

Conceptual Design Model of Instructional Interfaces: Courseware for Inclusive Education System (IID4C) Distance Learning

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ABSTRACT

This paper describes an ongoing study related to a conceptual design model, which is specific to instructional interface design to enhance courseware usage. It was found that most of the existing courseware applications focus on the needs of certain target with most of the courseware offer too little to inclusive learners. In addition, the use of structure, layout, and navigation to improve the courseware instructional interfaces as part of usability strategies was also problematic for developers. Thus, this study aims at creating an alternative instructional interface as part of usability strategies for inclusive education systems called Instructional Interface Design for Courseware (IID4C). It is proposed as guidance for the developer to refer to. The study used comparative analysis technique to determine the elements of the model. In the end, this study finds that the IID4C model is useful for information accessibility and contributes to the designing of instructional courseware. Future works are to evaluate the proposed model among disabled and non-disabled learners.

KEYWORDS

Instructional Interface, Layout, Navigation, Structure, Usability Strategies

INTRODUCTION

Young children have the right for education. Meanwhile, software developer is making all efforts to ensure that e-learning material is designed to enhance the education systems for all learners. The principle of learning for all has been introduced through inclusive education system; where learners with special needs or learning disabilities learn alongside with learners without disability in the same institution. This is to ensure that students with disabilities are not differentiated from the mainstream. This likely to bridge the gaps in education, and helps those with disabilities to reach their full potential and integrate with the outside world. This can be achieved through the use of courseware to support their learning (Cut, Ariffin, Nurulnadwan, & Rozana, 2011).

Courseware is developed in accordance with different purposes. According to Su (2013), it can be categorized into various forms: guidance, demo, drills, data tools, test form, game, and open network form. To achieve this objective, the courseware should be designed in such a way that it will: draw the learners' attention to the subject matter, applicable for all learners, demonstrate the facts clearly and easy to understand. In this situation, the courseware should have some fundamental pedagogical

values that will allow learners to learn independently (Efendioğlu, 2012; Nurulnadwan, Ariffin, & Siti Mahfuzah, 2014).

Based on the preliminary studies that have been carried out by Abdulrauf, Ariffin, and Sobihatun (2014, 2015), coursewares that are currently used in institutions mean too little to the inclusive education systems. This is because the usability strategies that should be considered on the instructional interface design to grasp the content presented in the courseware structure for both non-disabled and disabled learners are inadequate. The disabled among the learners are unable to understand and access the learning content in the courseware. This leads to the frustration in learning through the courseware. In fact, having usability strategies in learning materials is important for the learners to grasp and understand the presented knowledge (Kidney, Cummings & Boehm, 2014).

Furthermore, Nurulnadwan, Ariffin, Mohd Saifulizam, and Siti Mhfuzah (2014) through a comparative analysis by found that existing conceptual design models of courseware have been designed based on target user separately. This indicates that the conceptual design model for courseware that is specifically designed for inclusive system learners is highly lacking. In fact, using Supportive Technology (ST) requires the disabled learners to have extra knowledge on technical functions. This indicates that it is less possible for disabled users to operate among the counterparts' non-disable users. Therefore, the instructional interface elements that serve as part of usability strategies that will guide the users have not been considered. All these problems address the need for instructional interface elements that will serve as part of usability strategies in the courseware design. Designing applications for inclusive instructional system is barrier-free design. This broader the concept for the design of products and environments so that they can be used by all people, to the greatest extent possible, without the need for adaptation or specialization, which is called universal design.

In a learning environment, universal design means providing users with multiple means of representation, engagement, and means of expression throughout the learning process with various formats (visual, auditory, kinesthetic, numerical, narrative etc.) for content delivering; individual and social engagement options; and choices of modalities through which students can demonstrate learning comprehension. This is in line with the suggestion of Abdulrauf, Ariffin, and Sobihatun (2015) that there are needs for usability strategies in instructional interface for courseware that caters the need of inclusive environment.

Based on the justified problems in the previous paragraph, this paper aims at proposing a Conceptual Design Model of Instructional Interface for Courseware that is named "Instructional Interface Design for Courseware (IID4C)" to cater for the learning content needs for both non-disable and disabled learners. Prior to designing the proposed model, this study has to identify the main components, elements, and design principles for IID4C Model. To achieve the objective, four phases of activities have been carried out as further detailed in the next section.

METHODOLOGY

In this study, a sequence of activities (problems analysis, elements identification, model development, and evaluation) was carried out, as depicted in Figure 1. In the first phase, the activities include interview with courseware designer (instructors) and comparative analysis through User Centered Design (UCD) approach. From this phase, data regarding the multimedia elements, strategies, and design principles for IID4C were gathered from available courseware for both non-disabled learners and disabled learners. Then, the elements were merged to serve as instructional interface elements. This merging system was achieved based on theoretical constructs to learning object systems, and

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