FLEXIBLE PLANNING FOR THE PROVISION OF LEARNING CONTENT BASED ON STUDENT NEED

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Abstract. In teaching technical subjects, each student arrives having different levels of practical experience and theoretical knowledge of the subject and their need for additional information will vary. After defining the goals in teaching a practical subject, lecturers can devise teaching plans that can meet the needs of the students. This paper presents the results of research on student learning needs and the planning of a technical curriculum that will meet the needs of students based on the Kolb's theory of experiential learning.

Keywords: Flexible planning, teaching technical subjects, student learning needs.

1. Introduction

In recent years, teaching has focused more on student learning needs that can be met through the provision of flexible learning forms and flexible curricula. Student learning needs vary between individuals and this affects teaching outcomes, particularly when using the same teaching method or form for all students. Therefore, examining student need regarding learning content in teaching technical subjects is necessary to improve quality teaching.

In 2006, Natalie Brown described the relationship between the components of the student learning needs based on an outcome-based curriculum model (Prideaux, 2003) and developed a student knowledge acquisition model as a basis for planning the organization of courses in the flexible learning [1]. However, these guidelines were devised for online learning. In 2010, Bui Van Hong and Nguyen Thi Luong developed a flexible training curriculum for technical public school teachers based on the relationship between factors of the student learning needs as presented by Natalie Brown. In this study, the authors have proposed a training curriculum structure that consists of modules which

are content-independent. Teachers can select content, place and time suitable to the needs and conditions of each individual enrolled in their training courses [2]. This is a study of flexible curriculum that can be used by technical lecturers who will be updating their own knowledge and skills.

This research proposes the use of a flexible teaching plan that is based on meeting student need to learntechnical subjects. This paper presents the results of research on student learning needs and planning for teaching to meet the student needs in technical classes based on Kolb's theory of experiential learning.

2. Content

2.1. Kolb's Theory of experiential learning

The learning cycle is described following the observation that learning invariably follows a pattern that can be divided into four stages. Kolb argued that the learning cycle can begin at any one of the four points. The pattern that is most often suggested for the learning process is shown in Figure 1.
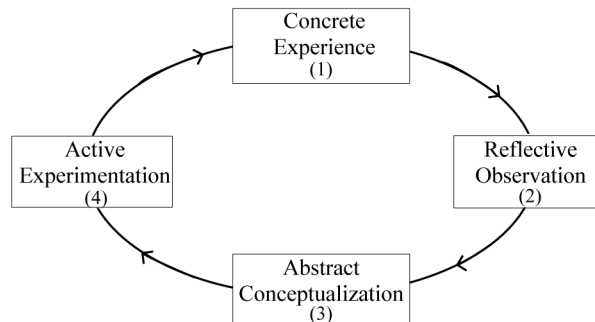

Figure 1. The model of experiential learning (Kolb, 1984) [3]

Stage 1. Concrete Experience

An individual carries out a particular action and then observes the effect of the action in this situation. Experiencing or immersing oneself in the "doing" of a task is the stage in which the learner simply carries out the assigned task. An engaged person is usually not reflecting on the task at this time but rather just carrying it out with intention.

Stage 2. Reflective Observation

Reflection involves stepping back from task involvement and reviewing what has been done and experienced. The skill of attending, noticing differences, and applying terms helps identify subtle events. One's paradigm (values, attitudes, values, beliefs) influences whether one can differentiate certain events. Understanding of the effects of an action in the particular instance is required in order to anticipate what would follow from the action if it will be taken again under the same circumstances.

Stage 3. Abstract Conceptualization

Conceptualization involves interpreting the events that have been noticed and understanding the relationships among them. It is at this stage that theory may be particularly helpful as a template for framing and explaining events. One's paradigm again influences the interpretive range a person is willing to entertain. Understanding the general principle under which the particular instance falls does not imply ability to express the principle in a symbolic medium.

Stage 4. Active Experimentation

This is the application through action in a new circumstance within the range of generalization. Within this context planning enables one to arrive at a new understanding and make predictions as to what is likely to happen next and what actions should be taken to refine the way the task is handled.

Depending on the student's knowledge level, their learning process can begin with Concrete Experience or Reflective Observation and end with Active Experimentation. Some individuals do well starting with Abstract Conceptualization and ending with Active Experimentation.

2.2. Planning for student learning need-based teaching technical practice

* Student learning needs in teaching technical practice

Natalie Brown describes the relationship between factors in planning flexible learning approaches and the student learning needs are considered to be a combination of need for knowledge, skill and understanding to be learned (What?), the need to devise a way to learn (How?), and the need to find a place to learn (Where?) [1]. The students' learning content needs are a predefined component based on their learning objectives. An appropriate solution is determined to satisfy the 'what', 'how' and 'where' requirements such that student learning needs can be understood "as the demands on content, way, place, and time for learning activities of each individual."

In teaching technical practices, teaching and learning activities take place within the school and classroom environment. The time and place to learn is the same for all students and student learning need varies only with regards to content and way. Because student learning needs are individual and vary according to their educational level and learning style and ability, and learning content and manner of teaching are correspondingly appropriate.

* Identifying student learning content need when teaching technical practices

In teaching technical practices, when the teaching aims have been defined, student learning content need can be assume according to the degree earned.

The student degrees reflect basic knowledge, skills, practical experience and ability to learn. In teaching technical practices, the student degrees are evaluated looking at the grades earned in subjects completed.

(1) An evaluation can take place at beginning of each course, at the beginning of

each practical subject and during the teaching process.

(2) Methods and tools for evaluating and grouping students include:

- Testing to determine theoretical knowledge and practical experience.

- Checking the results of previous subjects completed.

- Evaluation during the learning process.

Comparing the assessment of student degrees with the teaching aims, teachers can determine what is it that students need to learn in order to meet the teaching aims.

From the teaching aims of knowledge, skills and attitudes, lecturers can assess student degrees, and identify group student based on their learning need as follows:

- Group 1. Students have limited theoretical knowledge and practical experience of the practical subject. Their learning needs include: theoretical knowledge of the practical subject, the actual application of the practical products and practical skills.

- Group 2. Students have accumulated theoretical knowledge of the practical subject but have no practical experience. Their learning needs include: the actual application of the practical products and practical skills.

- Group 3. Students have the theoretical knowledge and practical experience of the practical subject but they need to acquire the practical skills.

* Flexible planning for teaching technical practices based on student learning content needs

Based on the teaching aims of practical subjects and identified student need for learning content, teachers plan teaching and learning activities that are appropriate for each group of students. Applying Kolb's theory of experiential learning in teaching technical practice, the student learning process takes place in four stages as follows:

- *Stage 1*. Acquiring theoretical knowledge of a practical subject.

- *Stage 2*. Observing the model products or results of the practical subject and reflecting upon the experience in order to master the practical process.

- *Stage 3*. Observing and following up with practical steps to reinforce the practical process, thus forming the first skills.

- *Stage 4*. Practicing the process to assimilate the information and develop the skill.

Once the learning content has been identified, teachers can plan to teach as follows:

- *Plan 1*. For use by students in Group 1

Students have limited theoretical knowledge and practical experience of the practical subject. Their learning progress can proceed from stage 1 → stage 2 → stage 3 and finish at stage 4.

- *Plan 2*. For use by students in Group 2

Students have accumulated theoretical knowledge of the practical subject but have no practical experience of the subject. Their learning progress can begin at stage 2 or stage 3 and finish at stage 4.

- *Plan 3*. For use by students in Group 3

Students have sufficient practical experience and theoretical knowledge of the practical subject. Their learning progress can begin at stage 3 and finish at stage 4 or occur only at stage 4.

In the teaching process, depending on the teaching aims and specific evolutions of student learning needs, teaching plans are selected in order to be appropriate.

3. Conclusion

Student learning needs are a combination of need for learning content a need for a way to learn and the need for a time and place for the learning activities. In a technical practice class situation, the student need for learning content and way to learn can be different for each student. However, the learning time and place of all of the students in the class are specified in the teaching plan.

Student learning content needs can be identified and grouped after comparing the teaching aims of the practical subject and the student's degree. Teaching plans are selected which are suitable for each group of students, with needs corresponding to student degrees. Student learning progress is organized to best benefit each group of students, thereby improving teaching quality and efficiency.

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