Collaborative Tagging of Java Learning Resources: Bridging the Gap between Teachers and Students

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ABSTRACT

With the advent of Web 2.0 technologies, new applications have emerged that provide Internet users with the power to create content. This study focuses on a specific kind of Web 2.0 application, which is social bookmarking and tagging, and evaluates its educational use within the boundaries of a small Java learning community. Using activity theory, the activity system is defined and the interaction between its components is studied. Furthermore, the findings suggest that such a system could be used as a course tool to create a pool of negotiated and accepted keywords supporting appropriate, effective and efficient retrieval of Java resources.

Keywords: Activity Theory, Collaborative Tagging, Conversational Framework, Java, Web 2.0

1. INTRODUCTION

Traditionally, teachers provided students with study and reference material for their courses. In recent years, Web 2.0 has introduced numerous applications that facilitate information management, information sharing and collaboration between Internet users sharing common interests. As such, more and more students use Internet search engines to locate study and reference material that matches their needs. Web 2.0 sites, such as Facebook (social networking), Flickr (photograph sharing) and Del.icio.us (social bookmarking), have changed the way Internet users and thus students connect to exchange information and form on-line communities.

Describing content using keywords to facilitate searching is not a new process. Professionals such as librarians have performed it for years in the form of indexing. Providing metadata to content clearly enables identification and organization. With the advent of Web 2.0, this process of content description has also passed into the hands of information consumers (Internet users), who are now able to tag digital resources and share these tags with the world. A tag is "a label attached to someone or something for the purpose of identification or to give other..."
information. Computing a character or set of characters appended to a piece of text or data in order to identify or categorize it” (Oxford Dictionaries, 2012).

Tagging is the process of categorizing a digital information object (web-page, article, photograph, video, audio clip etc.) as a whole or attaching categories to parts of the object, like identifying a face on a photograph or the place where the photograph was taken. Tagging is informal and is usually performed for the personal interest/benefit of the tagger. However, when performed in a social environment, others can use a person’s tags for information retrieval. As a result of this process, folksonomies are created. “Folksonomy is the result of personal free tagging of information and objects (anything with a URL) for one’s own retrieval. The tagging is done in a social environment (usually shared and open to others). Folksonomy is created from the act of tagging by the person consuming the information.” (Vander Wal, 2002). While taxonomy is content classification performed by domain experts, folksonomy is content classification performed informally by casual users in order to provide meaning according to their own understanding of the information under investigation, with a social face and using their own vocabulary.

Web 2.0 enables users to publically and collectively characterise digital components. “Collaborative tagging is the process by which users add metadata in the form of keyword based tags to shared resources” (Huang, Lin, & Chan, 2011, p.602). Social bookmarking is one form of collaborative tagging. Creating meaningful tags leads to faster and more accurate information retrieval (Huang et al., 2011; Lin & Tsai, 2011; Marlow, Naaman, Davis, & Hall, 2006).

One might argue that searching for learning resources on the Internet is as easy as typing keywords into search engines, but, from the perspective of teachers, links suggested by search engines do not always have an educational value or might not be valid.

2. RESEARCH OBJECTIVES AND QUESTIONS

I have initiated this study with an emphasis on student-teacher collaboration in creating a pool of JAVA resources. Each resource will be associated with a super set of descriptive labels (tags) created by the whole group. Three research questions guided the design, implementation and analysis of this work:

- Do students and teachers share a common perception of the purpose, level of difficulty, complexity and usefulness of each resource?
- To what extent can tags effectively and properly represent each resource, as perceived by this newly formed online community?
- Is there a gap (difference) between student tags and teacher tags? If so, to what extent can we bridge this gap (in the future) by using a union of tags, thus assisting students in the information search and retrieval process?

Activity Theory is used as a theoretical framework for analysis and discussion of the findings so as to understand the process of collaborative resource sharing and tagging and identify possible gaps in order to improve the efficiency of sharing and retrieving course-related knowledge.

The empirical grounding for this project is a short study performed in the CIS/IT department of small college in Greece. In this study, a social bookmarking website, Del.icio.us, was used as a tool to collect digital resources (URLs). These digital resources to online JAVA learning material were added and shared between participants and were collaboratively tagged. Participants were identified as either students or teachers of the CIS/IT department with expertise in JAVA programming.
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