Chapter III
Collaborative Learning Activity Design:
Learning about the Global Positioning System

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ABSTRACT

Collaborative learning activity design (CLAD) is a multi-institution approach to the creation of e-learning material from the design phase through the development stage and onto the embedding of learning activities into existing modules at higher education institutions on both sides of the Atlantic. This was the approach taken by a group of academic and e-learning material developers at the Pennsylvania State University and the University of Leeds to develop a series of learning activities to support the use and understanding of the global positioning system (GPS). Aided by concept mapping, a Guidance Toolkit and Web conferencing facilities, the group worked seamlessly at producing a series of e-learning resources, including the basics of turning on a GPS unit and obtaining a spatial location, GPS data properties and GPS components, differential correction, and sources of GPS error and error correction. This chapter reflects on the success of this project, which, authors believe, hinged on the following: a clear vision in defining the learning outcomes of the collaborative resources; appropriate tools and technologies to support and facilitate the collaboration; excellent communication and a high level of trust between collaborators; and the identification of a robust iterative methodology to produce reusable e-learning resources.

INTRODUCTION

This chapter examines the practicalities of collaboration in the design and development of e-learning materials. In particular we discuss methodologies, benefits, and difficulties of producing reusable learning resources. International and national collaboration is increasingly common between academic institutions in research and teaching arenas, as evidenced by the Worldwide Universities Network (WUN), an alliance between 16 research-led universities throughout the world that fosters and supports interdisciplinary collaboration, faculty and student exchange, and e-learning, on a global scale (WUN, 2005). Investment in the development of high quality and innovative online resources can be high and, for a return on this investment, the sharing and reuse of resources should be encouraged. Any lack of reusability in resources is potentially caused by a misalignment of learning objectives and differences in the nature and depth of learning materials between user groups. A potential solution could be multiple authors (who have no geographical restrictions – they can be academics from the same institution or different institutions) sharing their knowledge and working as a team to produce resources. Educational institutions participating in collaborative courses, or creators of e-learning materials, need to consider new approaches to developing resources to guarantee reusability and adaptability for use by others; once developed, the resources can be uploaded to learning object repositories, for example, Intute and Jorum (United Kingdom [UK]), MERLOT and DLESE (United States of America [USA]), Ariadne (Europe), eduSource (Canada), and EdNA (Australia). To ensure that these resources can be re-deployed easily and integrated into appropriate courses there is an argument for collaboration in both the design and development stages of this material.

When defining the requirements of e-learning architecture in the development of reusable learning activities, Laurillard (2002) identifies learning design as a major recent development. Dalziel (2003, p. 594) describes learning design as concentrating on the context rather than just the content of e-learning, being activity-based rather than merely absorbing information, and having the requirement to meet multi-user environments, stating: "Much of the focus on learning design arises from a desire for reuse and adaptation at a level above simply reusing and adapting content objects."

Interest in learning design is motivated, in part, by the desire to make resources reusable but to successfully achieve this goal, an appropriate methodology is required. Brooks (1975) observed that, as in software engineering more generally, producing software that can be used by others is an order of magnitude more difficult than making software one can use oneself. Could this observation equally apply to producing courseware? One way to increase the transferability of learning objects between different institutional settings might be to involve authors from multiple institutions. With this in mind, the authors of this chapter devised a collaborative approach to learning design, called Collaborative Learning Activity Design (CLAD). By using this methodology to design and develop exemplar materials that can be disseminated to a larger audience in a more applied and reusable form, the success of collaboration can be considered. Will the integration of knowledge from multiple authors produce the sought-after goal of reusable materials or was Brook (1975) accurate in his belief that adding manpower [sic] to a software engineering project (or shared courseware as discussed in this chapter) does not make the project easier or likely to finish sooner?

Focusing on these issues, this chapter will describe the implementation of an inter-continental collaborative learning activity design by a consortium of academic and e-learning technologists who undertook this work as part of the Joint Information System Committee (JISC) and the National Science Foundation (NSF) funded