Chapter XV

Collaboration and Pervasiveness: Enhancing Collaborative Learning Based on Ubiquitous Computational Services

Kazuhiko Shibuya, Musashino University, Japan

Editors’ Notes

Kazuhiko discusses one of the most challenging topics of the forthcoming years. The design, development, and support of ubiquitous learning environments are on the priority list of the next generation’s knowledge and learning management systems. We encourage readers to go through this chapter and to spend some more time on the concept of pervasiveness and ubiquity. Included in our plans for the next year is to undertake a similar edition on this topic.

We would also like to inform you that we are currently developing one more book entitled, Ubiquitous and Pervasive Knowledge and Learning Management: Semantics, Social Networking and New Media to Their Full Potential. Its release is forthcoming within the next few years.
Abstract

This chapter attempts to contribute toward exploring fundamental conceptualization on collaboration and pervasiveness in education. An assigned task is to clarify my concepts on collaborative learning based on ubiquitous computation and Semantic Web perspectives by means of more originated ways. Collaborative activities and computer-supported collaborative learning (CSCL) per se consists of various needs to encourage motivation and understandings of each student in more effective learning style and environment. We can recognize that collaborative learning in a ubiquitous environment can provide more interactive, experiential, spatiotemporal, and distributed aspects for anyone who wants to know information and solve educational tasks coordinating with others at any time. Then, I would like to show my design of the ubiquitous jigsaw method and self-organizing networks in the learning community. Further, I concentrate on exploring possibilities of collaborative learning with semantic technologies which allows to inspire and facilitate a more reciprocal exchange among affiliated relationships in a ubiquitous environment. Finally, I will discuss these topics.

Introduction

I have both conceptual and technical ideas to attain specific goals for collaborative services and computer supported collaborative learning (CSCL) in a ubiquitous environment. For that reason, I wish to explore possible collaborative learning for facilitation of education in the classroom and fostering other academic activities. Especially, I would like to identify the feasibility of more collaborative and experiential education and learning styles interwoven with both ubiquitous computation and Semantic Web Services. Specifically, I seek an educational attempt at a ubiquitous jigsaw method, along with emerging possibilities of self-organization networks and a networked learning community based on ubiquitous learning (see Figures 1 and 2 and Table 1).

Current studies of the Semantic Web are regarded as representative of intelligent computational services and knowledge engineering in this vast-networking era. We have acknowledged that proper computational generation and management of massive educational resources and materials are necessary because educational materials, human resources, and educational instructions are neither limited nor sufficiently prepared in advance, whereas physical limitations exist for time and social activities.

This chapter articulates the preceding two perspectives and their combination in ubiquitous computing by contrasting them against traditional educational styles of the jigsaw method and networked learning. Of course, the semantic perspective and its technical background are presumed to clarify the importance of service in terms of these fields.
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