An Adaptive Navigation Support System for Conducting Context-Aware Ubiquitous Learning in Museums

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Abstract

In context-aware ubiquitous learning, students are guided to learn in the real world with personalized supports from the learning system. As the learning resources are realistic objects in the real world, certain physical constraints, such as the limitation of stream of people who visit the same learning object, the time for moving from one object to another, and the environmental parameters, need to be taken into account. Moreover, the values of these context-dependent parameters are likely to change swiftly during the learning process, which makes it a challenging and important issue to find a navigation support mechanism for suggesting learning paths for individual students in real time. In this paper, the navigation support problem for context-aware ubiquitous learning is formulated and two navigation support algorithms are proposed by taking learning efficacy and navigation efficiency into consideration. From the simulation results of learning in a butterfly museum setting, it is concluded that the innovative approach is helpful to the students to more effectively and efficiently utilize the learning resources and achieve better learning efficacy.

Keyword：situated learning; authentic learning; ubiquitous learning; context awareness; navigation support