

Exploiting the FLOSS Paradigm in Collaborative e-Learning – Application to e-Government

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ABSTRACT

Modern societies face high demands for skilled professionals, able to successfully design, deploy and utilize complex Information Technology (IT) –enabled socio-technical systems at ever-increasing levels of reliability and security. Contrary to traditional education practices, the high-level training required to fulfill this demand should rely on the principle that the learners are themselves responsible for their learning process, that they have control over this process, and that the process aims at developing cross-disciplinary and problem-driven competences, not only at acquiring content knowledge. However, such training requires the presence of a highly interactive, problem-oriented environment for technology-supported learning (or e-learning). This poster presents a doctoral research project, which aims at designing, validating and monitoring a collaborative e-learning environment based on the principles of Free/Libre Open Source Software (FLOSS). In order to validate its outcomes, the project will rely on two real-life professional training programs: in Software Engineering for software managers and in e-Government for public managers. The poster presents the objectives, research methodology and expected results from this project.

Categories and Subject Descriptors

J.1 [Administrative Data Processing]: Education, Government;
K.3.1 [Computer Uses in Education]: Computer-assisted instruction (CAI); Computer-managed instruction (CMI)

General Terms

Design, Experimentation, Human Factors

Keywords

Education; Training; e-Learning; FLOSS; e-Government

1. INTRODUCTION

In Information Society (IS), the creation, distribution, diffusion, integration, use, and manipulation of information is a significant economic, political and cultural activity [1]. A major goal is

creative and innovative use of IT to gain competitive advantage [1], for instance to improve the lives of citizens or to develop new economic opportunities. However, while IS relies on the diffusion of IT and the presence of a ubiquitous technological infrastructure [2], developing and utilizing such infrastructure and a whole range of components and services deployed on it, requires competent developers, managers and users. To this end, new educational methods, suited to the needs of IS, are needed.

Contrary to traditional face-to-face teaching and learning, such methods should make use of IT to facilitate access to training and education, and to enhance the learning experience. In addition, the new educational methods should stress the learner's responsibility and control over his or her learning process, encourage the development of cross-cutting competences rather than mere acquisition of content knowledge, and offer highly interactive, problem-oriented environments to facilitate the process. Such principles have been already practiced for years by the FLOSS (Free/Libre Open Source Software) movement.

This poster presents a research project, which aims at developing an innovative, light, adaptable and effective high-level e-learning environment based on the principles and tools underpinning the FLOSS paradigm. E-learning refers to the use of web-based technologies to facilitate the teaching and learning process and access to educational content. In particular, e-learning frees the learners from the limitations of time and space, allowing them to learn at their own place and pace [3]. Along its complex history, marked by the increased availability of computing resources and debates over the nature of knowledge and information, FLOSS changed the way societies think about software and introduced a cultural phenomenon underpinned by technological development, with the aim of contributing to public good through community work. FLOSS plays an increasing role in e-learning.

The principles underlying the project are in line with the current thinking about education, which recognizes that fundamentally learning and development result from participation of students in social interactions and culturally-rich activities with other students, and that IT has the potential to mediate learning experiences and to support networked collaborative learning.

The rest of this poster is structured as follows. Section 2 presents the research problem. Section 3 introduces the methodology and expected results. The final Section 4 explains the expected contribution of the project to e-Government education [4].

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2. RESEARCH PROBLEM

The project aims to address three research questions: 1) What requirements should be fulfilled by a collaborative e-learning environment? 2) How is FLOSS, its principles, practices and tools applicable to collaborative e-learning environment? 3) How to validate that the proposed environment satisfies IS training needs? Following the research objectives, obtained results will be validated through their contribution to professional training of Government Chief Information Officers (GCIOs).

3. METHODOLOGY

To address these questions, a research methodology has been proposed comprising the following steps (see Figure 1):

1. *Collaborative e-Learning Review* – literature and project review to determine the state-of-the-art and state-of-practice in collaborative e-learning.
2. *Collaborative e-Learning Requirements* – based on the review (1), synthesizing the key functional and non-functional requirements for collaborative e-learning.
3. *FLOSS Review* – reviewing FLOSS-related literature and projects to determine the state-of-the-art and state-of-practice in the area.

4. *FLOSS Practice Assessment* – based on the review (3), assessing existing educational practices within FLOSS to identify the emerging teaching and learning patterns.
5. *FLOSS Contributions* – based on the FLOSS review (3) and assessment (4), identifying relevant FLOSS principles and practices that could be used in collaborative e-learning.
6. *Collaborative e-Learning Solution* – based on requirements for collaborative e-learning (2) and contributions by FLOSS (5), building FLOSS-based collaborative e-learning solution.
7. *Collaborative e-Learning Testing* – testing the solution (6) using professional training program in Software Engineering.
8. *Collaborative e-Learning Validation* – validating the tested (7) solution (6) through professional training program in e-Government; the program is explained in Section 4.

The research is expected to produce the following contributions: 1) Collaborative e-Learning – complete specifications of an innovative collaborative e-learning environment implementing peer-to-peer learning adopted from the FLOSS paradigm; 2) Peer-to-Peer Learning Patterns – learning patterns discovered from the common practices in the FLOSS communities, contributing to peer-to-peer learning; and 3) Collaborative e-learning assessment – assessment model and guidelines to evaluate collaborative e-learning, applied to the environment produced by this research.

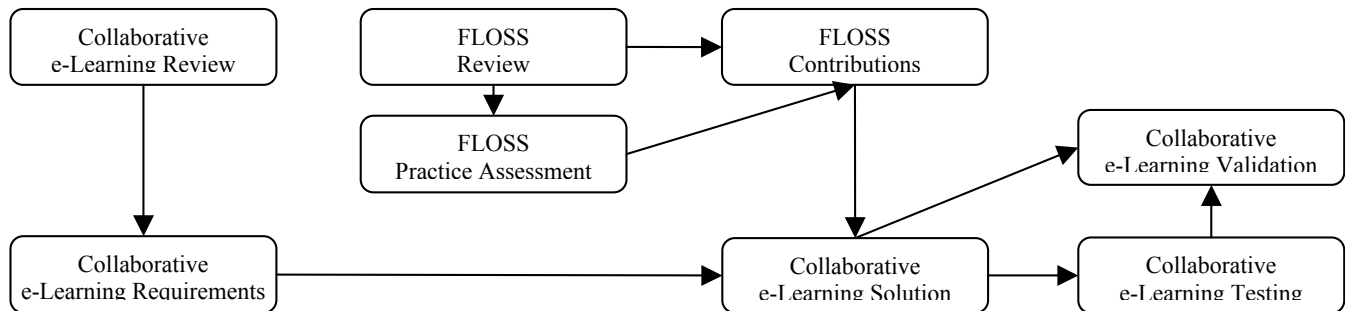


Figure 1: Peer-Production Approaches to e-Learning Research Methodology

4. APPLICATION TO E-GOVERNMENT

In the public sector, collaborative e-learning can be used for various purposes: 1) to share best practices between government agencies [5]; 2) to train civil servants on specific competencies and teamwork required in their jobs, for example building awareness on sustainable development issues among local government officials [6]; 3) to develop training for small and medium-size enterprises (SMEs) on how to engage in G2B services [3]; etc. As a result, a real-life e-government training program will be used to validate the proposed collaborative e-learning solution, targeting IT competency and experience-sharing needs of public managers who utilize IT in citizen-focused government programs. In particular, training for Government Chief Information Officers, with its strong requirements for experience-sharing and network-building, will be targeted.

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