Conference Materials

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Preface

The proceedings on education and relevant areas were compiled for the International Conference on Education (ICE 2013) "Excellent Innovations for Educational Research and IT Learning in the 21st Century." They include presentations on studies conducted by educational experts, lecturers, graduate students from both private and state universities as well as Thai and foreign researchers. The conference was held on 8-9 August 2013 at Sampran Riverside Hotel, Sampran, Nakorn Pathom, Thailand. Its objectives were to establish an academic platform for lecturers, students and researchers, to publicize research studies or dissertations and to exchange experiences in conducting research concerning learning innovations and information technology. Another objective was to innovate of a new body of knowledge and the development of quality in education in the 21st century.

The content of the proceedings includes research reports by educational experts, lecturers, graduate students from both private and state universities, as well as research institutions, and researchers from local and foreign countries.

The compilation of these proceedings became successful due to cooperation from many parties. The committee of the conference hopes that the proceedings will yield useful guidelines for promoting and developing teaching and learning as well as research on education.
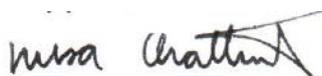
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A Development of SU Model: a learning innovation which encourages curriculum engineering

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Abstract

A report on the development of an authentic learning innovation called SU model, which was used to promote the quality of learning among education students. This model helps students learning the process performing tasks and practicing curriculum development. The model provides a conceptual framework in which the students can engage themselves in curriculum model, lectures, practices, and learning resources, including paper-based resources, e.g., study guides and handouts, as well as web-based printouts. The most important is the integration of assessment tasks that compel these students to develop a critical understanding of fundamental curriculum development processes.

The students participating in the research show conspicuous levels of satisfaction, interest, and engagement in their learning experience, together with significantly enhanced learning outcomes that were both self- and group-identified.

Additionally, the researcher also reports on how to use a number of principles of curriculum design, so that others —irrespective of their subject major— could use similar approaches with their students to achieve similar learning outcomes.

Key Words: curriculum development/ curriculum engineering/ curriculum model

Aims

The researcher sought to;

1. Develop a challenging and enjoyable learning environment that provides a widened breadth of knowledge, progress, relevance and personalization, and choices in learning innovation;

2. Produce assessment tasks that oblige students to think creatively; and

3. Design an assessment that is realistic, interlinked, and cumulative in effect.

Introduction

Research indicates that education students need the right support to augment their quality, both in knowledge and career-oriented experience which in lies the Standard 2 of Curriculum Development. Kember's study (1988) suggests that students find learning more challenging and interesting when they are given clear, vivid examples. This approach affords students a structure of academic, real world, and real life experiences, upon which they can build their learning. Similarly, Biggs (1999) argues in support that students take more time learning, especially when they experience a constructive alignment between the objectives and the outcomes. This teaching approach facilitates better learning because students find the materials more interesting and easier to understand, and also because they find the given tasks to be engaging, challenging, fulfilling, and yielding achievement and satisfaction (Connell 1967; Svenson 1977; Brookfield 1995).

Based on the works aforementioned, the researcher developed a teaching and learning strategy that provide students with a learning innovation that would oblige them to adopt deep, constructive approaches to their learning.

Objectives

The research aimed to develop SU Model a learning innovation that encourage curriculum engineering as following;

1. To develop an innovative curriculum model named SU model, which can promote better learning quality of education student;

2. To study the students' learning outcomes on curriculum development after having been taught via SU model before and after using SU Model; and

3. To study the students' opinions towards SU model.

Materials and Methods

The research and development was selected as research method in this study. This research method comprises 4 steps as following;

1. Analysis

The researcher analyzed a requirement of Curriculum Development course , the standards of knowledge and capacity of teachers in curriculum development as prescribed by the Teachers Council of Thailand, and research publications on the subject matter, as well as theories employed in past instruction.

2. Design and Development

The researcher designed an innovative curriculum model named SU model for Curriculum Development by analyzing jobs and tasks. The researcher consulted with five experts in the field of Curriculum Development. The process and model were compared. The model was adjusted according to suggestions and advice from these experts.

3. Implementation

SU model was implemented in a real classroom environment with the pre-experiment design, The implementation used the following tools: learning innovation, evaluation of curriculum development, and knowledge test.

4. Evaluation

The evaluation, after learning innovation implementation, is aimed at studying the effectiveness of SU model and to conclude internal and external validity of the research

Population and Samples

The research's population comprised third-year students from five different majors at the Faculty of Education, Silpakorn University. The sample group consisted of 39 students, majoring in English at Silpakorn University, Sanam Chandra Palace Campus, in the second semester of the 2012 academic year. They were selected using cluster random sampling.

Content Areas

The content areas in curriculum development which included philosophy, educational theories, the history and system of Thai education, visions and development plans of Thai education, curricular theories, curriculum development, standard and standard levels of curriculum, curriculum engineering, and trends and problems in curriculum development.

Variables

Independent variable: instruction using SU model.

Dependent variables:

1. Knowledge in curriculum development measured by scores from an assessment complying with Standard 2 of Curriculum Development of the Teachers Council of Thailand;

2. Capability in curriculum engineering measured by an assessment of the curriculum or curriculum developed per personal interest with the following levels:1 = adjustment needed, 2 = good enough, and 3 = satisfactory); and

3. Students' opinions towards SU model curriculum development learning approaches from a survey comprising 20 questions, each with five levels of satisfaction.

Results and Discussion

1. Analysis

The researcher analyzed a requirement of Curriculum Development course (462 201), the standards of knowledge and capacity of teachers in curriculum development as prescribed by the Teachers Council of Thailand, and research publications on the subject matter, as well as theories employed in past instruction. These included learner-centered psychological principles, constructive learning, authentic activities, and deep learning outcomes.

The researcher applied the Constructivist learning model (CLM) as guidelines, which comprised three phases: 1) clarifying existing knowledge, 2) identifying, receiving, and understanding new information, and 3) confirming and using new knowledge.

2. Design and Development

The researcher designed an innovative curriculum model named SU model for Curriculum Development by analyzing jobs and tasks, then to put down a theoretical framework based on CLM. The procedure can be broken down into the following:

1. Curriculum Planning

2. Curriculum Design

3. Curriculum Organization, and

4. Curriculum Evaluation

The researcher then created SU model, encompassing the following details:

The Process of Curriculum Development According to SU Model

The big triangle refers to the process of curriculum development, comprising four smaller triangles that represent the necessary steps taken. See diagram 1.
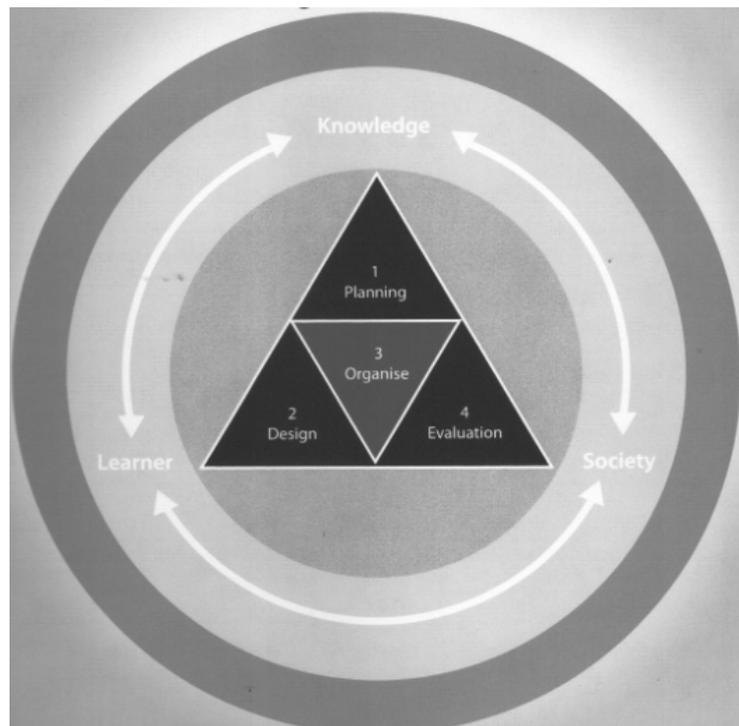

Diagram 1 SU model

The first triangle on top refers to curriculum planning. Drawing from Tyler's first question in curriculum development theory: What are the purposes, this step ensures the establishment of clear purposes needed in order to create a tangible curriculum.

The second triangle is a reference to curriculum design, which is where the framework is built upon the given purposes. The designed curriculum should help students set their goals in learning, drawing from Tyler's second question: What experiences should the school provide to students to help them achieve academic goals? Curriculum design is important, both in terms of the process itself and in learners' development. It provides students with experiences that fulfill the aims and goals of the curriculum.

At the core is the third triangle, entailing curriculum organization. This is an upside down triangle, reflecting the first triangle, because curriculum organization has to take planning into consideration. This is drawn from Tyler's third question: How to make a learning experience—including the management of curriculum and lesson—effective? Teaching plays an important role here in helping students formulate their own knowledge base, achieve their objectives, and use that knowledge in the real world.

The fourth triangle refers to curriculum evaluation, making a reference to Tyler's fourth question: How to evaluate the learning experience? This is the step to assess whether the knowledge gained is applicable to the real world.

The researcher consulted with five experts in the field of Curriculum Development. The process and model were compared. The model was adjusted according to suggestions and advice from these experts. The model was tested in a 16-week tryout period with 39 third-year students, majoring in Social Sciences. After the tryout period ended, SU model was adjusted before implementation with the sample of 39 third-year students, majoring in English, and another 10 from Educational Technology major.

3. Implementation

Using cluster random sampling, SU model was implemented in a real classroom environment with the pre-experiment design (Tuckman,1999 : 160), comprising pretest–posttest one-group design during a 16-week period on every Thursday 1 p.m.–4:30 p.m. The

implementation used the following tools: learning innovation, evaluation of curriculum development, and knowledge test.)

The researcher used SU model under the CLM aforementioned. As diagram 1

Diagram 1 SU Model under The CLM

Curriculum Process /Knowledge – Skill - Ability	1) Clarifying existing Knowledge	2) Identifying, receiving and understanding new information	3) Confirming and using new knowledge
1. Curriculum Planning	Task - 1	Test – Unit 1	Curriculum Vision
2. Curriculum Design	Task – 2	Test – Unit 2	Curriculum Mission
3. Curriculum Organize	Task – 3	Test – Unit 3	Lesson Plan
4.Curriculum Evaluation	Task - 4	Test – Unit 4	Assessment Plan

Competency(K+S+A)
  1 = Fail
  2 = Pass
  3 = Good
	K=SU Model – Summary
	1 = Fail
	2 = Pass
	3 = Good
		S=Test - Final Evaluation
		1 = Fail
		2 = Pass
		3 = Good
			A=Curriculum Evaluation
			1 = Fail
			2 = Pass
			3 = Good

K = Knowledge, S = Skill; A = Ability

1 = Uni Structure 2 = 1 + Multi Structure 3 = 2 + Relation Structure

The researcher compared the students' knowledge skill before and after the implementation of SU model, using paired samples t-test. The difference found was statistically significant at the .01 level. The result of the efficiency of the learning innovation is at 80/80.

4. Evaluation

In the evaluation process, there were two phases. Phase 1) Five expert evaluations were completed during implementation, which allowed the researcher to improve the lessons. There was an evaluation after each unit and at the end of the term. Phase 2) Evaluation of curriculum evaluation, including documents, implementation of curriculum, and students' achievements were carried out in a systematic and continuous manner. The evaluation, after learning innovation implementation, is aimed at studying the effectiveness of SU model and to conclude internal and external validity of the research.

Results

The results of this research are as the following:

1. The researcher developed an innovative curriculum model named SU model comprising four steps: planning, design, organization, and evaluation.

2. The differences in students' learning outcomes or students' knowledge before and after being taught by SU model were statistically significant at the .01 level. The students' learning outcome after instruction proved higher than before.

3. The ability of the students in project work as a whole was at a high level. Looking at each aspect separately, the students' ability also ranked at a high level in the following order: planning, work and presentation, and work processing.

4. The students' opinions towards SU model as a whole were at a high level of agreement. Considering each aspect separately, the students agreed in the following order: SU model learning activities, learning atmosphere, and benefits from SU model learning approaches.)

Discussion

Because SU model was developed on a constructive learning model, it encourages knowledge enriching, and helps those who know it to effectively develop a curriculum.

Pre- and post-SU model learning outcomes are statistically significant at the .01 level. Most students showed an outstanding ability in curriculum development. The researcher assessed the

students' ability to perform curriculum development tasks: three students were satisfactory, 11 were good, and 25 were outstanding.

This could be attributed to the use of SU model which comprises 1) analysis, 2) design and development, 3) implementation, and 4) evaluation. The researcher conducted class following the three steps of the constructivist learning model: 1) clarify existing knowledge, 2) identifying, receiving, and understanding new information, and 3) confirming and using new knowledge. This is where students interpreted and discussed the knowledge again in order to implement it. Using creative problem solving of Osborn (1953), fact finding, idea finding, and solution finding were integral parts of the instruction, which were in parallel to with 3-P model of learning (1996) which are 1) presage, 2) process, and 3) product. Also, Kember's curriculum planning model (2005) and model of desired outcomes were integral in the teaching, since outcomes were evaluated using a student engagement project.

One of the students said, "SU model covers a wide range of principles and processes of curriculum development. And by that, I mean that this model is not only used in curriculum development of an education curriculum, but it can also be applied to other types of development. Additionally, the Second Standard of the Teachers Council of Thailand is important for self-development of students in order to meet the requirements imposed by the council. The knowledge of it is beneficial for myself in the future."

Acknowledgement

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