Chapter 15
Pedagogical Patterns and Online Teaching

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ABSTRACT

This chapter summarizes the experience collected after years of researching and experiencing on teaching and learning online in the form of an eLearning pattern-architecture. In this architecture, based upon the leading role of the human factor (according to the vision of the eLearning by GRIAL Group), the whole processes occurring within any training activity is represented, from the institutional planning to the evaluation of the whole process, technological decisions, teaching activity, interaction with students, and so forth. This model is briefly presented after the explanation of the notion of pattern (and its application to the pedagogical context), as a prerequisite for understanding the scope of the use of this methodology in the field of online training.

1. INTRODUCTION

The concept of *pattern* does not come from the educational context and its most productive implementation sphere is probably Computer Engineering, particularly areas related to the planning and development of software applications. Patterns have interesting uses in other business and industrial spheres, and only in the last years

the concept of *pedagogical patterns*, as an attempt to apply this method of successful solutions representation to the scope of education, has made a space for itself in the scientific literature. Despite the attempts to add its benefits to the *educational culture*, its use and result perhaps are not at the height of the potential benefits that could be pulled out of its employment.

Certainly, the *pedagogical patterns* implementation to *eLearning* cannot be considered one *off-topic*, but it is enough to go to any relevant event

of pedagogical nature or even about *eLearning* to check it isn´t among the *trending topics* either, and generally, you have to pore over the events and publications specifically devoted to patterns to find some literature and cases about the use of pedagogical patterns. Anyway, in this research it has been considered that its use makes it possible to represent in an optimal way both the pattern and the experience gathered by the GRIAL group along the last few years.

2. THE CONCEPT OF *PATTERN* AND ITS APPLICATIONS

The concept of *pattern* is by no means something recent. Moreover, strictly speaking, it is not even necessarily a human invention. There is a huge number of *patterns,* that is, particular solutions which enable a potentially infinite number of variations to happen. A beehive is the result of a repeating *pattern,* basically of one sole element: hexagonal cells. However, there are not two identical beehives: Each of the elements in the periodic table is also a *pattern* (Fuller & Applewhite, 1975). Regarding human beings, they have been using *patterns* for centuries in the artistic creation, in science[11] and, of course, in the textile manufacture, whose context the best known Spanish meaning of the word belongs to.

Nevertheless, the technical sense of the word we are interested in here, comes from, and it is well known, the architect Christopher Alexander, who, in his work *A Pattern Language.* Towns, Buildings, Construction, states that a pattern "describes a problem which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice" (Alexander, Ishikawa, & Silverstein, 1977, p. x). In The Timeless Way of Building, Alexander defines the pattern again referring to the three elements that make it up. Thus, "each pattern is a relationship between

a certain context, a certain system of forces which occurs repeatedly in that context, and a certain spatial configuration which allows these forces to resolve themselves" (Alexander, 1979, p. 247). So, in a particular context a problem happens, and a solution is provided. The relationship among these three elements makes up a pattern. So, a pattern is not a simple "answer key," because it is not complete if the problem and the correct context for which such solution states to be efficient is not explained. Therefore, Alexander points out, just after the previous assertion, that "The pattern is, in short, at the same time a thing, which happens in the world, and the rule which tells us how to create that thing, and when we must create it. It is both a process and a thing; both a description of a thing which is alive, and a description of the process which will generate that thing."

In *A Pattern Language*, Alexander makes a catalogue of 253 patterns ordered and numbered from the greatest organic complexity (the city) going through its components (buildings) and the simplest solutions for such buildings (construction). This Pattern language, we will write about further on, receives the direct influence of the design and computer programming language which was being developed in that moment and that's why he states this language has got a network structure. And this, probably, explains why the leap of patterns from Architecture to Computer Engineering turned out to be so extremely natural.

Alexander's formula gets a rather discreet reception in its field of origin, architecture, but it is also used in Natural Sciences, Mathematics and even in Social Sciences. However, where it finds its natural development field is in Computer Science. In 1987 Kent Beck y Ward Cunningham present a report where they adapt Alexander's language of pattern to programming directed to objects. And from there it comes the first definition of "programming pattern": "A pattern language guides a designer by providing workable solutions to all of the problems known to arise in the course of design. It is a sequence of bits of knowledge written

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