Design and Development of an e-learning Course for University Faculty Referring to the Instructional Design Models Aimed to Facilitate Learners' Learning and Motivation.

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ABSTRACT

In this paper, we describe the design and development of an e-learning course for university faculty by applying instructional design (ID) models to facilitate learning and motivation. The purpose of this course is to provide university faculty, especially young or future faculty, opportunities to acquire skills for designing instruction to teach effectively and efficiently, and to practe such skills in classes for workers/learners in graduate school. This course is built as a module-based package. Educational materials are distributed through a learning management system (LMS) and by e-portfolio. Referring to ID models is effective when the course designer is conscious that the learners are university faculty that are also workers/learners. Faculty can acquire skills through an authentic experience. Two representative ID models support the design of this course: The first principles of instruction that facilitate learning and the ARCS-V model for motivational design. We describe how these models are applied to the course. A discussion follows about how to assess the design of this course with the anticipated outcomes: Learning goals and motivational development.

Keywords: e-learning course for university faculty, First principles of instruction, the ARCS-V model

INTRODUCTION

In this study, an e-learning course for university faculty was designed for the acquisition of instructional skills. The course was developed in reference to established instructional design (ID) models. The skills they will acquire are the competence in ID and practice in classes for worker/learner. Recently, the Government of Japan has promoted “return to school” for working people as in other developed countries (MEXT, 2013). With this e-learning course, university faculty will be also workers/learners. So the course adopted the meta viewpoint of “return to school” for worker. One example of the characteristics of workers/learners will be that they are generally busy during the day, so it is hard for them to attend school daily like regular students. University faculty are the same. The goal of this study is to design a course to guide workers/learners to acquire skills they need regardless of such conditions or constraints. University faculty will guide workers/learners for acquiring skills when they complete the course by providing actual experiences with tasks in authentic contexts. Designing a course with the knowledge of ID allows us to select proper strategies

to help learners reach the course goals. This “Return to School” course for workers will spread when it is recognized for its value. In this paper, we describe the application of ID models to the design of an e-learning course for university faculty and discuss how to assess its effectiveness.

PURPOSE OF THIS STUDY

The purpose of this paper is to explain how to design a course that is effective, efficient and engaging; how to refer to applicable ID models; and discuss how to assess the effectiveness by testing this model in a graduate class. The ID models incorporated in this study are the first principles of instruction (Merrill, 2002) and the ARCS-V model (Keller, 2008).

OUTLINE OF THE E-LEARNING COURSE

The outline of the e-learning course designed and developed is described as follows.

Purpose:

This course is the outcome of a project aimed to maintain the function of “return to school” for university faculty. It will provide universities with opportunities to train faculty to become experts for supporting workers/learners by allowing them to study effectively and efficiently within their learning environment. This course is based on practices we devised for supporting workers/learners, such as “they learn what they need to learn”, “they utilize knowledge right after they learn”, “they learn until they achieve their goals”, “they learn under their own control.” Faculty will be guided to learn not only “how to behave in class” but also “how to design instruction and practice in class in reference to ID or using ICT tools effectively”.

Target:

Recently employed or other university faculty who are interested in this course. Doctoral students who will become university faculty are also included.

Primary Course Competencies:

- Ability to design and deliver a class for “return to school” workers
- Ability to design and practice in a class for regular students.

Learning Period:

Depends on the learner due to the self-paced design. 120 hours estimated as planned.

Systems and Contents:

The entire course is provided online except for a part of the practicum. Learners will access the open source learning management system (LMS) *Moodle* and the e-portfolio system *Mahara*. The course consists of 12 modules (Figure1 and Table1). In the first half of the course, they will complete their own class design and syllabus after they learn skills for each module. Then, they prepare for the practicum with the syllabus they completed earlier and practice the actual class with his/her mentor. The mentor will help review their reflections and make improvements. Along the way, they will check to determine what they have done and what is yet to be completed. The learners will revise their learning plan, module by module.

The requirements for supporting workers/learners consists of 17 items such as “Assess the learning outcomes by checking if a skill was acquired, not how long learner worked” when compared with “they learn until they achieve their goals”. Most of the requirements are practical or authentic. All content is designed to accomplish these fundamental requirements. Since authentic learning contexts are valued, the first principles of instruction that focuses on topics such as Demonstration, Application, Activation, Integration and task-based learning seemed to be an excellent reference. On the other hand, since busy university faculty are targeted as learners, the ARCS-V model for promoting self-regulation of motivation was also selected.

Table.1 Learning Goal of Each Module

Module	Learning Goal
1	Make my plan feasible for learning as necessary
2	Verify the positioning and structure of my class (proper entrance and goal)
3	Classify learning goals and define appropriate tasks
4	Plan routines for class (instructional strategies, tasks with authentic contexts)
5	Choose appropriate ICT tools for each purpose
6	Plan student-support for off-class (making action plans, reflection guide and so on)
7	Create LMS content for class
8	Plan e-portfolio use in class
9	Complete a syllabus relevant to module outcomes
10	Prepare for practicum
11	Implement practicum, reflections and improvement with mentor
12	Collect learning outcomes, reflections and appeal one's acquired skills

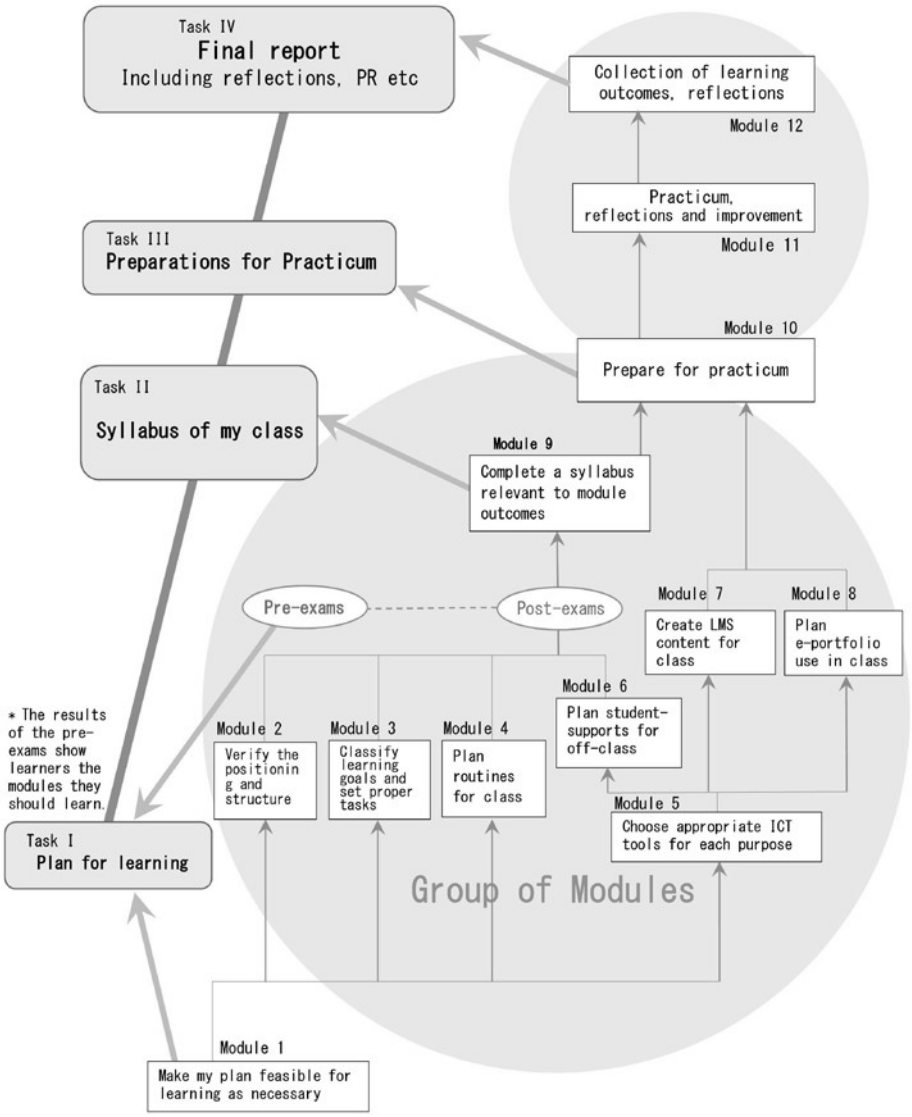

Figure1. Course Structure / Learning Hierarchy

First Principles of Instruction

First principles of instruction (Table2) consists of five identified components that underlie ID models and methodologies, and are included in most ID theories (Merrill, 2009). Merrill advocates that instruction designed based on these principles will be a good facilitator for learning. The methods for applying each of the five principles were presented by Merrill (2009) and Suzuki (2015).

Table 2. First Principles of Instruction (Merrill, 2009)

Principles		Statement of each principle
Demonstration	(D)	Learning is promoted when learners observe a demonstration.
Application	(Ap)	Learning is promoted when learners apply new knowledge.
Task-centered	(T)	Learning is promoted when learners engage in a task-centered instructional strategy.
Activation	(Ac)	Learning is promoted when learners activate relevant prior knowledge or experience.
Integration	(I)	Learning is promoted when learners integrate their new knowledge into their everyday world.

The ARCS-V Model

The original ARCS model, developed by Keller (1984), was enhanced to emphasize motivational components. The volitional component was added recently to focus on maintaining motivation until he/she reaches the goal (Keller, 2009). The model aims to motivate learners in five areas (Table 3.). Suzuki (2002) proposed practical strategies for improving motivation for each component of ARCS.

Table3. the ARCS-V model (Keller, 2012)

Component		Sub-Components
Attention	(A)	Capture Interest / Stimulate Inquiry / Maintain Attention
Relevance	(R)	Relate to Goals / Match Interests / Tie to Experiences
Confidence	(C)	Success Expectancies / Success Opportunities / Personal Responsibility
Volition	(V)	Strong Intentions / Action Control / Self-Regulation
Satisfaction	(S)	Intrinsic Satisfaction / Rewarding Outcomes / fair Treatment

Applying ID Models to the Course

In the examples below, applying ID models will facilitate learning and satisfy each requirement. The letters in parentheses represent the components listed in Tables 2 or 3.

Condition 1. Workers/Learners learn because they need to learn.

Recognizing the gap between the goal and current state will help learners realize what to learn (C). For module 3, the learner will work on classifying learning goals, analyzing tasks, and designing practices. However, if the learner can satisfy all required skills prior to starting this module, it may be skipped. The learner will continue with another module that he/she needs to learn. Therefore, determining the current state of learning at the beginning will be helpful in order not to waste time (R).

Condition 2. Workers/Learners utilize knowledge immediately after they learn.

In the first block of module 3, the learner will acquire the skill for classifying learning goals. When learner observes demonstrations appropriate for the learning goal (D) such as "Programming is an intellectual skill but typing on a keyboard is a motor skill because …". This will work well when practicing the next step. The learner will attempt to apply this new knowledge and skills to other situations (Ap). When learner satisfies this requirement, he/she can apply it to any other case (Ac). Then the learner will be able to apply it to his or her classes (T)(I)(S).

Condition 3. Workers/Learners learn until they achieve their goals.

Since this course is provided through an LMS and e-portfolio, learners can work on tasks or practices as much as possible. The purpose for module 3 is to acquire skills, such as

"Classify learning goals and set proper tasks", so opportunities to practice should not be limited. If some answers are incorrect, corrective feedback must be provided and the practices should still be open. The learner will continue working until the task is completed (Ap)(C). Then, the learner will be asked to write a reflection statement for improvement (I).

Condition 4. Workers/Learners learn under their own control.

Module 1 is one of the most challenging because the learner is asked to define the learning plan. The degree of motivation is dependent on having reviewed information about a course structure, learning goals, course content, learning requirements and competencies of 12 modules shown at the beginning. The learner is expected to understand: (1) The learner can work on a self-paced basis (R), (2) The learner can decide the order of modules to learn (C), (3) The learner does not need to learn what he/she has already knows (C), (4) The learner needs to acquire skills for designing instruction for his/her current employment (R). Most learners will be adequately motivated at the beginning but it may be reduced along the way. Therefore, learners will receive assistance to become self-regulated learners and enjoy the process of learning by realizing what he/she learned and earned (I)(S) and revising his/her learning plan as needed (V). For module 9, learners will prepare a course syllabus by recalling all skills (Ac) and information and applying them to this situation (T)(Ap).

In this way, learners will complete preparation of a syllabus for teaching workers/learners with facilitated learning and motivation. Next, they will continue to the practicum part and learn by doing (Ap)(T)(I). A certificate will be awarded after the learner completes all modules (S).

DISCUSSION

As described above, a course that uses ID models will assure that learners will acquire the expected skills. The effectiveness of this course depends on how ID models were utilized rather than the models themselves. Thus, assessments must be conducted after it is implemented by considering three points: (1) Was appropriate information provided in the course content for reaching the specified goals? (Nakajima et al., 2016), (2) Did the design support learners to learn effectively and efficiently? (3) Did the design support learners to promote and maintain their motivation?

Resources to assess this course design include responses to questionnaires, numbers of graduates and graduation rates, and specified learning outcomes. One of the learning outcomes is a document with a list of the skills acquired during this course. In the last module, the learner will submit this document to explain the acquired skills. This document will be analyzed to determine the effectiveness of this study.

The questionnaire will assess the efficiency of the course design and help identify unnecessary course content. For assessing the learner's motivation after completing the course, we will utilize the Instructional Material Motivation Survey (IMMS) designed by Keller (2010) that consists of 36 questions. Each question represents one of the components of ARCS, so we can measure whether motivation for each component is increased or reduced. These assessments and verifications will be made in addition to the learner's skill-acquisition that is evaluated by the instructor.

CONCLUSION

In this paper, we described an effective, efficient and engaging course design and how ID models were referenced and applied to the design. By applying ID models, the learners will be able to achieve the course goals with sufficient motivation and keep learning until they transfer ID skills to own classes. For the next step, we will implement this course and will assess how it works. Then, we will show the value of learning with this course to universities in Japan. We anticipate that many universities will adopt this course, with a focus on skill acquisition, in the near future.

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