Learning Evaluation

by Nur Qudus

Learning Evaluation Concept for Environmental Engineering Subjects in the Building Engineering Education Study Program, Semarang State University

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Abstract: The concept of learning at Semarang State University is directed towards conservation-based learning. This concept is in line with the tagline of the Semarang State University as a conservation campus. The consequence of this implementation is that the concept of learning held at UNNES must strive for conservation. Environmental engineering courses, as one of the compulsory courses at UNNES, are spearheading to provide a comprehensive understanding of conservation concepts. This course learning method must be directed to be a student-cantered learning method. The consequence of this implementation is that a blueprint needs to be made about the method of teaching environmental engineering courses. The general concept of learning, which consists of planning, implementation and evaluation, becomes broader which gives orientation to conservation understanding. Learning evaluation methods must be directed towards a comprehensive evaluation concept, and become a model for other subjects at UNNES.

1 INTRODUCTION

Semarang State University (UNNES) declared a conservation-oriented university in 2012. The definition of a conservation university is a university that in implementing education, research, and community service has a concept that refers to the principles of conservation (protection, preservation, and sustainable use) both conservation of natural, environmental, artistic and cultural resources. Conservation-based governance aims to create a campus atmosphere that supports the protection, preservation, and wise use of the environment through sustainable development that is environmentally sound and participatory, fully from UNNES residents.

Conservation-based campus management is realized through 7 (seven) main pillars of the University of conservation. The seven main pillars of the University of conservation are (1) include 1) biodiversity conservation, 2) green architecture and internal transportation systems, 3) waste management, 4) non-paper policies, 5) clean energy, 6) conservation, ethics, art, and culture and 7) conservation regeneration. Furthermore, these seven pillars are translated into the implementation of education, research and community service.

Efforts to change learning patterns at UNNES are directed to carry the concept of conservation. General learning concepts which include planning, implementation and evaluation are directed at understanding the conservation concept. Environmental engineering courses, as one of the compulsory subjects, are the main courses that aim to develop understanding of conservation. This course is the spearhead to provide a comprehensive understanding of conservation campuses, generally in the sense of sustainable conservation.

Development of environmental engineering courses, in general, is still an implementation of the concept of learning integrated with other courses at UNNES. The development of this subject still uses the concept of learning which consists of three components, namely planning, implementation and evaluation. The three stages in this learning concept are interrelated components of one another. In general, the learning concept looks like in Figure 1.

Figure 1. Learning concept

Learning planning includes the formulation of learning objectives. These learning objectives are translated into general instructional goals and specific instructional goals. Both are guidelines in implementing learning to be carried out. Implementation of this learning includes the design of instructional media, design models and appropriate learning methods. In the end, the final stage of the learning sequence is the evaluation of learning. Learning evaluation designs that are formulated appropriately will provide a comprehensive picture of the expected competencies.

2 TEACHING AND LEARNING CONCEPT

Teaching is any activity on the part of one person intended to facilitate learning on the part of another (Gagne & Briggs, 1979 & 1992). The definition of learning by Joyce and Weil (1980) is a process by which teacher and students create a shared environment including sets of values and beliefs (agreement about what is important) which in turn colour their view of reality. Both of these definitions of learning still prioritize the role of the teacher so that they are perceived to be centered on the teacher. Education view in a broad sense requires a change in the definition of student-centered learning.

Student-centered learning requires student activity in learning. Student activity must be seen as active student activity. The observed activity of students, both in the aspects of knowledge, affection and psychomotor, must be able to be measured by the teacher. Consequently, the concept of learning and learning will take place in two directions, namely between the teacher and students.

Formulation of coherent learning objectives will help teachers in the implementation of learning. The formulation of these learning objectives includes the content of learning materials, media and instructional tools, instructional methods and time. The preparation of instructional strategies compiled by the teacher is a strategic component in planning learning.

3 TEACHING AND LEARNING IMPLEMENTATIONS

Instructional development is a term that is developing in Indonesia. AT&T or American Telephone & Telegraph (1985) defines instructional design as a recipe for compiling the events and activities needed to provide direction towards the achievement of certain learning goals. Reigeluth (1978) divides instructional development into three stages, namely: 1) instructional design that serves as a blueprint for builders, 2) production which means design use to create instructional programs, and 3) validation which is a determination of the quality or validity of the product end. Both opinions appear to be in line, even though both opinions are still very general in nature.

Steps to develop instructional materials based on instructional strategies and assessment tools for learning outcomes that have been planned. The instructional material is adapted to the instructional approach. The three forms of instructional materials are 1) independent instructional materials or modules, 2) compilation instructional materials, and 3) combination instructional materials (Suparman, 2014). The contents of this instructional material are instructional contents that systematically follow the sequence of instructional activities contained in the instructional strategy.

The development of every form of instructional material needs to be done by a team that collaborates intensively. The coordination of the development team is usually led by instructional design experts so that their work appears as an integrated instructional system. Coordination of this development requires special management skills supported by special personnel and administration.

The instructional materials resulting from the development need to be evaluated and revised before being used in the field by following formative evaluation procedures that involve student participation and all instructional sub-systems.

4 EVALUATION AND MEASUREMENT

The terms measurement and evaluation assessment are sometimes used interchangeably; the word 'evaluation' is often confused with assessment, testing and measurement. Testing is only a technique to collect evidence regarding pupil behaviour. Measurement on the other hand, is limited to quantitative description of the student behaviour. Evaluation is a more comprehensive term which

includes testing and measurement and also qualitative description of the student behaviour. It also includes value judgment regarding the worth or desirability of the behaviour measured or assessed.

Thus, evaluation is a concept that has emerged as a prominent process of assessing, testing and measuring. Its main objective is qualitative improvement. Evaluation is a process of making value judgements over a level of performance or achievement. Making value judgements in evaluation process presupposes the set of objectives. Evaluation is the process of determining the extent to which the objectives are achieved. Concerned not only with the appraisal of achievement, but also with its improvement. Evaluation is continuous and dynamic. Evaluation helps in forming the following decisions.

Evaluation as "a systematic process of determining the extent to which educational objectives are achieved by pupils" (Stufflebeam and Coryn, 2014). Evaluation is the process for gathering information about the worth or quality of something as a way of making decisions to increase its worth or quality (Newby, et all, 2000). Cronbach defined evaluation as "the collection and use of information to make decisions about an educational programme". Wheeler defined evaluation as a more general judgement of the outcome of a programme, which involves the use of observations, various tests, questionnaires, interviews, etc. His emphasis was on the processes of educational evaluation.

This definition indicates that evaluation is a systematic process, and it omits tile casual, informal or uncontrolled observation of the pupils. The definition also implies that objectives of education has to be identified in advance. Without predetermined objectives, it is not possible to judge the progress, growth and development of students. Evaluation is an integral part of any teaching and learning programme. Whenever a question is asked and answered evaluation takes place. Thus, both teaching and evaluation overlap and merge into each other. In fact, it is not possible to have teaching and learning without evaluation. Both teaching and evaluation are based on the instructional objectives which provide direction to them. Instructional objectives are those desirable behaviours which are to be developed in students. It is for achieving the instructional objectives that instruction is provided and it is to see whether the instructional objectives have been achieved and to what extent, that the evaluation is made. The interrelationship of objectives, instructional process or the learning experience and evaluation in a programme of teaching can be expressed more clearly through the following Figure 2.

Evaluation serves numerous purposes in education, some of the important purposes are to grade, rank, classify, compare and promote the students, it is also used for certifying the completion of a course, selection of students for admission or scholarship, and for predicting their future success in different endeavours.
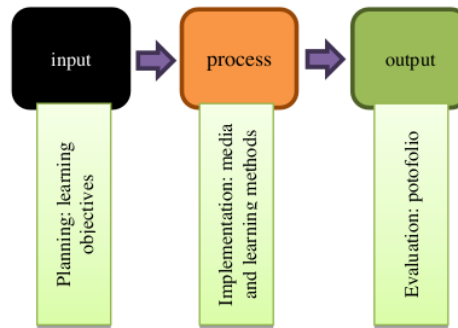

Figure 2. The relationship of learning objectives with the concept of evaluation

The sole purpose of evaluation has been to bring about quality improvement in education which it does by providing feedback regarding students' learning, classroom teaching, effectiveness of curriculum and course content, it also helps bring about all round development of the students' personality when it is used for developing their non-cognitive capacities.

Scriven (in Stuffelbeam and Coryn, 2014) distinguishes two types of evaluation, namely formative evaluation and summative evaluation. The definition of formative evaluation is to assist in developing programs and other objects. Whereas summative evaluation is to sum up the valuae of something and to assess the value of the object that it has been developed. This evaluation concept was developed to indicate explicitly that summative evaluation is not part of the process of developing a program.

The implementation of an evaluation must begin and be based on a previously prepared plan. Seven important components that must be considered by instructional developers, namely: 1) the purpose of formative evaluation, 2) who will use the results of the evaluation, 3) the information needed, 4) sources in evaluation, 5) evaluation data collection techniques, 6) evaluation techniques and 7) evaluation reporting forms.

5   CONCLUSIONS AND SUGGESTIONS

The concept of learning in environmental engineering courses is directed as an implementation of the concept of conservation. Learning evaluation methods developed should prioritize the meaningful meaning of conservation. Learning evaluation methods that should be developed are authentic assessment methods. This assessment will measure the significance of the meaning of conservation broadly. The meaningfulness is expected to have an impact on other learning. The hope, the impact of this learning can be used as a model for learning other subjects.

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FINAL GRADE

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GENERAL COMMENTS

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