Chapter 11
Pictorial Pedagogy

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ABSTRACT
For sighted people, pictures provide an important mechanism of communication; they are also a valuable learning resource. This paper discusses these issues in context to their use in developing and promoting online pictorial pedagogy through the medium of computers. As the size of an image collection grows, some form of picture repository is needed in order to store, manage, and retrieve images. In this context, the role of a digital object repository is discussed and a case study involving the use of a very large image collection is briefly described.

INTRODUCTION
During the last two decades our research group has been exploring the important role that pictorial forms can play in relation to the various types of communication process that can take place between humans and computers (Najah, 1986; Barker, Najah, & Manji, 1987; Manji, 1990; Barker, 1993; Lamont, 1994; Yasdani & Barker, 2000). More recently we have become involved in studying the ways in which pictorial forms, of one type or another, can be used to support different approaches to creating multimedia software to facilitate online pedagogy (Giller, 2007).

Naturally, pictures play a very important part of people’s lives in relation to the various types of learning and training activities that they undertake during their lifetime. Bearing this in mind, it is important to consider the fundamental nature of pictures and the ways in which they can be used to create and stimulate learning activities. Before considering the special role that pictures can play in a pedagogic situation, it is necessary to consider briefly the underlying nature of learning processes and how they come about.

Observation and communication are two important processes that strongly influence the ways in which an individual (or a community of people) learns. For example, someone might observe a phenomenon, artefact or event; natural curiosity might then cause that person to find out more about it in order to explain the event that has taken place. This is essentially a process of learning that has been stimulated by the event. In contrast, other people who may not have experienced the event first-hand may learn about it by...
reading, watching or listening to other people’s descriptions of it. This illustrates how communication can also stimulate learning. Typical mechanisms for facilitating communication are books, television, computers, newspapers, mobile phones, university courses, and so on. In all of these communication ‘media’, pictures play an important role in achieving effective and efficient communication strategies.

Because of the importance of pictures and images in relation to designing, developing and promoting learning situations, this essay briefly discusses the nature of pictures and the types of pedagogy that they can be used to support. Particular emphasis is given to digital pictures as might be used to facilitate online pedagogy for the support of both individual learning and/or group-based collaborative learning.

The remainder of the essay is structured into four main parts. These describe and discuss the underlying nature of pictures, the development of picture pedagogy, the use of picture repositories and a short case study involving the use of digital pictures.

THE NATURE OF PICTURES

A picture is essentially an image-based or graphical representation of a situation (past or present) which may be real or imaginary. The image that is of interest may be created manually using some type of drawing or painting activity using an appropriate form of ‘scribing instrument’ on a ‘recording medium’ such as paper or a computer screen. Alternatively, the picture may be ‘captured’ by a ‘recording device’ such as a camera. These possibilities are summarised, in a generic way, in Figure 1.

A picture will normally contain a spatial array of objects called ‘picture elements’ (not to be confused with pixels). The nature of the objects in a picture, their attributes and their relationships, one to another, will determine the ‘meaning of the picture’.

In order to extract the meaning from an image, its viewer or observer needs to decode relevant information from it. This process of information/knowledge extraction can often be aided by the provision of ancillary material such as its title, a list of descriptive keywords and a textual narrative - all of which can be used to provide a context for the picture and also provide help in relation to understanding its meaning. The relationship between these image attributes, the picture itself and the pedagogy associated with a picture is illustrated schematically in Figure 2.

For non-sighted users of pictures, all of the ‘normally’ textual attributes shown in Figure 2 can be made available in audio format. In addition, an audio/Braille transcript can also be provided. Audio transcripts of this sort form the basis of our research into ‘talking books’ for visually impaired people (Barker & Sutherland, 1996).

The pedagogy related to a particular picture is a description and specification of the way in which an image (and any other related images) are used to support a given learning situation. Of course, a picture’s title (or titles) and its list of keywords are often used for indexing the picture when it is committed to a storage medium; these attributes then facilitate the easy retrieval of an image for subsequent use in a pedagogic application. As is discussed later in the essay, fast and