0.08	-0.06	0.04	-0.03
IC_12	-0.05	0.10	0.04	0.05	-0.09	-0.11
ID_1	0.06	-0.04	-0.01	-0.03	-0.07	0.12
ID_2	-0.12	0.04	-0.13	-0.02	-0.10	0.00
ID_4	0.07	0.01	-0.08	-0.05	0.12	0.07

Expected Change for THETA-EPS

	IC_2	IC_4	IC_5	IC_6	IC_7	IC_8
IC_2	--					
IC_4	-0.09	--				
IC_5	-0.08	-0.16	--			
IC_6	0.01	-0.12	0.24	--		
IC_7	0.04	0.13	0.01	-0.03	--	
IC_8	0.15	0.00	0.03	0.02	0.02	--
IC_9	-0.03	0.04	-0.05	-0.14	0.03	0.02
IC_10	-0.08	0.17	-0.01	0.01	-0.06	-0.13
IC_12	0.06	-0.07	-0.02	-0.01	-0.03	0.08
ID_1	0.02	-0.02	-0.06	-0.05	-0.07	0.18
ID_2	0.01	0.07	0.06	-0.02	0.11	0.04
ID_4	-0.03	-0.07	0.08	0.06	-0.21	-0.12

Expected Change for THETA-EPS

	IC_9	IC_10	IC_12	ID_1	ID_2	ID_4
IC_9	--					
IC_10	-0.02	--				
IC_12	-0.12	-0.08	--			
ID_1	0.08	0.08	-0.04	--		
ID_2	-0.08	-0.03	0.27	-0.10	--	

ID_4	0.06	0.07	0.05	-0.02	0.00	--
------	------	------	------	-------	------	----

Completely Standardized Expected Change for THETA-EPS

	IA_2	IA_4	IA_5	IB_2	IB_3	IB_4
-----						
IA_2	--					
IA_4	-0.20	--				
IA_5	-0.13	0.19	--			
IB_2	-0.02	0.01	0.12	--		
IB_3	0.04	0.01	0.02	0.02	--	
IB_4	0.09	-0.08	-0.06	-0.02	-0.06	--
IC_2	0.01	-0.05	0.00	0.02	-0.02	0.06
IC_4	-0.03	0.07	0.01	0.02	0.02	-0.02
IC_5	-0.02	0.04	-0.08	-0.04	0.06	0.09
IC_6	0.00	0.19	-0.03	-0.01	-0.05	-0.06
IC_7	0.17	-0.07	0.02	0.00	0.06	-0.03
IC_8	0.13	-0.19	-0.12	-0.01	-0.08	-0.03
IC_9	0.07	-0.09	0.00	0.00	0.11	0.02
IC_10	-0.07	0.07	0.08	-0.05	0.03	-0.03
IC_12	-0.06	0.08	0.04	0.05	-0.08	-0.10
ID_1	0.06	-0.02	-0.01	-0.02	-0.05	0.10
ID_2	-0.11	0.03	-0.11	-0.01	-0.08	0.00
ID_4	0.07	0.01	-0.07	-0.04	0.10	0.07

Completely Standardized Expected Change for THETA-EPS

	IC_2	IC_4	IC_5	IC_6	IC_7	IC_8
-----						
IC_2	--					
IC_4	-0.06	--				
IC_5	-0.07	-0.12	--			
IC_6	0.01	-0.08	0.19	--		
IC_7	0.03	0.10	0.01	-0.02	--	
IC_8	0.12	0.00	0.02	0.01	0.02	--
IC_9	-0.03	0.04	-0.04	-0.11	0.03	0.02
IC_10	-0.06	0.12	-0.01	0.00	-0.05	-0.10
IC_12	0.05	-0.05	-0.02	-0.01	-0.03	0.06
ID_1	0.01	-0.02	-0.04	-0.03	-0.05	0.13
ID_2	0.00	0.04	0.05	-0.01	0.09	0.03
ID_4	-0.02	-0.05	0.06	0.05	-0.18	-0.10

Completely Standardized Expected Change for THETA-EPS

	IC_9	IC_10	IC_12	ID_1	ID_2	ID_4
-----						
IC_9	--					
IC_10	-0.02	--				
IC_12	-0.11	-0.07	--			
ID_1	0.07	0.06	-0.03	--		
ID_2	-0.07	-0.02	0.21	-0.07	--	
ID_4	0.05	0.06	0.04	-0.01	0.00	--

Maximum Modification Index is 9.48 for Element (17,15) of THETA-EPS

Standardized Solution

LAMBDA-Y

	StudQua	Curr	FacInf	EduStaff
-----				
IA_2	0.51	--	--	--
IA_4	0.77	--	--	--
IA_5	0.52	--	--	--
IB_2	--	0.69	--	--
IB_3	--	0.71	--	--
IB_4	--	0.64	--	--
IC_2	--	--	0.82	--
IC_4	--	--	0.75	--
IC_5	--	--	0.57	--
IC_6	--	--	0.61	--
IC_7	--	--	0.68	--
IC_8	--	--	0.51	--
IC_9	--	--	0.44	--
IC_10	--	--	0.72	--
IC_12	--	--	0.71	--
ID_1	--	--	--	0.95
ID_2	--	--	--	0.72
ID_4	--	--	--	0.70

#### GAMMA

##### INPUT

StudQua	1.00
Curr	1.00
FacInf	1.00
EduStaff	1.00

#### Correlation Matrix of ETA and KSI

	StudQua	Curr	FacInf	EduStaff	INPUT
-----					
StudQua	1.00				
Curr	1.00	1.00			
FacInf	1.00	1.00	1.00		
EduStaff	1.00	1.00	1.00	1.00	
INPUT	1.00	1.00	1.00	1.00	1.00

#### Completely Standardized Solution

##### LAMBDA-Y

	StudQua	Curr	FacInf	EduStaff
-----				
IA_2	0.55	--	--	--
IA_4	0.64	--	--	--
IA_5	0.55	--	--	--
IB_2	--	0.67	--	--
IB_3	--	0.63	--	--
IB_4	--	0.64	--	--
IC_2	--	--	0.71	--
IC_4	--	--	0.62	--
IC_5	--	--	0.54	--
IC_6	--	--	0.51	--
IC_7	--	--	0.63	--

IC_8	--	--	0.46	--
IC_9	--	--	0.44	--
IC_10	--	--	0.64	--
IC_12	--	--	0.66	--
ID_1	--	--	--	0.77
ID_2	--	--	--	0.60
ID_4	--	--	--	0.64

GAMMA

INPUT

StudQua	1.00
Curr	1.00
FacInf	1.00
EduStaff	1.00

Correlation Matrix of ETA and KSI

	StudQua	Curr	FacInf	EduStaff	INPUT
StudQua	1.00				
Curr	1.00	1.00			
FacInf	1.00	1.00	1.00		
EduStaff	1.00	1.00	1.00	1.00	
INPUT	1.00	1.00	1.00	1.00	1.00

THETA-EPS

IA_2	IA_4	IA_5	IB_2	IB_3	IB_4
0.69	0.59	0.70	0.55	0.60	0.59

THETA-EPS

IC_2	IC_4	IC_5	IC_6	IC_7	IC_8
0.50	0.61	0.71	0.74	0.60	0.79

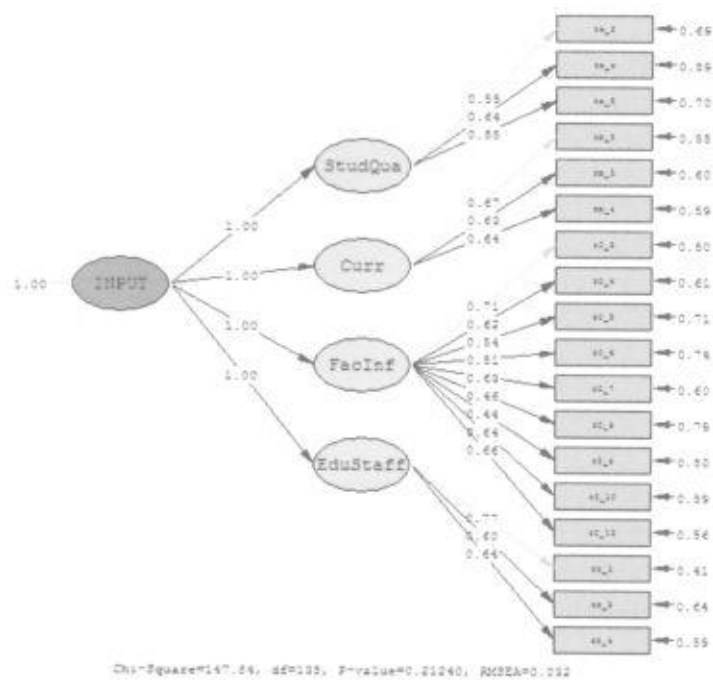
THETA-EPS

IC_9	IC_10	IC_12	ID_1	ID_2	ID_4
0.80	0.59	0.56	0.41	0.64	0.59

Time used: 0.031 Seconds

## SECOND ORDER CONFIRMATORY FACTOR ANALYSIS

### INPUT DIMENSION



DATE: 12/21/2015  
TIME: 21:25

LISREL 8.80

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file D:\CFA\_Analysis\PROCESS.spj:

Raw Data from file 'D:\CFA\_Analysis\PROCESS.psf'

Sample Size = 94

Latent Variables TLP IndInt EduPrac PROCESS

IIA\_1=TLP

IIA\_2=TLP

IIA\_3=TLP

IIA\_4=TLP

IIA\_5=TLP

IIA\_6=TLP

IIA\_7=TLP

IIA\_8=TLP

IIA\_9=TLP

IIB\_1=IndInt

IIB\_2=IndInt

IIB\_3=IndInt

IIC\_1=EduPrac

IIC\_2=EduPrac

IIC\_3=EduPrac

IIC\_4=EduPrac

TLP IndInt EduPrac=PROCESS

OPTIONS SC MI add=off IT=100

Set the Error Variance of IIB\_1 to 0.001

Set the error covariance of IIA\_8 and IIA\_7

Set the error covariance of IIA\_6 and IIA\_2

Relationships

Path Diagram

End of Problem

Sample Size = 94

Covariance Matrix

IIA\_1 IIA\_2 IIA\_3 IIA\_4 IIA\_5 IIA\_6

IIA_1	0.63					
IIA_2	0.24	0.26				
IIA_3	0.45	0.23	0.55			
IIA_4	0.42	0.21	0.42	0.61		
IIA_5	0.23	0.12	0.21	0.22	0.19	
IIA_6	0.17	0.15	0.20	0.18	0.12	0.22
IIA_7	0.46	0.22	0.42	0.46	0.25	0.22
IIA_8	0.26	0.10	0.26	0.29	0.14	0.12
IIA_9	0.24	0.14	0.26	0.24	0.15	0.14
IIB_1	0.15	0.06	0.09	0.06	0.03	0.02
IIB_2	0.19	0.09	0.13	0.08	0.05	0.05
IIB_3	0.13	0.07	0.08	0.10	0.06	0.03
IIC_1	0.13	0.02	0.11	0.10	0.03	-0.03
IIC_2	0.11	0.06	0.14	0.12	0.04	0.02
IIC_3	0.17	0.07	0.17	0.14	0.06	0.02
IIC_4	0.23	0.09	0.23	0.21	0.09	0.03

#### Covariance Matrix

	IIA_7	IIA_8	IIA_9	IIB_1	IIB_2	IIB_3
IIA_7	0.78					
IIA_8	0.35	0.25				
IIA_9	0.28	0.15	0.22			
IIB_1	0.11	0.06	0.06	0.37		
IIB_2	0.13	0.07	0.05	0.34	0.42	
IIB_3	0.14	0.07	0.06	0.20	0.18	0.40
IIC_1	0.06	0.04	0.03	0.05	0.06	0.08
IIC_2	0.06	0.06	0.04	0.06	0.06	0.09
IIC_3	0.11	0.09	0.09	0.08	0.10	0.07
IIC_4	0.18	0.09	0.10	0.08	0.07	0.09

#### Covariance Matrix

	IIC_1	IIC_2	IIC_3	IIC_4
IIC_1	0.35			
IIC_2	0.18	0.41		
IIC_3	0.16	0.24	0.45	
IIC_4	0.21	0.23	0.18	0.37

Number of Iterations = 88

LISREL Estimates (Maximum Likelihood)

#### Measurement Equations

IIA\_1 = 0.66\*TLP, Errorvar.= 0.20 , R<sup>2</sup> = 0.69  
 (0.034)  
 5.82

IIA\_2 = 0.34\*TLP, Errorvar.= 0.14 , R<sup>2</sup> = 0.44  
 (0.047) (0.022)  
 7.08 6.46



$$\text{IIA}_3 = 0.66 * \text{TLP}, \text{Errorvar.} = 0.12, R^2 = 0.78$$

(0.061)	(0.023)
10.78	5.22

$$\text{IIA}_4 = 0.64 * \text{TLP}, \text{Errorvar.} = 0.20, R^2 = 0.67$$

(0.067)	(0.034)
9.56	5.90

$$\text{IIA}_5 = 0.35 * \text{TLP}, \text{Errorvar.} = 0.072, R^2 = 0.63$$

(0.038)	(0.012)
9.06	6.07

$$\text{IIA}_6 = 0.30 * \text{TLP}, \text{Errorvar.} = 0.13, R^2 = 0.42$$

(0.044)	(0.019)
6.82	6.50

$$\text{IIA}_7 = 0.69 * \text{TLP}, \text{Errorvar.} = 0.31, R^2 = 0.60$$

(0.078)	(0.050)
8.80	6.11

$$\text{IIA}_8 = 0.40 * \text{TLP}, \text{Errorvar.} = 0.090, R^2 = 0.64$$

(0.043)	(0.015)
9.17	6.01

$$\text{IIA}_9 = 0.39 * \text{TLP}, \text{Errorvar.} = 0.067, R^2 = 0.70$$

(0.040)	(0.012)
9.84	5.79

$$\text{IIB}_1 = 0.61 * \text{IndInt}, \text{Errorvar.} = 0.0010, R^2 = 1.00$$

$$\text{IIB}_2 = 0.55 * \text{IndInt}, \text{Errorvar.} = 0.12, R^2 = 0.72$$

(0.036)	(0.017)
15.56	6.77

$$\text{IIB}_3 = 0.32 * \text{IndInt}, \text{Errorvar.} = 0.29, R^2 = 0.26$$

(0.056)	(0.043)
5.75	6.81

$$\text{IIC}_1 = 0.40 * \text{EduPrac}, \text{Errorvar.} = 0.19, R^2 = 0.45$$

(0.034)
5.64

$$\text{IIC}_2 = 0.46 * \text{EduPrac}, \text{Errorvar.} = 0.20, R^2 = 0.52$$

(0.080)	(0.038)
5.78	5.23

$$\text{IIC}_3 = 0.42 * \text{EduPrac}, \text{Errorvar.} = 0.28, R^2 = 0.38$$

(0.082)	(0.047)
5.08	5.96

$$\text{IIC}_4 = 0.51 * \text{EduPrac}, \text{Errorvar.} = 0.11, R^2 = 0.69$$

(0.082)	(0.031)
6.22	3.64

$$\text{Error Covariance for IIA}_6 \text{ and IIA}_2 = 0.048$$

(0.016)
3.04

Error Covariance for IIA\_8 and IIA\_7 = 0.074

(0.022)

3.39

#### Structural Equations

TLP = 0.68\*PROCESS, Errorvar. = 0.54 , R<sup>2</sup> = 0.46

(0.20)

(0.25)

3.46

2.15

IndInt = 0.35\*PROCESS, Errorvar. = 0.88 , R<sup>2</sup> = 0.12

(0.13)

(0.14)

2.65

6.18

EduPrac = 0.70\*PROCESS, Errorvar. = 0.51 , R<sup>2</sup> = 0.49

(0.22)

(0.29)

3.25

1.76

#### Correlation Matrix of Independent Variables

PROCESS

-----

1.00

#### Covariance Matrix of Latent Variables

TLP IndInt EduPrac PROCESS

-----

TLP	1.00			
IndInt	0.24	1.00		
EduPrac	0.48	0.24	1.00	
PROCESS	0.68	0.35	0.70	1.00

#### Goodness of Fit Statistics

Degrees of Freedom = 100

Minimum Fit Function Chi-Square = 132.60 (P = 0.016)

Normal Theory Weighted Least Squares Chi-Square = 123.79 (P = 0.054)

Estimated Non-centrality Parameter (NCP) = 23.79

90 Percent Confidence Interval for NCP = (0.0 ; 56.19)

Minimum Fit Function Value = 1.43

Population Discrepancy Function Value (F0) = 0.26

90 Percent Confidence Interval for F0 = (0.0 ; 0.60)

Root Mean Square Error of Approximation (RMSEA) = 0.051

90 Percent Confidence Interval for RMSEA = (0.0 ; 0.078)

P-Value for Test of Close Fit (RMSEA < 0.05) = 0.47

Expected Cross-Validation Index (ECVI) = 2.11

90 Percent Confidence Interval for ECVI = (1.85 ; 2.45)

ECVI for Saturated Model = 2.92

ECVI for Independence Model = 21.41

Chi-Square for Independence Model with 120 Degrees of Freedom = 1959.35

Independence AIC = 1991.35

Model AIC = 195.79

Saturated AIC = 272.00

Independence CAIC = 2048.04

Model CAIC = 323.35

Saturated CAIC = 753.89

Normed Fit Index (NFI) = 0.93

Non-Normed Fit Index (NNFI) = 0.98

Parsimony Normed Fit Index (PNFI) = 0.78

Comparative Fit Index (CFI) = 0.98

Incremental Fit Index (IFI) = 0.98

Relative Fit Index (RFI) = 0.92

Critical N (CN) = 96.25

Root Mean Square Residual (RMR) = 0.030

Standardized RMR = 0.077

Goodness of Fit Index (GFI) = 0.86

Adjusted Goodness of Fit Index (AGFI) = 0.81

Parsimony Goodness of Fit Index (PGFI) = 0.63

#### Modification Indices and Expected Change

The Modification Indices Suggest to Add the

Path to	from	Decrease in Chi-Square	New Estimate
IIA_6	EduPrac	9.4	-0.14

#### Modification Indices for LAMBDA-Y

	TLP	IndInt	EduPrac
IIA_1	--	5.81	2.29
IIA_2	--	1.01	0.60
IIA_3	--	0.17	5.58
IIA_4	--	1.43	0.63
IIA_5	--	1.03	1.12
IIA_6	--	1.69	9.42
IIA_7	--	0.05	0.87
IIA_8	--	0.00	0.19
IIA_9	--	0.00	1.71
IIB_1	3.76	--	1.35
IIB_2	2.26	--	0.31
IIB_3	2.30	--	3.35
IIC_1	2.89	0.07	--
IIC_2	3.80	0.20	--
IIC_3	0.32	0.24	--
IIC_4	6.97	0.06	--

#### Expected Change for LAMBDA-Y

	TLP	IndInt	EduPrac
IIA_1	--	0.12	0.10
IIA_2	--	0.04	0.04
IIA_3	--	-0.02	0.13
IIA_4	--	-0.06	0.05
IIA_5	--	-0.03	-0.04
IIA_6	--	-0.05	-0.14
IIA_7	--	0.01	-0.06

IIA_8	--	0.00	-0.02
IIA_9	--	0.00	-0.05
IIB_1	-0.08	--	-0.05
IIB_2	0.06	--	0.02
IIB_3	0.09	--	0.12
IIC_1	-0.11	-0.01	--
IIC_2	-0.13	-0.02	--
IIC_3	0.04	0.03	--
IIC_4	0.17	0.01	--

Standardized Expected Change for LAMBDA-Y

	TLP	IndInt	EduPrac
<hr/>			
IIA_1	--	0.12	0.10
IIA_2	--	0.04	0.04
IIA_3	--	-0.02	0.13
IIA_4	--	-0.06	0.05
IIA_5	--	-0.03	-0.04
IIA_6	--	-0.05	-0.14
IIA_7	--	0.01	-0.06
IIA_8	--	0.00	-0.02
IIA_9	--	0.00	-0.05
IIB_1	-0.08	--	-0.05
IIB_2	0.06	--	0.02
IIB_3	0.09	--	0.12
IIC_1	-0.11	-0.01	--
IIC_2	-0.13	-0.02	--
IIC_3	0.04	0.03	--
IIC_4	0.17	0.01	--

Completely Standardized Expected Change for LAMBDA-Y

	TLP	IndInt	EduPrac
<hr/>			
IIA_1	--	0.16	0.12
IIA_2	--	0.08	0.07
IIA_3	--	-0.02	0.17
IIA_4	--	-0.08	0.07
IIA_5	--	-0.07	-0.09
IIA_6	--	-0.10	-0.30
IIA_7	--	0.01	-0.07
IIA_8	--	0.00	-0.03
IIA_9	--	0.00	-0.10
IIB_1	-0.12	--	-0.08
IIB_2	0.09	--	0.03
IIB_3	0.14	--	0.19
IIC_1	-0.18	-0.02	--
IIC_2	-0.20	-0.04	--
IIC_3	0.06	0.04	--
IIC_4	0.27	0.02	--

No Non-Zero Modification Indices for BETA

No Non-Zero Modification Indices for GAMMA

No Non-Zero Modification Indices for PHI

No Non-Zero Modification Indices for PSI

Modification Indices for THETA-EPS

	IIA_1	IIA_2	IIA_3	IIA_4	IIA_5	IIA_6
IIA_1	--					
IIA_2	3.02	--				
IIA_3	2.08	0.66	--			
IIA_4	0.06	0.09	0.00	--		
IIA_5	0.01	0.07	4.39	0.02	--	
IIA_6	5.15	--	0.19	0.49	1.17	--
IIA_7	0.22	0.05	4.96	0.09	0.77	0.62
IIA_8	0.04	6.40	0.64	5.98	0.33	0.12
IIA_9	4.30	0.33	0.66	2.57	2.92	6.32
IIB_1	0.03	0.32	1.25	0.22	0.79	0.60
IIB_2	1.73	0.90	1.58	0.33	0.01	0.47
IIB_3	0.09	0.81	0.91	0.71	1.30	0.64
IIC_1	1.97	0.18	0.01	0.14	0.08	3.73
IIC_2	1.05	0.25	0.59	0.12	0.73	0.15
IIC_3	0.02	0.00	0.00	0.42	0.21	0.14
IIC_4	0.45	0.16	1.85	0.51	0.17	1.31

Modification Indices for THETA-EPS

	IIA_7	IIA_8	IIA_9	IIB_1	IIB_2	IIB_3
IIA_7	--					
IIA_8	--	--				
IIA_9	1.63	0.82	--			
IIB_1	0.03	0.08	4.02	0.81		
IIB_2	0.02	0.03	4.94	0.37	--	
IIB_3	0.75	0.07	0.13	0.20	0.01	--
IIC_1	0.00	0.26	0.65	0.36	0.30	0.22
IIC_2	3.04	2.65	2.01	0.01	0.07	0.36
IIC_3	0.79	0.87	1.72	0.32	1.08	0.05
IIC_4	1.16	3.60	0.05	0.41	0.96	0.17

Modification Indices for THETA-EPS

	IIC_1	IIC_2	IIC_3	IIC_4
IIC_1	--			
IIC_2	0.07	--		
IIC_3	0.04	7.22	--	
IIC_4	2.17	0.69	7.40	--

Expected Change for THETA-EPS

	IIA_1	IIA_2	IIA_3	IIA_4	IIA_5	IIA_6
IIA_1	--					
IIA_2	0.03	--				
IIA_3	0.03	0.01	--			
IIA_4	-0.01	-0.01	0.00	--		
IIA_5	0.00	0.00	-0.03	0.00	--	
IIA_6	-0.04	--	-0.01	-0.01	0.01	--
IIA_7	0.01	0.00	-0.05	-0.01	0.01	0.01
IIA_8	0.00	-0.03	0.01	0.03	0.00	0.00
IIA_9	-0.03	-0.01	0.01	-0.02	0.01	0.02
IIB_1	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
IIB_2	0.02	0.01	0.02	-0.01	0.00	0.01

IIB_3	-0.01	0.02	-0.02	0.02	0.02	-0.02
IIC_1	0.03	-0.01	0.00	0.01	0.00	-0.03
IIC_2	-0.02	0.01	0.02	0.01	-0.01	0.01
IIC_3	0.00	0.00	0.00	-0.02	-0.01	-0.01
IIC_4	0.01	0.01	0.02	0.02	0.01	-0.02

Expected Change for THETA-EPS

	IIA_7	IIA_8	IIA_9	IIB_1	IIB_2	IIB_3
IIB_3						
IIC_1						
IIC_2						
IIC_3						
IIC_4						
IIB_1						
IIB_2						
IIB_3						
IIC_1						
IIC_2						
IIC_3						
IIC_4						

Expected Change for THETA-EPS

	IIC_1	IIC_2	IIC_3	IIC_4
IIC_1				
IIC_2				
IIC_3				
IIC_4				

Completely Standardized Expected Change for THETA-EPS

	IIA_1	IIA_2	IIA_3	IIA_4	IIA_5	IIA_6
IIA_1						
IIA_2						
IIA_3						
IIA_4						
IIA_5						
IIA_6						
IIB_1						
IIB_2						
IIB_3						
IIC_1						
IIC_2						
IIC_3						
IIC_4						

Completely Standardized Expected Change for THETA-EPS

	IIA_7	IIA_8	IIA_9	IIB_1	IIB_2	IIB_3
IIB_3						
IIC_1						
IIC_2						
IIC_3						
IIC_4						
IIB_1						
IIB_2						
IIB_3						
IIC_1						
IIC_2						
IIC_3						
IIC_4						

IIB_3	0.04	-0.01	-0.02	-0.02	0.01	--
IIC_1	0.00	-0.02	-0.04	-0.02	0.02	0.03
IIC_2	-0.08	0.07	-0.07	0.00	-0.01	0.04
IIC_3	-0.04	0.04	0.07	-0.02	0.05	-0.02
IIC_4	0.04	-0.08	-0.01	0.02	-0.04	0.03

Completely Standardized Expected Change for THETA-EPS

	IIC_1	IIC_2	IIC_3	IIC_4
IIC_1	--			
IIC_2	-0.02	--		
IIC_3	-0.01	0.20	--	
IIC_4	0.13	-0.08	-0.22	--

Maximum Modification Index is 9.42 for Element ( 6, 3) of LAMBDA-Y

Standardized Solution

LAMBDA-Y

	TLP	IndInt	EduPrac
IIA_1	0.66	--	--
IIA_2	0.34	--	--
IIA_3	0.66	--	--
IIA_4	0.64	--	--
IIA_5	0.35	--	--
IIA_6	0.30	--	--
IIA_7	0.69	--	--
IIA_8	0.40	--	--
IIA_9	0.39	--	--
IIB_1	--	0.61	--
IIB_2	--	0.55	--
IIB_3	--	0.32	--
IIC_1	--	--	0.40
IIC_2	--	--	0.46
IIC_3	--	--	0.42
IIC_4	--	--	0.51

GAMMA

PROCESS

PROCESS	TLP	IndInt	EduPrac
TLP	0.68		
IndInt	0.35		
EduPrac	0.70		

Correlation Matrix of ETA and KSI

	TLP	IndInt	EduPrac	PROCESS
TLP	1.00			
IndInt	0.24	1.00		
EduPrac	0.48	0.24	1.00	
PROCESS	0.68	0.35	0.70	1.00

PSI

Note: This matrix is diagonal.

TLP	IndInt	EduPrac
0.54	0.88	0.51

Completely Standardized Solution

LAMBDA-Y

	TLP	IndInt	EduPrac
IIA_1	0.83	--	--
IIA_2	0.66	--	--
IIA_3	0.88	--	--
IIA_4	0.82	--	--
IIA_5	0.79	--	--
IIA_6	0.64	--	--
IIA_7	0.78	--	--
IIA_8	0.80	--	--
IIA_9	0.84	--	--
IIB_1	--	1.00	--
IIB_2	--	0.85	--
IIB_3	--	0.51	--
IIC_1	--	--	0.67
IIC_2	--	--	0.72
IIC_3	--	--	0.62
IIC_4	--	--	0.83

GAMMA

PROCESS

TLP	0.68
IndInt	0.35
EduPrac	0.70

Correlation Matrix of ETA and KSI

	TLP	IndInt	EduPrac	PROCESS
TLP	1.00			
IndInt	0.24	1.00		
EduPrac	0.48	0.24	1.00	
PROCESS	0.68	0.35	0.70	1.00

PSI

Note: This matrix is diagonal.

TLP	IndInt	EduPrac
0.54	0.88	0.51

THETA-EPS

	IIA_1	IIA_2	IIA_3	IIA_4	IIA_5	IIA_6
IIA_1	0.31					



IIA_2	--	0.56				
IIA_3	--	--	0.22			
IIA_4	--	--	--	0.33		
IIA_5	--	--	--	--	0.37	
IIA_6	--	0.20	--	--	--	0.58
IIA_7	--	--	--	--	--	--
IIA_8	--	--	--	--	--	--
IIA_9	--	--	--	--	--	--
IIB_1	--	--	--	--	--	--
IIB_2	--	--	--	--	--	--
IIB_3	--	--	--	--	--	--
IIC_1	--	--	--	--	--	--
IIC_2	--	--	--	--	--	--
IIC_3	--	--	--	--	--	--
IIC_4	--	--	--	--	--	--

THETA-EPS

	IIA_7	IIA_8	IIA_9	IIB_1	IIB_2	IIB_3
IIA_7	0.40					
IIA_8	0.17	0.36				
IIA_9	--	--	0.30			
IIB_1	--	--	--	0.00		
IIB_2	--	--	--	--	0.28	
IIB_3	--	--	--	--	--	0.74
IIC_1	--	--	--	--	--	--
IIC_2	--	--	--	--	--	--
IIC_3	--	--	--	--	--	--
IIC_4	--	--	--	--	--	--

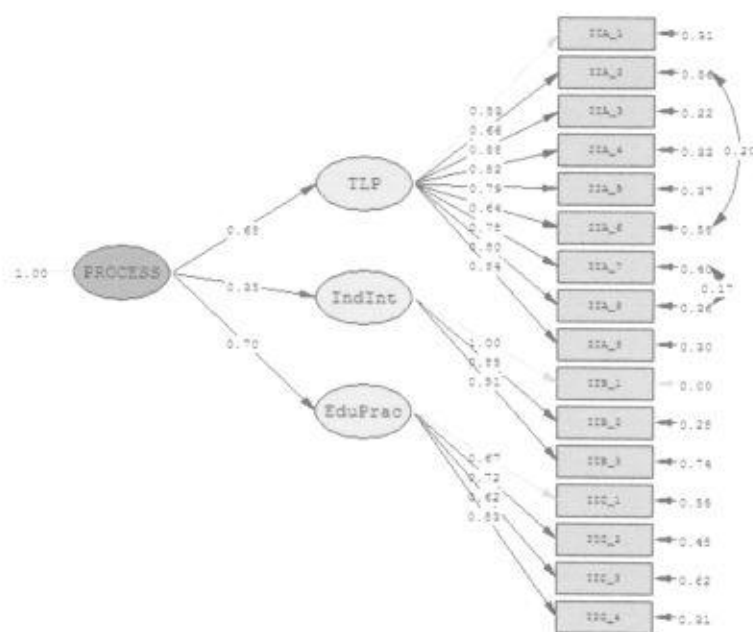
THETA-EPS

	IIC_1	IIC_2	IIC_3	IIC_4
IIC_1	0.55			
IIC_2	--	0.48		
IIC_3	--	--	0.62	
IIC_4	--	--	--	0.31

Time used: 0.047 Seconds

## SECOND ORDER CONFIRMATORY FACTOR ANALYSIS

### PROCESS DIMENSION



Chi-Square=122.79, df=100, P-value=0.00060, RMSEA=0.031

DATE: 12/21/2015

TIME: 20:49

L I S R E L 8.80

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file D:\CFA\_Analysis\OUTCOME\_TEACHER.spj:

Raw Data from file 'D:\CFA\_Analysis\OUTCOME\_TEACHER.psf'

Sample Size = 94

Latent Variables W\_App W\_Mot CarDev OUTCOME

IVA\_1=W\_App

IVA\_2=W\_App

IVA\_3=W\_App

IVB\_2=W\_Mot

IVB\_4=W\_Mot

IVB\_5=W\_Mot

IVB\_7=W\_Mot

IVB\_8=W\_Mot

IVB\_9=W\_Mot

IVB\_10=W\_Mot

IVB\_11=W\_Mot

IVB\_13=W\_Mot

IVB\_14=W\_Mot

IVB\_15=W\_Mot

IVC\_1=CarDev

IVC\_2=CarDev

IVC\_3=CarDev

IVC\_4=CarDev

IVC\_5=CarDev

IVC\_6=CarDev

IVC\_7=CarDev

IVC\_8=CarDev

IVC\_9=CarDev

IVC\_11=CarDev

IVC\_12=CarDev

IVC\_13=CarDev

W\_App W\_Mot CarDev= OUTCOME

OPTIONS SC MI ADD=OFF

SET ERROR COVARIANCE OF IVC\_8 AND IVC\_11 FREE

SET ERROR VARIANCE OF W\_App TO 0,01

SET ERROR VARIANCE OF W\_Mot TO 0,01

SET ERROR VARIANCE OF CarDev TO 0,01

Relationships  
Path Diagram  
End of Problem

Sample Size = 94

Covariance Matrix

	IVA_1	IVA_2	IVA_3	IVB_2	IVB_4	IVB_5
IVA_1	0.55					
IVA_2	0.31	1.33				
IVA_3	0.27	0.34	0.83			
IVB_2	0.35	0.64	0.31	1.02		
IVB_4	0.32	0.33	0.38	0.41	0.91	
IVB_5	0.41	0.71	0.41	0.70	0.54	1.24
IVB_7	0.24	0.45	0.39	0.46	0.40	0.51
IVB_8	0.32	0.51	0.38	0.44	0.41	0.39
IVB_9	0.53	0.79	0.45	0.66	0.40	0.73
IVB_10	0.45	0.71	0.44	0.58	0.42	0.56
IVB_11	0.27	0.52	0.24	0.39	0.23	0.41
IVB_13	0.29	0.63	0.36	0.61	0.45	0.59
IVB_14	0.44	0.58	0.43	0.64	0.50	0.77
IVB_15	0.33	0.45	0.40	0.55	0.44	0.56
IVC_1	0.36	0.66	0.38	0.74	0.58	0.73
IVC_2	0.41	0.57	0.40	0.60	0.41	0.61
IVC_3	0.45	0.61	0.42	0.63	0.52	0.64
IVC_4	0.46	0.68	0.40	0.64	0.61	0.82
IVC_5	0.32	0.45	0.41	0.51	0.33	0.46
IVC_6	0.26	0.38	0.36	0.40	0.40	0.45
IVC_7	0.41	0.56	0.49	0.70	0.42	0.75
IVC_8	0.41	0.49	0.31	0.60	0.52	0.71
IVC_9	0.32	0.75	0.42	0.67	0.46	0.65
IVC_11	0.38	0.49	0.32	0.48	0.36	0.61
IVC_12	0.35	0.64	0.45	0.60	0.46	0.63
IVC_13	0.38	0.62	0.59	0.62	0.60	0.80

Covariance Matrix

	IVB_7	IVB_8	IVB_9	IVB_10	IVB_11	IVB_13
IVB_7	0.95					
IVB_8	0.40	1.05				
IVB_9	0.46	0.53	1.32			
IVB_10	0.40	0.43	0.69	1.37		
IVB_11	0.27	0.36	0.55	0.47	0.81	
IVB_13	0.46	0.37	0.54	0.56	0.32	0.91
IVB_14	0.56	0.43	0.67	0.60	0.45	0.62
IVB_15	0.47	0.49	0.45	0.61	0.32	0.44
IVC_1	0.53	0.56	0.60	0.64	0.43	0.58
IVC_2	0.48	0.60	0.79	0.69	0.44	0.49
IVC_3	0.47	0.49	0.72	0.72	0.45	0.59
IVC_4	0.62	0.62	0.68	0.73	0.50	0.69
IVC_5	0.38	0.44	0.57	0.40	0.31	0.40
IVC_6	0.36	0.42	0.35	0.30	0.25	0.32
IVC_7	0.57	0.52	0.65	0.66	0.49	0.56
IVC_8	0.48	0.32	0.61	0.48	0.36	0.52
IVC_9	0.51	0.50	0.59	0.70	0.45	0.56

IVC_11	0.41	0.43	0.62	0.48	0.44	0.37
IVC_12	0.55	0.54	0.59	0.65	0.36	0.47
IVC_13	0.66	0.53	0.77	0.65	0.49	0.69

#### Covariance Matrix

	IVB_14	IVB_15	IVC_1	IVC_2	IVC_3	IVC_4
IVB_14	1.32					
IVB_15	0.63	1.00				
IVC_1	0.85	0.53	1.38			
IVC_2	0.59	0.46	0.54	1.22		
IVC_3	0.64	0.57	0.55	0.68	1.26	
IVC_4	0.84	0.73	0.77	0.52	0.79	1.63
IVC_5	0.43	0.45	0.54	0.44	0.47	0.55
IVC_6	0.41	0.37	0.51	0.34	0.44	0.44
IVC_7	0.76	0.58	0.81	0.72	0.51	0.72
IVC_8	0.64	0.54	0.65	0.36	0.62	0.74
IVC_9	0.64	0.57	0.67	0.46	0.64	0.86
IVC_11	0.57	0.49	0.69	0.42	0.45	0.62
IVC_12	0.57	0.57	0.68	0.59	0.72	0.76
IVC_13	0.76	0.61	0.77	0.67	0.71	0.72

#### Covariance Matrix

	IVC_5	IVC_6	IVC_7	IVC_8	IVC_9	IVC_11
IVC_5	0.88					
IVC_6	0.39	0.60				
IVC_7	0.53	0.46	1.33			
IVC_8	0.42	0.42	0.53	1.08		
IVC_9	0.45	0.47	0.73	0.61	1.33	
IVC_11	0.42	0.39	0.55	0.65	0.48	0.96
IVC_12	0.48	0.44	0.60	0.64	0.60	0.63
IVC_13	0.61	0.49	0.77	0.76	0.64	0.62

#### Covariance Matrix

	IVC_12	IVC_13
IVC_12	1.20	
IVC_13	0.70	1.52

Number of Iterations = 25

LISREL Estimates (Maximum Likelihood)

#### Measurement Equations

$$IVA_1 = 0.49 * W\_App, \text{ Errorvar.} = 0.31, R^2 = 0.43$$

(0.047)  
6.60

$$IVA_2 = 0.77 * W\_App, \text{ Errorvar.} = 0.74, R^2 = 0.45$$

(0.13)                      (0.11)

5.91                      6.59

IVA\_3 = 0.53\*W\_App, Errorvar.= 0.55 , R<sup>2</sup> = 0.34  
 (0.10)                      (0.082)  
 5.24                      6.67

IVB\_2 = 0.78\*W\_Mot, Errorvar.= 0.41 , R<sup>2</sup> = 0.59  
    (0.065)  
    6.40

IVB\_4 = 0.60\*W\_Mot, Errorvar.= 0.55 , R<sup>2</sup> = 0.40  
 (0.095)                      (0.083)  
 6.35                      6.63

IVB\_5 = 0.85\*W\_Mot, Errorvar.= 0.53 , R<sup>2</sup> = 0.58  
 (0.11)                      (0.082)  
 7.90                      6.43

IVB\_7 = 0.63\*W\_Mot, Errorvar.= 0.56 , R<sup>2</sup> = 0.42  
 (0.097)                      (0.084)  
 6.54                      6.61

IVB\_8 = 0.62\*W\_Mot, Errorvar.= 0.66 , R<sup>2</sup> = 0.37  
 (0.10)                      (0.099)  
 6.10                      6.65

IVB\_9 = 0.83\*W\_Mot, Errorvar.= 0.63 , R<sup>2</sup> = 0.52  
 (0.11)                      (0.097)  
 7.42                      6.51

IVB\_10 = 0.77\*W\_Mot, Errorvar.= 0.78 , R<sup>2</sup> = 0.43  
 (0.12)                      (0.12)  
 6.68                      6.60

IVB\_11 = 0.53\*W\_Mot, Errorvar.= 0.53 , R<sup>2</sup> = 0.35  
 (0.090)                      (0.079)  
 5.89                      6.67

IVB\_13 = 0.69\*W\_Mot, Errorvar.= 0.43 , R<sup>2</sup> = 0.52  
 (0.092)                      (0.066)  
 7.46                      6.50

IVB\_14 = 0.84\*W\_Mot, Errorvar.= 0.62 , R<sup>2</sup> = 0.53  
 (0.11)                      (0.095)  
 7.53                      6.49

IVB\_15 = 0.69\*W\_Mot, Errorvar.= 0.52 , R<sup>2</sup> = 0.48  
 (0.098)                      (0.079)  
 7.09                      6.55

IVC\_1 = 0.86\*CarDev, Errorvar.= 0.64 , R<sup>2</sup> = 0.53  
    (0.099)  
    6.49

IVC\_2 = 0.73\*CarDev, Errorvar.= 0.68 , R<sup>2</sup> = 0.44  
 (0.11)                      (0.10)  
 6.45                      6.59

IVC\_3 = 0.80\*CarDev, Errorvar.= 0.61 , R<sup>2</sup> = 0.51  
 (0.12)                      (0.094)

6.99                  6.52

IVC\_4 = 0.92\*CarDev, Errorvar.= 0.78 , R<sup>2</sup> = 0.52  
 (0.13)                  (0.12)  
 7.05                  6.51

IVC\_5 = 0.62\*CarDev, Errorvar.= 0.50 , R<sup>2</sup> = 0.43  
 (0.097)                  (0.076)  
 6.35                  6.61

IVC\_6 = 0.54\*CarDev, Errorvar.= 0.31 , R<sup>2</sup> = 0.48  
 (0.080)                  (0.048)  
 6.74                  6.56

IVC\_7 = 0.84\*CarDev, Errorvar.= 0.63 , R<sup>2</sup> = 0.53  
 (0.12)                  (0.097)  
 7.09                  6.50

IVC\_8 = 0.74\*CarDev, Errorvar.= 0.53 , R<sup>2</sup> = 0.51  
 (0.11)                  (0.081)  
 6.97                  6.51

IVC\_9 = 0.80\*CarDev, Errorvar.= 0.70 , R<sup>2</sup> = 0.48  
 (0.12)                  (0.11)  
 6.73                  6.56

IVC\_11 = 0.67\*CarDev, Errorvar.= 0.50 , R<sup>2</sup> = 0.48  
 (0.10)                  (0.077)  
 6.71                  6.55

IVC\_12 = 0.78\*CarDev, Errorvar.= 0.58 , R<sup>2</sup> = 0.51  
 (0.11)                  (0.089)  
 7.00                  6.52

IVC\_13 = 0.90\*CarDev, Errorvar.= 0.71 , R<sup>2</sup> = 0.54  
 (0.13)                  (0.11)  
 7.15                  6.49

Error Covariance for IVC\_11 and IVC\_8 = 0.15  
 (0.058)  
 2.49

#### Structural Equations

W\_App = 1.00\*OUTCOME,, R<sup>2</sup> = 1.00  
 (0.14)  
 7.08

W\_Mot = 1.00\*OUTCOME,, R<sup>2</sup> = 1.00  
 (0.11)  
 8.73

CarDev = 1.00\*OUTCOME,, R<sup>2</sup> = 1.00  
 (0.12)  
 8.12

#### Correlation Matrix of Independent Variables

## OUTCOME

1.00

### Covariance Matrix of Latent Variables

	W_App	W_Mot	CarDev	OUTCOME
W_App	1.00			
W_Mot	1.00	1.00		
CarDev	1.00	1.00	1.00	
OUTCOME	1.00	1.00	1.00	1.00

### Goodness of Fit Statistics

Degrees of Freedom = 298

Minimum Fit Function Chi-Square = 348.23 (P = 0.024)

Normal Theory Weighted Least Squares Chi-Square = 323.31 (P = 0.15)

Estimated Non-centrality Parameter (NCP) = 25.31

90 Percent Confidence Interval for NCP = (0.0 ; 72.96)

Minimum Fit Function Value = 3.74

Population Discrepancy Function Value (F0) = 0.27

90 Percent Confidence Interval for F0 = (0.0 ; 0.78)

Root Mean Square Error of Approximation (RMSEA) = 0.030

90 Percent Confidence Interval for RMSEA = (0.0 ; 0.051)

P-Value for Test of Close Fit (RMSEA < 0.05) = 0.94

Expected Cross-Validation Index (ECVI) = 4.62

90 Percent Confidence Interval for ECVI = (4.34 ; 5.13)

ECVI for Saturated Model = 7.55

ECVI for Independence Model = 75.25

Chi-Square for Independence Model with 325 Degrees of Freedom = 6945.79

Independence AIC = 6997.79

Model AIC = 429.31

Saturated AIC = 702.00

Independence CAIC = 7089.92

Model CAIC = 617.10

Saturated CAIC = 1945.70

Normed Fit Index (NFI) = 0.95

Non-Normed Fit Index (NNFI) = 0.99

Parsimony Normed Fit Index (PNFI) = 0.87

Comparative Fit Index (CFI) = 0.99

Incremental Fit Index (IFI) = 0.99

Relative Fit Index (RFI) = 0.95

Critical N (CN) = 96.53

Root Mean Square Residual (RMR) = 0.058

Standardized RMR = 0.052

Goodness of Fit Index (GFI) = 0.79

Adjusted Goodness of Fit Index (AGFI) = 0.75

Parsimony Goodness of Fit Index (PGFI) = 0.67



# Modification Indices and Expected Change

No Non-Zero Modification Indices for LAMBDA-Y

No Non-Zero Modification Indices for BETA

No Non-Zero Modification Indices for GAMMA

No Non-Zero Modification Indices for PHI

## Modification Indices for PSI

	W_App	W_Mot	CarDev
W_App	1.95		
W_Mot	2.02	2.11	
CarDev	0.24	0.85	0.41

## Expected Change for PSI

	W_App	W_Mot	CarDev
W_App	-0.13		
W_Mot	0.04	-0.04	
CarDev	-0.01	0.01	-0.02

## Standardized Expected Change for PSI

	W_App	W_Mot	CarDev
W_App	-0.13		
W_Mot	0.04	-0.04	
CarDev	-0.01	0.01	-0.02

## Modification Indices for THETA-EPS

	IVA_1	IVA_2	IVA_3	IVB_2	IVB_4	IVB_5
IVA_1	--					
IVA_2	2.21	--				
IVA_3	0.12	1.08	--			
IVB_2	0.90	0.69	5.10	--		
IVB_4	0.41	4.23	1.21	1.43	--	
IVB_5	0.00	0.85	0.66	1.00	0.33	--
IVB_7	2.79	0.29	0.89	0.28	0.14	0.28
IVB_8	0.04	0.23	0.76	0.83	0.34	5.89
IVB_9	7.49	5.21	0.02	0.08	2.79	0.29
IVB_10	1.85	2.56	0.19	0.19	0.49	2.15
IVB_11	0.04	3.12	0.57	0.13	2.91	0.63
IVB_13	1.51	3.32	0.01	3.22	0.41	0.05
IVB_14	0.55	0.93	0.04	0.04	0.01	1.03
IVB_15	0.08	1.90	0.37	0.09	0.28	0.33
IVC_1	1.58	0.00	1.62	2.14	1.34	0.02
IVC_2	1.15	0.01	0.03	0.39	0.19	0.05
IVC_3	1.50	0.03	0.02	0.03	0.40	0.45
IVC_4	0.06	0.19	1.97	1.67	0.84	0.42
IVC_5	0.13	0.15	2.50	0.48	0.65	1.26
IVC_6	0.00	0.46	3.30	0.15	3.66	0.01
IVC_7	0.00	1.66	0.63	1.21	2.02	0.55

IVC_8	0.65	1.40	2.31	0.62	2.89	2.19
IVC_9	2.11	3.85	0.01	1.02	0.12	0.17
IVC_11	0.75	0.00	0.04	1.30	1.69	0.08
IVC_12	0.66	0.27	0.33	0.05	0.07	0.47
IVC_13	1.66	1.08	2.95	2.45	0.87	0.29

Modification Indices for THETA-EPS

	IVB_7	IVB_8	IVB_9	IVB_10	IVB_11	IVB_13
IVB_7	--					
IVB_8	0.00	--				
IVB_9	1.27	0.03	--			
IVB_10	1.70	0.54	0.49	--		
IVB_11	1.30	0.27	3.61	0.90	--	
IVB_13	0.19	1.20	0.46	0.21	0.98	--
IVB_14	0.27	1.95	0.13	0.47	0.03	0.69
IVB_15	0.44	1.02	4.39	1.29	0.81	0.60
IVC_1	0.07	0.17	2.94	0.11	0.26	0.08
IVC_2	0.11	4.61	7.73	2.76	0.75	0.07
IVC_3	0.40	0.04	0.93	1.93	0.15	0.54
IVC_4	0.33	0.40	1.60	0.08	0.05	0.97
IVC_5	0.04	0.96	1.32	1.41	0.08	0.21
IVC_6	0.39	3.58	4.42	5.25	0.53	1.67
IVC_7	0.44	0.00	0.51	0.04	0.63	0.11
IVC_8	0.15	7.06	0.12	1.67	1.21	0.60
IVC_9	0.02	0.00	1.21	1.41	0.22	0.02
IVC_11	0.20	0.94	1.21	0.05	3.40	4.51
IVC_12	0.80	0.66	0.83	0.35	0.85	2.01
IVC_13	2.16	0.31	0.18	0.47	0.01	1.54

Modification Indices for THETA-EPS

	IVB_14	IVB_15	IVC_1	IVC_2	IVC_3	IVC_4
IVB_14	--					
IVB_15	0.65	--				
IVC_1	4.33	1.29	--			
IVC_2	0.21	0.64	1.86	--		
IVC_3	0.32	0.07	4.84	2.11	--	
IVC_4	1.02	2.20	0.06	4.69	0.57	--
IVC_5	2.18	0.31	0.08	0.01	0.25	0.12
IVC_6	0.87	0.00	1.26	1.36	0.08	1.40
IVC_7	0.80	0.00	2.07	2.61	7.52	0.67
IVC_8	0.09	0.10	0.08	7.46	0.87	0.88
IVC_9	0.27	0.07	0.04	3.49	0.01	2.93
IVC_11	0.00	0.10	3.94	0.23	3.64	0.05
IVC_12	2.45	0.18	0.01	0.03	2.26	0.34
IVC_13	0.01	0.08	0.00	0.01	0.05	2.49

Modification Indices for THETA-EPS

	IVC_5	IVC_6	IVC_7	IVC_8	IVC_9	IVC_11
IVC_5	--					
IVC_6	2.62	--				
IVC_7	0.08	0.03	--			
IVC_8	0.48	0.18	2.61	--		
IVC_9	0.41	0.93	1.00	0.28	--	
IVC_11	0.06	0.34	0.04	--	1.36	--

IVC_12	0.00	0.22	0.88	0.34	0.20	2.49
IVC_13	0.79	0.02	0.04	2.32	1.38	0.04

Modification Indices for THETA-EPS

	IVC_12	IVC_13
IVC_12	--	
IVC_13	0.02	--

Expected Change for THETA-EPS

	IVA_1	IVA_2	IVA_3	IVB_2	IVB_4	IVB_5
IVA_1	--					
IVA_2	-0.08	--				
IVA_3	0.02	-0.07	--			
IVB_2	-0.04	0.05	-0.12	--		
IVB_4	0.03	-0.14	0.06	-0.06	--	
IVB_5	0.00	0.06	-0.05	0.05	0.03	--
IVB_7	-0.07	-0.04	0.06	-0.03	0.02	-0.03
IVB_8	0.01	0.04	0.06	-0.05	0.04	-0.16
IVB_9	0.13	0.17	0.01	0.02	-0.11	0.03
IVB_10	0.07	0.13	0.03	-0.03	-0.05	-0.10
IVB_11	0.01	0.12	-0.04	-0.02	-0.10	-0.05
IVB_13	-0.05	0.11	0.00	0.08	0.03	0.01
IVB_14	0.04	-0.07	-0.01	-0.01	0.00	0.06
IVB_15	-0.01	-0.09	0.03	0.02	0.03	-0.03
IVC_1	-0.06	0.00	-0.08	0.08	0.07	0.01
IVC_2	0.05	0.01	0.01	0.04	-0.03	-0.02
IVC_3	0.06	-0.01	-0.01	0.01	0.04	-0.04
IVC_4	0.01	-0.04	-0.10	-0.08	0.06	0.05
IVC_5	0.02	-0.03	0.09	0.03	-0.05	-0.06
IVC_6	0.00	-0.04	0.08	-0.02	0.09	0.00
IVC_7	0.00	-0.09	0.05	0.06	-0.09	0.05
IVC_8	0.03	-0.08	-0.08	0.04	0.09	0.08
IVC_9	-0.07	0.15	-0.01	0.06	-0.02	-0.03
IVC_11	0.04	0.00	-0.01	-0.05	-0.07	0.02
IVC_12	-0.04	0.04	0.03	-0.01	-0.02	-0.04
IVC_13	-0.07	-0.08	0.11	-0.09	0.06	0.04

Expected Change for THETA-EPS

	IVB_7	IVB_8	IVB_9	IVB_10	IVB_11	IVB_13
IVB_7	--					
IVB_8	0.00	--				
IVB_9	-0.07	0.01	--			
IVB_10	-0.09	-0.06	0.05	--		
IVB_11	-0.07	0.03	0.12	0.06	--	
IVB_13	0.02	-0.06	-0.04	0.03	-0.05	--
IVB_14	0.03	-0.10	-0.02	-0.05	0.01	0.05
IVB_15	0.04	0.06	-0.13	0.08	-0.05	-0.04
IVC_1	-0.02	0.03	-0.12	-0.03	-0.03	-0.02
IVC_2	0.02	0.15	0.20	0.13	0.06	-0.02
IVC_3	-0.04	-0.01	0.07	0.10	0.02	0.04
IVC_4	0.04	0.05	-0.10	0.02	0.01	0.06
IVC_5	-0.01	0.06	0.07	-0.08	-0.02	-0.02
IVC_6	0.03	0.09	-0.10	-0.12	-0.03	-0.05
IVC_7	0.04	0.00	-0.05	0.02	0.05	-0.02

IVC_8	0.02	-0.16	-0.02	-0.09	-0.06	0.04
IVC_9	0.01	0.00	-0.08	0.09	0.03	0.01
IVC_11	-0.02	0.06	0.06	-0.01	0.10	-0.10
IVC_12	0.05	0.05	-0.06	0.04	-0.05	-0.08
IVC_13	0.10	-0.04	0.03	-0.06	0.01	0.07

Expected Change for THETA-EPS

	IVB_14	IVB_15	IVC_1	IVC_2	IVC_3	IVC_4
IVB_14	--					
IVB_15	0.05	--				
IVC_1	0.14	-0.07	--			
IVC_2	-0.03	-0.05	-0.10	--		
IVC_3	-0.04	0.02	-0.15	0.10	--	
IVC_4	0.08	0.10	-0.02	-0.17	0.06	--
IVC_5	-0.09	0.03	0.02	-0.01	-0.03	-0.02
IVC_6	-0.04	0.00	0.05	-0.06	0.01	-0.06
IVC_7	0.06	0.00	0.10	0.11	-0.19	-0.06
IVC_8	0.02	0.02	-0.02	-0.17	0.06	0.06
IVC_9	-0.04	0.02	-0.01	-0.14	-0.01	0.14
IVC_11	0.00	0.02	0.12	-0.03	-0.11	-0.01
IVC_12	-0.10	0.03	0.01	0.01	0.10	0.04
IVC_13	0.01	-0.02	0.00	0.01	-0.02	-0.13

Expected Change for THETA-EPS

	IVC_5	IVC_6	IVC_7	IVC_8	IVC_9	IVC_11
IVC_5	--					
IVC_6	0.07	--				
IVC_7	0.02	0.01	--			
IVC_8	-0.04	0.02	-0.10	--		
IVC_9	-0.04	0.05	0.07	0.03	--	
IVC_11	0.01	0.02	0.01	--	-0.07	--
IVC_12	0.00	0.02	-0.06	0.03	-0.03	0.09
IVC_13	0.06	0.01	0.02	0.10	-0.09	-0.01

Expected Change for THETA-EPS

	IVC_12	IVC_13
IVC_12	--	
IVC_13	-0.01	--

Completely Standardized Expected Change for THETA-EPS

	IVA_1	IVA_2	IVA_3	IVB_2	IVB_4	IVB_5
IVA_1	--					
IVA_2	-0.09	--				
IVA_3	0.02	-0.07	--			
IVB_2	-0.05	0.04	-0.13	--		
IVB_4	0.04	-0.13	0.07	-0.06	--	
IVB_5	0.00	0.05	-0.05	0.05	0.03	--
IVB_7	-0.10	-0.03	0.06	-0.03	0.02	-0.03
IVB_8	0.01	0.03	0.06	-0.05	0.04	-0.14
IVB_9	0.15	0.13	0.01	0.01	-0.10	0.03
IVB_10	0.08	0.10	0.03	-0.02	-0.04	-0.08
IVB_11	0.01	0.11	-0.05	-0.02	-0.11	-0.05

IVB_13	-0.07	0.10	-0.01	0.09	0.04	0.01
IVB_14	0.04	-0.05	-0.01	-0.01	0.00	0.05
IVB_15	-0.02	-0.08	0.04	0.02	0.03	-0.03
IVC_1	-0.07	0.00	-0.08	0.07	0.07	0.01
IVC_2	0.06	0.00	0.01	0.03	-0.03	-0.01
IVC_3	0.07	-0.01	-0.01	0.01	0.04	-0.03
IVC_4	0.01	-0.02	-0.08	-0.06	0.05	0.03
IVC_5	0.02	-0.02	0.10	0.04	-0.05	-0.06
IVC_6	0.00	-0.04	0.11	-0.02	0.12	0.00
IVC_7	0.00	-0.07	0.05	0.05	-0.08	0.04
IVC_8	0.04	-0.06	-0.09	0.04	0.09	0.07
IVC_9	-0.08	0.11	-0.01	0.05	-0.02	-0.02
IVC_11	0.05	0.00	-0.01	-0.05	-0.07	0.01
IVC_12	-0.05	0.03	0.03	-0.01	-0.02	-0.03
IVC_13	-0.07	-0.06	0.10	-0.08	0.05	0.03

Completely Standardized Expected Change for THETA-EPS

	IVB_7	IVB_8	IVB_9	IVB_10	IVB_11	IVB_13
IVB_7	--					
IVB_8	0.00	--				
IVB_9	-0.06	0.01	--			
IVB_10	-0.08	-0.05	0.04	--		
IVB_11	-0.07	0.04	0.11	0.06	--	
IVB_13	0.02	-0.06	-0.04	0.03	-0.06	--
IVB_14	0.03	-0.08	-0.02	-0.04	0.01	0.04
IVB_15	0.04	0.06	-0.11	0.07	-0.06	-0.04
IVC_1	-0.02	0.02	-0.09	-0.02	-0.03	-0.01
IVC_2	0.02	0.14	0.16	0.10	0.06	-0.01
IVC_3	-0.04	-0.01	0.05	0.08	0.02	0.04
IVC_4	0.03	0.04	-0.07	0.02	0.01	0.05
IVC_5	-0.01	0.06	0.07	-0.07	-0.02	-0.03
IVC_6	0.04	0.12	-0.11	-0.13	-0.05	-0.07
IVC_7	0.04	0.00	-0.04	0.01	0.05	-0.02
IVC_8	0.02	-0.15	-0.02	-0.07	-0.06	0.04
IVC_9	0.01	0.00	-0.06	0.07	0.03	0.01
IVC_11	-0.03	0.06	0.06	-0.01	0.11	-0.11
IVC_12	0.05	0.05	-0.05	0.03	-0.06	-0.07
IVC_13	0.08	-0.03	0.02	-0.04	0.01	0.06

Completely Standardized Expected Change for THETA-EPS

	IVB_14	IVB_15	IVC_1	IVC_2	IVC_3	IVC_4
IVB_14	--					
IVB_15	0.04	--				
IVC_1	0.11	-0.06	--			
IVC_2	-0.03	-0.05	-0.08	--		
IVC_3	-0.03	0.01	-0.11	0.08	--	
IVC_4	0.05	0.08	-0.01	-0.12	0.04	--
IVC_5	-0.08	0.03	0.02	-0.01	-0.03	-0.02
IVC_6	-0.05	0.00	0.06	-0.07	0.02	-0.06
IVC_7	0.05	0.00	0.07	0.09	-0.14	-0.04
IVC_8	0.01	0.02	-0.01	-0.15	0.05	0.05
IVC_9	-0.03	0.01	-0.01	-0.11	0.00	0.09
IVC_11	0.00	0.02	0.10	-0.03	-0.10	-0.01
IVC_12	-0.08	0.02	0.01	0.01	0.08	0.03
IVC_13	0.00	-0.02	0.00	0.01	-0.01	-0.08

Completely Standardized Expected Change for THETA-EPS

	IVC_5	IVC_6	IVC_7	IVC_8	IVC_9	IVC_11
IVC_5	--					
IVC_6	0.10	--				
IVC_7	0.02	0.01	--			
IVC_8	-0.04	0.02	-0.08	--		
IVC_9	-0.04	0.05	0.05	0.03	--	
IVC_11	0.01	0.03	0.01	--	-0.06	--
IVC_12	0.00	0.03	-0.05	0.03	-0.02	0.08
IVC_13	0.05	0.01	0.01	0.08	-0.06	-0.01

Completely Standardized Expected Change for THETA-EPS

	IVC_12	IVC_13
IVC_12	--	
IVC_13	-0.01	--

Maximum Modification Index is 7.73 for Element (16, 9) of THETA-EPS

Standardized Solution

LAMBDA-Y

	W_App	W_Mot	CarDev
IVA_1	0.49	--	--
IVA_2	0.77	--	--
IVA_3	0.53	--	--
IVB_2	--	0.78	--
IVB_4	--	0.60	--
IVB_5	--	0.85	--
IVB_7	--	0.63	--
IVB_8	--	0.62	--
IVB_9	--	0.83	--
IVB_10	--	0.77	--
IVB_11	--	0.53	--
IVB_13	--	0.69	--
IVB_14	--	0.84	--
IVB_15	--	0.69	--
IVC_1	--	--	0.86
IVC_2	--	--	0.73
IVC_3	--	--	0.80
IVC_4	--	--	0.92
IVC_5	--	--	0.62
IVC_6	--	--	0.54
IVC_7	--	--	0.84
IVC_8	--	--	0.74
IVC_9	--	--	0.80
IVC_11	--	--	0.67
IVC_12	--	--	0.78
IVC_13	--	--	0.90

GAMMA

OUTCOME

```

-----
W_App  1.00
W_Mot  1.00
CarDev  1.00

```

Correlation Matrix of ETA and KSI

```

      W_App  W_Mot  CarDev  OUTCOME
-----
W_App  1.00
W_Mot  1.00  1.00
CarDev  1.00  1.00  1.00
OUTCOME 1.00  1.00  1.00  1.00

```

Completely Standardized Solution

LAMBDA-Y

```

      W_App  W_Mot  CarDev
-----
IVA_1  0.66  --  --
IVA_2  0.67  --  --
IVA_3  0.58  --  --
IVB_2  --  0.77  --
IVB_4  --  0.63  --
IVB_5  --  0.76  --
IVB_7  --  0.65  --
IVB_8  --  0.61  --
IVB_9  --  0.72  --
IVB_10 --  0.66  --
IVB_11 --  0.59  --
IVB_13 --  0.72  --
IVB_14 --  0.73  --
IVB_15 --  0.69  --
IVC_1  --  --  0.73
IVC_2  --  --  0.66
IVC_3  --  --  0.72
IVC_4  --  --  0.72
IVC_5  --  --  0.65
IVC_6  --  --  0.69
IVC_7  --  --  0.73
IVC_8  --  --  0.71
IVC_9  --  --  0.69
IVC_11 --  --  0.69
IVC_12 --  --  0.72
IVC_13 --  --  0.73

```

GAMMA

OUTCOME

```

-----
W_App  1.00
W_Mot  1.00
CarDev  1.00

```

Correlation Matrix of ETA and KSI

```

      W_App  W_Mot  CarDev  OUTCOME

```

W_App	1.00			
W_Mot	1.00	1.00		
CarDev	1.00	1.00	1.00	
OUTCOME	1.00	1.00	1.00	1.00

# THETA-EPS

	IVA_1	IVA_2	IVA_3	IVB_2	IVB_4	IVB_5
IVA_1	0.57					
IVA_2	--	0.55				
IVA_3	--	--	0.66			
IVB_2	--	--	--	0.41		
IVB_4	--	--	--	--	0.60	
IVB_5	--	--	--	--	--	0.42
IVB_7	--	--	--	--	--	--
IVB_8	--	--	--	--	--	--
IVB_9	--	--	--	--	--	--
IVB_10	--	--	--	--	--	--
IVB_11	--	--	--	--	--	--
IVB_13	--	--	--	--	--	--
IVB_14	--	--	--	--	--	--
IVB_15	--	--	--	--	--	--
IVC_1	--	--	--	--	--	--
IVC_2	--	--	--	--	--	--
IVC_3	--	--	--	--	--	--
IVC_4	--	--	--	--	--	--
IVC_5	--	--	--	--	--	--
IVC_6	--	--	--	--	--	--
IVC_7	--	--	--	--	--	--
IVC_8	--	--	--	--	--	--
IVC_9	--	--	--	--	--	--
IVC_11	--	--	--	--	--	--
IVC_12	--	--	--	--	--	--
IVC_13	--	--	--	--	--	--

# THETA-EPS

	IVB_7	IVB_8	IVB_9	IVB_10	IVB_11	IVB_13
IVB_7	0.58					
IVB_8	--	0.63				
IVB_9	--	--	0.48			
IVB_10	--	--	--	0.57		
IVB_11	--	--	--	--	0.65	
IVB_13	--	--	--	--	--	0.48
IVB_14	--	--	--	--	--	--
IVB_15	--	--	--	--	--	--
IVC_1	--	--	--	--	--	--
IVC_2	--	--	--	--	--	--
IVC_3	--	--	--	--	--	--
IVC_4	--	--	--	--	--	--
IVC_5	--	--	--	--	--	--
IVC_6	--	--	--	--	--	--
IVC_7	--	--	--	--	--	--
IVC_8	--	--	--	--	--	--
IVC_9	--	--	--	--	--	--
IVC_11	--	--	--	--	--	--
IVC_12	--	--	--	--	--	--



IVC\_13    --    --    --    --    --    --

THETA-EPS

	IVB_14	IVB_15	IVC_1	IVC_2	IVC_3	IVC_4
IVB_14	0.47					
IVB_15	--	0.52				
IVC_1	--	--	0.47			
IVC_2	--	--	--	0.56		
IVC_3	--	--	--	--	0.49	
IVC_4	--	--	--	--	--	0.48
IVC_5	--	--	--	--	--	--
IVC_6	--	--	--	--	--	--
IVC_7	--	--	--	--	--	--
IVC_8	--	--	--	--	--	--
IVC_9	--	--	--	--	--	--
IVC_11	--	--	--	--	--	--
IVC_12	--	--	--	--	--	--
IVC_13	--	--	--	--	--	--

THETA-EPS

	IVC_5	IVC_6	IVC_7	IVC_8	IVC_9	IVC_11
IVC_5	0.57					
IVC_6	--	0.52				
IVC_7	--	--	0.47			
IVC_8	--	--	--	0.49		
IVC_9	--	--	--	--	0.52	
IVC_11	--	--	--	0.14	--	0.52
IVC_12	--	--	--	--	--	--
IVC_13	--	--	--	--	--	--

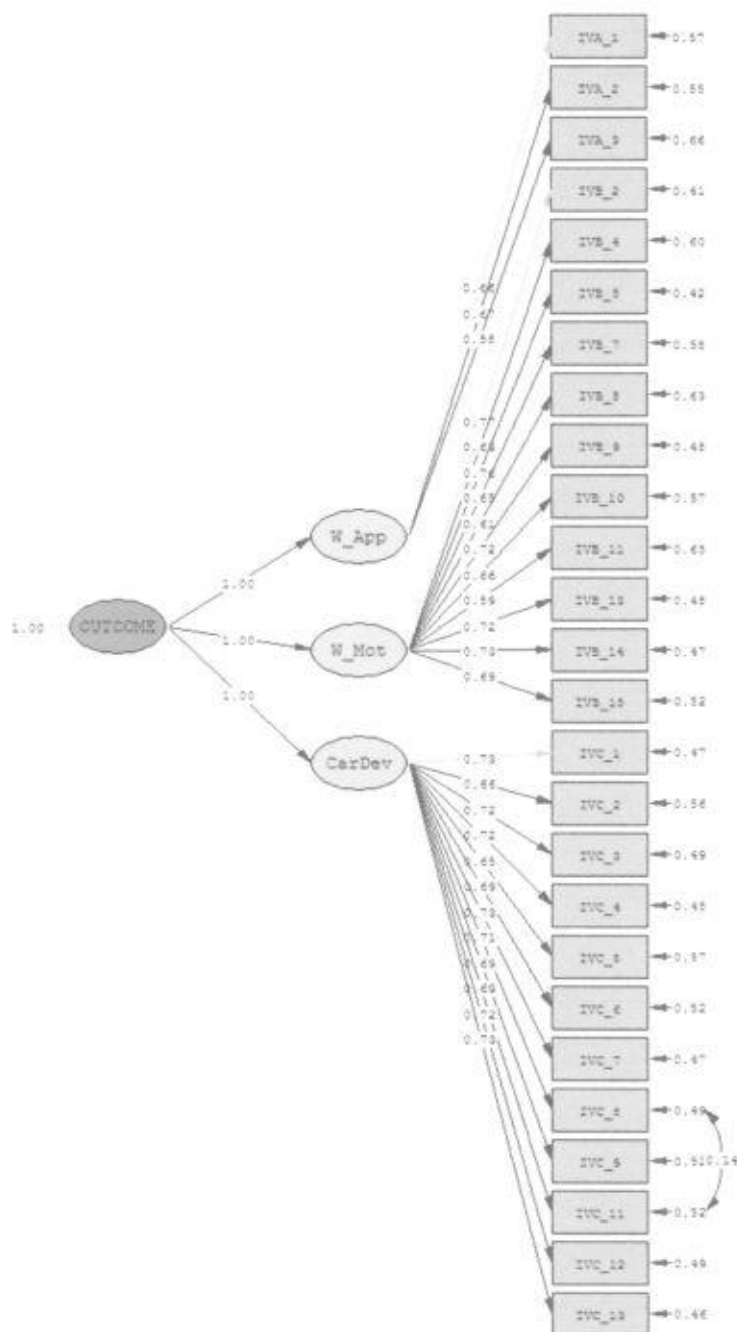
THETA-EPS

	IVC_12	IVC_13
IVC_12	0.49	
IVC_13	--	0.46

Time used: 0.078 Seconds

## SECOND ORDER CONFIRMATORY FACTOR ANALYSIS

### OUTCOME DIMENSION



Chi-Square=323.91, df=298, P-value=0.15016, RMSEA=0.030

DATE: 12/21/2015

TIME: 20:46

L I S R E L 8.80

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file D:\CFA\_Analysis\OUTCOME\_PRINCIPAL.spj:

Raw Data from file 'D:\CFA\_Analysis\OUTCOME\_PRINCIPAL.psf'

Sample Size = 87

Latent Variables TComp SAdm ContSD CreInn OUTCOME

TC\_1=TComp

TC\_2=TComp

TC\_3=TComp

TC\_4=TComp

TC\_5=TComp

TC\_6=TComp

TC\_8=TComp

TC\_9=TComp

SA\_1=SAdm

SA\_2=SAdm

SA\_3=SAdm

SA\_4=SAdm

SA\_5=SAdm

CiS\_1=ContSD

CiS\_2=ContSD

CiS\_3=ContSD

CiS\_4=ContSD

CiS\_5=ContSD

CiS\_6=ContSD

CI\_1=CreInn

CI\_2=CreInn

CI\_3=CreInn

CI\_4=CreInn

OPTIONS SC MI

TComp SAdm ContSD CreInn=OUTCOME

Set the error covariance of SA\_4 and SA\_1

Set the error covariance of TC\_2 and TC\_1

Set the error covariance of CiS\_6 and CiS\_5

Set the error covariance of CiS\_5 and CiS\_4

Set the error covariance of TC\_4 and TC\_3

Set the error covariance of TC\_8 and TC\_3

Relationships

Path Diagram  
End of Problem

Sample Size = 87

Covariance Matrix

	TC_1	TC_2	TC_3	TC_4	TC_5	TC_6
TC_1	0.25					
TC_2	0.20	0.25				
TC_3	0.15	0.18	0.29			
TC_4	0.15	0.18	0.23	0.27		
TC_5	0.12	0.12	0.15	0.14	0.29	
TC_6	0.11	0.14	0.17	0.15	0.17	0.31
TC_8	0.11	0.15	0.22	0.18	0.13	0.14
TC_9	0.15	0.19	0.17	0.17	0.14	0.19
SA_1	0.10	0.10	0.12	0.10	0.06	0.07
SA_2	0.11	0.15	0.14	0.11	0.06	0.10
SA_3	0.10	0.12	0.13	0.12	0.06	0.10
SA_4	0.09	0.09	0.11	0.09	0.04	0.08
SA_5	0.10	0.13	0.13	0.09	0.04	0.11
CiS_1	0.08	0.09	0.10	0.10	0.06	0.07
CiS_2	0.06	0.07	0.07	0.07	0.05	0.07
CiS_3	0.05	0.06	0.05	0.08	0.05	0.04
CiS_4	0.06	0.07	0.06	0.06	0.03	0.06
CiS_5	0.05	0.05	0.04	0.04	0.02	0.06
CiS_6	0.09	0.09	0.07	0.07	0.05	0.11
CI_1	0.09	0.08	0.09	0.09	0.08	0.09
CI_2	0.06	0.04	0.06	0.06	0.06	0.06
CI_3	0.07	0.05	0.05	0.03	0.05	0.07
CI_4	0.01	0.01	0.01	0.01	0.02	0.04

Covariance Matrix

	TC_8	TC_9	SA_1	SA_2	SA_3	SA_4
TC_8	0.29					
TC_9	0.17	0.37				
SA_1	0.11	0.13	0.25			
SA_2	0.15	0.15	0.19	0.36		
SA_3	0.14	0.14	0.16	0.30	0.35	
SA_4	0.11	0.12	0.23	0.17	0.14	0.24
SA_5	0.12	0.13	0.16	0.31	0.30	0.15
CiS_1	0.10	0.12	0.09	0.12	0.12	0.08
CiS_2	0.08	0.09	0.08	0.10	0.08	0.08
CiS_3	0.06	0.03	0.04	0.05	0.04	0.03
CiS_4	0.06	0.07	0.05	0.09	0.07	0.04
CiS_5	0.04	0.04	0.01	0.03	0.01	0.02
CiS_6	0.09	0.11	0.02	0.05	0.05	0.03
CI_1	0.09	0.12	0.08	0.11	0.11	0.07
CI_2	0.03	0.07	0.08	0.09	0.10	0.06
CI_3	0.06	0.06	0.07	0.09	0.07	0.07
CI_4	0.03	0.02	0.01	0.01	0.03	0.01

Covariance Matrix

SA_5	CiS_1	CiS_2	CiS_3	CiS_4	CiS_5
------	-------	-------	-------	-------	-------

SA_5	0.37					
CiS_1	0.13	0.27				
CiS_2	0.10	0.21	0.23			
CiS_3	0.06	0.16	0.15	0.25		
CiS_4	0.10	0.16	0.15	0.13	0.28	
CiS_5	0.04	0.10	0.11	0.13	0.18	0.24
CiS_6	0.09	0.15	0.15	0.13	0.15	0.18
CI_1	0.12	0.08	0.05	0.04	0.07	0.03
CI_2	0.09	0.05	0.03	0.02	0.05	0.02
CI_3	0.10	0.03	0.03	0.02	0.02	0.02
CI_4	0.03	0.03	0.03	0.01	0.01	0.01

#### Covariance Matrix

	CiS_6	CI_1	CI_2	CI_3	CI_4
CiS_6	0.28				
CI_1	0.08	0.27			
CI_2	0.02	0.11	0.16		
CI_3	0.06	0.14	0.08	0.22	
CI_4	0.04	0.08	0.06	0.09	0.14

Number of Iterations = 23

#### LISREL Estimates (Maximum Likelihood)

##### Measurement Equations

$$TC\_1 = 0.33 * TComp, \text{ Errorvar.} = 0.14, R^2 = 0.44$$

(0.024)  
5.85

$$TC\_2 = 0.40 * TComp, \text{ Errorvar.} = 0.092, R^2 = 0.64$$

(0.042)                      (0.018)  
9.53                      5.14

$$TC\_3 = 0.44 * TComp, \text{ Errorvar.} = 0.091, R^2 = 0.68$$

(0.069)                      (0.018)  
6.41                      4.98

$$TC\_4 = 0.42 * TComp, \text{ Errorvar.} = 0.088, R^2 = 0.67$$

(0.066)                      (0.018)  
6.38                      4.87

$$TC\_5 = 0.33 * TComp, \text{ Errorvar.} = 0.18, R^2 = 0.38$$

(0.066)                      (0.030)  
5.04                      6.08

$$TC\_6 = 0.38 * TComp, \text{ Errorvar.} = 0.17, R^2 = 0.46$$

(0.069)                      (0.029)  
5.48                      5.89

$$TC\_8 = 0.40 * TComp, \text{ Errorvar.} = 0.14, R^2 = 0.53$$

(0.068)                      (0.024)

5.84                      5.61

TC\_9 = 0.44\*TComp, Errorvar.= 0.17 , R<sup>2</sup> = 0.52  
           (0.075)                (0.031)  
           5.80                5.68

SA\_1 = 0.32\*SAdm, Errorvar.= 0.15 , R<sup>2</sup> = 0.40  
                                   (0.024)  
                                   6.30

SA\_2 = 0.56\*SAdm, Errorvar.= 0.044 , R<sup>2</sup> = 0.88  
           (0.080)                (0.012)  
           6.99                3.61

SA\_3 = 0.53\*SAdm, Errorvar.= 0.067 , R<sup>2</sup> = 0.81  
           (0.078)                (0.014)  
           6.81                4.80

SA\_4 = 0.29\*SAdm, Errorvar.= 0.16 , R<sup>2</sup> = 0.34  
           (0.019)                (0.025)  
           15.49                6.36

SA\_5 = 0.55\*SAdm, Errorvar.= 0.067 , R<sup>2</sup> = 0.82  
           (0.080)                (0.014)  
           6.84                4.65

CiS\_1 = 0.48\*ContSD, Errorvar.= 0.044 , R<sup>2</sup> = 0.84  
                                   (0.012)  
                                   3.60

CiS\_2 = 0.44\*ContSD, Errorvar.= 0.035 , R<sup>2</sup> = 0.85  
           (0.034)                (0.010)  
           12.93                3.47

CiS\_3 = 0.33\*ContSD, Errorvar.= 0.14 , R<sup>2</sup> = 0.45  
           (0.045)                (0.022)  
           7.41                6.15

CiS\_4 = 0.35\*ContSD, Errorvar.= 0.16 , R<sup>2</sup> = 0.44  
           (0.049)                (0.026)  
           7.28                6.16

CiS\_5 = 0.25\*ContSD, Errorvar.= 0.16 , R<sup>2</sup> = 0.28  
           (0.047)                (0.023)  
           5.27                6.92

CiS\_6 = 0.33\*ContSD, Errorvar.= 0.17 , R<sup>2</sup> = 0.40  
           (0.049)                (0.027)  
           6.73                6.23

CI\_1 = 0.42\*CreInn, Errorvar.= 0.097 , R<sup>2</sup> = 0.64  
                                   (0.026)  
                                   3.68

CI\_2 = 0.26\*CreInn, Errorvar.= 0.093 , R<sup>2</sup> = 0.43  
           (0.048)                (0.017)  
           5.44                5.37

CI\_3 = 0.33\*CreInn, Errorvar.= 0.11 , R<sup>2</sup> = 0.50  
           (0.058)                (0.023)

5.81            4.91

CI\_4 = 0.20\*CreInn, Errorvar.= 0.10 , R<sup>2</sup> = 0.28  
 (0.045)            (0.017)  
 4.47            5.94

Error Covariance for TC\_2 and TC\_1 = 0.068  
 (0.018)  
 3.89

Error Covariance for TC\_4 and TC\_3 = 0.043  
 (0.014)  
 3.03

Error Covariance for TC\_8 and TC\_3 = 0.035  
 (0.013)  
 2.61

Error Covariance for SA\_4 and SA\_1 = 0.14  
 (0.024)  
 6.01

Error Covariance for CiS\_5 and CiS\_4 = 0.081  
 (0.018)  
 4.57

Error Covariance for CiS\_6 and CiS\_5 = 0.083  
 (0.018)  
 4.61

#### Structural Equations

TComp = 0.74\*OUTCOME, Errorvar.= 0.45 , R<sup>2</sup> = 0.55  
 (0.15)            (0.18)  
 4.85            2.54

SAdm = 0.75\*OUTCOME, Errorvar.= 0.44 , R<sup>2</sup> = 0.56  
 (0.15)            (0.17)  
 4.85            2.52

ContSD = 0.58\*OUTCOME, Errorvar.= 0.67 , R<sup>2</sup> = 0.33  
 (0.12)            (0.15)  
 4.68            4.57

CreInn = 0.62\*OUTCOME, Errorvar.= 0.62 , R<sup>2</sup> = 0.38  
 (0.14)            (0.19)  
 4.47            3.22

#### Correlation Matrix of Independent Variables

OUTCOME

-----  
 1.00

#### Covariance Matrix of Latent Variables

TComp    SAdm    ContSD    CreInn    OUTCOME

TComp	1.00				
SAdm	0.56	1.00			
ContSD	0.43	0.43	1.00		
CreInn	0.46	0.46	0.36	1.00	
OUTCOME	0.74	0.75	0.58	0.62	1.00

#### Goodness of Fit Statistics

Degrees of Freedom = 220

Minimum Fit Function Chi-Square = 283.00 (P = 0.0027)

Normal Theory Weighted Least Squares Chi-Square = 251.98 (P = 0.068)

Estimated Non-centrality Parameter (NCP) = 31.98

90 Percent Confidence Interval for NCP = (0.0 ; 75.35)

Minimum Fit Function Value = 3.29

Population Discrepancy Function Value (F0) = 0.37

90 Percent Confidence Interval for F0 = (0.0 ; 0.88)

Root Mean Square Error of Approximation (RMSEA) = 0.041

90 Percent Confidence Interval for RMSEA = (0.0 ; 0.063)

P-Value for Test of Close Fit (RMSEA < 0.05) = 0.72

Expected Cross-Validation Index (ECVI) = 4.23

90 Percent Confidence Interval for ECVI = (3.86 ; 4.74)

ECVI for Saturated Model = 6.42

ECVI for Independence Model = 35.22

Chi-Square for Independence Model with 253 Degrees of Freedom = 2983.18

Independence AIC = 3029.18

Model AIC = 363.98

Saturated AIC = 552.00

Independence CAIC = 3108.90

Model CAIC = 558.07

Saturated CAIC = 1508.59

Normed Fit Index (NFI) = 0.91

Non-Normed Fit Index (NNFI) = 0.97

Parsimony Normed Fit Index (PNFI) = 0.79

Comparative Fit Index (CFI) = 0.98

Incremental Fit Index (IFI) = 0.98

Relative Fit Index (RFI) = 0.89

Critical N (CN) = 83.57

Root Mean Square Residual (RMR) = 0.019

Standardized RMR = 0.071

Goodness of Fit Index (GFI) = 0.80

Adjusted Goodness of Fit Index (AGFI) = 0.75

Parsimony Goodness of Fit Index (PGFI) = 0.64

#### Modification Indices and Expected Change

##### Modification Indices for LAMBDA-Y

TComp	SAdm	ContSD	CreInn
-------	------	--------	--------



TC_1	--	0.11	0.08	3.99
TC_2	--	1.51	0.02	2.75
TC_3	--	0.50	0.49	0.00
TC_4	--	2.33	0.15	0.64
TC_5	--	4.66	0.39	0.27
TC_6	--	0.34	0.03	0.56
TC_8	--	0.48	0.45	0.05
TC_9	--	0.62	0.79	0.63
SA_1	1.16	--	0.40	0.39
SA_2	0.19	--	0.06	0.34
SA_3	0.02	--	0.62	0.02
SA_4	0.04	--	0.06	0.01
SA_5	2.11	--	0.29	0.19
CiS_1	0.84	2.68	--	0.62
CiS_2	1.76	1.02	--	2.92
CiS_3	0.20	1.99	--	0.69
CiS_4	0.41	1.13	--	1.70
CiS_5	1.46	2.31	--	2.92
CiS_6	3.42	0.12	--	4.63
CI_1	2.10	0.21	0.37	--
CI_2	0.25	2.47	0.01	--
CI_3	0.95	0.04	1.53	--
CI_4	2.75	4.03	0.00	--

Expected Change for LAMBDA-Y

	TComp	SAdm	ContSD	CreInn
TC_1	--	-0.01	0.01	0.09
TC_2	--	0.04	-0.01	-0.06
TC_3	--	0.03	-0.02	0.00
TC_4	--	-0.06	0.01	-0.03
TC_5	--	-0.13	-0.03	0.03
TC_6	--	-0.04	-0.01	0.05
TC_8	--	0.04	0.03	-0.01
TC_9	--	0.05	0.05	0.05
SA_1	0.03	--	0.01	0.01
SA_2	0.02	--	-0.01	-0.02
SA_3	-0.01	--	-0.03	-0.01
SA_4	0.00	--	0.00	0.00
SA_5	-0.06	--	0.02	0.02
CiS_1	0.03	0.06	--	0.03
CiS_2	-0.04	-0.03	--	-0.06
CiS_3	-0.02	-0.07	--	-0.04
CiS_4	0.03	0.04	--	0.06
CiS_5	-0.04	-0.05	--	-0.06
CiS_6	0.08	0.01	--	0.10
CI_1	0.09	0.03	0.03	--
CI_2	0.02	0.07	0.00	--
CI_3	-0.05	-0.01	-0.06	--
CI_4	-0.08	-0.09	0.00	--

Standardized Expected Change for LAMBDA-Y

	TComp	SAdm	ContSD	CreInn
TC_1	--	-0.01	0.01	0.09
TC_2	--	0.04	-0.01	-0.06
TC_3	--	0.03	-0.02	0.00
TC_4	--	-0.06	0.01	-0.03

TC_5	--	-0.13	-0.03	0.03
TC_6	--	-0.04	-0.01	0.05
TC_8	--	0.04	0.03	-0.01
TC_9	--	0.05	0.05	0.05
SA_1	0.03	--	0.01	0.01
SA_2	0.02	--	-0.01	-0.02
SA_3	-0.01	--	-0.03	-0.01
SA_4	0.00	--	0.00	0.00
SA_5	-0.06	--	0.02	0.02
CiS_1	0.03	0.06	--	0.03
CiS_2	-0.04	-0.03	--	-0.06
CiS_3	-0.02	-0.07	--	-0.04
CiS_4	0.03	0.04	--	0.06
CiS_5	-0.04	-0.05	--	-0.06
CiS_6	0.08	0.01	--	0.10
CI_1	0.09	0.03	0.03	--
CI_2	0.02	0.07	0.00	--
CI_3	-0.05	-0.01	-0.06	--
CI_4	-0.08	-0.09	0.00	--

Completely Standardized Expected Change for LAMBDA-Y

	TComp	SAdm	ContSD	CreInn
TC_1	--	-0.03	0.02	0.17
TC_2	--	0.09	-0.01	-0.12
TC_3	--	0.05	-0.04	0.00
TC_4	--	-0.11	0.03	-0.06
TC_5	--	-0.25	-0.06	0.06
TC_6	--	-0.06	-0.02	0.08
TC_8	--	0.06	0.06	-0.02
TC_9	--	0.08	0.08	0.08
SA_1	0.05	--	0.03	0.03
SA_2	0.03	--	-0.01	-0.04
SA_3	-0.01	--	-0.05	-0.01
SA_4	-0.01	--	-0.01	0.00
SA_5	-0.11	--	0.03	0.03
CiS_1	0.06	0.11	--	0.05
CiS_2	-0.09	-0.07	--	-0.12
CiS_3	-0.04	-0.13	--	-0.08
CiS_4	0.05	0.08	--	0.11
CiS_5	-0.09	-0.11	--	-0.13
CiS_6	0.15	0.03	--	0.18
CI_1	0.17	0.05	0.06	--
CI_2	0.06	0.18	0.01	--
CI_3	-0.11	-0.02	-0.12	--
CI_4	-0.20	-0.24	-0.01	--

Modification Indices for BETA

	TComp	SAdm	ContSD	CreInn
TComp	--	0.29	0.36	0.01
SAdm	0.29	--	0.01	0.36
ContSD	0.36	0.01	--	0.29
CreInn	0.01	0.36	0.29	--

Expected Change for BETA

TComp	SAdm	ContSD	CreInn
-------	------	--------	--------

TComp	--	-0.21	0.11	-0.02
SAdm	-0.21	--	-0.02	0.13
ContSD	0.16	-0.03	--	-0.10
CreInn	-0.03	0.18	-0.09	--

#### Standardized Expected Change for BETA

	TComp	SAdm	ContSD	CreInn
TComp	--	-0.21	0.11	-0.02
SAdm	-0.21	--	-0.02	0.13
ContSD	0.16	-0.03	--	-0.10
CreInn	-0.03	0.18	-0.09	--

#### No Non-Zero Modification Indices for GAMMA

#### No Non-Zero Modification Indices for PHI

#### Modification Indices for PSI

	TComp	SAdm	ContSD	CreInn
TComp	--			
SAdm	0.29	--		
ContSD	0.36	0.01	--	
CreInn	0.01	0.36	0.29	--

#### Expected Change for PSI

	TComp	SAdm	ContSD	CreInn
TComp	--			
SAdm	-0.09	--		
ContSD	0.07	-0.01	--	
CreInn	-0.01	0.08	-0.06	--

#### Standardized Expected Change for PSI

	TComp	SAdm	ContSD	CreInn
TComp	--			
SAdm	-0.09	--		
ContSD	0.07	-0.01	--	
CreInn	-0.01	0.08	-0.06	--

#### The Modification Indices Suggest to Add an Error Covariance

Between and		Decrease in Chi-Square	New Estimate
SA_5	SA_1	13.2	-0.02
SA_5	SA_4	9.0	0.02
CiS_1	SA_1	10.4	0.01
CiS_1	SA_4	10.1	-0.01
CiS_5	CiS_3	8.6	0.03

#### Modification Indices for THETA-EPS

	TC_1	TC_2	TC_3	TC_4	TC_5	TC_6
TC_1	--					
TC_2	--	--				

TC_3	0.12	0.63	--			
TC_4	0.01	1.68	--	--		
TC_5	1.97	3.57	0.69	0.14	--	
TC_6	0.47	0.34	2.17	2.99	7.41	--
TC_8	1.95	0.39	--	2.96	0.32	1.92
TC_9	0.02	0.35	1.64	0.29	0.05	1.96
SA_1	0.99	0.01	0.54	0.14	1.94	3.59
SA_2	2.45	5.26	0.07	0.30	0.02	1.63
SA_3	0.48	2.86	0.56	2.61	0.02	0.02
SA_4	0.11	0.21	0.21	0.08	2.18	3.08
SA_5	0.05	0.49	1.59	4.26	2.31	2.13
CiS_1	0.04	0.13	0.51	0.01	0.00	3.23
CiS_2	0.15	0.01	0.05	0.23	0.04	0.38
CiS_3	0.05	0.19	2.06	7.19	0.39	0.21
CiS_4	0.04	0.04	0.03	0.04	0.85	0.27
CiS_5	0.04	0.05	0.01	0.20	0.36	0.08
CiS_6	0.47	0.04	0.20	0.91	0.58	4.39
CI_1	0.11	0.16	0.00	0.08	0.01	0.14
CI_2	2.12	2.72	0.13	1.01	1.60	0.01
CI_3	1.66	0.22	0.00	2.22	0.17	0.67
CI_4	0.68	0.03	0.59	0.15	0.00	0.97

Modification Indices for THETA-EPS

	TC_8	TC_9	SA_1	SA_2	SA_3	SA_4
-----						
TC_8	--					
TC_9	0.00	--				
SA_1	0.76	0.06	--			
SA_2	0.93	0.12	3.11	--		
SA_3	0.75	0.03	1.53	2.32	--	
SA_4	0.97	0.45	--	1.16	3.01	--
SA_5	2.32	0.08	13.17	0.02	5.26	8.95
CiS_1	0.06	0.80	10.40	1.28	5.98	10.10
CiS_2	0.01	0.21	4.21	3.19	4.68	6.86
CiS_3	0.50	6.92	0.01	0.01	0.39	0.09
CiS_4	0.13	0.11	0.10	0.26	0.00	0.01
CiS_5	0.85	0.95	0.09	1.52	1.03	0.29
CiS_6	1.23	1.15	1.51	4.75	0.03	0.42
CI_1	0.06	1.44	0.72	0.00	0.04	1.10
CI_2	5.20	0.01	4.01	0.10	2.98	2.42
CI_3	0.31	0.59	3.06	0.58	3.27	4.62
CI_4	0.74	0.12	1.22	3.48	0.57	0.50

Modification Indices for THETA-EPS

	SA_5	CiS_1	CiS_2	CiS_3	CiS_4	CiS_5
-----						
SA_5	--					
CiS_1	0.53	--				
CiS_2	0.08	2.24	--			
CiS_3	0.02	0.01	0.00	--		
CiS_4	2.06	0.19	0.01	1.67	--	
CiS_5	1.30	0.47	0.06	8.60	--	--
CiS_6	5.71	1.39	0.01	0.44	3.89	--
CI_1	0.01	1.85	6.07	0.00	3.37	2.15
CI_2	1.07	0.92	0.48	0.11	0.35	0.10
CI_3	1.06	3.24	0.79	0.06	0.88	0.00
CI_4	0.75	0.70	4.02	0.38	1.19	0.18

Modification Indices for THETA-EPS

	CiS_6	CI_1	CI_2	CI_3	CI_4
CiS_6	--				
CI_1	2.67	--			
CI_2	2.26	0.05	--		
CI_3	1.86	0.01	0.71	--	
CI_4	0.00	0.73	0.06	4.19	--

Expected Change for THETA-EPS

	TC_1	TC_2	TC_3	TC_4	TC_5	TC_6
TC_1	--					
TC_2	--	--				
TC_3	0.00	-0.01	--			
TC_4	0.00	0.01	--	--		
TC_5	0.02	-0.02	0.01	0.00	--	
TC_6	-0.01	-0.01	0.02	-0.02	0.06	--
TC_8	-0.02	0.01	--	0.03	-0.01	-0.02
TC_9	0.00	0.01	-0.02	-0.01	0.00	0.03
SA_1	0.01	0.00	0.00	0.00	0.01	-0.01
SA_2	-0.01	0.02	0.00	0.00	0.00	-0.02
SA_3	0.01	-0.01	-0.01	0.01	0.00	0.00
SA_4	0.00	0.00	0.00	0.00	-0.01	0.01
SA_5	0.00	0.01	0.01	-0.02	-0.02	0.02
CiS_1	0.00	0.00	0.01	0.00	0.00	-0.02
CiS_2	0.00	0.00	0.00	0.00	0.00	0.01
CiS_3	0.00	0.00	-0.01	0.03	0.01	-0.01
CiS_4	0.00	0.00	0.00	0.00	-0.01	0.01
CiS_5	0.00	0.00	0.00	0.00	0.01	0.00
CiS_6	0.01	0.00	0.00	-0.01	-0.01	0.03
CI_1	0.00	0.00	0.00	0.00	0.00	-0.01
CI_2	0.02	-0.02	0.00	0.01	0.02	0.00
CI_3	0.02	0.00	0.00	-0.02	0.01	0.01
CI_4	-0.01	0.00	-0.01	0.00	0.00	0.02

Expected Change for THETA-EPS

	TC_8	TC_9	SA_1	SA_2	SA_3	SA_4
TC_8	--					
TC_9	0.00	--				
SA_1	-0.01	0.00	--			
SA_2	0.01	0.00	0.01	--		
SA_3	0.01	0.00	0.01	-0.03	--	
SA_4	0.01	0.01	--	-0.01	-0.01	--
SA_5	-0.02	0.00	-0.02	0.00	0.04	0.02
CiS_1	0.00	0.01	0.01	-0.01	0.02	-0.01
CiS_2	0.00	0.01	-0.01	0.01	-0.02	0.01
CiS_3	0.01	-0.05	0.00	0.00	-0.01	0.00
CiS_4	0.00	0.01	0.00	0.00	0.00	0.00
CiS_5	-0.01	-0.01	0.00	0.01	-0.01	0.00
CiS_6	0.01	0.02	-0.01	-0.02	0.00	0.00
CI_1	0.00	0.02	0.01	0.00	0.00	-0.01
CI_2	-0.03	0.00	0.01	0.00	0.02	-0.01
CI_3	0.01	-0.01	-0.01	0.01	-0.02	0.01
CI_4	0.01	-0.01	-0.01	-0.02	0.01	0.00

Expected Change for THETA-EPS

	SA_5	CiS_1	CiS_2	CiS_3	CiS_4	CiS_5
SA_5	--					
CiS_1	-0.01	--				
CiS_2	0.00	0.03	--			
CiS_3	0.00	0.00	0.00	--		
CiS_4	0.02	0.00	0.00	-0.02	--	
CiS_5	-0.01	-0.01	0.00	0.03	--	--
CiS_6	0.03	-0.01	0.00	-0.01	0.04	--
CI_1	0.00	0.01	-0.02	0.00	0.02	-0.02
CI_2	-0.01	0.01	-0.01	0.00	0.01	0.00
CI_3	0.01	-0.02	0.01	0.00	-0.01	0.00
CI_4	0.01	-0.01	0.02	-0.01	-0.01	0.00

Expected Change for THETA-EPS

	CiS_6	CI_1	CI_2	CI_3	CI_4
CiS_6	--				
CI_1	0.02	--			
CI_2	-0.02	0.00	--		
CI_3	0.02	0.00	-0.01	--	
CI_4	0.00	-0.01	0.00	0.03	--

Completely Standardized Expected Change for THETA-EPS

	TC_1	TC_2	TC_3	TC_4	TC_5	TC_6
TC_1	--					
TC_2	--	--				
TC_3	0.01	-0.02	--			
TC_4	0.00	0.04	--	--		
TC_5	0.08	-0.09	0.04	-0.02	--	
TC_6	-0.04	-0.03	0.06	-0.08	0.19	--
TC_8	-0.06	0.02	--	0.10	-0.03	-0.08
TC_9	0.01	0.03	-0.05	-0.02	-0.01	0.09
SA_1	0.02	0.00	0.01	0.01	0.04	-0.05
SA_2	-0.05	0.06	-0.01	-0.01	-0.01	-0.05
SA_3	0.02	-0.05	-0.02	0.05	0.01	-0.01
SA_4	-0.01	-0.01	-0.01	-0.01	-0.04	0.05
SA_5	-0.01	0.02	0.03	-0.06	-0.07	0.06
CiS_1	0.01	-0.01	0.02	0.00	0.00	-0.08
CiS_2	-0.01	0.00	-0.01	-0.01	0.01	0.03
CiS_3	-0.01	0.02	-0.06	0.12	0.04	-0.03
CiS_4	-0.01	0.01	-0.01	-0.01	-0.05	0.03
CiS_5	0.01	0.01	0.00	0.01	0.03	-0.01
CiS_6	0.03	-0.01	-0.01	-0.03	-0.04	0.11
CI_1	0.02	-0.02	0.00	0.01	-0.01	-0.02
CI_2	0.08	-0.07	0.02	0.05	0.09	0.01
CI_3	0.07	-0.02	0.00	-0.07	0.03	0.05
CI_4	-0.05	0.01	-0.03	-0.02	0.00	0.07

Completely Standardized Expected Change for THETA-EPS

	TC_8	TC_9	SA_1	SA_2	SA_3	SA_4
TC_8	--					
TC_9	0.00	--				

SA_1	-0.02	-0.01	--			
SA_2	0.03	0.01	0.03	--		
SA_3	0.03	-0.01	0.02	-0.08	--	
SA_4	0.02	0.02	--	-0.02	-0.03	--
SA_5	-0.05	-0.01	-0.06	-0.01	0.10	0.05
CiS_1	-0.01	0.04	0.06	-0.03	0.07	-0.06
CiS_2	0.00	0.02	-0.04	0.04	-0.06	0.05
CiS_3	0.04	-0.16	0.00	0.00	-0.03	-0.01
CiS_4	0.02	0.02	-0.01	-0.02	0.00	0.00
CiS_5	-0.04	-0.05	-0.01	0.04	-0.03	0.01
CiS_6	0.05	0.05	-0.03	-0.07	0.01	0.02
CI_1	0.01	0.07	0.02	0.00	-0.01	-0.03
CI_2	-0.13	0.01	0.06	-0.01	0.08	-0.05
CI_3	0.03	-0.05	-0.05	0.03	-0.08	0.06
CI_4	0.05	-0.02	-0.03	-0.08	0.04	0.02

Completely Standardized Expected Change for THETA-EPS

	SA_5	CiS_1	CiS_2	CiS_3	CiS_4	CiS_5
-----						
SA_5	--					
CiS_1	-0.02	--				
CiS_2	-0.01	0.10	--			
CiS_3	-0.01	0.00	0.00	--		
CiS_4	0.05	-0.02	0.00	-0.07	--	
CiS_5	-0.04	-0.02	-0.01	0.14	--	--
CiS_6	0.08	-0.05	0.00	-0.04	0.13	--
CI_1	0.00	0.05	-0.10	0.00	0.09	-0.07
CI_2	-0.04	0.04	-0.03	-0.02	0.03	0.02
CI_3	0.04	-0.08	0.04	0.02	-0.05	0.00
CI_4	0.04	-0.04	0.10	-0.04	-0.06	0.02

Completely Standardized Expected Change for THETA-EPS

	CiS_6	CI_1	CI_2	CI_3	CI_4
-----					
CiS_6	--				
CI_1	0.08	--			
CI_2	-0.09	-0.02	--		
CI_3	0.07	-0.01	-0.07	--	
CI_4	0.00	-0.07	0.02	0.17	--

Maximum Modification Index is 13.17 for Element (13, 9) of THETA-EPS

Standardized Solution

LAMBDA-Y

	TComp	SAdm	ContSD	CreInn
-----				
TC_1	0.33	--	--	--
TC_2	0.40	--	--	--
TC_3	0.44	--	--	--
TC_4	0.42	--	--	--
TC_5	0.33	--	--	--
TC_6	0.38	--	--	--
TC_8	0.40	--	--	--
TC_9	0.44	--	--	--

SA_1	--	0.32	--	--
SA_2	--	0.56	--	--
SA_3	--	0.53	--	--
SA_4	--	0.29	--	--
SA_5	--	0.55	--	--
CiS_1	--	--	0.48	--
CiS_2	--	--	0.44	--
CiS_3	--	--	0.33	--
CiS_4	--	--	0.35	--
CiS_5	--	--	0.25	--
CiS_6	--	--	0.33	--
CI_1	--	--	--	0.42
CI_2	--	--	--	0.26
CI_3	--	--	--	0.33
CI_4	--	--	--	0.20

#### GAMMA

##### OUTCOME

TComp	0.74
SAdm	0.75
ContSD	0.58
CreInn	0.62

#### Correlation Matrix of ETA and KSI

	TComp	SAdm	ContSD	CreInn	OUTCOME
-----					
TComp	1.00				
SAdm	0.56	1.00			
ContSD	0.43	0.43	1.00		
CreInn	0.46	0.46	0.36	1.00	
OUTCOME	0.74	0.75	0.58	0.62	1.00

#### PSI

Note: This matrix is diagonal.

TComp	SAdm	ContSD	CreInn
-----			
0.45	0.44	0.67	0.62

#### Completely Standardized Solution

##### LAMBDA-Y

	TComp	SAdm	ContSD	CreInn
-----				
TC_1	0.66	--	--	--
TC_2	0.80	--	--	--
TC_3	0.83	--	--	--
TC_4	0.82	--	--	--
TC_5	0.61	--	--	--
TC_6	0.68	--	--	--
TC_8	0.73	--	--	--
TC_9	0.72	--	--	--
SA_1	--	0.63	--	--
SA_2	--	0.94	--	--



SA_3	--	0.90	--	--
SA_4	--	0.58	--	--
SA_5	--	0.91	--	--
CiS_1	--	--	0.92	--
CiS_2	--	--	0.92	--
CiS_3	--	--	0.67	--
CiS_4	--	--	0.66	--
CiS_5	--	--	0.52	--
CiS_6	--	--	0.63	--
CI_1	--	--	--	0.80
CI_2	--	--	--	0.65
CI_3	--	--	--	0.71
CI_4	--	--	--	0.53

#### GAMMA

##### OUTCOME

TComp	0.74
SAdm	0.75
ContSD	0.58
CreInn	0.62

#### Correlation Matrix of ETA and KSI

	TComp	SAdm	ContSD	CreInn	OUTCOME
TComp	1.00				
SAdm	0.56	1.00			
ContSD	0.43	0.43	1.00		
CreInn	0.46	0.46	0.36	1.00	
OUTCOME	0.74	0.75	0.58	0.62	1.00

#### PSI

Note: This matrix is diagonal.

TComp	SAdm	ContSD	CreInn
0.45	0.44	0.67	0.62

#### THETA-EPS

	TC_1	TC_2	TC_3	TC_4	TC_5	TC_6
TC_1	0.56					
TC_2	0.27	0.36				
TC_3	--	--	0.32			
TC_4	--	--	0.15	0.33		
TC_5	--	--	--	--	0.62	
TC_6	--	--	--	--	--	0.54
TC_8	--	--	0.12	--	--	--
TC_9	--	--	--	--	--	--
SA_1	--	--	--	--	--	--
SA_2	--	--	--	--	--	--
SA_3	--	--	--	--	--	--
SA_4	--	--	--	--	--	--
SA_5	--	--	--	--	--	--
CiS_1	--	--	--	--	--	--
CiS_2	--	--	--	--	--	--
CiS_3	--	--	--	--	--	--

CiS_4	--	--	--	--	--	--
CiS_5	--	--	--	--	--	--
CiS_6	--	--	--	--	--	--
CI_1	--	--	--	--	--	--
CI_2	--	--	--	--	--	--
CI_3	--	--	--	--	--	--
CI_4	--	--	--	--	--	--

THETA-EPS

	TC_8	TC_9	SA_1	SA_2	SA_3	SA_4
TC_8	0.47					
TC_9	--	0.48				
SA_1	--	--	0.60			
SA_2	--	--	--	0.12		
SA_3	--	--	--	--	0.19	
SA_4	--	--	0.57	--	--	0.66
SA_5	--	--	--	--	--	--
CiS_1	--	--	--	--	--	--
CiS_2	--	--	--	--	--	--
CiS_3	--	--	--	--	--	--
CiS_4	--	--	--	--	--	--
CiS_5	--	--	--	--	--	--
CiS_6	--	--	--	--	--	--
CI_1	--	--	--	--	--	--
CI_2	--	--	--	--	--	--
CI_3	--	--	--	--	--	--
CI_4	--	--	--	--	--	--

THETA-EPS

	SA_5	CiS_1	CiS_2	CiS_3	CiS_4	CiS_5
SA_5	0.18					
CiS_1	--	0.16				
CiS_2	--	--	0.15			
CiS_3	--	--	--	0.55		
CiS_4	--	--	--	--	0.56	
CiS_5	--	--	--	--	0.32	0.72
CiS_6	--	--	--	--	--	0.34
CI_1	--	--	--	--	--	--
CI_2	--	--	--	--	--	--
CI_3	--	--	--	--	--	--
CI_4	--	--	--	--	--	--

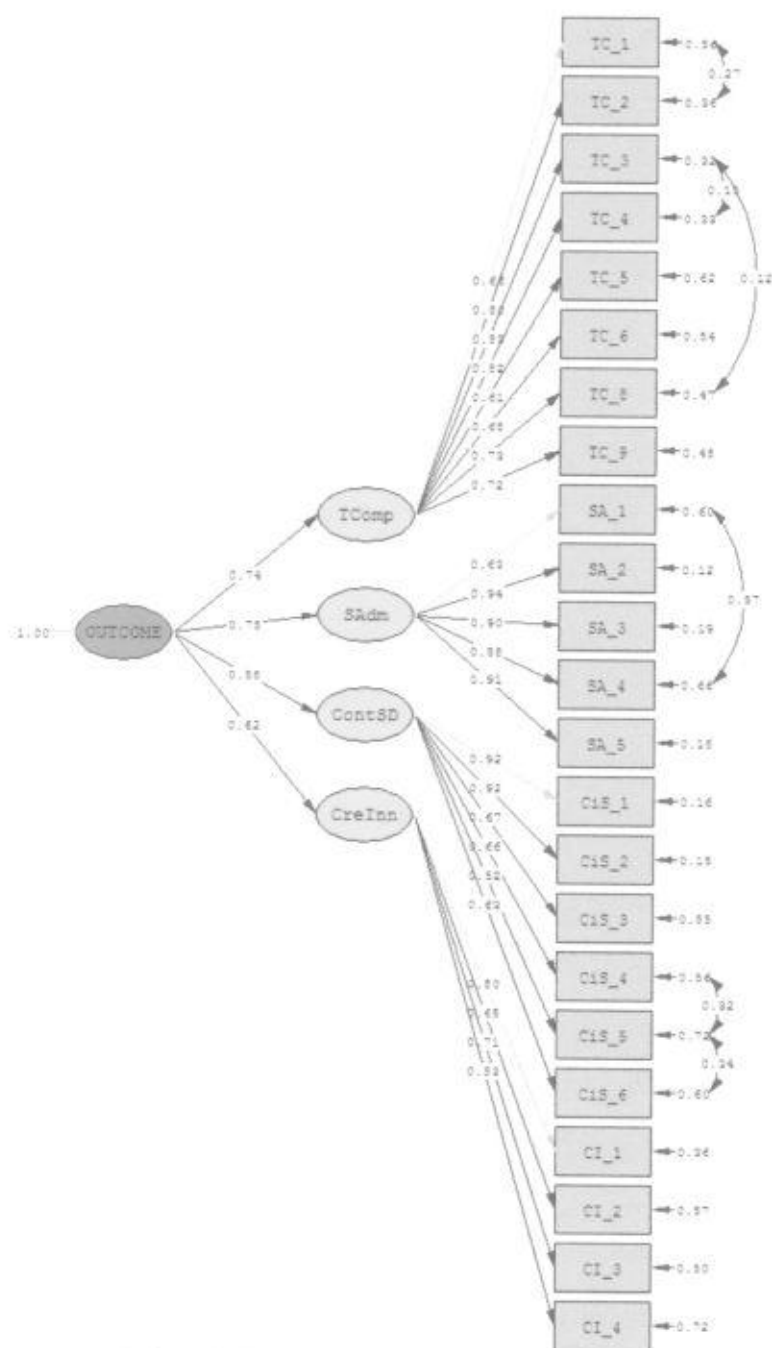
THETA-EPS

	CiS_6	CI_1	CI_2	CI_3	CI_4
CiS_6	0.60				
CI_1	--	0.36			
CI_2	--	--	0.57		
CI_3	--	--	--	0.50	
CI_4	--	--	--	--	0.72

Time used: 0.078 Seconds

# SECOND ORDER CONFIRMATORY FACTOR ANALYSIS

## OUTCOME DIMENSION



DATE: 12/21/2015

TIME: 5:30

LISREL 8.80

BY

Karl G. Jöreskog & Dag Sörbom

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The following lines were read from file D:\CFA\_Analysis\OUTCOME\_STUDENT.spj:

Raw Data from file 'D:\CFA\_Analysis\OUTCOME\_STUDENT.psf'

Sample Size = 100

Latent Variables Master Media Stra EvAss OUTCOME

Mat\_1=Master

Mat\_2=Master

Mat\_3=Master

Mat\_4=Master

Med\_1=Media

Med\_2=Media

Med\_3=Media

Med\_4=Media

Stra\_1=Stra

Stra\_2=Stra

Stra\_3=Stra

Stra\_5=Stra

Stra\_6=Stra

EvAss\_1=EvAss

EvAss\_2=EvAss

EvAss\_4=EvAss

EvAss\_5=EvAss

EvAss\_6=EvAss

Master Media Stra EvAss = OUTCOME

OPTIONS SC MI

Set the error covariance of Stra\_6 and Stra\_5

Relationships

Path Diagram

End of Problem

Sample Size = 100

Covariance Matrix

Mat\_1 Mat\_2 Mat\_3 Mat\_4 Med\_1 Med\_2

Mat_1	0.29					
Mat_2	0.10	0.35				
Mat_3	0.09	0.10	0.29			
Mat_4	0.14	0.16	0.15	0.32		
Med_1	0.06	0.04	0.05	0.04	0.25	
Med_2	0.07	0.05	0.09	0.08	0.17	0.31
Med_3	0.06	0.04	0.05	0.04	0.16	0.25
Med_4	0.08	0.10	0.07	0.05	0.21	0.24
Stra_1	0.06	0.07	0.05	0.07	0.08	0.10
Stra_2	0.03	0.08	0.05	0.06	0.01	0.04
Stra_3	0.08	0.07	0.07	0.09	0.10	0.10
Stra_5	0.06	0.02	0.05	0.08	0.10	0.12
Stra_6	0.07	0.04	0.07	0.10	0.08	0.15
EvAss_1	0.03	0.03	0.05	0.06	0.06	0.09
EvAss_2	0.03	0.06	0.02	0.04	0.06	0.11
EvAss_4	0.03	0.03	0.07	0.07	0.05	0.05
EvAss_5	0.02	-0.03	0.01	0.01	0.05	0.05
EvAss_6	0.05	0.06	0.01	0.06	0.06	0.09

#### Covariance Matrix

	Med_3	Med_4	Stra_1	Stra_2	Stra_3	Stra_5
Med_3	0.42					
Med_4	0.32	0.45				
Stra_1	0.06	0.10	0.27			
Stra_2	0.00	-0.01	0.11	0.26		
Stra_3	0.09	0.14	0.18	0.05	0.30	
Stra_5	0.08	0.11	0.07	0.05	0.14	0.30
Stra_6	0.06	0.06	0.13	0.10	0.15	0.23
EvAss_1	0.09	0.10	0.06	0.05	0.09	0.08
EvAss_2	0.11	0.09	0.05	0.03	0.05	0.02
EvAss_4	0.05	0.06	0.04	0.03	0.03	0.04
EvAss_5	0.02	0.03	0.03	0.01	0.03	0.06
EvAss_6	0.07	0.11	0.02	0.00	0.08	0.10

#### Covariance Matrix

	Stra_6	EvAss_1	EvAss_2	EvAss_4	EvAss_5	EvAss_6
Stra_6	0.43					
EvAss_1	0.13	0.28				
EvAss_2	0.07	0.11	0.42			
EvAss_4	0.09	0.09	0.11	0.28		
EvAss_5	0.09	0.08	0.11	0.10	0.35	
EvAss_6	0.05	0.08	0.10	0.09	0.09	0.34

Number of Iterations = 29

LISREL Estimates (Maximum Likelihood)

#### Measurement Equations

Mat\_1 = 0.30\*Master, Errorvar. = 0.21 , R<sup>2</sup> = 0.30

(0.033)  
6.14

Mat\_2 = 0.34\*Master, Errorvar.= 0.23 , R<sup>2</sup> = 0.33  
(0.083) (0.039)  
4.11 6.01

Mat\_3 = 0.32\*Master, Errorvar.= 0.18 , R<sup>2</sup> = 0.36  
(0.077) (0.031)  
4.23 5.83

Mat\_4 = 0.46\*Master, Errorvar.= 0.11 , R<sup>2</sup> = 0.66  
(0.098) (0.034)  
4.66 3.20

Med\_1 = 0.36\*Media, Errorvar.= 0.12 , R<sup>2</sup> = 0.52  
(0.019)  
6.07

Med\_2 = 0.45\*Media, Errorvar.= 0.10 , R<sup>2</sup> = 0.66  
(0.059) (0.020)  
7.64 5.26

Med\_3 = 0.53\*Media, Errorvar.= 0.14 , R<sup>2</sup> = 0.66  
(0.069) (0.027)  
7.64 5.26

Med\_4 = 0.57\*Media, Errorvar.= 0.12 , R<sup>2</sup> = 0.74  
(0.072) (0.026)  
8.01 4.46

Stra\_1 = 0.39\*Stra, Errorvar.= 0.11 , R<sup>2</sup> = 0.57  
(0.024)  
4.68

Stra\_2 = 0.18\*Stra, Errorvar.= 0.23 , R<sup>2</sup> = 0.12  
(0.056) (0.033)  
3.13 6.83

Stra\_3 = 0.45\*Stra, Errorvar.= 0.094 , R<sup>2</sup> = 0.69  
(0.069) (0.027)  
6.61 3.45

Stra\_5 = 0.27\*Stra, Errorvar.= 0.22 , R<sup>2</sup> = 0.25  
(0.061) (0.035)  
4.50 6.49

Stra\_6 = 0.36\*Stra, Errorvar.= 0.30 , R<sup>2</sup> = 0.30  
(0.073) (0.048)  
4.90 6.35

EvAss\_1 = 0.32\*EvAss, Errorvar.= 0.18 , R<sup>2</sup> = 0.36  
(0.033)  
5.39

EvAss\_2 = 0.36\*EvAss, Errorvar.= 0.29 , R<sup>2</sup> = 0.30  
(0.094) (0.051)  
3.78 5.75

EvAss\_4 = 0.30\*EvAss, Errorvar.= 0.19 , R<sup>2</sup> = 0.32

(0.078)	(0.034)
3.84	5.64

EvAss\_5 = 0.27\*EvAss, Errorvar.= 0.28 , R<sup>2</sup> = 0.21

(0.082)	(0.044)
3.36	6.24

EvAss\_6 = 0.30\*EvAss, Errorvar.= 0.26 , R<sup>2</sup> = 0.26

(0.083)	(0.042)
3.58	6.02

Error Covariance for Stra\_6 and Stra\_5 = 0.13

(0.033)
3.91

#### Structural Equations

Master = 0.57\*OUTCOME, Errorvar.= 0.67 , R<sup>2</sup> = 0.33

(0.17)	(0.28)
3.47	2.42

Media = 0.65\*OUTCOME, Errorvar.= 0.58 , R<sup>2</sup> = 0.42

(0.14)	(0.18)
4.63	3.20

Stra = 0.75\*OUTCOME, Errorvar.= 0.43 , R<sup>2</sup> = 0.57

(0.15)	(0.18)
5.00	2.38

EvAss = 0.64\*OUTCOME, Errorvar.= 0.59 , R<sup>2</sup> = 0.41

(0.17)	(0.26)
3.72	2.25

#### Correlation Matrix of Independent Variables

OUTCOME

-----
1.00

#### Covariance Matrix of Latent Variables

	Master	Media	Stra	EvAss	OUTCOME
Master	1.00				
Media	0.37	1.00			
Stra	0.43	0.49	1.00		
EvAss	0.37	0.41	0.48	1.00	
OUTCOME	0.57	0.65	0.75	0.64	1.00

#### Goodness of Fit Statistics

Degrees of Freedom = 130

Minimum Fit Function Chi-Square = 151.28 (P = 0.098)

Normal Theory Weighted Least Squares Chi-Square = 145.59 (P = 0.17)

Estimated Non-centrality Parameter (NCP) = 15.59

90 Percent Confidence Interval for NCP = (0.0 ; 49.33)

Minimum Fit Function Value = 1.53  
 Population Discrepancy Function Value (F0) = 0.16  
 90 Percent Confidence Interval for F0 = (0.0 ; 0.50)  
 Root Mean Square Error of Approximation (RMSEA) = 0.035  
 90 Percent Confidence Interval for RMSEA = (0.0 ; 0.062)  
 P-Value for Test of Close Fit (RMSEA < 0.05) = 0.80

Expected Cross-Validation Index (ECVI) = 2.30  
 90 Percent Confidence Interval for ECVI = (2.14 ; 2.64)  
 ECVI for Saturated Model = 3.45  
 ECVI for Independence Model = 11.60

Chi-Square for Independence Model with 153 Degrees of Freedom = 1112.82

Independence AIC = 1148.82

Model AIC = 227.59

Saturated AIC = 342.00

Independence CAIC = 1213.71

Model CAIC = 375.40

Saturated CAIC = 958.48

Normed Fit Index (NFI) = 0.86

Non-Normed Fit Index (NNFI) = 0.97

Parsimony Normed Fit Index (PNFI) = 0.73

Comparative Fit Index (CFI) = 0.98

Incremental Fit Index (IFI) = 0.98

Relative Fit Index (RFI) = 0.84

Critical N (CN) = 112.53

Root Mean Square Residual (RMR) = 0.023

Standardized RMR = 0.071

Goodness of Fit Index (GFI) = 0.86

Adjusted Goodness of Fit Index (AGFI) = 0.82

Parsimony Goodness of Fit Index (PGFI) = 0.65

#### Modification Indices and Expected Change

##### Modification Indices for LAMBDA-Y

	Master	Media	Stra	EvAss
Mat_1	--	0.85	0.61	0.00
Mat_2	--	0.10	0.03	0.13
Mat_3	--	0.48	0.10	0.04
Mat_4	--	3.76	0.17	0.00
Med_1	0.06	--	2.29	0.49
Med_2	3.17	--	3.41	1.98
Med_3	3.12	--	6.74	0.95
Med_4	0.46	--	0.21	0.17
Stra_1	0.57	0.48	--	1.97
Stra_2	1.49	2.00	--	0.00
Stra_3	0.09	0.11	--	0.66
Stra_5	0.25	3.79	--	0.24
Stra_6	0.17	0.53	--	2.66
EvAss_1	0.26	1.43	2.97	--
EvAss_2	0.30	0.45	0.65	--



EvAss_4	0.77	0.64	0.76	--
EvAss_5	2.68	1.27	1.01	--
EvAss_6	0.09	0.71	0.01	--

#### Expected Change for LAMBDA-Y

	Master	Media	Stra	EvAss
Mat_1	--	0.05	0.05	0.00
Mat_2	--	0.02	0.01	-0.03
Mat_3	--	0.04	0.02	0.01
Mat_4	--	-0.12	-0.03	0.00
Med_1	0.01	--	0.08	0.04
Med_2	0.08	--	0.09	0.07
Med_3	-0.10	--	-0.15	-0.06
Med_4	-0.04	--	-0.03	-0.02
Stra_1	-0.04	-0.04	--	-0.09
Stra_2	0.08	-0.09	--	0.00
Stra_3	0.02	0.02	--	-0.06
Stra_5	0.03	0.10	--	0.03
Stra_6	0.03	-0.05	--	0.12
EvAss_1	0.03	0.07	0.12	--
EvAss_2	-0.04	0.05	-0.07	--
EvAss_4	0.06	-0.05	-0.06	--
EvAss_5	-0.12	-0.08	-0.08	--
EvAss_6	0.02	0.06	0.01	--

#### Standardized Expected Change for LAMBDA-Y

	Master	Media	Stra	EvAss
Mat_1	--	0.05	0.05	0.00
Mat_2	--	0.02	0.01	-0.03
Mat_3	--	0.04	0.02	0.01
Mat_4	--	-0.12	-0.03	0.00
Med_1	0.01	--	0.08	0.04
Med_2	0.08	--	0.09	0.07
Med_3	-0.10	--	-0.15	-0.06
Med_4	-0.04	--	-0.03	-0.02
Stra_1	-0.04	-0.04	--	-0.09
Stra_2	0.08	-0.09	--	0.00
Stra_3	0.02	0.02	--	-0.06
Stra_5	0.03	0.10	--	0.03
Stra_6	0.03	-0.05	--	0.12
EvAss_1	0.03	0.07	0.12	--
EvAss_2	-0.04	0.05	-0.07	--
EvAss_4	0.06	-0.05	-0.06	--
EvAss_5	-0.12	-0.08	-0.08	--
EvAss_6	0.02	0.06	0.01	--

#### Completely Standardized Expected Change for LAMBDA-Y

	Master	Media	Stra	EvAss
Mat_1	--	0.10	0.09	0.01
Mat_2	--	0.03	0.02	-0.04
Mat_3	--	0.07	0.04	0.02
Mat_4	--	-0.20	-0.05	0.00
Med_1	0.02	--	0.15	0.07
Med_2	0.15	--	0.17	0.13

Med_3	-0.15	--	-0.24	-0.09
Med_4	-0.05	--	-0.04	-0.04
Stra_1	-0.08	-0.08	--	-0.18
Stra_2	0.15	-0.17	--	0.01
Stra_3	0.03	0.04	--	-0.10
Stra_5	0.05	0.19	--	0.06
Stra_6	0.04	-0.07	--	0.18
EvAss_1	0.06	0.14	0.23	--
EvAss_2	-0.07	0.08	-0.11	--
EvAss_4	0.10	-0.09	-0.12	--
EvAss_5	-0.20	-0.13	-0.13	--
EvAss_6	0.04	0.10	0.01	--

#### Modification Indices for BETA

	Master	Media	Stra	EvAss
-----				
Master	--	1.03	1.34	0.02
Media	1.03	--	0.02	1.34
Stra	1.34	0.02	--	1.03
EvAss	0.02	1.34	1.03	--

#### Expected Change for BETA

	Master	Media	Stra	EvAss
-----				
Master	--	-0.23	0.41	-0.04
Media	-0.20	--	-0.06	0.28
Stra	0.26	-0.05	--	-0.29
EvAss	-0.03	0.29	-0.40	--

#### Standardized Expected Change for BETA

	Master	Media	Stra	EvAss
-----				
Master	--	-0.23	0.41	-0.04
Media	-0.20	--	-0.06	0.28
Stra	0.26	-0.05	--	-0.29
EvAss	-0.03	0.29	-0.40	--

No Non-Zero Modification Indices for GAMMA

No Non-Zero Modification Indices for PHI

#### Modification Indices for PSI

	Master	Media	Stra	EvAss
-----				
Master	--			
Media	1.03	--		
Stra	1.34	0.02	--	
EvAss	0.02	1.34	1.03	--

#### Expected Change for PSI

	Master	Media	Stra	EvAss
-----				
Master	--			
Media	-0.13	--		
Stra	0.18	-0.03	--	

EvAss -0.02 0.17 -0.17 --

# Standardized Expected Change for PSI

	Master	Media	Stra	EvAss
Master	--			
Media	-0.13	--		
Stra	0.18	-0.03	--	
EvAss	-0.02	0.17	-0.17	--

The Modification Indices Suggest to Add an Error Covariance Between and Decrease in Chi-Square New Estimate

Med_3	Med_1	8.1	-0.05
Med_4	Med_2	12.4	-0.08
Med_4	Med_3	7.9	0.07
Stra_2	Stra_1	8.3	0.06
Stra_3	Stra_2	9.6	-0.07
Stra_5	Stra_1	9.4	-0.05
Stra_6	Med_2	9.1	0.05

# Modification Indices for THETA-EPS

	Mat_1	Mat_2	Mat_3	Mat_4	Med_1	Med_2
Mat_1	--					
Mat_2	0.03	--				
Mat_3	0.47	0.35	--			
Mat_4	0.01	0.10	0.57	--		
Med_1	0.33	0.14	0.00	0.11	--	
Med_2	0.24	2.70	1.28	2.66	0.95	--
Med_3	0.01	0.51	0.22	0.06	8.12	1.71
Med_4	0.25	6.88	0.01	5.46	1.37	12.42
Stra_1	0.04	0.79	0.02	0.52	0.01	0.94
Stra_2	0.20	2.31	0.09	0.23	0.30	1.93
Stra_3	0.30	0.03	0.00	0.01	0.94	4.61
Stra_5	0.09	0.79	0.00	0.19	1.18	0.00
Stra_6	0.02	0.44	0.03	0.25	0.13	9.10
EvAss_1	0.61	0.53	0.37	0.17	0.07	0.01
EvAss_2	0.00	1.47	0.56	0.46	0.45	0.83
EvAss_4	0.18	0.26	1.66	0.71	0.04	0.60
EvAss_5	0.06	3.43	0.00	0.01	1.73	0.23
EvAss_6	0.24	0.80	2.20	0.07	0.00	0.06

# Modification Indices for THETA-EPS

	Med_3	Med_4	Stra_1	Stra_2	Stra_3	Stra_5
Med_3	--					
Med_4	7.93	--				
Stra_1	1.36	0.02	--			
Stra_2	0.11	3.32	8.28	--		
Stra_3	0.10	3.19	4.47	9.56	--	
Stra_5	0.04	0.77	9.43	0.64	4.84	--
Stra_6	0.33	7.60	0.92	2.36	3.43	--
EvAss_1	0.17	0.05	0.10	0.44	0.06	0.00
EvAss_2	1.28	0.33	0.00	0.03	0.14	2.12
EvAss_4	0.04	0.02	0.07	0.18	2.39	1.62
EvAss_5	1.10	0.79	0.01	0.09	0.92	0.11
EvAss_6	0.53	1.17	2.87	0.89	1.91	7.66

# Modification Indices for THETA-EPS

	Stra_6	EvAss_1	EvAss_2	EvAss_4	EvAss_5	EvAss_6
Stra_6	--					
EvAss_1	2.18	--				
EvAss_2	0.26	0.00	--			
EvAss_4	3.15	0.32	0.03	--		
EvAss_5	0.77	0.03	0.10	0.85	--	
EvAss_6	5.15	0.90	0.00	0.04	0.20	--

## Expected Change for THETA-EPS

	Mat_1	Mat_2	Mat_3	Mat_4	Med_1	Med_2
Mat_1	--					
Mat_2	0.00	--				
Mat_3	-0.02	-0.02	--			
Mat_4	0.00	0.01	0.02	--		
Med_1	0.01	-0.01	0.00	-0.01	--	
Med_2	-0.01	-0.03	0.02	0.03	0.02	--
Med_3	0.00	-0.02	-0.01	0.00	-0.05	0.03
Med_4	0.01	0.06	0.00	-0.04	0.02	-0.08
Stra_1	0.00	0.02	0.00	-0.01	0.00	0.01
Stra_2	-0.01	0.04	0.01	0.01	-0.01	0.02
Stra_3	0.01	0.00	0.00	0.00	0.01	-0.03
Stra_5	0.01	-0.02	0.00	0.01	0.02	0.00
Stra_6	0.00	-0.02	0.00	0.01	-0.01	0.05
EvAss_1	-0.02	-0.02	0.01	0.01	0.00	0.00
EvAss_2	0.00	0.04	-0.02	-0.02	-0.01	0.02
EvAss_4	-0.01	-0.01	0.03	0.02	0.00	-0.01
EvAss_5	0.01	-0.05	0.00	0.00	0.03	0.01
EvAss_6	0.01	0.02	-0.04	0.01	0.00	0.00

## Expected Change for THETA-EPS

	Med_3	Med_4	Stra_1	Stra_2	Stra_3	Stra_5
Med_3	--					
Med_4	0.07	--				
Stra_1	-0.02	0.00	--			
Stra_2	-0.01	-0.04	0.06	--		
Stra_3	-0.01	0.03	0.08	-0.07	--	
Stra_5	0.00	0.02	-0.05	-0.02	0.04	--
Stra_6	-0.01	-0.06	0.02	0.04	-0.04	--
EvAss_1	0.01	0.00	-0.01	0.01	0.00	0.00
EvAss_2	0.03	-0.01	0.00	0.01	-0.01	-0.04
EvAss_4	0.00	0.00	0.00	0.01	-0.03	-0.03
EvAss_5	-0.02	-0.02	0.00	-0.01	-0.02	0.01
EvAss_6	-0.02	0.02	-0.04	-0.02	0.03	0.06

## Expected Change for THETA-EPS

	Stra_6	EvAss_1	EvAss_2	EvAss_4	EvAss_5	EvAss_6
Stra_6	--					
EvAss_1	0.03	--				
EvAss_2	0.01	0.00	--			
EvAss_4	0.04	-0.02	0.01	--		

EvAss_5	0.02	0.00	0.01	0.03	--	
EvAss_6	-0.06	-0.03	0.00	0.01	0.01	--

Completely Standardized Expected Change for THETA-EPS

	Mat_1	Mat_2	Mat_3	Mat_4	Med_1	Med_2
Mat_1	--					
Mat_2	0.02	--				
Mat_3	-0.06	-0.05	--			
Mat_4	-0.01	0.03	0.08	--		
Med_1	0.04	-0.02	0.00	-0.02	--	
Med_2	-0.03	-0.09	0.06	0.08	0.05	--
Med_3	0.01	-0.04	-0.03	-0.01	-0.16	0.08
Med_4	0.03	0.14	-0.01	-0.11	0.07	-0.22
Stra_1	-0.01	0.06	-0.01	-0.04	0.01	0.05
Stra_2	-0.04	0.13	0.02	0.04	-0.04	0.09
Stra_3	0.03	-0.01	0.00	0.01	0.05	-0.10
Stra_5	0.02	-0.06	0.00	0.03	0.06	0.00
Stra_6	0.01	-0.04	0.01	0.03	-0.02	0.15
EvAss_1	-0.06	-0.06	0.05	0.03	-0.02	0.01
EvAss_2	0.00	0.09	-0.06	-0.05	-0.04	0.05
EvAss_4	-0.03	-0.04	0.10	0.06	0.01	-0.05
EvAss_5	0.02	-0.15	0.00	-0.01	0.09	0.03
EvAss_6	0.04	0.07	-0.12	0.02	0.00	0.01

Completely Standardized Expected Change for THETA-EPS

	Med_3	Med_4	Stra_1	Stra_2	Stra_3	Stra_5
Med_3	--					
Med_4	0.17	--				
Stra_1	-0.06	-0.01	--			
Stra_2	-0.02	-0.11	0.22	--		
Stra_3	-0.01	0.08	0.27	-0.24	--	
Stra_5	-0.01	0.04	-0.19	-0.06	0.14	--
Stra_6	-0.03	-0.13	0.06	0.11	-0.12	--
EvAss_1	0.02	0.01	-0.02	0.06	0.02	0.00
EvAss_2	0.07	-0.03	0.00	0.02	-0.02	-0.10
EvAss_4	0.01	-0.01	0.02	0.04	-0.10	-0.09
EvAss_5	-0.06	-0.05	0.01	-0.03	-0.06	0.02
EvAss_6	-0.04	0.06	-0.12	-0.08	0.09	0.19

Completely Standardized Expected Change for THETA-EPS

	Stra_6	EvAss_1	EvAss_2	EvAss_4	EvAss_5	EvAss_6
Stra_6	--					
EvAss_1	0.10	--				
EvAss_2	0.03	0.00	--			
EvAss_4	0.12	-0.05	0.02	--		
EvAss_5	0.06	-0.01	0.03	0.08	--	
EvAss_6	-0.15	-0.09	0.00	0.02	0.04	--

Maximum Modification Index is 12.42 for Element ( 8, 6) of THETA-EPS

Standardized Solution

# LAMBDA-Y

	Master	Media	Stra	EvAss
-----	-----	-----	-----	-----
Mat_1	0.30	--	--	--
Mat_2	0.34	--	--	--
Mat_3	0.32	--	--	--
Mat_4	0.46	--	--	--
Med_1	--	0.36	--	--
Med_2	--	0.45	--	--
Med_3	--	0.53	--	--
Med_4	--	0.57	--	--
Stra_1	--	--	0.39	--
Stra_2	--	--	0.18	--
Stra_3	--	--	0.45	--
Stra_5	--	--	0.27	--
Stra_6	--	--	0.36	--
EvAss_1	--	--	--	0.32
EvAss_2	--	--	--	0.36
EvAss_4	--	--	--	0.30
EvAss_5	--	--	--	0.27
EvAss_6	--	--	--	0.30

# GAMMA

## OUTCOME

Master	0.57
Media	0.65
Stra	0.75
EvAss	0.64

## Correlation Matrix of ETA and KSI

	Master	Media	Stra	EvAss	OUTCOME
-----	-----	-----	-----	-----	-----
Master	1.00				
Media	0.37	1.00			
Stra	0.43	0.49	1.00		
EvAss	0.37	0.41	0.48	1.00	
OUTCOME	0.57	0.65	0.75	0.64	1.00

## PSI

Note: This matrix is diagonal.

Master	Media	Stra	EvAss
-----	-----	-----	-----
0.67	0.58	0.43	0.59

## Completely Standardized Solution

# LAMBDA-Y

	Master	Media	Stra	EvAss
-----	-----	-----	-----	-----
Mat_1	0.55	--	--	--
Mat_2	0.58	--	--	--
Mat_3	0.60	--	--	--

Mat_4	0.81	--	--	--
Med_1	--	0.72	--	--
Med_2	--	0.81	--	--
Med_3	--	0.81	--	--
Med_4	--	0.86	--	--
Stra_1	--	--	0.76	--
Stra_2	--	--	0.35	--
Stra_3	--	--	0.83	--
Stra_5	--	--	0.50	--
Stra_6	--	--	0.55	--
EvAss_1	--	--	--	0.60
EvAss_2	--	--	--	0.55
EvAss_4	--	--	--	0.57
EvAss_5	--	--	--	0.46
EvAss_6	--	--	--	0.51

#### GAMMA

##### OUTCOME

Master	0.57
Media	0.65
Stra	0.75
EvAss	0.64

#### Correlation Matrix of ETA and KSI

	Master	Media	Stra	EvAss	OUTCOME
Master	1.00				
Media	0.37	1.00			
Stra	0.43	0.49	1.00		
EvAss	0.37	0.41	0.48	1.00	
OUTCOME	0.57	0.65	0.75	0.64	1.00

#### PSI

Note: This matrix is diagonal.

Master	Media	Stra	EvAss
0.67	0.58	0.43	0.59

#### THETA-EPS

	Mat_1	Mat_2	Mat_3	Mat_4	Med_1	Med_2
Mat_1	0.70					
Mat_2	--	0.67				
Mat_3	--	--	0.64			
Mat_4	--	--	--	0.34		
Med_1	--	--	--	--	0.48	
Med_2	--	--	--	--	--	0.34
Med_3	--	--	--	--	--	--
Med_4	--	--	--	--	--	--
Stra_1	--	--	--	--	--	--
Stra_2	--	--	--	--	--	--
Stra_3	--	--	--	--	--	--
Stra_5	--	--	--	--	--	--
Stra_6	--	--	--	--	--	--
EvAss_1	--	--	--	--	--	--

EvAss_2	--	--	--	--	--	--
EvAss_4	--	--	--	--	--	--
EvAss_5	--	--	--	--	--	--
EvAss_6	--	--	--	--	--	--

THETA-EPS

	Med_3	Med_4	Stra_1	Stra_2	Stra_3	Stra_5
<hr/>						
Med_3	0.34					
Med_4	--	0.26				
Stra_1	--	--	0.43			
Stra_2	--	--	--	0.88		
Stra_3	--	--	--	--	0.31	
Stra_5	--	--	--	--	--	0.75
Stra_6	--	--	--	--	--	0.35
EvAss_1	--	--	--	--	--	--
EvAss_2	--	--	--	--	--	--
EvAss_4	--	--	--	--	--	--
EvAss_5	--	--	--	--	--	--
EvAss_6	--	--	--	--	--	--

THETA-EPS

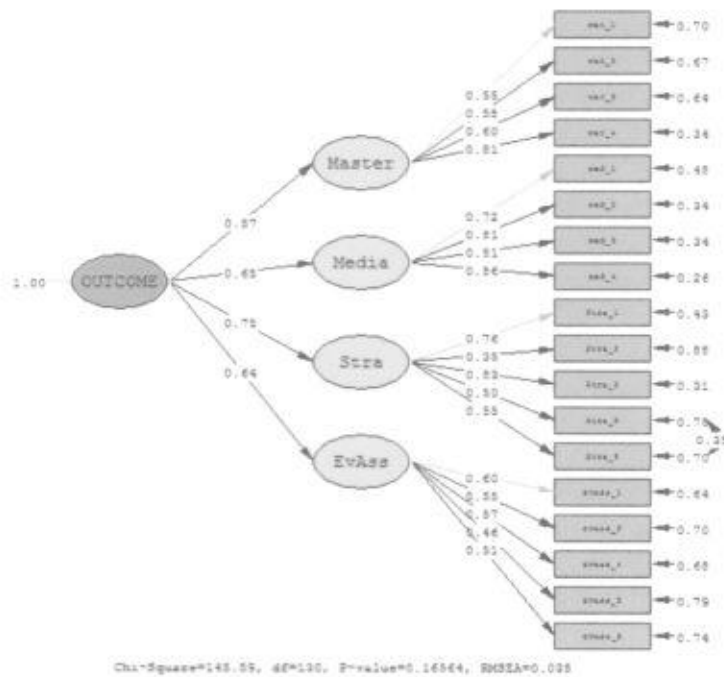
	Stra_6	EvAss_1	EvAss_2	EvAss_4	EvAss_5	EvAss_6
<hr/>						
Stra_6	0.70					
EvAss_1	--	0.64				
EvAss_2	--	--	0.70			
EvAss_4	--	--	--	0.68		
EvAss_5	--	--	--	--	0.79	
EvAss_6	--	--	--	--	--	0.74

Time used: 0.031 Seconds



## SECOND ORDER CONFIRMATORY FACTOR ANALYSIS

### OUTCOME DIMENSION



# **APPENDIX G**

## **RESEARCH PERMIT**



PEMERINTAH KABUPATEN PURWOREJO  
DINAS PENDIDIKAN, KEBUDAYAAN, PEMUDA DAN OLAHRAGA  
**SEKOLAH MENENGAH KEJURUAN NEGERI 1 PURWOREJO**

*Jalan Tentara Pelajar Kotak Pos 127 Purworejo 54101*

**Telepon / Faximile 0275 321948**

Website : [www.smkn1pwr.net](http://www.smkn1pwr.net) email : [smkn1pwr@yahoo.co.id](mailto:smkn1pwr@yahoo.co.id)



**SURAT KETERANGAN**

**Nomor : 422/ 0429 /2015**

Dasar : Surat dari Universitas Negeri Yogyakarta Program Pasca Sarjana, Nomor : 2867/UN34.17/LT/2015, tanggal 23 Maret 2015 perihal Izin Penelitian.

Kepala SMK Negeri 1 Purworejo menerangkan bahwa mahasiswa dibawah ini :

Nama	: Nurhening Yuniarti
Nomor Registrasi	: 11702261006
Program Studi	: S.3 (Pascasarjana)
Jurusan	: Pendidikan Teknologi dan Kejuruan
Universitas	: Universitas Negeri Yogyakarta
Judul Penelitian	: Outcome Evaluation as Main Condition in Improving The Quality oh Teacher Education Institutions.

Telah melaksanakan penelitian dengan baik di SMK Negeri 1 Purworejo.  
Demikian surat keterangan ini dibuat untuk dapat dipergunakan seperlunya.

Purworejo, 22 April 2015  
KEPALA SEKOLAH  
  
DANDIYONO, S.Pd., M.Pd.  
Pembina  
NIP. 19680101 199402 1 001



PEMERINTAH KABUPATEN BOYOLALI  
DINAS PENDIDIKAN PEMUDA DAN OLAH RAGA  
**SMK NEGERI 1 JUWANGI**



Certificate No.51432/A/0001/UK/En

*Kompetensi Keahlian :*  
*Teknik Gambar Bangunan, Desain & Produksi Kria Kayu, Busana Butik & Teknik Otomotif Sepeda Motor*  
Alamat : Jl. Raya Juwangi No. 148, Kab. Boyolali, Kode Pos 57391 Telp 082134610798

F.6.1/ADM-02

**SURAT KETERANGAN**

No : 421.5 / *ORS* / 90 / 2015

Yang bertandatangan di bawah ini Kepala SMK Negeri 1 Juwangi Kabupaten Boyolali menerangkan bahwa :

Nama : NURHENING YUNIARTI, MT  
No. Registrasi : -  
Program Studi : PENDIDIKAN TEKNOLOGI DAN KEJURUAN  
PROGRAM PASCASARJANA  
UNIVERSITAS NEGERI YOGYAKARTA

Yang bersangkutan benar-benar telah melaksanakan penelitian dalam rangka penulisan tesis yang dilaksanakan pada :

Tanggal : 30 s.d 31 Maret 2015  
Tempat : SMK Negeri 1 Juwangi Boyolali  
Judul Penelitian : " OUTCOME EVALUATION AS MAIN CONDITION  
IN IMPROVING THE QUALITY OF TEACHER  
EDUCATION INSTITUTIONS "

Demikian surat keterangan ini dibuat, untuk dapat dipergunakan sebagaimana mestinya.

Juwangi, 02 April 2015

Kepala Sekolah



**FREDY SULAKSONO, S.Pd**

NIP. 19680130 199003 1 005



PEMERINTAH KOTA MAGELANG  
DINAS PENDIDIKAN  
**SMK NEGERI 1 MAGELANG**

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**MAGELANG**



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**SURAT KETERANGAN**

Nomor : 070/429/230.SMK01

Yang bertanda tangan dibawah ini Kepala Sekolah SMK N1 Magelang

Nama : Drs. Nisandi, M.T  
NIP : 19600814 198803 1 009  
Pangkat/Golongan : Pembina /IVA

Menerangkan bahwa :

Nama : Nurhening Yuniarti, M.T.  
No.Registrasi : 11702261006  
Program Studi : Pendidikan Teknologi dan Kejuruan

Telah melaksanakan kegiatan penelitian dalam rangka penulisan disertasi Program Pascasarjana Universitas Negeri Yogyakarta dengan Judul Penelitian "*Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education Institution*" pada Tanggal 18 April s/d 27 April 2015.

Demikian surat keterangan ini dibuat untuk dapat dipergunakan seperlunya.

Magelang, 27 April 2015

Kepala SMK Negeri 1 Magelang



Drs. Nisandi, M.T  
Pembina  
NIP. 19600814 198803 1 009



PEMERINTAH KOTA YOGYAKARTA  
DINAS PENDIDIKAN  
**SMK NEGERI 2**

Jl. AM. Sangaji 47 Telp. (0274) 513490 Fax. (0274) 512639  
E-mail : info@smk2-yk.sch.id Website : www.smk2-yk.sch.id,  
Yogyakarta 55233

**SURAT KETERANGAN**

No. : 070/0621

Kepala SMK Negeri 2 Yogyakarta menerangkan bahwa :

Nama : **NURHENING YUNIARTI**  
No. Mahasiswa : 11702261006  
Pekerjaan : Mahasiswa PPs UNY

Berdasarkan surat izin dari Dinas Perizinan Kota Yogyakarta Nomor : 070/0772 tanggal 4 Maret 2015 perihal Permohonan Izin Penelitian, bahwa mahasiswa tersebut telah selesai melaksanakan pengambilan data pada tanggal 26 Februari 2015 sampai 26 Mei 2015 dengan judul :

**“ OUTCOME EVALUATION AS MAIN CONDITION IN IMPROVING  
THE QUALITY OF TEACHER EDUCATION INSTITUTIONS “**

Demikian surat keterangan ini dibuat untuk digunakan sebagaimana mestinya.



Yogyakarta, 21 April 2015  
Kepala Sekolah

**Drs. PARYOTO, MT, M.Pd**  
NIP 19641214 199003 1 007



**SEGORO AMARTO**  
SEMANGAT GOTONG ROYONG AGAWE MAJUNE NGAYOGYAKARTA  
KEMANDIRIAN – KEDISIPLINAN – KEPEDULIAN – KEBERSAMAAN





PEMERINTAH KABUPATEN BANTUL  
DINAS PENDIDIKAN MENENGAH DAN NON FORMAL

**SMK 2 SEWON**

Alamat: Unit 1: Jl. Parangtritis Km 7, Timbulharjo, Sewon, Bantul, Telp. 0274-6463472  
Unit 2 (Induk): Cangkringmalang, Timbulharjo, Sewon, Bantul, Telp./Fax. 0274-6463179, 6463476  
Email: [smksewon2@yahoo.co.id](mailto:smksewon2@yahoo.co.id), Website: [www.smk2sewon.sch.id](http://www.smk2sewon.sch.id), Kode Pos 55186, Yogyakarta

**SURAT KETERANGAN**

Nomor: 421/132

Yang bertanda tangan di bawah ini:

Nama : Drs. PII KUSHARBUGIADI, M.T.  
NIP : 19640115 198903 1 013  
Pangkat / Gol. : Pembina / IV a  
Jabatan : Kepala Sekolah  
Instansi : SMK Negeri 2 Sewon

Menerangkan bahwa:

Nama : Nurhening Yuniarti, M.T.  
P.T. : Program Pascasarjana UNY, Karang Malang Yogyakarta  
NIM : 11702261006

Telah melaksanakan penelitian pada:

Sekolah : SMK Negeri 2 Sewon, Bantul  
Tanggal : 8 s.d. 20 April 2015  
Judul : *Outcome Evaluation as Main Condition in Improving the Quality of Teacher Education Institution*

Demikian surat keterangan ini dibuat dengan sesungguhnya untuk dapat dipergunakan sebagaimana mestinya.



Sewon, 20 April 2015  
Kepala Sekolah  
**Drs. Pii Kusharbugiadi, M.T.**  
NIP. 19640115 198903 1 013



MUHAMMADIYAH MAJLIS PENDIDIKAN DASAR DAN MENENGAH  
**SMK MUHAMMADIYAH 1 BAMBANGLIPURO**

KOMPETENSI KEAHLIAN : TEKNIK KENDARAAN RINGAN	Terakreditasi A
REKAYASA PERANGKAT LUNAK	Terakreditasi A
TEKNIK MULTI MEDIA	Terakreditasi A
TEKNIK PENGOLAHAN HASIL PERTANIAN	akreditasi A
TEKNIK SEPEDA MOTOR	Terakreditasi B



Alamat : Jl. Samas Km 2,3 Kanutan sumbermulyo Bambanglipuro Bantul, Daerah Istimewa Yogyakarta.  
Telp/fax: (0274) 6460410 . E-mail: info@smkmbali.sch.co.id web: www.smkmbali.sch.id

**SURAT KETERANGAN PELAKSANAAN PENELITIAN**

Nomor : 363/ III.4/KET/IV/2015

Yang bertanda tangan dibawah ini Kepala SMK Muhammadiyah 1 Bambanglipuro Bantul Yogyakarta

Nama : Drs. H. Maryoto, M.Pd  
NIP : 19650522 198903 1 005  
Jabatan : Kepala Sekolah  
Unit Kerja : SMK Muhammadiyah 1 Bambanglipuro

Menerangkan bahwa :

Nama : Nurhening Yuniarti, MT  
NIM : 11702261006  
Program /Tingkat : Pascasarjana  
Perguruan Tinggi : Universitas Negeri Yogyakarta

Telah mengadakan Penelitian di SMK Muhammadiyah 1 Bambanglipuro dengan judul: **Outcome evaluation as main condition in improving the quality of teacher education institution**, yang telah dilaksanakan dari tanggal 05 Maret sd 05 Juni 2015

Demikian surat keterangan ini dibuat untuk dapat digunakan sebagaimana mestinya.



Bantul, 28 Pril 2015

Kepala Sekolah

Drs. H. Maryoto, M.Pd

Nip: 19650522 198903 1 005





# SMK PENERBANGAN AAG ADISUTJIPTO

KELOMPOK TEKNOLOGI DAN INDUSTRI

STATUS : TERAKREDITASI A

Alamat : Lanud Adisutjipto Jln. Janti Depok, Sleman Yogyakarta (55002)

Telpon : (0274) 488385 atau (0274) 488466 Psw. 5201

www.smkpenerbanganjogja.sch.id



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www.tuv.com  
ID 910509863

## SURAT KETERANGAN

Nomor : 875 /113.5/P16/SMK AAG/V/2015

Yang bertanda tangan di bawah ini Kepala SMK Penerbangan AAG Adisutjipto Yogyakarta, dengan ini menerangkan bahwa :

Nama : NURHENING YUNIARTI, M.T.  
No. Regrestasi : 11702261006  
Program Studi : Pendidikan Teknologi dan Kejuruan

Telah melaksanakan kegiatan penelitian dari tanggal 1 April s/d 13 Mei 2015 , dengan judul Outcome Evaluation as Main Condition in Improving The Quality of Teacher Education Institution.

Demikian surat keterangan ini diberikan agar dapat dipergunakan dengan semestinya.



Mei 2015  
Kepala Sekolah

Dr. Yulianto Hadi, M. M.



PEMERINTAH DAERAH DAERAH ISTIMEWA YOGYAKARTA  
DINAS PENDIDIKAN, PEMUDA, DAN OLARHAGA  
**SMK NEGERI 2 WONOSARI**

Jalan Kyal Haji Agus Salim, Ledoksari, Wonosari, Gunungkidul, 55813

Telepon (0274) 391019, 392454 Facsimile 392454

[Http://www.smkn2wonosari.sch.id](http://www.smkn2wonosari.sch.id) E-mail : stmnerigk@yahoo.com

**SURAT KETERANGAN**

No. : 422/0305

Kepala SMK Negeri 2 Wonosari menerangkan bahwa :

Nama : **NURHENING YUNIARTI, MT**  
No. Mhs. : 11702261006  
Fakultas : Teknik  
Universitas : Universitas Negeri Yogyakarta  
Judul Penelitian : "OUTCOME EVALUATION AS MAIN CONDITION  
IN IMPROVING THE QUALITY OF TEACHER  
EDUCATION INSTITUTIONS"

Telah melaksanakan penelitian di SMK Negeri 2 Wonosari pada tanggal  
16 Maret – 2 April 2015.

Demikian surat keterangan ini dibuat untuk dapat dipergunakan sebagaimana  
mestinya.

Wonosari, 4 April 2015  
Kepala Sekolah  
  
Drs. RACHMAD BASUKI, SH, M.T  
NIP. 19620304 198804 1 001



**LEMBAGA PENDIDIKAN MA'ARIF KULON PROGO**  
**SEKOLAH MENENGAH KEJURUAN MA'ARIF I NANGGULAN**  
**TERAKREDITASI A**

PROGRAM KEAHLIAN : TEKNIK KENDARAAN RINGAN  
: TEKNIK KOMPUTER DAN JARINGAN

Alamat : Karang Jatisarono Nanggulan KP DIY Pos 55671 Telp. (0274) 749 3060

**SURAT KETERANGAN**  
**NOMOR : 105/113.3/122/LL/ 2015**

Yang bertandatangan di bawah ini :

Nama : **SARWIDI, S.Pd**  
NIP. : 19690102 199103 1 008  
Jabatan : Kepala Sekolah  
Instansi : SMK Ma'arif 1 Nanggulan  
Alamat : Karang, Jatisarono, Nanggulan, Kulon Progo

Menerangkan bahwa :

Nama : **NURHENING YUNIARTI**  
NIM : 11702261006  
Jenis Kelamin : Perempuan  
Jurusan/Program Studi : Pendidikan Teknologi dan Kejuruan (S-3), Pasca Sarjana UNY

Telah menyelesaikan kegiatan Penelitian di SMK Ma'arif 1 Nanggulan, Kulon progo. Penelitian dilaksanakan mulai tanggal 13 Maret 2015 sampai dengan 26 Maret 2015. Selama penelitian di sekolah kami, mahasiswa yang bersangkutan telah melakukan penelitian dengan baik.

Demikian Surat Keterangan ini kami buat untuk dapat dipergunakan sebagaimana mestinya.

Nanggulan, 02 April 2015

Kepala Sekolah



**SARWIDI, S.Pd**

Pembina IV/a

NIP. 19690102 199103 1 008



PEMERINTAH DAERAH DAERAH ISTIMEWA YOGYAKARTA  
SEKRETARIAT DAERAH

Kompleks Kepatihan, Danurejan, Telepon (0274) 562811 - 562814 (Hunting)  
YOGYAKARTA 55213

SURAT KETERANGAN IJIN

070 /Reg / VI 729 2 /2015

Membaca Surat : **KEPALA BIRO ADMINISTRASI  
PEMBANGUNAN SETDA DIY** Nomor : **070/REG/VI/216/12/2014**

Tanggal : **12 Desember 2014** Perihal : **Ijin Penelitian-Perpanjangan**

Mengingat : 1. Peraturan Pemerintah Nomor 41 Tahun 2006 tentang Perizinan bagi Perguruan Tinggi Asing, Lembaga Penelitian dan Pengembangan Asing, Badan Usaha Asing dan Orang Asing dalam Melakukan Kegiatan Penelitian dan Pengembangan di Indonesia;  
2. Peraturan Menteri Dalam Negeri Nomor 20 Tahun 2011 tentang Pedoman Penelitian dan Pengembangan di Lingkungan Kementerian Dalam Negeri dan Pemerintah Daerah;  
3. Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 37 tahun 2008 tentang Rincian Tugas dan Fungsi Satuan Organisasi di Lingkungan Sekretariat Daerah dan Sekretariat Dewan Perwakilan Rakyat Daerah;  
4. Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 18 Tahun 2009 tentang Pedoman Pelayanan Perizinan, Rekomendasi Pelaksanaan Survei, Penelitian, Pendataan, Pengembangan, Pengkajian dan Studi Lapangan di Daerah Istimewa Yogyakarta.

**DIIJINKAN** untuk melakukan kegiatan survei/penelitian/pengembangan/pengkajian/studi lapangan kepada:

Nama : **NURHENING YUNIARTI, M.T.** NIP/NIM : **11702261006**

Alamat : **PROGRAM PASCASARJANA, PENDIDIKAN TEKNOLOGI DAN KEJURUAN, UNIVERSITAS  
NEGERI YOGYAKARTA**

Judul : **OUTCOME EVALUATION AS MAIN CONDITION IN IMPROVING THE QUALITY OF TEACHER  
EDUCATION INSTITUTION**

Lokasi : **DINAS PENDIDIKAN, PEMUDA DAN OLAHRAGA DIY**

Waktu : **26 Februari 2015 s/d 26 Mei 2015**

Dengan Ketentuan:

1. Menyerahkan surat keterangan/ijin survei/penelitian/pendataan/pengembangan/pengkajian/studi lapangan \*) dari Pemerintah Daerah DIY kepada Bupati/Walikota melalui institusi yang berwenang mengeluarkan ijin dimaksud;
2. Menyerahkan softcopy hasil penelitiannya baik kepada Gubernur Daerah Istimewa Yogyakarta melalui Biro Administrasi Pembangunan Setda DIY dalam bentuk compact disk (CD) maupun mengunggah (upload) melalui website : [adbang.jogjaprov.go.id](http://adbang.jogjaprov.go.id) dan menunjukkan naskah cetakan asli yang sudah disahkan dan dibubuhi cap institusi;
3. Ijin ini hanya dipergunakan untuk keperluan ilmiah, dan pemegang ijin wajib mentatati ketentuan yang berlaku di lokasi kegiatan;
4. Ijin penelitian dapat diperpanjang maksimal 2 (dua) kali dengan menunjukkan surat ini kembali sebelum berakhir waktunya setelah mengajukan perpanjangan melalui website : [adbang.jogjaprov.go.id](http://adbang.jogjaprov.go.id);
5. Ijin yang diberikan dapat dibatalkan sewaktu-waktu apabila pemegang ijin ini tidak memenuhi ketentuan yang berlaku.

Dikeluarkan di Yogyakarta

Pada tanggal **26 Februari 2015**



Tembusan:

1. Ytn. Gubernur Daerah Istimewa Yogyakarta (sebagai laporan)
2. Ka. Dinas Pendidikan Pemuda dan Olah Raga DIY
3. Bupati Bantul c.q. Ka. Bappeda
4. Bupati Gunungkidul c.q. KPPTSP
5. Walikota Yogyakarta c.q. Ka. Dinas Perizinan
6. Bupati Sleman c.q. Ka. Badan Kesatuan Bangsa
7. Bupati Kulon Progo c.q. KPT
8. ASISTEN DIREKTUR I PROGRAM PASCASARJANA, UNIVERSITAS NEGERI YOGYAKARTA
9. Yang bersangkutan



PEMERINTAH DAERAH DAERAH ISTIMEWA YOGYAKARTA  
BADAN KESATUAN BANGSA DAN PERLINDUNGAN MASYARAKAT  
( BADAN KESBANGLINMAS )

Jl. Jenderal Sudirman No 5 Yogyakarta – 55233  
Telepon : (0274) 551136, 551275, Fax (0274) 551137

Yogyakarta, 31 Maret 2015

Nomor : 074/908/Kesbang/2015  
Perihal : Rekomendasi Perijinan

Kepada Yth.  
Gubernur Jawa Tengah  
Up. Kepala Badan Penanaman Modal Daerah  
Provinsi Jawa Tengah  
Di  
SEMARANG

Memperhatikan surat :

Dari : Asisten Direktur I, Program Pasca Sarjana Univesitas Negeri  
Yogyakarta  
Nomor : 2867/UN34.17/LT/2015  
Tanggal : 23 Maret 2015  
Perihal : Izin Penelitian

Setelah mempelajari surat permohonan dan proposal yang diajukan, maka dapat diberikan surat rekomendasi tidak keberatan untuk melaksanakan riset/penelitian dalam rangka penyusunan disertasi dengan judul proposal : "OUTCOME EVALUATION AS MAIN CONDITION IN IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTIONS", kepada :

Nama : NURHENING YUNIARTI  
NIM : 11702261006  
No. HP/ KTP : 08231437990/3404104906750002  
Prodi/Jurusan : Pendidikan Teknologi dan Kejuruan  
Institusi : Program Pasca Sarjana Univesitas Negeri Yogyakarta  
Lokasi Penelitian : 1. SMKN 1 Purworejo 2. SMKN 7 Purworejo  
3. SMKN 8 Purworejo 4. SMKN 1 Magelang  
5. SMKN 2 Surakarta 6. SMKN 5 Surakarta  
Waktu Penelitian : 1 s.d 30 April 2015

Sehubungan dengan maksud tersebut, diharapkan agar pihak yang terkait dapat memberikan bantuan/fasilitas yang dibutuhkan.

Kepada yang bersangkutan diwajibkan :

1. Menghormati dan mentaati peraturan dan tata tertib yang berlaku di wilayah riset/penelitian;
2. Tidak dibenarkan melakukan riset/penelitian yang tidak sesuai atau tidak ada kaitannya dengan judul riset/penelitian dimaksud;
3. Menyerahkan hasil riset/penelitian kepada Badan Kesbanglinmas DIY.
4. Surat rekomendasi ini dapat diperpanjang maksimal 2 (dua) kali dengan menunjukkan surat rekomendasi sebelumnya, paling lambat 7 (tujuh) hari kerja sebelum berakhirnya surat rekomendasi ini.

Rekomendasi Ijin Riset/Penelitian ini dinyatakan tidak berlaku, apabila ternyata pemegang tidak mentaati ketentuan tersebut di atas.

Demikian untuk menjadikan maklum.



Tembusan disampaikan Kepada Yth :

1. Gubernur DIY (sebagai laporan);
2. Asisten Direktur I, Program Pasca Sarjana Univesitas Negeri Yogyakarta;
3. Yang bersangkutan.



PEMERINTAHAN KOTA YOGYAKARTA  
DINAS PERIZINAN

Jl. Kenari No. 56 Yogyakarta 55165 Telepon 514448, 515865, 515865, 515866, 562682  
Fax (0274) 555241  
E-MAIL : perizinan@jogjakota.go.id  
HOTLINE SMS : 081227625000 HOT LINE EMAIL : upik@jogjakota.go.id  
WEBSITE : www.perizinan.jogjakota.go.id

SURAT IZIN

NOMOR : 070/0772  
1428/34

Membaca Surat : Dari Surat izin/ Rekomendasi dari Gubernur Kepala Daerah Istimewa Yogyakarta  
Nomor : 070/REG/N/729/2/2015 Tanggal : 28 Februari 2015

Mengingat : 1. Peraturan Gubernur Daerah istimewa Yogyakarta Nomor : 18 Tahun 2009 tentang Pedoman Pelayanan Perizinan, Rekomendasi Pelaksanaan Survei, Penelitian, Pendataan, Pengembangan, Pengkajian dan Studi Lapangan di Daerah Istimewa Yogyakarta;  
2. Peraturan Daerah Kota Yogyakarta Nomor 10 Tahun 2008 tentang Pembentukan, Susunan, Kedudukan dan Tugas Pokok Dinas Daerah;  
3. Peraturan Walikota Yogyakarta Nomor 29 Tahun 2007 tentang Pemberian Izin Penelitian, Praktek Kerja Lapangan dan Kuliah Kerja Nyata di Wilayah Kota Yogyakarta;  
4. Peraturan Walikota Yogyakarta Nomor 85 Tahun 2008 tentang Fungsi, Rincian Tugas Dinas Perizinan Kota Yogyakarta;  
5. Peraturan Walikota Yogyakarta Nomor 18 tahun 2011 tentang Penyelenggaraan Perizinan pada Pemerintah Kota Yogyakarta;

Dijinkan Kepada : Nama : NURHENING YUNIARTI  
No. Mhs/ NIM : 11702261006  
Pekerjaan : Mahasiswa PPs UNY  
Alamat : Jl. Colombo No. 1 Yogyakarta  
Penanggungjawab : Prof. Pardjono, Ph.D.  
Keperluan : Melakukan Penelitian dengan judul Proposal : OUTCOME EVALUATION AS MAIN CONDITION IN IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTIONS

Lokasi/Responden : Kota Yogyakarta  
Waktu : 26 Februari 2015 s/d 26 Mei 2015  
Lampiran : Proposal dan Daftar Pertanyaan  
Dengan Ketentuan : 1. Wajib Memberikan Laporan hasil Penelitian berupa CD kepada Walikota Yogyakarta (Cq. Dinas Perizinan Kota Yogyakarta)  
2. Wajib Menjaga Tata tertib dan menaati ketentuan-ketentuan yang berlaku setempat  
3. Izin ini tidak disalahgunakan untuk tujuan tertentu yang dapat mengganggu kesetabilan pemerintahan dan hanya diperlukan untuk keperluan ilmiah  
4. Surat izin ini sewaktu-waktu dapat dibatalkan apabila tidak dipenuhinya ketentuan-ketentuan tersebut diatas

Kemudian diharap para Pejabat Pemerintahan setempat dapat memberikan bantuan seperlunya

Tanda Tangan  
Pemegang Izin

NURHENING YUNIARTI



Dikeluarkan di : Yogyakarta  
Pada Tanggal : 4-3-2015  
DINAS AN : Kepala Dinas Perizinan  
Sekretaris  
Drs. HARDONO  
NIP. 195804101985031013

Tembusan Kepada :

- Yth 1. Walikota Yogyakarta (sebagai laporan)  
2. Ka. Biro Administrasi Pembangunan Setda DIY  
3. Ka. Dinas Pendidikan Kota Yogyakarta  
4. Kepala SMK Negeri 2 Yogyakarta  
5. Kepala SMK Negeri 3 Yogyakarta  
6. Kepala SMK Negeri 4 Yogyakarta  
7. Kepala SMK Negeri 6 Yogyakarta

8. Kepala SMK Tamansiswa Jetis Yogyakarta
9. Kepala SMK Piri 1 Yogyakarta
10. Kepala SMK Perindustrian Yogyakarta
11. Kepala SMK Islam Yogyakarta
12. Kepala SMK Marsudiluhur II Yogyakarta
13. Ybs.





PEMERINTAH KABUPATEN BANTUL  
BADAN PERENCANAAN PEMBANGUNAN DAERAH  
( B A P P E D A )

Jln. Robert Wolter Monginsidi No. 1 Bantul 55711, Telp. 367533, Fax. (0274) 367796  
Website: bappeda.bantulkab.go.id Webmail: bappeda@bantulkab.go.id

SURAT KETERANGAN/IZIN

Nomor : 070 / Reg / 1085 / S3 / 2015

**Menunjuk Surat**

Dari : Sekretariat Daerah DIY Nomor : 070/REG/81/3/2015  
Tanggal : 26 Februari 2015 Perihal : Ijin Penelitian

**Mengingat**

- Peraturan Daerah Nomor 17 Tahun 2007 tentang Pembentukan Organisasi Lembaga Teknis Daerah Di Lingkungan Pemerintah Kabupaten Bantul sebagaimana telah diubah dengan Peraturan Daerah Kabupaten Bantul Nomor 16 Tahun 2009 tentang Perubahan Atas Peraturan Daerah Nomor 17 Tahun 2007 tentang Pembentukan Organisasi Lembaga Teknis Daerah Di Lingkungan Pemerintah Kabupaten Bantul;
- Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 18 Tahun 2009 tentang Pedoman Pelayanan Perijinan, Rekomendasi Pelaksanaan Survei, Penelitian, Pengembangan, Pengkajian, dan Studi Lapangan di Daerah Istimewa Yogyakarta;
- Peraturan Bupati Bantul Nomor 17 Tahun 2011 tentang Ijin Kuliah Kerja Nyata (KKN) dan Praktek Lapangan (PL) Perguruan Tinggi di Kabupaten Bantul.

**Diizinkan kepada**

Nama : **NURHENING YUNIARTI, M.T.**  
P. T / Alamat : **Program Pascasarjana, Pendidikan Teknologi Dan Kejuruan, Universitas Negeri Yogyakarta**  
NIP/NIM/No. KTP : **11702261006**  
Tema/Judul : **OUTCOME AVALUATION AS MAIN CONDITION IN IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTION**  
Kegiatan :  
Lokasi : **SMK SE-KAB BANTUL**  
Waktu : **05 Maret 2015 s/d 05Juni 2015**  
No. Telp./HP : **082314379900**

**Dengan ketentuan sebagai berikut :**

- Dalam melaksanakan kegiatan tersebut harus selalu berkoordinasi (menyampaikan maksud dan tujuan) dengan institusi Pemerintah Desa setempat serta dinas atau instansi terkait untuk mendapatkan petunjuk seperlunya;
- Wajib menjaga ketertiban dan mematuhi peraturan perundangan yang berlaku;
- Izin hanya digunakan untuk kegiatan sesuai izin yang diberikan;
- Pemegang izin wajib melaporkan pelaksanaan kegiatan bentuk *softcopy* (CD) dan *hardcopy* kepada Pemerintah Kabupaten Bantul c.q Bappeda Kabupaten Bantul setelah selesai melaksanakan kegiatan;
- Izin dapat dibatalkan sewaktu-waktu apabila tidak memenuhi ketentuan tersebut di atas;
- Memenuhi ketentuan, etika dan norma yang berlaku di lokasi kegiatan; dan
- Izin ini tidak boleh disalahgunakan untuk tujuan tertentu yang dapat mengganggu ketertiban umum dan kestabilan pemerintah.

Dikeluarkan di : B a n t u l  
Pada tanggal : 05 Maret 2015



**Tembusan disampaikan kepada Yth.**

- 1 Bupati Bantul (sebagai laporan)
- 2 Ka. Kantor Kesatuan Bangsa dan Politik Kab. Bantul
- 3 Ka. Dinas Pendidikan Menengah dan Non Formal Kab. Bantul
- 4 Ka. SMK N 1 Pundong
- 5 Ka. SMK N 1 Sedayu
- 6 Ka. SMK MUH Bambanglipuro
- 7 Ka. SMK Muh 1 Bantul
- 8 Ka. SMK Muh 1 Imogiri
- 9 Ka. SMK N 1 Pleret
- 10 Ka. SMK KI AGENG PEMANAHAN
- 11 Ka. Program Pascasarjana, Pendidikan Teknologi Dan Kejuruan, Universitas Negeri Yogyakarta
- 12 Yang Bersangkutan (Mahasiswa)





PEMERINTAH KABUPATEN SLEMAN  
**BADAN PERENCANAAN PEMBANGUNAN DAERAH**

Jalan Parasamya Nomor 1 Beran, Tridadi, Sleman, Yogyakarta 55511  
Telepon (0274) 868800, Faksimilie (0274) 868800  
Website: www.bappeda.slemankab.go.id, E-mail : bappeda@slemankab.go.id

**SURAT IZIN**

Nomor : 070 / Bappeda / 916 / 2015

**TENTANG  
PENELITIAN**

**KEPALA BADAN PERENCANAAN PEMBANGUNAN DAERAH**

Dasar : Peraturan Bupati Sleman Nomor : 45 Tahun 2013 Tentang Izin Penelitian, Izin Kuliah Kerja Nyata,  
Dan Izin Praktik Kerja Lapangan.  
Menunjuk : Surat dari Kepala Kantor Kesatuan Bangsa Kab. Sleman  
Nomor : 070/Kesbang/894/2015  
Hal : Rekomendasi Penelitian  
Tanggal : 02 Maret 2015

**MENGIZINKAN :**

Kepada :  
Nama : NURHENING YUNIARTI, MT.  
No.Mhs/NIM/NIP/NIK : 11702261006  
Program/Tingkat : S3  
Instansi/Perguruan Tinggi : Universitas Negeri Yogyakarta  
Alamat instansi/Perguruan Tinggi : Karangmalang, Yogyakarta  
Alamat Rumah : Kunjonsari, Tundan, purwomartani, Kalasan  
No. Telp / HP : 082314379900  
Untuk : Mengadakan Penelitian / Pra Survey / Uji Validitas / PKL dengan judul  
**OUTCOME EVALUATION AS MAIN CONDITION IN IMPROVING THE  
QUALITY OF TEACHER EDUCATION INSTITUTION**  
Lokasi : SMK Se-Kabupaten Sleman  
Waktu : Selama 3 Bulan mulai tanggal 02 Maret 2015 s/d 01 Juni 2015

**Dengan ketentuan sebagai berikut :**

1. Wajib melaporkan diri kepada Pejabat Pemerintah setempat (Camat/ Kepala Desa) atau Kepala Instansi untuk mendapat petunjuk seperlunya.
2. Wajib menjaga tata tertib dan mentaati ketentuan-ketentuan setempat yang berlaku.
3. Izin tidak disalahgunakan untuk kepentingan-kepentingan di luar yang direkomendasikan.
4. Wajib menyampaikan laporan hasil penelitian berupa 1 (satu) CD format PDF kepada Bupati diserahkan melalui Kepala Badan Perencanaan Pembangunan Daerah.
5. Izin ini dapat dibatalkan sewaktu-waktu apabila tidak dipenuhi ketentuan-ketentuan di atas.

Demikian izin ini dikeluarkan untuk digunakan sebagaimana mestinya, diharapkan pejabat pemerintah/non pemerintah setempat memberikan bantuan seperlunya.

Setelah selesai pelaksanaan penelitian Saudara wajib menyampaikan laporan kepada kami 1 (satu) bulan setelah berakhirnya penelitian.

Dikeluarkan di Sleman

Pada Tanggal : 2 Maret 2015

a.n. Kepala Badan Perencanaan Pembangunan Daerah

Sekretaris



SEBENY MARYATUN, S.IP, MT

Pemula, IV/a

NIP 19720411 199603 2 003

**Tembusan :**

1. Bupati Sleman (sebagai laporan)
2. Kepala Dinas Dikpora Kab. Sleman
3. Kepala Kantor Kementerian Agama Kab. Sleman
4. Kabid. Sosial & Pemerintahan Bappeda Kab. Sleman
5. Camat Seyegan
6. Camat Depok
7. Camat Moyudan
8. Camat Sleman
9. Camat Pakem
10. Camat Prambanan



**PEMERINTAH KABUPATEN SLEMAN**  
**BADAN PERENCANAAN PEMBANGUNAN DAERAH**

Jalan Parasamya Nomor 1 Beran, Tridadi, Sleman, Yogyakarta 55511  
Telepon (0274) 868800, Faksimilie (0274) 868800  
Website: [www.bappeda.slemankab.go.id](http://www.bappeda.slemankab.go.id), E-mail : [bappeda@slemankab.go.id](mailto:bappeda@slemankab.go.id)

Lanjutan Tembusan Surat Izin Penelitian Nomor : 070 / Bappeda / 916 / 2015

11. Camat Minggir
12. Ka. SMK N 1 Seyegan
13. Ka. SMK N 2 depok
14. Ka. SMK Muh. Moyudan
15. Ka. SMK Muda Patria Sleman
16. Ka. SMK Muh, Pakem
17. Ka. SMK Muh. Prambanan
18. Ka. SMK Nasional Sleman
19. Ka. SMK Muh. Minggir
20. Rektor UNY
21. Yang Bersangkutan



**SURAT KETERANGAN / IZIN**  
**Nomor : 070.2 /00226/III/2015**

Memperhatikan : Surat dari Sekretariat Daerah Provinsi DIY Nomor: 070/REG/V/729/2/2015, TANGGAL: 26 FEBRUARI 2015, PERHAL: IZIN PENELITIAN

Mengingat : 1. Keputusan Menteri Dalam Negeri Nomor 61 Tahun 1983 tentang Pedoman Penyelenggaraan Pelaksanaan Penelitian dan Pengembangan di Lingkungan Departemen Dalam Negeri;  
2. Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 18 Tahun 2009 tentang Pedoman Pelayanan Perizinan, Rekomendasi Pelaksanaan Survei, Penelitian, Pengembangan, Pengkajian dan Studi Lapangan di Daerah Istimewa Yogyakarta;  
3. Peraturan Daerah Kabupaten Kulon Progo Nomor : 16 Tahun 2012 tentang Pembentukan Organisasi dan Tata Kerja Lembaga Teknis Daerah;  
4. Peraturan Bupati Kulon Progo Nomor : 73 Tahun 2012 tentang Uraian Tugas Unsur Organisasi Terendah Pada Badan Penanaman Modal dan Perizinan Terpadu..

Diizinkan kepada : **NURHENING YUNIARTI, M.T**  
NIM / NIP : **11702261006**  
PT/Instansi : **UNIVERSITAS NEGERI YOGYAKARTA**  
Keperluan : **IZIN PENELITIAN**  
Judul/Tema : **OUTCOM EVALUATION AS MAIN CONDITION IN IMPROVING THE QUALITY OF TEACHER EDUCATION INSTITUTIONS**

Lokasi : **SMK DI WILAYAH KABUPATEN KULON PROGO**

Waktu : **26 Februari 2015 s/d 26 Mei 2015**

1. Terlebih dahulu menemui/melaporkan diri kepada Pejabat Pemerintah setempat untuk mendapat petunjuk seperlunya.
2. Wajib menjaga tata tertib dan mentaati ketentuan-ketentuan yang berlaku.
3. Wajib menyerahkan hasil Penelitian/Riset kepada Bupati Kulon Progo c.q. Kepala Badan Penanaman Modal dan Perizinan Terpadu Kabupaten Kulon Progo.
4. Izin ini tidak disalahgunakan untuk tujuan tertentu yang dapat mengganggu kestabilan Pemerintah dan hanya diperlukan untuk kepentingan ilmiah.
5. Apabila terjadi hal-hal yang tidak diinginkan menjadi tanggung jawab sepenuhnya peneliti
6. Surat izin ini dapat diajukan untuk mendapat perpanjangan bila diperlukan.
7. Surat izin ini dapat dibatalkan sewaktu-waktu apabila tidak dipenuhi ketentuan-ketentuan tersebut di atas.

Ditetapkan di : Wates

Pada Tanggal : **05 Maret 2015**

  
**AGUNG KURNIAWAN, S.I.P., M.Si.**  
Pengguna Tk.I ; IV/b  
NIP. 19680805 199603 1 005

Tembusan kepada Yth. :

1. Bupati Kulon Progo (Sebagai Laporan)
2. Kepala Bappeda Kabupaten Kulon Progo
3. Kepala Kantor Kesbangpol Kabupaten Kulon Progo
4. Kepala Dinas Pendidikan Kabupaten Kulon Progo
5. Kepala SMK .....
6. Yang bersangkutan
7. Arsip



# PEMERINTAH KABUPATEN GUNUNGKIDUL

## KANTOR PENANAMAN MODAL DAN PELAYANAN TERPADU

Alamat : Jl. Brigjen. Katamso No.1 Wonosari Telp. 391942 Kode Pos : 55812

### SURAT KETERANGAN / IJIN

Nomor : 291/KPTS/III/2015

Membaca : Surat dari SEKRETARIA DAERAH, Nomor : 070/REL/II/7292/2015, hal :  
Izin Penelitian

Mengingat : 1. Keputusan Menteri dalam Negeri Nomor 9 Tahun 1983 tentang  
Pedoman Pendataan Sumber dan Potensi Daerah;  
2. Keputusan Menteri dalam Negeri Nomor 61 Tahun 1983 tentang  
Pedoman Penyelenggaraan Pelaksanaan Penelitian dan  
Pengembangan di lingkungan Departemen Dalam Negeri;  
3. Surat Keputusan Gubernur Daerah Istimewa Yogyakarta Nomor  
38/12/2004 tentang Pemberian Izin Penelitian di Provinsi Daerah  
Istimewa Yogyakarta;

Dijijinkan kepada :  
Nama : NURHENING YUNIARTI, M.T NIM : 11702261006  
Fakultas/Instansi : Teknik / Universitas Negeri Yogyakarta  
Alamat Instansi : Jl. Colombo No. 1 Yogyakarta  
Alamat Rumah : Kujonsari, Purwomartani, Kalasan, Sleman, Yogyakarta  
Keperluan : Ijin Penelitian Dengan Judul : " OUTCOME EVALUATION AS MAIN  
CONDITION IN IMPROVING THE QUALITY OF TEACHER EDUCATION  
INSTITUTIONS

Lokasi Penelitian : SMKN 2 Wonosari, SMKN 3 Wonosari, SMKN 1 Saptosari, SMKN Muh 1  
Playen, SMK 45 Wonosari, SMK YAPPI Wonosari, Kab Gunungkidul

Dosen Pembimbing : Prof. Dr. Gisela Wiesner, Prof. Soenarto, Ph. D, Prof. Djemer Mardapi,  
Ph.D

Waktunya : Mulai tanggal : 12/03/2015 sd. 13/06/2015  
Dengan ketentuan :

Terlebih dahulu memenuhi/melaporkan diri kepada Pejabat setempat (Camat, Lurah/Kepala  
Desa, Kepala Instansi) untuk mendapat petunjuk seperlunya.

1. Wajib menjaga tata tertib dan mentaati ketentuan-ketentuan yang berlaku setempat
2. Wajib memberi laporan hasil penelitiannya kepada Bupati Gunungkidul (cq. BAPPEDA Kab.  
Gunungkidul).
3. Ijin ini tidak disalahgunakan untuk tujuan tertentu yang dapat mengganggu kestabilan pemerintah dan  
hanya diperlukan untuk keperluan ilmiah.
4. Surat ijin ini dapat diajukan lagi untuk mendapat perpanjangan bila diperlukan.
5. Surat ijin ini dibatalkan sewaktu-waktu apabila tidak dipenuhi ketentuan-ketentuan tersebut diatas.  
Kemudian kepada para Pejabat Pemerintah setempat diharapkan dapat memberikan bantuan  
seperlunya.

Dikeluarkan di : Wonosari  
Pada Tanggal 13 Maret 2015  
An. BUPATI GUNUNGKIDUL



#### Tembusan disampaikan kepada Yth.

1. Bupati Kab. Gunungkidul (Sebagai Laporan);
2. Kepala BAPPEDA Kab. Gunungkidul;
3. Kepala Kantor KESBANGPOL Kab. Gunungkidul;
4. Kepala Dinas Pendidikan Pemuda dan Olahraga Kab. Gunungkidul;
5. Kepala SMK..... Kab Gunungkidul;
6. Arsip.;



PEMERINTAH KABUPATEN BANTUL  
BADAN PERENCANAAN PEMBANGUNAN DAERAH  
(BAPPEDA)

Jln. Robert Wolter Monginsidi No. 1 Bantul 55711, Telp. 367533, Fax. (0274) 367796  
Website: bappeda.bantulkab.go.id Webmail: bappeda@bantulkab.go.id

**SURAT KETERANGAN/IZIN**

**Nomor : 070 / Reg / 1085 / S3 / 2015**

**Menunjuk Surat** : Dari : Sekretaris Daerah DIY Nomor : 070/REG/V/81/3/2015  
Tanggal : 26 Februari 2015 Perihal : Ijin Penelitian

**Mengingat** : a. Peraturan Daerah Nomor 17 Tahun 2007 tentang Pembentukan Organisasi Lembaga Teknis Daerah Di Lingkungan Pemerintah Kabupaten Bantul sebagaimana telah diubah dengan Peraturan Daerah Kabupaten Bantul Nomor 16 Tahun 2009 tentang Perubahan Atas Peraturan Daerah Nomor 17 Tahun 2007 tentang Pembentukan Organisasi Lembaga Teknis Daerah Di Lingkungan Pemerintah Kabupaten Bantul;  
b. Peraturan Gubernur Daerah Istimewa Yogyakarta Nomor 18 Tahun 2009 tentang Pedoman Pelayanan Perijinan, Rekomendasi Pelaksanaan Survei, Penelitian, Pengembangan, Pengkajian, dan Studi Lapangan di Daerah Istimewa Yogyakarta;  
c. Peraturan Bupati Bantul Nomor 17 Tahun 2011 tentang Ijin Kuliah Kerja Nyata (KKN) dan Praktek Lapangan (PL) Perguruan Tinggi di Kabupaten Bantul.

**Diizinkan kepada**

Nama : **NURHENING YUNIARTI, M.T.**  
P. T / Alamat : **PROGRAM PASCASARJANA UNY  
KARANG MALANG YOGYAKARTA**  
NIP/NIM/No. KTP : **11702261006**  
Nomor Telp./HP : **082314379900**  
Tema/Judul : **OUTCOME EVALUATION AS MAIN CONDITION IN IMPROVING  
THE QUALITY OF TEACHER EDUCATION INSTITUTION**  
Kegiatan :  
Lokasi : **SMK Di Bantul**  
Waktu : **05 Maret 2015 s/d 05 Juni 2015**

**Dengan ketentuan sebagai berikut :**

1. Dalam melaksanakan kegiatan tersebut harus selalu berkoordinasi (menyampaikan maksud dan tujuan) dengan institusi Pemerintah Desa setempat serta dinas atau instansi terkait untuk mendapatkan petunjuk sepiutnya;
2. Wajib menjaga ketertiban dan mematuhi peraturan perundangan yang berlaku;
3. Izin hanya digunakan untuk kegiatan sesuai izin yang diberikan;
4. Pemegang izin wajib melaporkan pelaksanaan kegiatan bentuk *softcopy* (CD) dan *hardcopy* kepada Pemerintah Kabupaten Bantul c.q Bappeda Kabupaten Bantul setelah selesai melaksanakan kegiatan;
5. Izin dapat dibatalkan sewaktu-waktu apabila tidak memenuhi ketentuan tersebut di atas;
6. Memenuhi ketentuan, etika dan norma yang berlaku di lokasi kegiatan; dan
7. Izin ini tidak boleh disalahgunakan untuk tujuan tertentu yang dapat mengganggu ketertiban umum dan kestabilan pemerintah.

Dikeluarkan di : Bantul  
Pada tanggal : 05 Maret 2015

A.n. Kepala,  
Kepala Bidang Dalitbang

**Tiau Sakti S.S. M.Hum**  
NIP: 19700105 199903 1 006

**Tembusan disampaikan kepada Yth.**

1. Bupati Kab. Bantul (sebagai laporan)
2. Kantor Kesatuan Bangsa dan Politik Kab. Bantul
3. Ka. Dinas Pendidikan Menengah dan Non Formal Kab. Bantul
4. Ka. SMK Negeri 1 Pleret
5. Ka. SMK Negeri 1 Pundong
6. Ka. SMK Negeri 1 Sedayu
7. Ka. SMK Negeri 1 Sanden
8. Ka. SMK Negeri 1 Dlingo
9. Ka. SMK Negeri 1 Bantul
10. Ka. SMK Negeri 1 Sewon
11. Ka. SMK Negeri 2 Sewon
12. Ka. SMK Negeri 3 Kasihan
13. Ka. SMK Muhammadiyah 1 Bantul



**PEMERINTAH KABUPATEN BANTUL**  
**BADAN PERENCANAAN PEMBANGUNAN DAERAH**  
**( B A P P E D A )**

Jln. Robert Wolter Monginsidi No. 1 Bantul 55711, Telp. 367533, Fax. (0274) 367796  
Website: [bappeda.bantulkab.go.id](http://bappeda.bantulkab.go.id) Webmail: [bappeda@bantulkab.go.id](mailto:bappeda@bantulkab.go.id)

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**Lampiran Nomor : 070 / Reg / 1085 / S3 / 2015**

14. Ka. SMK Muhammadiyah 1 Imogiri
15. Ka. SMK Muhammadiyah Bambanglipuro
16. Ka. SMK Ki Ageng Pemanahan
17. Ka. SMK Teknologi Bantul
18. Asisten Direktur Program Pascasarjana UNY
19. Yang Bersangkutan (Pemohon)