

# Social Software Approach to E-Learning 3.0

Anna Nedyalkova, Krassimir Nedyalkov, and Teodora Bakardjieva

**Abstract**—In the present paper, we'll explore how social media tools provide an opportunity for new developments of the e-Learning in the context of managing personal knowledge. There will be a discussion how social media tools provide a possibility for helping knowledge workers and students to gather, organize and manage their personal information as a part of the e-learning process. At the centre of this social software driven approach to e-learning environments are the challenges of personalization and collaboration. We'll share concepts of how organizations are using social media for e-Learning and believe that integration of these tools into traditional e-Learning is probably not a choice, but inevitability. Students' Survey of use of web technologies and social networking tools is presented. Newly developed framework for semantic blogging capable of organizing results relevant to user requirements is implemented at Varna Free University (VFU) to provide more effective navigation and search.

**Keywords**—Semantic blogging, social media tools, e-Learning, web 2.0, web 3.0.

## I. INTRODUCTION

**S**OCIAL software supports active social networking processes and a community model to foster knowledge sharing and collaboration. Social media tools represent new repositories of information and knowledge for personal and organizational purposes. High quality contributions are assured not only by guidelines, but also by reputation and rating the contributions [1].

Web 2.0 [2] or the Social Web has introduced new concepts and tools that are able to operationalise a more social-centric vision. This trend has appeared so relevant and so promising that many specialists consider this approach to be the future of knowledge management, hoping that these tools will contribute to realizing the challenge of managing knowledge [3], [4]. This perspective raises a number of questions related to the application of a vision that was born from the need to incorporate more of the social dimension [5] and to better fit the individual needs of knowledge workers [6]. PKM on Web 2.0 is achieved by a set of tools that allow people to create, codify, organize and share knowledge, but also to socialize, extend personal networks, collaborate on organizing knowledge and create new knowledge [7]. In this highly interconnected, dynamic world, new ways of cultivating and exploiting knowledge sharing with customers, suppliers and

partners are forcing companies to expand their knowledge management concepts and agendas [8].

Chatti et al. [9], [10] discuss the use of social software in learning environments. Open blogs and cloud platforms such as Facebook have great educational potential [11].

Semantic blogging has recently been associated with a decentralized form of knowledge management [12] - [14] and is a technology that builds upon blogging and enriches blog items with metadata. Newly developed framework for semantic blogging capable of organizing results relevant to user requirement [15] is implemented at Varna Free University to provide more effective navigation and search.

## II. BACKGROUND

Nowadays setting up an e-learning system is very easy. Almost anyone can now establish an online learning community using open source learning tools that comprise Web 2.0 features [16]. That's why it is possible for any organization to afford personalized online courses with a learning management system having advanced features to support mutual communication and collaboration. Production and delivery of e-learning programs are far easier with the arrival of Web 2.0.

Students get more tools and more encouragement to use these tools for learning, there is a possibility of creating 'personal learning environments', software interfaces that the learner can add to or edit, to facilitate their learning. These might include a portal to their courses that would include access to an LMS, but would also include links to their blog, e-portfolio, and social networks [17], [18].

Open source LMS, such as Moodle, have an advantage here in that designers in universities with access to open source developers can build and integrate open source web 2.0 tools into the LMS quite easily.

The platform, developed and prototypical in use at Varna Free University, is based on concepts like social tagging and networking and therefore offers its users a new perspective of Web 2.0 driven learning [19].

There are numerous ways that faculties can use the Web 2.0 tools to enhance student's interaction in online learning. Incorporation of Web 2.0 tools such as blogs and wikis into online and hybrid courses has the potential for improving student engagement in learning. As shown through examples from our teaching and from the literature, these tools can facilitate rich interaction among students, the faculties, and the online interaction, the cornerstone of effective online learning.

## III. OBSERVATIONS AND DISCUSSIONS

Web 2.0 changes fundamentally the e-Learning experience. At a minimum, they encourage a level of sociability, sharing,

Prof. Anna Nedyalkova, Dr.Sc. is a Rector of Varna Free University, Resort "Chaika", 9007 Varna, Bulgaria.

Prof. Krassimir Nedyalkov, Dr. is a Vice Rector of Varna Free University, Resort "Chaika", 9007 Varna, Bulgaria.

Prof. Teodora Bakardjieva, Dr. is a Director of the Institute of Technology at Varna Free University, Resort "Chaika, 9007 Varna, Bulgaria (corresponding author – phone: +359888843111; fax: +35952356088; e-mail: bakardjieva@vfu.bg).

and connection among learners we've not experienced before. Instead of inviting learners to be passive consumers of information, with interactions limited to those specified by the "learning professionals," social media tools empower learners to be much more actively involved in constructing their own learning. Social media tools also provide learners with avenues for connecting with a much broader network of people as part of their learning experience.

Varna Free University understands the power of social media and E-school is our networking platform with more than 41,000 users. Like any other organization we use social media in our daily work processes. Whether blogs, wikis, and social networks are set up behind the firewall, or brought in through the internet cloud, these applications are finding their way into organization everywhere [19].

An inquiry was made among 257 MBA students at Varna Free University and as a result they had mainly positive reactions to the Web 2.0 technologies.

TABLE I  
STUDENTS' SURVEY OF USE OF WEB 2.0 TECHNOLOGIES  
(MBA 325 - 65% RESPONSE RATE)

Response	Ease of use	Enhanced learning	Useful for exam prep	Fair assessment of students' efforts
1-strongly agree	18	18	25	22
2-agree	68	54	47	49
3-neutral	10	29	20	21
4-disagree	4	2	8	8
5-strongly disagree	0	0	0	0

TABLE II  
STUDENTS' SURVEY OF USE OF TECHNIQUES AND SOCIAL NETWORKING TOOLS

	Notebook or netbook computers	Smartphones	IPads or tablets	Social networking tools
Use	78%	62%	35%	79%

TABLE III  
STUDENTS' SURVEY OF USE OF WEB 2.0 TECHNOLOGIES

	Social networks	wikis, blogs and forums	podcasts or video podcasts	shared video media (YouTube)
Use	85%	61%	42%	79%

These social media tools are used most often to find new information, connect with colleagues, and keep track of interesting people or topics. Seventy percent of survey respondents believe that their investment in Web 2.0 technologies is valuable.

TABLE IV  
STUDENT SURVEY OF USE OF WEB TECHNOLOGIES

	Web 1.0	Web 2.0*	Web 3.0**
Use	89%	82%	29%

\* 82% say that they increased collaboration through Web

2.0 implementation. In terms of specific technologies being used, simulations, multi-player games, mobile learning and personalized learning portals were most popular. Most of the students believe that they can find what they are looking for on the first search, but personalized learning content is still not as prevalent as many would like it to be. Learning from multiple resources and having a learning history, publishing user content to university training sites, and focusing learning or IT resources on Web 3.0 still have a long way to go, with only about 30% of departments doing well.

\*\* 72% of those surveyed see Web 3.0 as "the intelligent Web," which includes "the semantic Web" and natural language search. Location awareness and recommendation engines are also popularly believed to be part of Web 3.0. 61% feel that the biggest benefit from Web 3.0 is the ability to filter and personalize search results. The ability to interact with more types of Web content and search using natural language were seen as the second- and third biggest benefits. Web 3.0 adoption is dependent on the increasing use of video, on the importance of collaboration and cloud topologies. E-Learning 3.0 will happen when learners are better engaged for setting up their own blogs, wikis, and podcasts and for creating their own networks. Among the reasons given for this improvement are: wider use by employees, better collaboration, more personalized and flexible technology, the ability of learning to be embedded in work processes, and better support for mobile learning, as well as lowering costs.

TABLE V  
STUDENTS' SURVEY OF WEB 3.0 TECHNOLOGIES

	Web 3.0 is having a high impact on learning	Web 3.0 as real after 2015	Web 3.0-barriers: adoption of learning and workspace technologies	Web 3.0-barriers: security concerns	Web 3.0 - use of a virtual assistant
Students' claim	25%	90%	64%	36%	38%

A lot of students commented that Wiki was a useful tool and a good way to put a summary of the lecture content together in a way that all students could benefit. Others mentioned that it allowed them to carry on dialogue with varying view-points that offered a more holistic learning experience. There was dissatisfaction about the fact that it is hard to grade participation because often people post the same things. Pointing out the pedagogical benefits from the project we have to stress on the assessment. As seen in the survey results above, this is one area in which students were the least satisfied. Students were assessed on their participation in the Wiki. Any user can see who has made a contribution, the date and time of each contribution.

Another difficulty in integrating Wikis successfully comes from the switch to a student-centered approach. Using student-created Wikis as a major content source shifts the creation and ownership of knowledge base from the teacher to the student. The role of student in this Wiki project is that of primary content producer. The teacher's role changes to one

of facilitating and correcting errors. As mentioned above, Wikis are quite straightforward, and Moodle has Wiki interface that resembles common word processing programs, so students may find it easy to use.

Other useful tools for publishing information such as research publications are semantic blogs where there is need of some structure and semantic blogging provides this. Items may be classified using ontologies. Semantic links may exist between items [13]. Semantic blogging uses desirable features of both blogging and the semantic web to deal with the challenges of traditional blogging. The semantic web is well suited for incrementally publishing structured and semantically rich information. On the other hand, the easy publishing nature of blogging can boost the semantic web by publishing enough data and resources [12], [13].

“Semantic blogging” can help users discover items of interest in blogs. Navigation through the blogosphere can be more flexible and meaningful due to interconnections among various items and topics. Aggregation of useful materials across multiple blogs and the semantic web is possible. Semantic blogging can extend blogging from simple diary browsing to informal knowledge management [13]. Publication is easy in semantic blogs too because only some additional metadata data have to be added compared to traditional blogs. The users do not need to put any effort to enjoy the additional features provided. Hence, there is not much effort added in using a semantic blog instead of a conventional one. The rich metadata and semantic structure work behind to give the user the added value experience of semantic blogging. However, the semantic capabilities currently implemented for semantic blogging are still limited. It is difficult to obtain blog entries relevant to a topic in an aggregated and organized form.

Attempts for implementation of a framework for semantic blogging capable of organizing results relevant to user requirements are made at VFU to provide more effective search by exploring semantic relations in blogs.

The system is built upon a blogging infrastructure backed up by an RDF metadata store. The metadata schema enriches the blog entries input. The metadata schema also helps the query processor to search by metadata. Users input queries to the system according to their information requirement. The query processor searches for matching blog entries and instances in the ontology of the domain of application. Integrated with the ontology is the inference engine, which can deduce implicit relations from the ontology. All the blog entries related to the relevant ontology instances are obtained from the blogontology mapping. The total relevant blog entries obtained are finally organized into an aggregated and navigable collection by the organizer. The system also produces output in RSS format which computers can understand and aggregate.

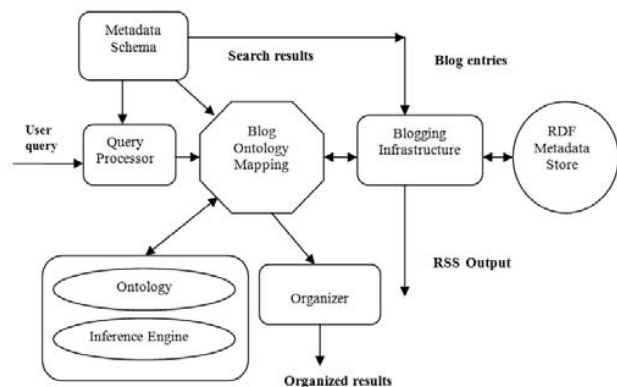


Fig. 1 System architecture of the semantic blogging framework

#### IV. CONCLUSIONS

Newly developed framework for semantic blogging capable of organizing results relevant to user requirements is implemented at Varna Free University to provide more effective navigation and search by exploring semantic relations in blogs.

Ontology has been introduced to utilize semantic relations, enhanced by inference. Blog entries are mapped to the ontology using language processing. Search results are organized by introducing semantic aggregation. Blog entries are enriched by metadata and an annotation mechanism has also been developed. The framework has been tested and evaluated by implementing a system for the Institute of Technology domain ontology at VFU. Experiments have shown quite good results. Single sample ontology is created for demonstration.

The social software driven approach reflects the nature of learning and knowledge as being social, personal, distributed, flexible and dynamic. It represents a shift towards a more personalized, open and knowledge-pull model for learning. The platform, developed and prototypical in use at Varna Free University, is based on concepts like social tagging and networking and therefore offers its users a new perspective of Web 2.0 driven learning.

This paper suggests that social media tools provide an opportunity for new developments of the e-learning concept and discusses these new approaches developed with the objective of operationalising this social perspective in the context of managing personal knowledge. Web 2.0 enables a new model of e-learning that contributes to collective intelligence through formal and informal communication, collaboration and social media tools. This new model facilitates virtual interaction, social processes, collaboration and knowledge exchanges on the web. A characteristic of such systems is the fact that they are open and designed to invite collaboration and to facilitate social interaction.

In blogs and wikis externalisation of personal knowledge is self-initiated. Furthermore, despite using social networking tools it is still difficult to find the right piece of information. Better search functionalities and sorted entries are an issue

that needs to be addressed in further development. Semantic Web 3.0 technologies enhance Web 2.0 tools and their associated data with semantic annotations and semantic-enhanced knowledge representations, thus enabling a better automatic processing of data which in turn will lead to enhanced search mechanisms.

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