Chapter 3.17
A Pliant-Based Software Tool for Courseware Development

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ABSTRACT

The increasing importance of e-learning has been a boosting element for the emergence of Internet-based educational tools. As we move into the information age, tremendous efforts are made in the development of new information and communication technologies for educational purposes. The ultimate goal is to facilitate e-learning methodologies and acquisition. The chapter's contribution is in the area of open source software for technology-enhanced learning. First, we report on the capabilities of Pliant, a novel software framework for Web-based courseware development. Pliant' design features upon which e-learning capabilities are built are presented, showing that Pliant has some advantages over existing software, including flexibility, efficiency, and universal usability. A case study of the use of Pliant in the project "Multilanguage Database for Localization" developed at the CUSB School of Translation is presented. Second, we present Academia,[3] a Pliant-based courseware development Web portal, and its use in translation studies at CUSB.

INTRODUCTION

The widespread availability of Web-based educational systems and standard-based courseware systems, and their deployment in educational institutions, including educational community as a whole, has raised a clear concern regarding their "universal usability" scope (Hochheiser & Shneiderman, 2001). A thorough analysis of

the situation and informal discussions with "online teachers" and teacher educators show that Web-based educational tools are quite far from achieving their main goal—that is, being used by a wide distance audience in a cost-effective and educationally sound manner, and in particular, endowing Web literacy to both young, old, novice, expert, and end users with less computing background. This chapter reports on the capabilities of Pliant, a high-level and flexible programming language and Web development framework. It shows how Pliant can be used both for high-level programming and e-learning purposes, while meeting educational and software-oriented expectations. Academia, an example of an open-source, lightweight, Web-based courseware tool fully implemented in Pliant, is presented. This portal has been designed to help instructors quickly create, post, manage, and deliver Web-based courses and other e-learning resources. A case study of the usability of Academia at a Canadian institution is presented. This Pliant-driven application is meant to show the efficiency of the Pliant's framework as a supporting tool for e-learning methodologies and acquisition.

The chapter is organized as follows. First, we briefly introduce the main streams driving the development of Web-based educational tools, and situate Pliant in that context. We then present an overview of the Pliant approach in terms of language constructs—here, we present our view of the Pliant architecture, and its underlying design features upon which e-learning capabilities can be supported. Next, we discuss various e-learning capabilities of Pliant, while highlighting their relationships to some of the main topics of this book. These include:

a. A description of Pliant as a tool for consolidating e-learning methodologies/acquisition—here, elements for exploration, data management, teaching, communications, and users' management are presented;
b. A description of Pliant as a tool for learning programming languages and Web programming—a case study of the use of Pliant in a project entitled "Multilanguage Database for Localization," developed at the CUSB School of Translation, is also presented; and
c. A description of Academia—here, our focus is on showing how this portal has been used as a tool for supporting translation studies at the CUSB School of Translation.

We also introduce Co-op Web,[4] a Pliant-based Web portal developed at Ryerson University, Canada, used to administer the Cooperative Education and Internship Program.

Some shortcomings of our framework and how these can be addressed as future research themes are then offered, in the perspective of enhancing e-learning methodologies and acquisition. Future developments of our framework are also highlighted, and finally, our conclusion synthesizes our discussion and presents our final remarks on Pliant's e-learning features.

BACKGROUND

Web-Based Educational Tools

The exponentially increasing number of educational courses being offered over the Web has spurred a growing industry of software tools to assist in the creation of Web-based curriculum and in performing class management tasks. For this reason, Web-based educational tools and standard courseware systems are two main research and development streams in the field of e-learning. The development of these systems can be categorized in two complementary streams. The first stream is based on the traditional approach of "hardwiring" high-quality educational material items in the course content—that is, the learning content used by the student resides in the system. Well-