

Implementing provus discrepancy model in reconstructing science learning planning course

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Abstract

Keywords:

Evaluation;
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Learning planning;
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The effectiveness of a course needs to be evaluated to determine whether the course is relevant to the graduate profile. The development of science and technology makes it necessary for a course to be reconstructed . This study aims to reconstruct the science learning planning course using the Provus model based on the gap theory with four stages, namely design, installation, process, and product. The research method used is an evaluative method. Data collection was carried out by interview, observation, and documentation. Data sources in this study include the actions or words of the lecturers of science learning planning course, heads of study programs, RPS, SN-DIKTI standard documents, and descriptions of the science learning process. The standard process in lectures has been implemented; however, there are several gaps that have occurred. First, there is a mismatch in the implementation of learning, particularly in the aspect of alignment between the learning process and research and community service activities. Second, there is a gap in the variable of student study load, namely the absence of alignment in credit units within the cluster of courses related to science learning planning.

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Introduction

Science, environment, and technology play an important role in 21st-century learning. Understanding science and technology enables individuals to participate in sustainable social and economic development. Understanding the environment is crucial for addressing the environmental challenges that future societies will face. 21st-century learning presents both opportunities and challenges, particularly in mastering cognitive skills, creative thinking, collaboration, and communication abilities (Rodrigue & Enama, 2021; Turhan & Demirci, 2021). Not only that, religious values are also necessary to balance students' skills. Learning process that integrates religious values is a holistic process that helps students develop a broader perspective (Juliani & Bastian, 2023; Kukla et al., 2023). The integration of religious values presents a concept within the process of meaningful experience and problem-solving (Baran et al., 2019; Dyah Rahmawati & Haryanto, 2022).

The goal of science education is not only focused on students' cognitive mastery, but also on understanding the concepts of scientific literacy. In learning, students should be able to

understand themselves and the world by continuously transforming their worldview. Science education aims to develop students' literacy and competencies comprehensively, including attitudes, knowledge, and skills. The ability to develop literacy and competencies is in line with Level 6 of the Indonesian National Qualifications Framework (KKNI) by the Ministry of Education and Culture (2003), which states that graduates should be able to apply and utilize expertise in technology, science, and/or the arts in their field to solve problems and adapt to different situations.

The rapid development of science requires study programs to ensure that graduates are better prepared to face challenges in the job market. One way to achieve this is by reconstructing courses to improve the quality of learning through more effective teaching methods, more relevant materials, and better assessment. Courses also need to reflect social changes and accommodate local culture (Sudarmin & Sumarni, 2018), so that issues of diversity, environment, and developing social values can be addressed in learning (Zuyina & Widodo, 2020). Reconstructing courses is an effort to ensure that programs remain relevant, high-quality, and effective in preparing future teachers.

The higher education curriculum is an institutional mandate that must be continuously updated to respond to evolving needs and advances in science and technology, as reflected in the learning outcomes (Junaidi et al., 2020). Therefore, course reconstruction is necessary to map graduate profiles. The development of science and technology, along with changes in education policy, has affected the types of competencies that graduates need to have. (Jamil et al., 2020).

In episode 26 of the Merdeka Belajar YouTube series, titled Transformation of National Standards and Higher Education Accreditation, the Minister of Education stated that learning outcomes must be integrated across knowledge, skills, and attitudes. The results of the course evaluation (RPS) for the science learning planning course showed that the course had not yet included knowledge-based CPLs, had not been integrated with religious values, had not fostered awareness of local potential, and had not integrated lecturers' research. These findings serve as the basis for reconstructing the science learning planning course.

Teachers must have competencies that support the implementation of an optimal learning process (Wulandari & Hendriani, 2021). Prospective teachers should be able to manage the learning process, develop their potential, and design lesson plans (Riyanto, 2010). In addition, teachers must be able to select appropriate and innovative methods, models, and teaching materials. Lesson planning plays an important role in improving the quality of learning (Sü, 2019). Planning skills also help activate feedback between teachers and students, generate useful responses, manage time effectively, and explore various learning strategies.

Holistic education is important to be introduced to students. It helps develop their understanding and skills across various fields of knowledge (Muhammad Anas Ma'arif & Ibnu Rusydi, 2020; Widyastono, 2012; Zidny et al., 2021). By using Project-Based Learning (PjBL) integrated with ethno-ISETS, lecturers can connect local issues (Sudarmin et al., 2017) related to knowledge, environment, technology, and society (Imaduddin & Hidayah, 2019; Salawane et al., 2020). This approach aligns with UNNES's strategic plan, which emphasizes the institution's active role in advancing science and technology and being competitive in solving community problems. PjBL supports the development of students' critical, creative, and

collaborative thinking skills (Afrianis, 2018; Rizki et al., 2022; Weganofa et al., 2022). Through project activities, students are encouraged to analyze situations, formulate questions, engage in discussions, explore issues, and make decisions.

The introduction of local potential as a learning resource encourages students to care about the environment, collaborate, think creatively, and be respectful (Sumarni et al., 2017). Through SETS, students become more wise and conservative (Khusniati et al., 2017), and are able to make discoveries through personal experience (Umami & Jatmiko, 2013). Learning as part of holistic education must integrate religious values. Science that does not incorporate spiritual values may lead to a multidimensional (Haerullah & Hasan, 2021). Religious values are essential in science learning, where students are expected to learn facts, scientific concepts, and ethical values as a (Kholifah, 2018; Ramadanti, 2020). Science cannot be separated from real life; instead, it must be connected to broader contexts. This helps students understand that science does not stand alone, but interacts with culture, religion, and the values present in society.

Therefore, science learning must be aligned with curriculum developments to meet the needs of the job market for future science teachers. It is necessary to reconstruct the curriculum in line with advancements in science and technology. The purpose of this study is to reconstruct the curriculum for the science learning planning course.

Method

This study is an evaluation research using the Discrepancy Evaluation Model (DEM) developed by Malcolm Provus. This model was chosen because it aligns with the guidelines for developing higher education curricula. The Discrepancy Evaluation Model consists of four stages: design, installation, process, and product. This research was conducted on the science learning planning course in the fourth semester of 2024 for Natural Science Education students at the State Islamic Institute (IAIN) of Kudus.

The focus of this study is to evaluate the implementation of the learning program in accordance with the curriculum development guidelines and the vision and mission of IAIN Kudus. The aim is to evaluate the ongoing implementation of the science learning planning course using the Discrepancy Evaluation Model.

The data used in this study include characteristics of the course planning and the process of implementing the learning activities in the science learning planning course. Data were collected through observation, documentation, and interviews based on the Provus evaluation grid. The data sources include statements and actions of the lecturers teaching the science learning planning course, the head of the study program, the Semester Learning Plans (RPS), SN-Dikti standard documents, and descriptions of the course implementation process..

Results and Discussion

Permenristekdikti (Minister of Research, Technology and Higher Education Regulation) No. 44 of 2015, Article 1, paragraph 10, states that the definition of learning is a process of interaction between students, lecturers and learning resources that occurs in the learning environment. Meanwhile, Permenristekdikti Article 10, paragraph (1) refers to

learning process standards. Learning process standards are minimum criteria relating to the implementation of learning in study programs to obtain achievements in graduate learning.

Evaluation in this study was carried out to provide an overview of a program in an effort to improve and make decisions (Wahyuningtias, 2017). The evaluation of the provus model in this study will be explained in table 1 as follows. Table 1 reveals the gap between theory (Permenristekdikti (Regulation of the Minister of Research, Technology and Higher Education) No. 44 of 2015 article 1 paragraph 10) and in the field.

Table 1. Evaluation Results Learning Process Standards Science learning planning
Major Tadris IPA IAIN Kudus

Standard Content	Indicator Achievement in accordance SN Higher Education	Results Evaluation
Characteristics of the Learning Process	- Each course uses a Student-Centered Learning (SCL) method or process that is interactive, holistic, integrative, scientific, contextual, thematic, effective, and collaborative in nature, in accordance with the characteristics of the course. - The learning methods are clearly stated in the RPS (Semester Learning Plan) and are implemented according to the plan.	- Lecturers understand the characteristics of the Natural Science Learning Planning course, the characteristics of students, and the characteristics of local potential as a source for learning. - Lecturers reconstruct the learning process using a project-based learning approach integrated with Islamic science, environment, technology, and society (Ethno-SETS) - The learning plan is developed based on learning outcomes and integrates attitudes, knowledge, general skills, and specific skills, compiled into a learning plan using the PjBL Ethno-SETS model.
Planning of the Learning Process	An RPS (Semester Learning Plan) is available for each course, containing a description of graduate competencies (knowledge, general skills, specific skills, and attitudes) and oriented toward future developments in accordance with established standards.	Lecturers understand the foundations and principles of preparing the RPS (Semester Learning Plan) based on the KKNI and the SN-Dikti, which include the scope of the material and the expected learning outcomes, as well as integrating concern for local potential and religious values into the Ethno-SETS PjBL model in the learning plan for the Natural Science Learning Planning course.

The Provus analysis in this study will be described in more detail below.

Characteristics of the Learning Process

The Provus evaluation in terms of the learning process characteristics of the Science Learning Planning course includes four components: design analysis, installation analysis, process analysis, and product analysis. These focus on the alignment between the learning methods used and the characteristics of pedagogical courses. According to (Fitria & Triana, 2017) the design stage refers to an understanding of the established standards, in this case, the learning process standards set by the Regulation of the Minister of Research, Technology and Higher Education No. 44 of 2015. At this stage, each lecturer is aware of the specific characteristics of this course, which emphasize the application of theory, the foundations of learning, analysis, and models of instruction. This is intended to enable students to follow and develop new theories in pedagogy and science.

The implication is that during the installation stage, lecturers apply learning methods that match the characteristics of pedagogical courses. Interviews with science education lecturers at the Tadris IPA study program revealed that they use various methods, with an emphasis on a Student-Centered Learning (SCL) approach. Lecturers explained that this approach encourages broad and comprehensive thinking patterns, enabling students to solve problems according to their competencies. This aligns with findings from (Dzulfikri & Joko, 2013) who noted that students taught using active learning methods achieved better outcomes.

The process analysis covers the mechanisms and procedures for implementing these methods in pedagogical lectures. Observational data showed that all lecturers implemented the SCL method according to its stages. Although in practice, some innovations were made to adapt to specific situations and conditions during class sessions. This was also supported by a review of course documents such as the Semester Learning Plan (RPS). In the product analysis, the RPS documents clearly state the learning methods used, and these were implemented in line with the planned instructional approach by all lecturers in pedagogical courses.

Semester Learning Plan

Lesson planning is the process of elaborating the study program curriculum into a Semester Learning Plan (RPS) for each course. The Provus model analysis in lesson planning for the teaching cluster includes design analysis, installation analysis, process analysis, and product analysis related to curriculum development and teaching-cluster courses. According to the evaluation results, the planning process in the teaching cluster has already aligned with the standards set by SN Dikti. This is in line with research conducted by (Prasoja et al., 2018) which states that effective lesson planning is one of the important stages in the learning system.

Based on the interview results, the design stage showed that lecturers understand the basis, principles, and components of RPS preparation through orientation session carried out by the study program and the quality assurance institution at IAIN Kudus. In addition,

lecturers also understand the curriculum that refers to KKNi and SN-Dikti, which covers the scope of materials and expected learning outcomes from students, including aspects of attitude, knowledge, general skills, and specific skills. This is in accordance with (Suprpto, 2019) who stated that curriculum is the main reference in high-quality learning, and therefore lecturers must understand it. Lecturers of the Science Learning Planning course identify the learning outcomes of the study program, which are then translated into course learning outcomes. These outcomes—attitude, knowledge, general skills, and specific skills—must be aligned with the course content and the graduate profile, which reflects the vision, mission, and objectives of the Science Education Study Program at IAIN Kudus.

Lecturers play an important role in higher education. Therefore, they are required to manage a series of learning processes systematically and in a focused way, based on the knowledge they have. Based on interviews, observations, and documentation, the installation analysis shows that lecturers have prepared the RPS according to the curriculum, which includes graduate competencies or learning outcomes that refer to KKNi and SN-Dikti. In addition, all lecturers have also prepared the RPS according to the minimum components listed in SN Dikti. At this stage, lecturers also determine textbooks or reference materials that are appropriate for the course content and student characteristics.

The evaluation process includes the mechanisms and procedures conducted by lecturers. In terms of lesson planning, lecturers have carried out the process in accordance with the indicators in the planning aspect listed in SN Dikti. RPS documents are prepared and developed by lecturers independently or collaboratively, based on the points agreed upon within the scientific consortium—one of whose functions is to evaluate whether the materials listed in the RPS are relevant to the development of science and technology. The completed RPS must also be reviewed and approved by the head of the subject cluster and the head of the department. This is done as part of the monitoring process of lesson planning implementation.

At the product stage, lecturers have produced RPS documents based on the curriculum development guidelines for Islamic Religious Colleges (PTKI), referring to KKNi and SN Dikti. In addition, Science Learning Planning course lecturers have also developed appropriate teaching materials from the results of learning content reconstruction. This is consistent with the findings of Sriwahyuni et al. (2019), which stated that every semester, lecturers are required to prepare and submit the learning tools they have created. Furthermore, based on the results of interviews and observations, the RPS for the Science Learning Planning course in the Science Department of IAIN Kudus has fulfilled the principles of RPS development and preparation, namely: being oriented to PTKI curriculum development guidelines that refer to KKNi and SN Dikti; compiled by considering the connection and integration between learning materials, learning activities, expected final competencies, assessment, and references; and designed to encourage motivation, interest, creativity, independence, and a spirit of learning, including reading, writing, and numeracy. Before being used, the RPS is validated by the course lecturer team and the head of the science department.

An educator, or in this context the lecturer, is responsible for implementing the

learning process and developing all existing student potential (Sawaluddin, 2018). The interview results show that at the design stage, all lecturers understood and had planned achievement indicators in the implementation aspects of the learning process, as shown in Table 1. However, in the installation stage, which naturally has implications for the process and product stages, a gap was found: not all lecturers had planned or produced research and community service activities as part of the learning process, nor did they fully involve students. These findings are different from the study conducted by (Prasojo et al., 2018) which showed that learning implementation activities carried out by teachers in public junior high schools were very effective and in accordance with the learning process standards. The gap found in this study occurred due to several factors, including the availability of human resources in terms of time, quality, and quantity.

In the process analysis stage, learning is implemented through interactions between lecturers and students across 16 meetings, consisting of 14 sessions for material delivery, one for the mid-semester exam (UTS), and one for the final semester exam (UAS). Additionally, lecturers pay attention to the steps of learning activities used in class. Learning activities are divided into three parts: introduction, core activities, and closing. Before conducting the learning sessions, lecturers identify the implementation steps listed in the RPS and adjust them if they are constrained by students' abilities or limited time. Lecturers identify and implement introductory, core, and closing activities while planning the science course. The learning process uses a combination of methods designed to suit the characteristics and learning outcomes of the course, including the PjBL Ethno-ISETs model. Lecturers design learning activities that promote student engagement through questioning, assignments, discussions, and practical exercises. Interviews revealed that lecturers regularly ask students to discuss, take notes, ask and answer questions, and complete exercises from the student worksheets. The learning process is implemented in a structured and systematic way. This is evident from the Science Education curriculum documents, which outline a structured curriculum aligned with the learning process stages of the Science Learning Planning course cluster. The curriculum structure also includes the course titles and learning load of each subject. Moreover, interview and observation results indicate that the implementation of the learning process and the learning load of each course have successfully met the course learning outcomes. Learning implementation is the realization of what is stated in the RPS. Based on the RPS document review, the product analysis shows that the learning implementation process is clearly described in the RPS. To ensure implementation is consistent with the plan, monitoring and evaluation are conducted to align the actual learning process with what was prepared in the RPS.

Students' Study Load

Students' study load is the amount of learning time assigned to students per semester. The study load is expressed in Semester Credit Units (SKS). One academic year consists of two semesters, with each semester consisting of 16 (sixteen) effective weeks of learning, including midterm and final examinations. Based on the results of interviews, observations, and the review of the RPS documents, it is shown that lecturers have understood, planned, and determined this matter. At the design and installation stages, lecturers have understood

and determined the number of credits for each course based on the curriculum structure. In addition, lecturers have planned and determined detailed activities for each meeting across 16 weeks, consisting of 14 face-to-face meetings for delivering materials, 1 meeting for the midterm exam (UTS), and 1 meeting for the final exam (UAS). Lecturers understand and have determined that each credit consists of 50 minutes of face-to-face activity, 60 minutes of structured activity, and 60 minutes of independent activity.

At the process stage, the department has not yet made adjustments to the study load or number of credits for each course. This has implications for the evaluation of the product. According to (Ekawati & Iriani, 2020) at this stage the researcher analyzes whether the objectives and implementation process are aligned. The purpose of determining the study load for each course is so that students and lecturers can carry out the learning process according to the assigned study load in order to achieve the expected learning outcomes. However, based on the results of interviews and observations, in reality the 2-credit allocation given for the Science Learning Planning course has not been fully able to meet the learning outcomes that students are expected to achieve.

Conclusion

Steps or Syntax in the Evaluation of the Learning Process in the Science Learning Planning Course Based on the Provus Model in the Tadris Science Department at IAIN Kudus consists of four stages: the design stage, installation stage, process stage, and product stage. In general, the lecture process for the Science Learning Planning course—which includes the characteristics of the course, learning planning, learning implementation, and student study load—has been in accordance with the SN-Dikti process standards. However, during the implementation of the learning process, not all courses have defined, processed, and produced products in the form of research or community service related to the learning process. In addition, the study load for each course has not fully met the learning outcomes of the course. Furthermore, there is no alignment yet in the credit allocation (SKS) within the cluster of Science Learning Planning courses. In the future, it is hoped that these gaps can be addressed. This study focuses on the standard of the learning process in higher education. Future researchers are encouraged to conduct studies on other aspects of national higher education standards, such as research or community service.

Credit Authorship Contribution Statement

Ulya Fawaida : Conceptualization, Methodology, Visualization, Formal analysis, Writing – original draft, Writing – review & editing. **Sudarmin** : Conceptualization, Methodology, Formal analysis, Resources, Writing – review & editing, Supervision, Project administration. **Sigit Saptono** : Visualization, Formal analysis, Funding – review, Resources, Writing – review, Funding, **Saiful ridlo** : Visualization, Formal analysis, Editing

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