

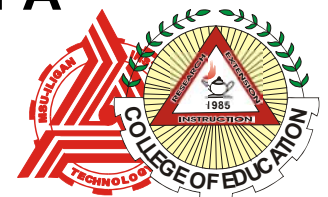


Teaching the Net Generation:
Curriculum, Pedagogy and the Challenge
of 21st Century Learning
10 to 11 September ♦ Cebu City, Philippines

Development of an E-Learning Course for Science Secondary School Teachers

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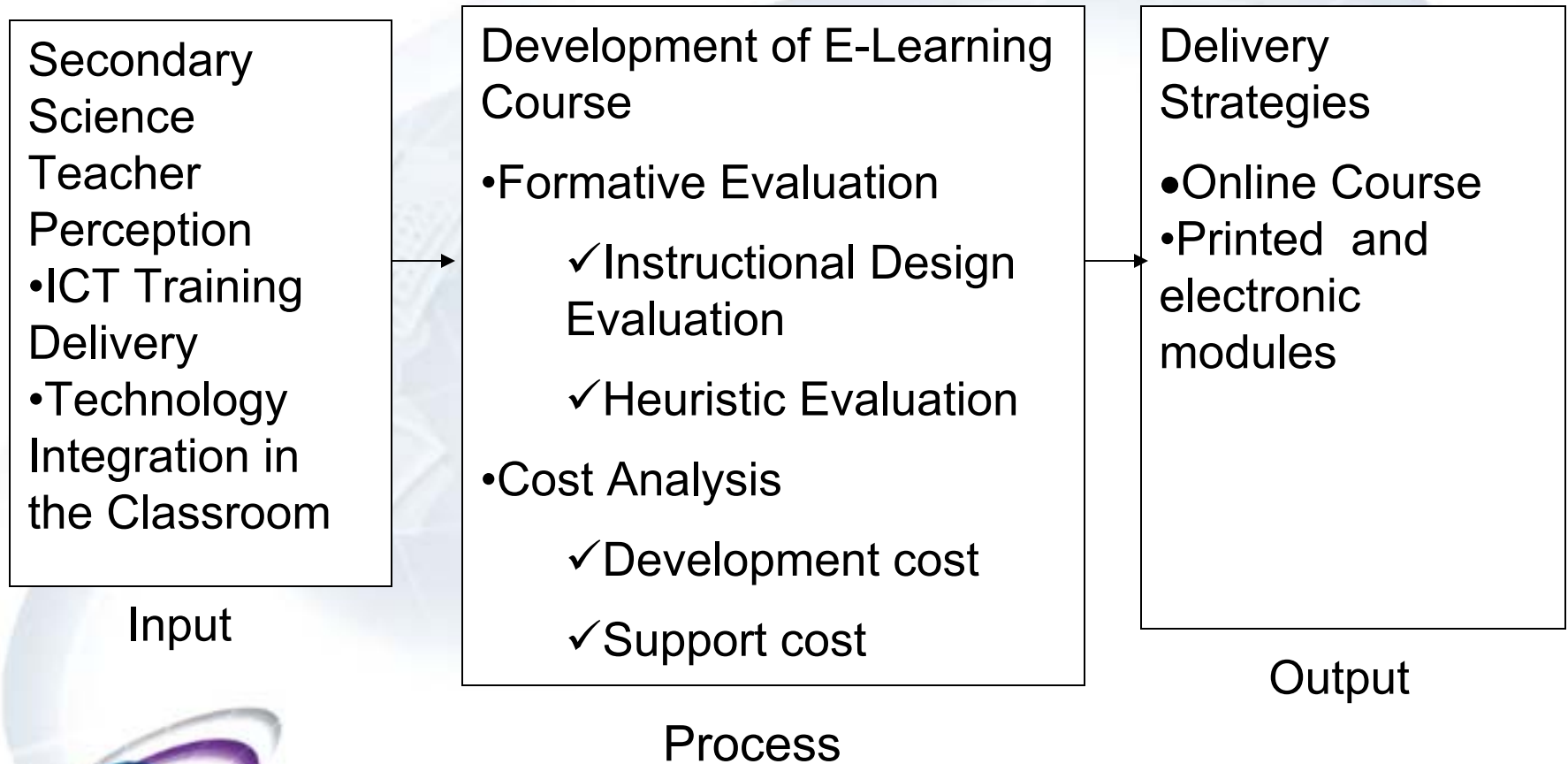
Current Status of ICT Integration

- Enough Theoretical support for ICT integration in the classroom
- Need for ICT Integration is well established worldwide – SEAMEO Innotech, ISTE Standards
- DepEd ICT Plan for Basic Education includes teacher training on the design, production, and use of ICT Based Instructional Materials
- MTDP for 2004-2010 envisions ICT as a development tool by establishing e-learning centers and wider use of ICT
- Secondary School Teachers have been trained in ICT literacy and ICT integration via face to face interaction

What has not been done?

- Design of ICT professional development courses based from the Philippine setting
- Widespread in-service trainings on the integration of ICT in the subject matter that are adaptive (time), collaborative, meaningful and cost effective in other words through flexible learning systems such as through e-learning
- Assessment on the learnability/usability of professional development courses

Conceptual Framework



Statement of the Problem

This study aimed to develop an e-learning course on technology integration in Science teaching for secondary schools. This study specifically aimed to answer the following questions:

- What are the perceptions of secondary science school teachers on: technology integration in the classroom, ICT training delivery, professional development courses delivered online?

Statement of the Problem

- What is the instructional design of the e-learning course?
- What are the experts' evaluation of the training course in terms of : instructional design evaluation & heuristic usability evaluation?
- How much is the cost of the training program with regards to: Course development, delivery and support?

Methodology

Research Sample

Purposively chosen eleven Integrated Science I teachers, 6 content experts, 6 regular experts

Qualitative Data Sources

Survey questionnaire definition of technology integration and opinions on the conduct of trainings on ICT integration in an online mode

Course design General Principle List (rating scale) by Moore and Kearsely (1996)

Heuristic List by Karoulis and Pambortsis (2003) (questionnaire)

Methodology

Survey on teachers' perception on ICT Integration & ICT Trainings

Analysis

Inputs for Content and delivery

Design

e-Learning Unit Plans

Decide on the content
Organize content to modules & Plan lesson for each module

Cost Analysis

Calculate the cost during development and delivery

Summary of cost during development and estimated cost for delivery

Learning resource manual and Course Guide

Develop

Develop the resource materials
Develop the student support materials
Develop the assessment tools
Upload/Encode Lessons in virtual classroom

Revised Course and Resources
SciTeach Virtual Classroom
Usability Evaluation

Results

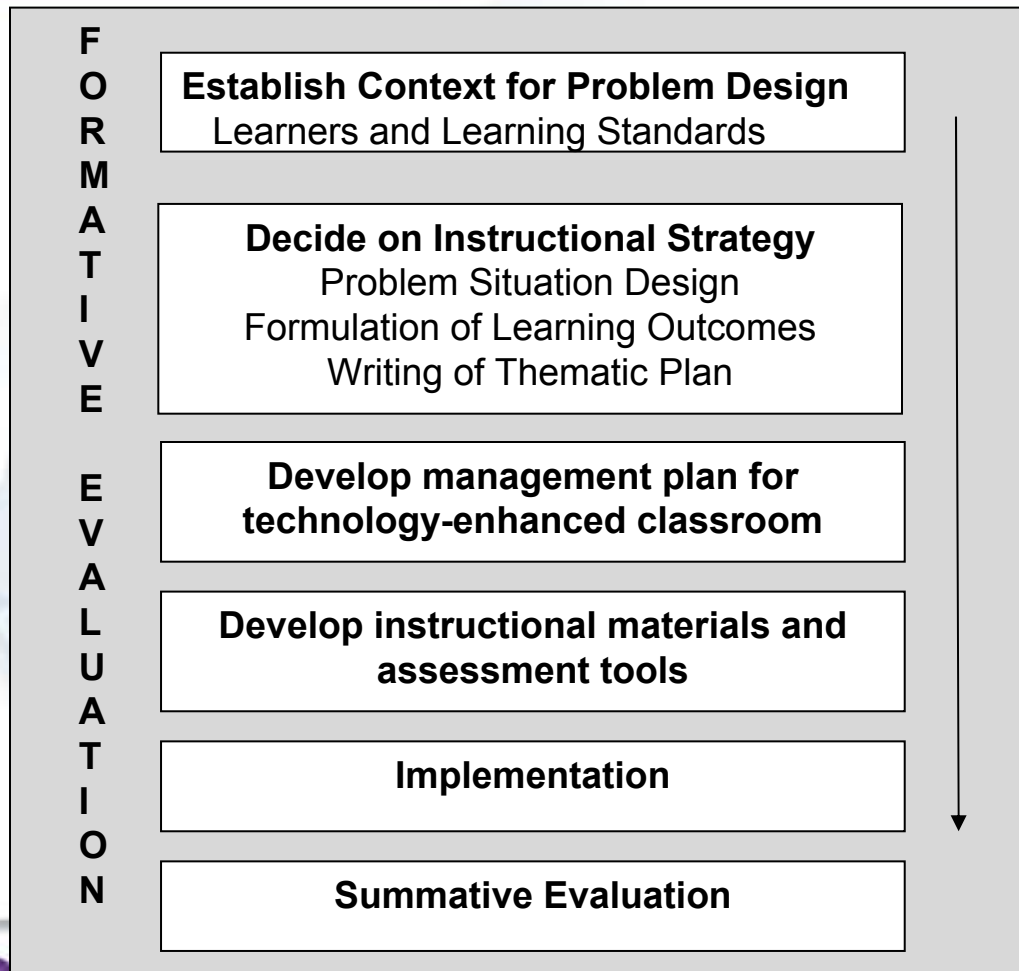
- Secondary Schools Teachers know how to integrate technology
- Science Secondary school teachers found professional development programs through online mode beneficial
- The course merged the components of technology integration and Science Teaching Principles

Results

Observed Conditions on Integrating Technology in Science Teaching as Perceived by Intended Participants

| Conditions | YES | NO |
|---|-----|-----|
| 1. Technologies such as computers, multimedia software, and the internet are used to explore the content of the course. | 83% | 17% |
| 2. Technologies are used in a learning task. | 83% | 17% |
| 3. The Teacher's role shifts from "dispenser of knowledge" to "facilitator of learning" | 83% | 17% |
| 4. Non cognitive skills such as communication skills-reading, writing, speaking, artistic expression and library research skills are considered. | 83% | 17% |
| 5. Students are active (mental behavior) meaning they are in the process of inquiry and discovery. | 83% | 17% |
| 6. Several cooperative group techniques such as jigsaw, STAD etc are utilized. | 67% | 33% |
| 7. Values such as truth, clarity, thoroughness, originality, order and freedom are integrated. | 83% | 17% |
| 8. The Scientific method is being followed in doing activities. | 67% | 33% |
| 9. Students are assessed using alternative assessment techniques such as authentic assessment, portfolio assessment, performance based assessment whenever appropriate. | 83% | 17% |

Results



Results



Technology Integration in Science Teaching An Online Training Course

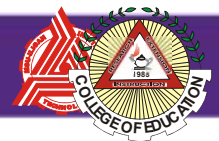
Main Menu

-  [Reflect](#)
-  [Read](#)
-  [Submit](#)
-  [Self-check](#)
-  [Conclusion](#)
-  [Required/Additional Reading](#)

Unit I– Overview of Technology Integration

This unit introduces you to technology integration in Science Teaching. Resources and activities are centered on the real meaning of technology integration and its components when taught in a Science Classroom. You are only given 1 week to complete this unit.

1. Define Technology Integration in Science Teaching
2. Identify the benefits that could be derived in teaching and learning using technology.
3. List activities appropriate to various computer tools
4. Reflect on an established practice and identify ways to improve it using technology.



Results

The screenshot shows a Windows Internet Explorer browser window displaying a Moodle course page. The address bar shows the URL: <http://hppml150.msuil.edu.ph/moodle/course/view.php?id=230&sesskey=Qvg04YNXs3&switchrole=5>. The browser title is "Course: SciTeach-Technology Integration in Science Teaching - Windows Internet Explorer".

The page content includes:

- MSU-III Online Learning Environment** banner with a "Close Tab (Ctrl+W)" button.
- Logged in as **Rhea Febro: Student** with a [Return to my normal role](#) button.
- Course name: **MOLÉ ► SciTeach** with another [Return to my normal role](#) button.
- People** section: [Participants](#)
- Activities** section: [Assignments](#), [Chats](#), [Forums](#), [Journals](#), [Resources](#), [Wikis](#)
- Search Forums** section:
- Administration** section: [Assign roles](#)
- Topic outline** section:
 - Welcome to Techology Integration in Science Teaching Course!
 - If it's your first time here, please read the [welcome letter](#) and the [how to study](#) links.
 - [Self-Introduction](#)
 - [SciTeach Chat Room](#)
 - [Welcome Letter](#)
 - [Expectations](#)
 - [how to study](#)
- Upcoming Events** section:
 - [Our School's Computer Tools](#) **Thursday, 8 March** (04:35 AM)
 - [Go to calendar...](#)
 - [New Event...](#)
- Recent Activity** section:
 - Activity since **Saturday, 3 March 2007, 02:50 PM**
 - [Full report of](#)
- 1 [Overview of Technology Integration](#)** (selected)
 - This module introduces technology integration in Science Teaching.

The Windows taskbar at the bottom shows the Start button, open windows for "Course: SciTeach-Tec...", "Document1 - Microsof...", and the system tray with the time 6:49 PM.

Results

Instructional Design Evaluation by Experts (Moore and Kearsely, 1996)

| Design Principle | Mean Rating | Description |
|-----------------------|-------------|----------------|
| Good Structure | 4 | Strongly agree |
| Clear Objectives | 3.8 | Strongly agree |
| Small Unit | 4 | Strongly agree |
| Planned Participation | 3.8 | Strongly agree |
| Completeness | 3.2 | Agree |
| Repetition | 3.2 | Agree |
| Synthesis | 4 | Strongly agree |
| Stimulation | 3.4 | Strongly agree |
| Variety | 3.6 | Strongly agree |
| Open-Ended | 3.6 | Strongly agree |
| Feedback | 3.8 | Strongly agree |
| Continual Evaluation | 3.8 | Strongly agree |

Results

- Most of the expert evaluators observed, using the heuristic usability evaluation tool of Karaoulis and Pambortsis (2003), that the course meets the criteria on:
 - quantity, quality and value of content;
 - Online Distance Learning Adaptation and integration;
 - user interface;
 - use of the underlying technologies;
 - interactivity with the instructional material;
 - provision for student support and communication channel;
 - acquisition of knowledge;
 - projects and learning by doing;
 - and assessment according to the principles of ODL.

Results

Suggestions were to improve the course's functionality and technology use; and increase the number of tutorial sessions, exercises, and hands-on practices.

- The course is packaged to include resource kits -course guide, resource manual, and an interactive CD that directs them to activities in the online classroom via the MSU-Iligan Institute of Technology Online Learning Environment (MOLE).
- It is recommended that the course be evaluated for effectiveness through the conduct of pilot implementation.
- The cost for the development of the SciTeach course is PhP 52, 251.00, while for the delivery is PhP 7,263.00.

Thank you