

Need Assessment of Developing Visionary Instructional Model to Increase Student's Creative and Innovative Future Problem-Solving Skill in Indonesia

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Abstract:

The purpose of the study is to develop visionary instructional that increases students' creative and innovative thinking skills as well as allows them to solve problems individually and collaboratively. In particular, the study aims at (1) describing model of instructional used in universities, (2) providing the analysis of visionary instructional need, and (3) finding specification and components of visionary instructional design. Lecturers from six leading Indonesian universities were given a questionnaire regarding learning sources and teaching media they used in the class and facilities they needed for improving the quality of their work. The study concludes that all lecturers have made use of various materials in their teaching and learning activities. They also confirm the need to improve the quality of their work through certain trainings.

Keywords: *visionary instructional model, future problem-solving skills, creative, innovative*

1. INTRODUCTION

Instructional is an effort to facilitate the transfer the knowledge so that it is easier for the students to understand new concepts. The world instructional means “to facilitate or help students’ learning activities” so that learning activities should emphasize on students (student-oriented learning).

Planning the lesson is one of the methods to create learning situation that facilitates students’ learning. Lesson planning is the first step lecturers should do in the process of learning. The success or failure of learning relies heavily upon the result of the lesson planning conducted earlier. Therefore, having ability to plan a lesson is pivotal for a lecturer.

Problem solving and thinking skills according to Joni (1989) are the future of learning. In line with the expert, Ardhana (1992) states that engaging students in learning process that involves the concepts of rationale thinking, critical thinking and abstract thinking is the future direction of education.

The experts in general admit that problem-solving ability is one of the vital goals in learning program at schools because problem-solving is the highest capability in thinking skills (Gagne, 1975; Gagne, Briggs and Wager, 1988; 1992; Resnick and Klopfer, 1989; Barba and Rubba, 1992; Marzano, Pickering, and McTighe, 1993).

It is urgent to conduct studies within the area in order to provide empirical data that eventually be used in an effort to increase the quality of learning in universities. Thinking skill and problem-solving are two topics the experts in psychology paid huge attention to in the 1980s. It is caused by immediate change and challenge in the society; such condition requires individuals with problem-solving skills (Bransford et.al., 1986; Marzano et.al., 1988; Marzano, Pickering, and McTighe, 1993). When an individual has mastered problem-solving skills, s/he can overcome similar problems and at the same time is expected to be able to solve different problems he or she encounters on everyday basis (Gagne, 1985; Gagne, 1977; 1985; Bransford, Sherwood, and Reiser, 1986; Siegler, 1991).

Referring to the previous elaboration, the coverage of the study is the future problem-solving program using the following dimensions, namely (1) the development of the model of education, instructional and training, (2) the development of curriculum, (3) the development of learning sources or multimedia as learning materials, (4) the development of instructional strategy, (5) the development of assessment methods, (6) the development of creative, critical and analytical thinking, (7) the development of verbal communication and writing skills, (8) the development of problem-solving strategy; to overcome the gap between the problems students encounter at schools and those they find in their daily lives. The coverage and themes should be applied to all subjects, for example mathematics, biology, physics, social science, language religion, physics so the learning process should give students some opportunities to solve some real-life problems related to the subjects.

Studies using problem-solving as the specific domain has been conducted by various researchers since 1996. The final intensive activity related to studies about problem-solving learning is dissertation to finish doctoral program. Some studies researchers have conducted related to the subject are (1) Mathematics problem-solving capabilities of elementary school students in Malang, (2) Survey on the Model of Instructional Strategy in Excellent Classes/Schools in Elementary Schools in East Java, (3) Theoretical Analysis on Teaching Behavior, Teachers’ Attitude and Elementary School Students’ Problem-Solving Capabilities, (4) Problem-Solving Process of story-based questions of the Third Grader of Elementary Schools: Developing Problem-Based Mathematics Learning through Computer-Based Instruction for the Students of Excellent Class of Elementary School, (5) Evaluation of Community Learning Center Program in Indonesia. The study is funded by the Research and Development Agency and UNESCO, (6) Evaluation of Principal Partnership Program: Management, Learning and Public Participation, and (7) Evaluation of School-Based Management Program.

Future problem-solving program as a topic of a study has a lot of potential because it is rarely conducted in Indonesia. Thus, the researcher encourages fellow researchers and lecturers to conduct studies related to future problem-solving program or work collaboratively on the topic.

In general, the findings of the study function as preliminary data about the function of instructional development; more specifically, the findings are in the form of theory that is going to be used as the platform for the development of other functions, such as function of learning resource production (AECT, 1979; Seel dan Richey, 1994). Once the model of visionary instructional design has been established, it is going to be

easier for lecturer, whose one of the roles is as instructional designer, to develop instructional prescription that increases innovative and creative future problem-solving capabilities.

The development of the visionary instructional model is going to bridge the gap between teaching-based or instructor-mediated learning context and instructional-based instructional context. The advantage of the study is to provide learning sources for students so that each student can reach their optimum abilities to overcome future problems.

The specific goals of the study are (1) to describe model of instructional design used in universities, (2) to analyze the need of visionary instructional design, and (3) to find specification and components of visionary instructional design.

2. METHOD

Research Design

In the first year, the study was a descriptive study using survey as the data collection method. The purposes of the survey were to probe some data about (1) model of instructional design used in universities, (2) analysis of the need of visionary instructional design, (3) specification and components of visionary instructional design. Based on the data, the researcher found out the preferred and suitable visionary instructional design specification to be used in university instructional system for visionary instructional in Indonesia.

Subject of the Study

The subjects of the study were lecturers, instructional experts and students from six Indonesian universities, namely (1) State University of Malang, (2) Institute of Education and Teacher Training PGRI Semarang, (3) State University of Lampung, (4) Lambung Mangkurat University, (5) State University of Manado and (6) Nusa Cendana University in Kupang.

Variable

Since the data of the study were in the form of understanding, perception and need analysis on Visionary Instructional (LV) design, the variables were lecturer's knowledge about LV, perception about LV, the beginning of LV instructional and specification of LV.

Instrument

The instrument used to measure the variables was designed by the researcher himself based on the elaboration of the variables into their indicators.

Data Analysis

Descriptive statistic was used as the method of data analysis.

3. FINDINGS

Learning Sources in Universities

There are various types of learning sources used in universities. The following description contains the type as well as the percentage of learning sources the respondents use. They are as follow:

- There is tendency (14.11%) that the respondents use printed learning sources (hand-outs, textbooks, journals) as much as 50% which means printed learning source is dominantly used in universities.
- There is tendency (10.6%) that the respondents use power-point slides as much as 50%, which means power-point slides are frequently used in universities.
- The majority of respondents (18.2%) stated that they use video as learning resource as much as 10% which means the type of learning source is rarely used.
- The majority of respondents (16.2%) stated that they use computer as learning resource as much as 10% which means computer is rarely used as learning source in universities.
- 22.7% of the respondents use the internet as source of learning as much as 10% which means the internet is rarely used as learning source in universities.

In conclusion, the two most dominant learning sources the respondents use in universities are printed materials (hand-outs, textbooks, and journals) and power-point presentation.

Real Problem-Solving Task

Most of the respondents (84.35) assigned real problem-solving tasks to their students; only 8.1% admitted they did not. It means the majority of the tasks given to university students are real life problem solving-oriented.

Future Problem-Solving Task

There is a tendency (46%) that the respondents did not assign future-problem solving tasks to their students. As many as 44.9% of the respondents stated that they assigned future-problem solving tasks to their students. It means future problem-solving task is rarely assigned to university students.

Types of Media as Learning Facilities

The types of media the respondents use to facilitate the learning process are:

- The majority of the respondents (88.9%) preferred lecturing as the method of instructional, while 10.6% stated they did not conduct such activity.
- Most of the respondents did not use learning sources other than their lecturers during the learning process and 42.9% of them stated that they used learning sources other than the lecturers.
- 89.9% of the respondents answered that they used printed media to deliver the lesson, while 9.6% stated that they did not use one. It shows the respondents' tendency in using printed media during learning process.
- 75.3% of the respondents used power-point slide as learning media, while 24.2% of them did not. It means that power-point presentation is frequently used by the respondents during learning process.
- Most respondents (63.6%) answered that they did not use video as learning media and 35.9% of them did. It shows that video is rarely used by the respondents in the process of learning.
- 54.5% of the respondents admitted that they did not use computer during learning process; on the other hand, 44.9% of them stated that they use computer as learning media. It means that it is sometimes used during the process of learning.
- Half of the respondents (51%) did not use the internet as learning media, while 48.5% of them did. It means that the internet network is sometimes used during the process of learning.

In terms of the type of media the respondents used to deliver the lesson, lecturing, printed media (hand-outs, books, journals) and power-point presentation are the three most frequently used media to use in the process of learning.

Types of Learning Activity

The types of learning facilities conducted in the universities are:

- The majority of the respondents (93.9%) stated that they conducted lecturing during the class while 5.1% of them stated that they did not. It means that lecture has always been conducted during learning activities.
- 97% of the respondents stated that they had discussion as learning activity, while 2% of them did not. It means that discussion is frequently used by the respondents as learning facilities.
- 52.5% of the respondents answered they went to the laboratory during the process of learning, while 46.5% of them responded they did not. It shows that the students sometimes go to the laboratory for the purpose of learning.
- 74.7% of the respondents stated that they conducted independent learning as a learning activity, while 24.2% of them did not. It means independent learning is frequently-conducted learning activity in universities.
- 72.7% of the respondents stated that small-group discussion was the type of learning activity they conducted, while 26.3% of them did not. It means small-group discussion is frequently-conducted activity in universities.
- 60.6% of the respondents stated that they used classical learning activity in the process of learning, while 38.4% of them did not. It means classical learning activity is sometimes used in universities.
- 56.1% of the respondents stated that they did not go to the library as one of the learning activities, while 42.9% of them did. It means students may sometimes go to the library for the purpose of learning.
- 67.7% of the respondents did not use learning everywhere as learning activity, while 31.3% of them did. It means that learning everywhere is one of the learning activities conducted in universities.

Assessment Method

The methods of assessment the respondents used to figure out learning progress are:

- 95.5% of the respondents used mid-term test as assessment method, while 2% of them did not. It means that mid-term test is the method of assessment the respondents use to find out how much progress the students make during the process of learning.
- 95.5% of the respondents used final test as assessment method, while 2% of them did not. It means that final test is the method of assessment the respondents use to find out how much progress the students make during the process of learning.
- 85.4% of the respondents used student's presentation as assessment method, while 12.1% of them did not. It means that student's presentation is the method of assessment the respondents use to find out how much progress the students make during the process of learning.
- 76.3% of the respondents used paper as assessment method, while 21.2% of them did not. It means that paper is the method of assessment the respondents use to find out how much progress the students make during the process of learning.
- 83.8% of the respondents did not assign project to the students as assessment method, while 13.6% of them did. It means that assigning project to the students is the method of assessment the respondents do not use to find out how much progress the students make during the process of learning.
- 79.3% of the respondents did not use portfolio as assessment method, while 18.2% of them did. It means that portfolio is the method of assessment the respondents do not use to find out how much progress the students make during the process of learning.
- 50.5% of the respondents stated that they had developed hand-out as learning source. The majority of respondents (12.1%) stated that they had developed one hand-out.
- 43.4% of the respondents stated that they had developed materials as learning source. The majority of respondents (11.1%) stated that they had developed one material.
- 69.2% of the respondents stated that they had developed power-point presentation as learning source. The majority of respondents (6.6%) stated that they had created 12 power-point presentations.
- 25.3% of the respondents stated that they had yet created video, while 23.2% of them stated that they had created video as learning source. The majority of respondents (6.1%) stated that they had created two videos.
- 24.7% of the respondents stated that they had yet developed computer-based learning, while 20.2% of them stated that they had developed one. The majority of respondents (3.0%) stated that they conducted two meetings of computer-based learning.

Development of Visionary Instructional Model

As many as 58% of the respondents strongly agreed on the development of visionary instructional model to overcome future problems, while 35% of them agreed to do so, and 3% of the respondents did not answer.

Facilities to Enhance Learning

Based on the result of the data analysis, the facilities the respondents need to improve the learning qualities are complete facilities and equipments, internet access in the form of wi-fi zone, published textbooks, learning videos, as well as trainings of which topic involve learning methodology and textbook development.

Training to Improve Learning Quality

Based on the respondents' answers, in order to improve the quality of learning, some of the trainings the respondents need are the ones about English language skills, e-learning, research and its methodology, ICT (Information and Communication Technology), curriculum development, learning media, learning methodology, and multimedia.

4. CONCLUSION

Regarding the data analysis, the following points can be concluded. First, as many as 14.1% of the respondents tend to use printed learning sources (textbooks, journals) in 50% of their class time. This indicates that printed materials are dominantly used during the teaching and learning sessions. Second, as many as 10.6% of the respondents used power-point presentation in 50% of their class time, which indicates that power-point presentation is frequently used in the classroom. Third, as many as 18.2% of the respondents confirm that they use videos in 10% of their class time, indicating that this learning source is rarely used in the classroom. Fourth, as many as 16.2% of the respondents confirm that they do use computer as the learning source. Fifth, as many as 22% respondents state that they use the internet in 10% their class time. Sixth, in order to improve learning quality, respondents gave different answers during the survey. It was later found out that the facilities the respondents need were complete learning facilities, broad access to the internet as well as wi-fi zone, published textbooks, tutorial videos, and trainings on teaching and book writing. Finally, in order to improve the learning quality, respondents affirm that trainings on the following topics are necessary: English language skills, e-learning, research, ICT, curriculum development, teaching media, teaching strategies, and multimedia.

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