Chapter XII
Simple Geography-Related Multimedia

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ABSTRACT

Teaching geography at university level involves students in study of complex diagrams and maps. These can be made easier to understand if split into parts. This chapter reports the work of a team writing a series of courses in geographic information systems (GIS) and their solution to the problem, which involved authoring simple multimedia animations using Microsoft PowerPoint™ software. The animations were authored by those writing the courses with little input from the multimedia Web specialist supporting the team. The techniques that the team used to produce the animations are explained, as are the nine points of best practice that were developed and how the animations were used with other non-animated content. Three sub-categories of these animations are described and explained and the issues of maintenance and reuse of the animated content is considered.

INTRODUCTION

A major challenge facing the teaching of geography or geology is students' interpretation of complex maps and diagrams. Laurillard (1997) states that this is because the "[graphical] representation and the content are unfamiliar" to a novice user. These graphics are often used to communicate important multidimensional and locationally specific concepts that are extremely difficult to present verbally. Taking an example: a professional geographer will inspect a contour map and immediately be able to understand the aspects of the landscape that it represents: they can "read" maps. A novice geographer would not

be able to interpret a map in the same way, for example, they may be able to understand what a contour line symbolizes but the complex pattern of contours on the map may overwhelm their ability to interpret the physical landscape it represents. One solution to this issue is to break the map or diagram down into component parts or concepts and present them in a way that builds back up to the original complexity of the diagram. In a contour map example with a dipping plane dissected by a valley ending at a cliff, the problem could be split into three stages: in the first a contour map of a dipping plane is presented, then a stage showing the same plane dissected by a valley and the final stage would show the patterns of contours with all the elements present. This sequence of diagrams would be annotated by labels and notes. In this chapter we present our experience in the development of complex maps or diagrams (hereafter referred to as "complex diagrams" for the sake of brevity) for delivery to students engaged in independent learning. Our work was initially implemented as part of a fully online master's-level program and we have subsequently utilized the approach in self-paced practical sessions with traditional face-to-face students.

The traditional approach to breaking down a complex diagram would involve an expert geographer acting as author (hereafter referred to only as "author") who analyses the diagram and then splits it into logical parts, annotates it, and presents it using a static diagram form. A second, alternative approach would have the author and a learning technologist (a multimedia Web specialist) working together to produce an animation of the diagram. The problem with this approach is that learning technologist time is expensive and highly constrained in most higher education environments, in addition communication between the author and learning technologist could slow production speeds compared with just having the author work on the material alone. In this chapter we advocate a third approach: by keeping the animation simple the authors can produce animation-based content for themselves. For reasons that will become apparent we term these animations "animated slide sets". We argue that this is an educational improvement on the first static text and diagrams approach, whilst avoiding the problems of the second approach.

The teaching materials described in this chapter have been written by a multi-author team comprising several academic staff and a learning technologist. The initial work was undertaken to support an online distance learning MSc in GIS, delivered collaboratively by the Universities of Leeds and Southampton. In the case of our actual team the learning technologist had subject specialist skills, blurring the distinction between author and learning technologist. We think such blurring of roles should not affect any project that aimed to reproduce our type of work flow, all that is required is that members of the team maintain a sense of what role they are taking when undertaking team tasks. Our learning materials were written as standard HTML Web pages in learning object format (described in more detail by Wright et al., under review) and are each between approximately 500 and 2,500 words in length. Within each object there are typically one or more animated slide sets, activities and a reference section. Wright et al. (under review) also addresses such issues as learning object reuse, storage, editorial control, and intellectual property so we have avoided discussion of such issues here.

The remainder of this chapter is arranged in six sections. Firstly, we present a definition of animated slide sets, the particular type of animation we developed for our courses, and we review a range of work that deals with the presentation of complex concepts through complex diagrams, particularly focusing on the role of animation and the issue of cognitive load. We then present a worked example of an animated slide set, to which the remaining discussion will make reference. In the third section we address software and technical issues before turning to a consideration