

SPMI Evaluation Modeling in the Assessment of Learning Outcomes of the Informatics Engineering Study Program at Indraprasta PGRI University

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Abstract

This study aims to analyze the implementation of the Internal Quality Assurance System (SPMI) at the evaluation stage in the Informatics Engineering Study Program and to develop an evaluation model for learning outcome assessment standards that can subsequently be applied in the Management Study Program at Indraprasta PGRI University. A qualitative approach was used, with data obtained through literature review, analysis of the study program's self-evaluation (ED) documents, relevant prior research, and applicable laws and regulations; data were analyzed descriptively using a systems approach covering input, process, and output aspects. The findings show that the implementation of the learning outcome assessment system has not yet run optimally and that a comprehensive evaluation model has not been developed, particularly with regard to team formation, assessment program planning, information systems, instrument development, and monitoring and evaluation. Based on these findings, this study offers a ten-stage evaluation model for learning outcome assessment, covering the formation of an assessment team, assessment program development, information system development, socialization, course-level assessment planning, instrument development, assessment implementation, mid- and end-of-semester assessment, reporting and utilization of results, and monitoring and evaluation, which is expected to serve as a practical reference for the Informatics Engineering Study Program and other study programs seeking to strengthen SPMI implementation at the evaluation stage.

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1. INTRODUCTION

Human resources (HR) are the most crucial factor in achieving a nation's progress. As a developing nation, Indonesia needs more qualified human resources, those with mastery of science and technology, possessing the expertise and skills to manage and utilize natural resource potential more effectively and wisely, and able to face both internal and external challenges, including those of the global era.

The implementation of free access to goods and labor in the global era has implications for the potential for increased technology transfer and skills development from developed to developing countries. Therefore, if Indonesian human resources are unable to master technology and develop these skills, more foreign workers will enter the country. Conversely, Indonesian workers will only occupy low-level jobs. In this regard, education at all levels, including higher education, plays a crucial and strategic role in developing human resources capable of competing nationally, regionally, and internationally.

Law No. 12 of 2012 concerning Higher Education, in Article 5 (a) and (b), states that higher education aims to develop the potential of students to become people who believe and fear God Almighty and have noble morals, are healthy, knowledgeable, capable, creative, independent, skilled, competent, and cultured for the benefit of the nation. In addition, higher education is expected to produce graduates who master the branches of science and/or technology to fulfill national interests and increase the nation's competitiveness.

Indraprasta PGRI University (UNINDRA) is a Higher Education Institution that has a vision and mission in the discipline of science and technology, quality experts, and the fulfillment of professional human resources (HR) based on humanist and religious values. UNINDRA has a mission in organizing professional academic, vocational, and professional education based on humanist and religious values, improving the quality of competent and professional human resources and domestic and international cooperation based on mutual benefit [1].

The Informatics Engineering Study Program is one of the study programs at the Faculty of Economics, Indraprasta PGRI University, which was founded in 2009. The vision of the Informatics Engineering Study Program is to become a leading Informatics Engineering Study Program in information technology, communication, and independence based on humanist and religious values in 2025. Meanwhile, the mission of the Informatics Engineering Study Program is to carry out educational and learning processes based on the principles of the Tri Dharma of Higher Education, to carry out educational and learning processes based on the economics curriculum and based on the Indonesian National Qualification Framework (KKNI), and to carry out educational and learning processes based on the development of economics and business on a national and regional scale [1].

Graduates of the Informatics Engineering study program are expected to have an entrepreneurial spirit and be able to apply the principles of Informatics Engineering in business and non-business fields. In general, the implementation of education in the Informatics Engineering study program has been running smoothly. The Tridharma activities of higher education, including education, research, and community service, have been well implemented. However, the results of the implementation of these programs have not been achieved optimally. The assessment model used by lecturers has not fully measured the condition of student competency and is still limited to assessing cognitive abilities. The average study period for undergraduate programs is more than 9 semesters, which should be 8 semesters. The demands for fulfilling the need for technological mastery for students have also not been fully met due to limited facilities and suboptimal learning outcome assessment programs. The number of graduates with absorption in the business world or entrepreneurial skills is also still low. The number of research results from the Informatics Engineering study program that are utilized by external parties (industry, society, educational institutions, and other parties) is also still very small. Thus, the vision, mission, and objectives of the Informatics Engineering study program have not been fully achieved and have not yet functioned as a center of excellence and at the forefront in the formation of professional human resources.

The implementation of the Internal Quality Assurance System (SPMI) is an important aspect in educational governance, including the management of the Informatics Engineering study program. Through the evaluation stages of the SPMI, various accurate inputs will be obtained regarding the feasibility of learning programs and model development [2], the readiness of human resources and supporting facilities, program effectiveness and the achievement of results. The less-than-optimal educational outcomes in the Informatics Engineering study program are suspected to be due to the inaccurate design and implementation of learning outcome assessments and the low support of human resources and supporting facilities [3]. Therefore, it is necessary to develop an evaluation model or system for the implementation of learning outcome assessments that are appropriate and applicable and enable the realization of quality improvements in the Informatics Engineering study program. How is the implementation and development of the evaluation model for learning outcome assessments in the Informatics Engineering study program at Indraprasta PGRI University (UNINDRA)?

2. METHOD

The research was conducted at the Faculty of Engineering, Informatics Engineering Study Program, Indraprasta University, Jakarta. The research sample consisted of 15 people, consisting of 3 key informants, namely the head of the study program, the secretary of the study program, and a senior lecturer. Meanwhile, the respondents were 12 Informatics Engineering students. In

the initial stage of the research, an assessment method was carried out through literature studies, in-depth discussions, and document searches of the results of the Informatics Engineering study program's self-evaluation, relevant research results, and applicable laws and regulations. The assessment was conducted using a systems approach, especially on the Input, Process, and Output aspects [4]. The assessment began with the identification of problems faced by the management study program [5]. Next, an analysis was carried out on various factors causing these problems, especially those related to the evaluation stage in SPMI. Based on these factors, the most appropriate alternative solutions were studied to overcome the problems faced by the Informatics Engineering study program in evaluating the implementation of learning outcome assessments.

Data collection was carried out through three complementary techniques. First, literature review, in which national policy documents, prior research, and relevant theoretical references on SPMI and learning outcome assessment were examined to build the conceptual framework used to interpret the field data. Second, document study of the Informatics Engineering study program's self-evaluation (ED) report, which was read systematically to identify statements, indicators, and supporting data relating specifically to the evaluation stage of learning outcome assessment. Third, in-depth discussions with the three key informants and twelve student respondents, conducted to clarify and cross-check findings from the document study and to capture practical experiences not explicitly recorded in the self-evaluation report. The data obtained from these three techniques were analyzed descriptively-qualitatively using a systems approach covering input, process, and output aspects [13]: input data (the resources, policies, and self-evaluation findings available to the study program), process data (how the evaluation stage of learning outcome assessment is actually carried out), and output data (the resulting gaps and needs) were each identified, compared across the three data sources for consistency, and then interpreted to formulate the alternative solutions and evaluation model presented in the following section.

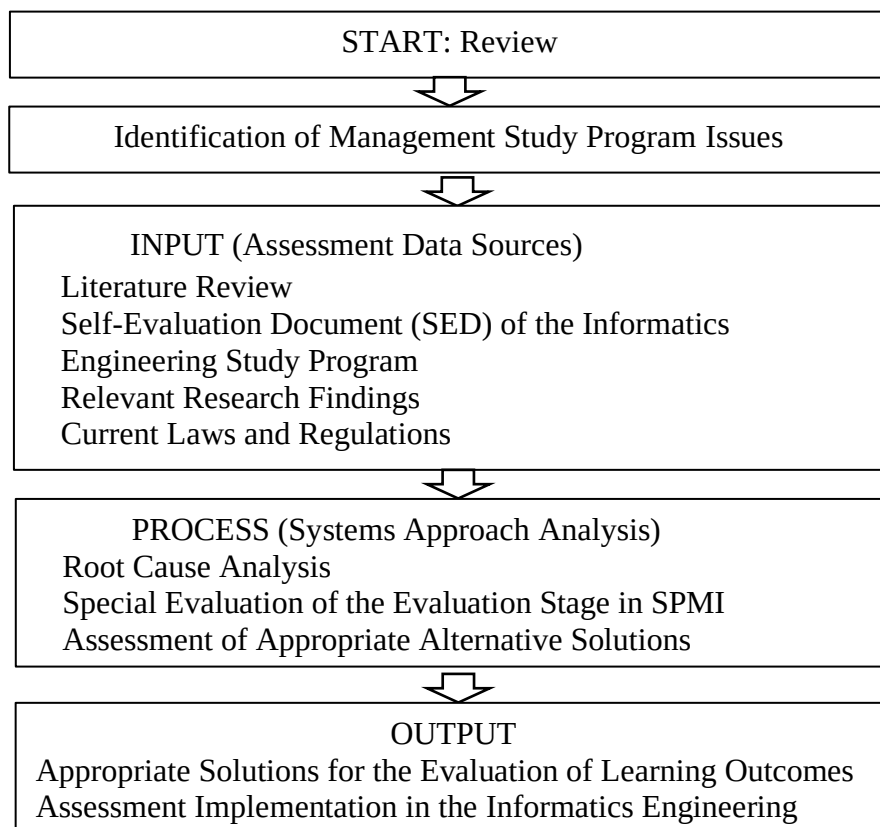


Figure 1

Syntax of research implementation

Figure 1 illustrates how the research moved from raw material to a usable output. It begins with a review stage in which the four input sources, literature, the self-evaluation document, prior

research, and current regulations, were brought together, since none of these sources alone was considered sufficient to identify the study program's real needs. These inputs were then carried into the process stage, where a systems-based analysis was applied: the root causes behind the underperformance of the evaluation stage were traced, a targeted evaluation of that stage within SPMI was conducted, and the resulting findings were assessed against several alternative solutions rather than accepted at face value. Only after this process stage was completed did the flow arrive at the output, namely a set of solutions considered appropriate for evaluating the implementation of learning outcome assessment in the Informatics Engineering study program, consistent with the input-process-output logic commonly used to structure institutional quality assessment [14]. Reading the figure in this input-process-output sequence, rather than as three disconnected boxes, makes clear why the evaluation model proposed later in this article follows the same logical order: what is planned (input) is only as good as how rigorously it is examined (process), and what is eventually implemented (output) should be traceable back to a specific input and a specific step in that examination.

3. RESULTS AND DISCUSSION

Referring to the document on the results of the self-evaluation (ED) of the study program, overall, in quality planning in the Informatics Engineering study program, independent and well-planned planning has been carried out. Uka is based on information and computer technology, including in educational programs and assessments. This is evidenced by the development of a unique innovation called Elanos. The management has made the design as efficient as possible for each lecturer in each study program.

The purpose of implementing quality assurance in the Informatics Engineering study program clearly and firmly states that it is able to compete and have global excellence in producing graduates [6]. To determine and fulfill the needs for optimizing program implementation, the study program management does not explain in detail the program achievements, the rules for the flexibility of developing learning outcome assessment models and holding meetings between students and lecturers in determining actual needs.

It is evident that the needs mentioned by the study program management are limited to technical instructions and information provision and have not yet been studied in depth regarding the impact of program implementation and assessment of learning outcomes on the quality of graduates [7]. In the self-evaluation document, information was found stating that the empowerment of educational programs in an integrated, measurable, and innovative manner is very necessary to improve student competence. Likewise, in the standards for implementing learning outcome assessments, an authentic and comprehensive assessment model for student competency achievement is very important. Finally, the aspect of fulfilling facilities and infrastructure to support the success of educational programs is also an important aspect.

In improving quality, it is necessary to conduct a more comprehensive evaluation and develop an evaluation model in the implementation of learning outcome assessment [8], the aim is to smooth the performance of internal quality management in the Informatics Engineering study program. However, the improvement of the evaluation model has not been running optimally. As evidenced by the document, there is data stating that the implementation of the implementation assessment is limited to administrative requirements, runs independently between lecturers, and lacks development efforts as an alternative to quality improvement. So the output of the assessment implementation cannot be proven directly what is really needed from students in the implementation of the program and learning.

Quality assurance managers only generalize these needs to the needs and accuracy of assessment information [9]. Lecturers and students are not given the space to understand the essence of implementing authentic assessment based on needs. There are no specific guidelines and criteria in building a quality management work team in the implementation of learning outcome assessment [10]. The obstacle seen in building the work team is that the majority of the

work team has not mastered good learning outcome assessment techniques and according to procedures.

Read critically, these findings point to a gap that is more structural than technical. The self-evaluation document shows that the study program is not short of policy statements about quality, competitiveness, and global excellence; what it lacks is a competency framework that translates those statements into who is responsible for which part of the evaluation stage, using what criteria, and with what authority to act on the results. This is consistent with the argument that internal quality assurance tends to remain administrative rather than developmental when it is not anchored in a clear competency framework defining the roles and capacities required of those who run it [15]. Viewed this way, the absence of specific guidelines for building the assessment work team, and the team's limited mastery of assessment techniques, are not isolated weaknesses but two symptoms of the same underlying problem: the evaluation stage has been treated as a compliance requirement to be completed rather than a management function to be resourced and developed. This also helps explain why the improvement efforts documented in the self-evaluation report have not moved beyond administrative fulfilment: comparable cases at other Indonesian universities show that SPMI implementation only begins to produce substantive quality gains once it is managed as an institution-wide system, with dedicated structures and continuous follow-up, rather than left to individual study programs to interpret and carry out on their own [16]. The Informatics Engineering study program's current practice, where quality assurance managers generalize needs into administrative information requirements and lecturers and students are given little space to understand the essence of authentic assessment, is therefore best read as a predictable consequence of under-resourced, decentralized implementation rather than as a failure specific to this one study program.

Based on the findings of the self-evaluation document, efforts need to be made to develop a model for evaluating educational program implementation and assessing student learning outcomes. In the context of quality improvement, at least three types of evaluation need to be developed: learning outcome evaluation and program evaluation.

Assessment is the process of obtaining/collecting information about student learning outcomes, which is used as a guideline for making academic decisions about students, providing information to students, parents, teachers, or other related parties about student learning progress, strengths and weaknesses, to determine the effectiveness of learning and curriculum, and to inform policy [11].

The development of learning outcome assessment needs to be carried out with the following broad steps:

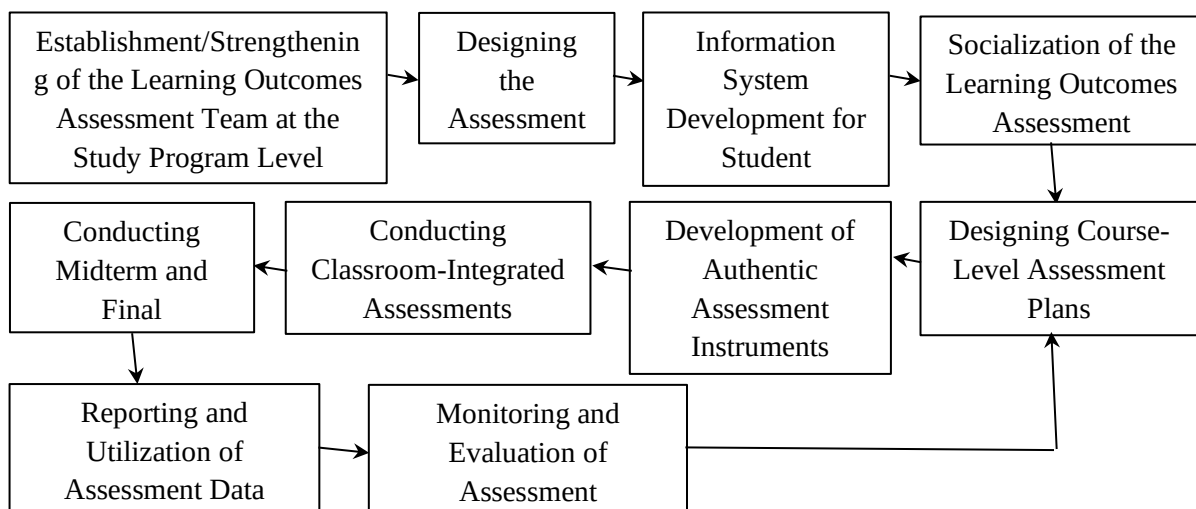


Figure 2
Flow of development of learning outcome assessment system

The image can explain the development flow of the implementation of the learning outcome assessment system based on theoretical and empirical studies. **First**, a learning outcomes assessment team was formed in the Informatics Engineering study program. The team consists of lecturers with expertise in assessment and instrument development. This team is responsible for coordinating program development, tool development, management of the assessment information system, implementation of the assessment, and reporting and utilization of the assessment results. **Second**, an assessment program needs to be developed and/or updated at least every semester. The program should include, among other things: assessment objectives, types, scope, targets, tools, schedule, assessment management/information systems, reports, utilization of assessment results, task allocation, and other related matters.

Third, development of assessment information systems. An assessment information system needs to be developed separately or integrated with existing information systems within study programs. Information systems are crucial, particularly for documenting programs, assessment tools, assessment designs for each course, grade lists, assessment result processing, reporting, and other related matters. Through the information system, each lecturer can store assessment tools and assessment result data, and update them. Students can also track their learning progress by viewing grades and observing their progress.

Fourth, socialization. Every academic community member of a study program, both lecturers and staff, should understand and actively participate in assessments according to their duties and functions. Therefore, the learning outcome assessment system needs to be well socialized, for example: through study program meetings, *Forum Group Discussion*, or special socialization events with other programs (program evaluation and self-evaluation/SPMI).

Fifth, development of assessment plans for each course. Each course should be equipped with an assessment plan. Assessment plans are generally integrated into the Semester Course Plan. However, assessment plans are also supplemented by instruments and assessment/scoring guidelines. **Sixth**, development of assessment instruments/questions: Instruments/questions, both in the form of tests and non-tests for each course, need to be developed. The assessment team should coordinate the instrument development process, including validation, to produce valid and reliable instruments. Instruments must be valid, reliable, focused on expected competencies, comprehensive, objective, sustainable, and educational.

Seventh, implementation of assessment integrated with learning. Assessment is carried out systematically and continuously through *placement tests* (initial and placement tests), *formative*, *diagnostics*, and *summative*. The implementation procedure is in accordance with the objectives and learning series, with the principles *integrating assessment and the learning process*. Evaluation techniques using *ongoing assessment* with multi-methods covering process and product assessment, including: paper and pencil tests, performance tests, portfolios, individual oral presentations, quizzes, debates, field work reports (MKBM), mind maps, talk and answer sessions, which are conducted both formally and informally.

Eighth, implementation of mid-semester and end-of-semester assessments. Mid-semester and final assessments must be conducted systematically according to the established plan and schedule. The instruments/questions used should be those that have been developed and validated. Mid-semester assessments should be conducted simultaneously in the eighth week or at a time determined by the plan. Conducting these assessments simultaneously ensures that each lecturer implements the learning process as outlined in the Semester Lecture/Learning Plan (RPS).

Ninth: reporting and utilization of learning outcome assessments. Each lecturer should promptly review student work/assessments, document the assessment results, and utilize them for learning purposes. Assessment results must be communicated to students so they can identify material they have mastered and material they have not, enabling them to learn better. Transparency must be prioritized, while maintaining assessment ethics.

Tenth, Monitoring and evaluation of assessment implementation. Every detail and stage of the assessment process requires monitoring and evaluation. The goal is to obtain a picture of

achievement and input for improving the assessment system in the study program. Monitoring and evaluation are carried out collaboratively between the assessment development team, lecturers, and study program leaders. The results of monitoring and evaluation are published internally and reviewed continuously to identify alternative improvement solutions based on innovation and meeting the needs of achieving graduate quality.

Taken as a whole, Figure 2 is best understood not as ten separate activities but as a single, cyclical management system for the evaluation stage of learning outcome assessment. The first three stages, team formation, program development, and the information system, establish who is responsible and what infrastructure they have to work with; the next three, socialization, course-level assessment planning, and instrument development, translate that responsibility and infrastructure into tools that lecturers can actually use in the classroom; the following two, integrated implementation and mid-/end-of-semester assessment, put those tools into practice according to plan; and the final two, reporting and utilization, and monitoring and evaluation, feed the results back into the system so that the next cycle can begin from a better starting point than the last. This sequencing matters for readers trying to apply the model: skipping directly to instrument development (stage six) without first forming a team and building the information system (stages one to three), for instance, would reproduce the same fragmented, team-less, undocumented practice that this study found in the current self-evaluation, because the later stages depend structurally on what the earlier stages put in place. Approached this way, the model functions similarly to a managed information-system cycle for quality assurance, in which each stage generates the documentation and data the next stage needs, rather than as a checklist whose items are equally optional [17]. It is this closed-loop character, ending in monitoring and evaluation that feeds back into team and program development, that is intended to prevent the evaluation stage from collapsing back into the administrative, compliance-only pattern identified earlier in this section.

4. CONCLUSION

Every higher education institution has an orientation of excellence in various fields that are in accordance with its vision, mission, and established goals. The achievement of this vision and mission can be reflected in the output/outcome of the implementation of educational programs and a valid assessment system. Based on the results of the self-evaluation analysis, the less-than-optimal achievement of output/outcome in the Informatics Engineering study program at UNINDRA is suspected to be due to the ineffective implementation of learning outcome assessments and not in accordance with needs-based assessment procedures. Therefore, improvements are needed through the implementation of SPMI at the evaluation stage of the assessment standards.

The SPMI implementation policy at the evaluation stage in the UNINDRA Informatics Engineering study program is interpreted as a continuous and dynamic process to improve [12] the quality of education through improving the learning outcome assessment system model. The program organizer and SPMI need to be managed more systematically by forming a team, involving all components, and having comprehensive and interrelated coverage.

Finally, a study on the need for improvements to the implementation of SPMI in the evaluation phase at the Informatics Engineering study program at UNINDRA revealed that lecturer performance evaluations were conducted through questionnaires. The evaluation revealed critical notes about the need for changes to improve the implementation of the needs-based assessment system. However, these findings have not been concretely followed up by the study program leadership.

5. SUGGESTION

Based on the research results, the Informatics Engineering Study Program at UNINDRA is advised to strengthen the implementation of SPMI, particularly in the evaluation stage of learning outcome assessment standards. Evaluations conducted through questionnaires need to be

followed up concretely by preparing a measurable follow-up plan, including those responsible, time targets, success indicators, and monitoring mechanisms. The assessment system also needs to be developed based on needs by taking into account learning outcomes, course characteristics, student needs, and the demands of the workplace. In addition, evaluation management needs to be carried out systematically and collaboratively by involving study program leaders, lecturers, students, and relevant stakeholders so that the evaluation results become the basis for continuous quality control and improvement.

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