

## ΜΕΡΟΣ ΠΡΩΤΟ

### Θεωρητικά πλαίσια και αρχές των εκπαιδευτικών εφαρμογών των ΤΠΕ

#### ADAPTIVITY THROUGH COGNITIVE MODELLING IN LEARNING SYSTEMS

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##### **Abstract**

The increasing demand of distant education and the growing degree of diversity of the learner group have created the widespread practice of e-learning which takes place in virtual learning environments (VLEs). By exploring those VLEs, learners perceive, analyse, assimilate, and interact with the pedagogical presentation and then “construct” their understanding or develop certain skills of the domain.

In order to provide support for learners during the learning process, the VLEs have to demonstrate a certain degree of adaptivity/intelligence in knowing what the learners actually need, and provide means to meet their needs in a way that best suit the learners’ cognitive abilities. Cognitive theories are therefore closely examined in this presentation to provide the theoretical basis on which the adaptive techniques can be developed and evaluated.

Although Adaptive learning systems attempt to reduce the cognitive load by tailoring the domain content to suit the needs of individual learners, it is not easy for the educators to determine the effective adaptation techniques. This talk will describe the formalization of cognitive traits to provide the educators an effective and practical way to employ adaptive techniques in their learning systems. Various learner attributes, such as working memory capacity, inductive reasoning skill, domain experience and the perception of domain complexity, need to be monitored and measured to determine the best suitable course of action. This talk will describe the development of learner modelling techniques to reliably monitor and measure such attributes.