Application of the Kolb Learning Model in the Design of a Course

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Abstract

This paper proposes the organization of a class, which matches the learning styles given by Kolb [1]. Novel design requirements for the design of the class activities are proposed; these requirements can be implemented in an adaptive tutorial.

Keywords: Learning Styles, Adaptive tutorials.

1. Introduction

This paper introduces a novel organization of a class, which matches the learning styles given by Kolb [1]. The learning strategies used in the organization of the class are modeling, problem solving and project development [2]. The proposed class activities can be used in the design of a programming language tutorial. The section 2 introduces a design of a course applying the Kolb’s model [1]. Section 3 proposes design requirements for the implementation of course activities.

2. Application of the Kolb’s Model in the design of a course

This section introduces an example of the application of the Kolb’s learning styles in the design of a course of programming language. The course design is based on the learning strategies modeling, problem solving and project development. Kolb [1] said that the good learners start with a meaningful experiential activity (Concrete Experience). Through a carefully observation, the learners understand the meaning of ideas and situations (Observation and Reflection). The learners reflect and generate an idea (Abstract Conceptualization), and act or decide what to do in order to reach the objective (Active Experimentation). The following itemized points introduce the proposed teaching-learning activities to be followed during a course:

A) Activity previous to the course: The learners have to answer some psychological tests to quantify their intelligence types, learning styles, and beliefs and attitudes with regard to the programming language to be studied. Also the learners have to answer an exam to evaluate their knowledge background and the learners have to fill a questionnaire about special interests.

B) Activity previous to the class: Based on the learners’ profile, the learners have to select from a list of problems, the problems that model the concepts and syntax to be studied. (Observation and Reflection, Abstract Conceptualization, Active Experimentation).

C) Class Activities:

a) After the learners have learnt the concepts and syntax, the learners have to select from a list of
problems, the problems that must be resolved by using the learning strategy problem solving. (Observation and Reflection, Abstract Conceptualization, Active Experimentation).

b) The student must apply the abilities developed in class by implementing real projects that reflects the difficulty of the everyday jobs. (Observation and Reflection, Abstract Conceptualization, Active Experimentation).

3. Design Requirements of the Class Activities

This section proposes design requirements of the class activities introduced in the previous section, and how these requirements can be implemented in an adaptive tutorial.

The modeling strategy will be designed in two ways; the first one will consists of a set of pre-codified well-formed programs that will be introduced to the learner. The well-formed programs will be contained in a program's base, classified by the grade of difficulty, application area and by the necessary themes required to develop them. The second one consists of a designing tool; where the learners can design their own program's screens. A program will be generated through a detailed transformation from the designed screen to its implementation. The learner can do a click on each program's tokens or on a set of tokens and an explanation of those tokens will be displayed. Also, the learner will have an option to move into the knowledge module to review the whole necessary theory to do that program.

After executing the modeling designs above mentioned, the tutorial would introduce to the learner the problems world resolution. The introduced problems must be resolved by using the previously acquired knowledge. Based on the learner's characteristics, a set of problems and interactive games will be introduced by the tutorial. The adaptive tutorial will contain interesting problems related with different areas of study, classified in several grades of difficulty. Using information banks the learner can search information, which may be useful in the resolution of problems.

The problem resolution strategy will be implemented through a process, which will involve students in evaluating their own thinking and progress while solving problems. This multi-phase process includes discussing strategies for solving a specific problem, generalizing the strategies to solve similar problems, and identifying other problems presented by the given situation [2]. The project development strategy will be implemented through a modular process development of a final project. The tutorial will include some links to dictionaries on-line, and some other pages related with the topics of the problems to be incorporated in the tutorial.

4. Conclusions

The proposed design requirements can be used in the implementation of an adaptive tutorial, in which the matching of learning styles is only one aspect to be covered in the personalization process of adaptive tutorials.

5. References