ABSTRACT

Social tagging systems celebrate enormous growth rates on the World Wide Web. In this article, we want to look at social tagging from an educational perspective, particularly its use for educational environments. We identify the processes underlying social tagging from an embodied-interaction perspective. We will support the thesis that emerging folksonomies are at the base of meaningful interaction processes between user and system. Moreover, they represent embodied conceptualizations whose potential effectiveness in e-learning we will discuss. We will provide an example of e-learning software for children (Amici, implemented by one of the authors) in which social tagging is used to support sharing in a programming environment to showcase how the embodiment of conceptualization is achieved through tagging in the system.

Keywords: collaborative technologies; constructionism; constructivism; educational multimedia, educational technology; learning communities; human-computer interaction

INTRODUCTION

The field of human-computer interaction (HCI) deals with the natural gap and difficulties in interactions between human beings and machines. From an educational perspective, we are especially interested in its subfields of social and tangible computing as both are concerned with meaningful interaction. Interfaces, the contact points between humans and computers, and the underlying interaction can be designed to be more or less familiar and meaningful for users (Dourish, 2001). This design is especially important in e-learning systems and is decisive for self-steered learning processes using them.

In particular, social as well as tangible computing enable embodiment, that is, “the property of our engagement with the world that allows us to make it meaningful” (Dourish, 2001, p. 126). On the one hand, as humans are social beings, it seems to be a good idea to introduce social computing as an interaction form. On the other hand, people understand and assign meaning to the world because they are embedded in it, therefore a physical aspect of understanding has a place as well in the
interaction design for humans and computers as realized in tangible computing. Dourish’s definition of embodied interaction as “creation, manipulation, and sharing of meaning through engaged interaction with artifacts” (p. 126) highlights the role of real-world experiences in the processes of creating meaning.

The idea on which this article is based consists of applying such an embodied-interaction perspective to the current success story of social tagging in order to obtain a working design of an e-learning environment for children. These software systems are recently experiencing considerable interest and acceptance (i.e., usage) rates within the Internet community (see, e.g., Gordon-Murnane, 2006). Our specific thesis is that this high acceptance is based on its meaningful interaction process with respect to conceptualization. In particular, these systems make use of the fact that they enable an embodiment of concept development, that is, embodied conceptualizations, and the underlying processes are therefore valuable for individual learning.

We start off by introducing social tagging and related academic research. Then we will support our thesis by discussing the social-tagging phenomena with respect to knowledge and learning. Here, folksonomies will be interpreted as embodied conceptualizations that support understanding and learning processes. Concretely, we will present later on an implementation of such a concept embodiment within the integrated development environment Amici for children’s programming.

SOCIAL TAGGING

In contrast to social software, which is the generic term for software that “enables people to rendezvous, connect or collaborate through computer-mediated communication and to form online communities”, 1 in social-tagging systems, users more specifically label system-specific objects like bookmarks (e.g., del.icio.us 2 or Connotea 3) or images (e.g., Flickr 4) with any number of free text tags to organize and share their respective objects. Various definitions for the term tagging exist, but we refer to Beckett (2006): “Tagging: describing web content using whatever words seem right.” Formally, tagging systems can be described as tripartite networks, that is, networks “with three different kinds of nodes (the users, the items and the tags) and where the links relate three nodes of different kinds” (Lambiotte & Ausloos, 2005, p. 3).

Note that the entity of tags of all users in a social-tagging system builds not only a continuously developing navigation structure but also a communication setting between people. The navigation structure is called folksonomy (Vander Wal, 2004), short for folks and taxonomy because of its quality as a bottom-up organized, decentralized hierarchic structure. Tags are often represented in tag clouds by their frequency of occurrence at a certain point of time (mapped by font size). Other examples are tag clusters or recommender systems for similar tags as it can be found in Flickr’s image clustering.

We like to emphasize that for a user of social-tagging systems, the line between private and public is rather fuzzy as it is fully dependent on a user’s awareness state. According to Marlow, Naaman, Boyd, and Davis (2006), tagging systems can be differentiated by the following dimensions: “Tagging Rights, Tagging Support, Aggregation Model, Object Type, Source of Material, Resource Connectivity, Social Connectivity.” The user interface and the visibility of these dimensions are highly important for the user’s awareness. Sometimes social connections are visualized and presented as important features (as in Flickr), while other systems focus on personal storage, management, and retrieval of data (e.g., del.icio.us).

Though tagging can be seen as a practical way to annotate content with metadata (since users do it by themselves), it also has problems to overcome. For instance, formalism problems like ambiguity or synonyms as well as syntactical problems are common in tag systems. An example of ambiguous tags, or a polysemy as Golder and Huberman (2005) call it, is for instance the tag apple that might refer to a fruit as well as to a Macintosh computer. Tags can also represent strongly personal opinions or
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