

Wikis and Blogs in E-Learning Context

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1. Introduction

Much has been written about the effect that web technologies are having on commerce, media, and business in general. But outside of the 'edublogosphere', there's been little coverage of the impact it is having on education. Teachers are starting to explore the potential of blogs, media-sharing services and other social software - which, although not designed specifically for e-learning, can be used to empower students and create exciting new learning opportunities.

In the present chapter characteristics of some sample Web 2.0 tools for PKM (Personal Knowledge management) are discussed. Educational uses of wikis and blogs are outlined. Blogs and wikis represent new repositories of information and knowledge for personal and institutional purposes. System architecture of semantic blogging framework is shown. Challenges and future perspectives of Web 2.0 in e-learning are presented.

Social software driven approach represents a shift towards a new 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.

Open source Learning Management Systems (LMS) have an advantage in universities and developers can build and integrate easily open source web 2.0 tools into the LMS.

This chapter suggests that Web 2.0 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. At the centre of this approach are the challenges of personalization and collaboration. Rather than integrating different tools into a centralized system, the idea is to provide the learner with tools and hand over control to him/her to select and use the tools the way the learner deems fit. Chatti et al. (2006) discuss the potential use of social software in learning environments. Open blogs and cloud platforms such as Facebook have great educational potential (Meyer, 2010). Setting up an e-learning system is very easy now. Almost anyone can now establish an online learning community using open source learning tools that comprise Web 2.0 features. That's why it is now 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 is far easier with the arrival of Web 2.0. Discussion forums, wikis, blogs and podcasts are just a beginning in the field of online learning.

E-learning has evolved through a series of overlapping stages. Stage 1 consisted of communication and course management tools, from web page to, course management

systems, PowerPoint, email, bulletin boards, and chat rooms. Web 1.0 definitely improved the learning experience. It facilitated student-faculty and student-to-student communication. It gave students access to a broad range of databases and research resources. It made it much easier for students to conduct searches. It broadened the range of resources we brought into our classes, including audio and visual resources. And it allowed us to reinforce student learning by presenting material visually. But too often, Web 1.0 involved an impoverished definition of interactivity.

E-learning's second stage emphasizes active learning, collaboration, and enhanced interaction. Wikis, blogs, mashups, podcasts, tags, and social networking are the buzz words. These technological innovations offer opportunities to students to engage in inquiry and to share resources and create collaborative projects.

2. Web 2.0 in e-learning

Web 2.0 is a term which is hard to define because of the amorphousness of the concept. Web 2.0 (O'Reilly, 2005) or the Social Web has introduced new concepts and tools that are able to operationalise a more social-centric vision. Online social networking systems, such as LinkedIn, MySpace and Facebook, allow people to manage their interaction with others on a massive scale. Blogs, microblogs (e.g. Twitter) and instant messaging tools (e.g. Skype) have provided communication tools to interact more effectively with others in opened communities. Wikis and social bookmarking aimed at directly supporting PKM and fostering collective intelligence. 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 (Kakizawa, 2007; McAfee, 2006; Shimazu and Koike, 2007). 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 (Nabeth et al., 2002; Thomas et al., 2001) and to better fit the individual needs of knowledge workers (Razmerita, 2005). 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.

After O'Reilly, Paul McFedries (2006) presents a tentative definition according to which web 2.0 is "a second phase of the evolution of the World Wide Web in which developers create Web sites that act like desktop programs and encourage collaboration and communication between users". McFedries identifies the main characteristics of the Web 2.0 "movement", highlighting the social perspective of relation, collaboration and user-participated architecture:

- content is user-created and maintained (peer production, user-content ecosystem);
- user-created and maintained content require radical trust;
- application usability allows rich user experience;
- combining data from different sources leads to creation of new services (mashup);
- services get better as the number of users increases in architecture of participation.

In the last few years, there has been an increasing focus on social software applications and services as a result of the rapid development of Web 2.0 concepts. Nowadays, the web is a platform, in which content is created and shared facilitating social connection and information interchange. Social software technologies include wikis, blogs, podcasts, RSS and social tagging. Web 2.0 tools are designed for ease of use and rapidity of deployment, making possible powerful information sharing (Boulos et al., 2006). Web 2.0 is informed by

a “constructivist” understanding of learning in which students devise their own conceptual models for understanding.

Collaboration is the best feature of Web 2.0 that can help e-learning. It was not technically difficult to introduce a collaborative tool on top of a learning system accessible over web. However, fostering collaboration among a group of users is a challenge and Web 2.0 makes it very easy. Using Web 2.0 tools, people do not only passively consume information; rather, they are active contributors, even customizing tools and technology for their use. Web 2.0 facilitates social networking and collaboration and therefore is also referred to as the Social Web. The underlying principle of the Social Web is to make use of the “wisdom of the crowd” and “user generated content”. The wisdom of the crowd is a term coined by Surowiecki (2005) who argues that large groups of people are smarter than an elite few. No matter how intelligent they are, large groups of people are better at solving problems, fostering innovation, coming to wise decisions and even predicting the future. 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 (Mentzas et al., 2007). There is also the second phase of knowledge management where companies try to exploit a much richer form of knowledge assets, including blogs, wikis and social networks, focusing on the social, collaborative dimension of Web 2.0.

In Table 1 characteristics of some sample web 2.0 tools are highlighted.

Web Application	Description	Characteristics
Social networking, online social networks	Category of Internet applications to help connect friends, business partners, or other individuals together using a variety of tools.	Architecture of Participation
Social network Search engines	Social network search engines are a class of search engines that use social networks to organize, prioritize, or filter search results	Architecture of Participation
Blogs	A weblog, (or blog), is a website where entries are made displayed in chronological order. They often provide commentary or news on a particular subject, typically combining text, images, and links to other blogs, web pages, and other media related to the specific topic.	User-created and maintained content
Blog guides	Specialized search engines for searching blog and news Contents	Architecture of Participation
Social tagging, (folksonomy)	Ad hoc classification scheme (tags) that web users invent as they surf to categorize the data they find online	Architecture of participation, trust
Social bookmarking	Saving and applying keywords to one's personal collection of Web site bookmarks on a site that enables other people to share those bookmarks	Architecture of participation, trust

Web Application	Description	Characteristics
Web Syndication, Web feed management	Web syndication is a form of syndication in which a section of a website is made available for other sites to use through to making Web feeds available from a site in order to provide other people an updated list of content from it (for example one's latest forum postings, etc.).	User created and maintained content, content aggregation
Tag clouds	A list of tags user in the site with some kind of visual indication of each tag's relative popularity (ex. large font). Web sites that implement tag clouds functions allow both finding a tag by alphabet and by popularity.. Selecting a single tag within a tag cloud will generally lead to a collection of items that are associated with that tag	Architecture of participation
Peer production news	Websites combining social bookmarking, blogging, and syndication with a form of non-hierarchical, democratic editorial control. News stories and websites are submitted by users, and then promoted to the front page through a user-based ranking system	User created and maintained content, trust
Wikis	Collaborative web sites that allows users to add, edit and delete content	User created and maintained content, trust
Collaborative real time editing	Simultaneous editing of a text or media file by different participants on a network.	User created and maintained content
Content aggregation and management, mashup (web application hybrid)	A website or web application that combines content from more than one source	User created and maintained content, trust, architecture of participation

Table 1. Sample web 2.0 applications: description and "social networking" characteristics (Pettenati & Ranieri, 2006).

The traditional approach to e-learning has been to employ the use of a Virtual Learning Environment (VLE), software that is often cumbersome and expensive - and which tends to be structured around courses, timetables, and testing. That is an approach that is too often driven by the needs of the institution rather than the individual learner. In contrast, e-learning 2.0 (as coined by Stephen Downes) takes a 'small pieces, loosely joined' approach that combines the use of discrete but complementary tools and web services - such as blogs, wikis, and other social software - to support the creation of ad-hoc learning communities.

The learning process is social, personal, dynamic and distributed in nature, a fundamental shift is needed towards a more personalized, open and knowledge-pull model for learning, as opposed to the centralized, static and knowledge-push models of traditional learning

solutions (Chatti et al., 2007). Web 2.0 leads to this new generation of technology enhanced learning. The communication with the students can be realized through blogs and wikis and the concept of tagging and folksonomies offers a great potential for learners to express their own vocabulary (Vanderwal, 2005).

Web 2.0 supports knowledge networking and community building. For example, wikis create an opportunity for collaborative content creation and social interaction. Further, these tools do not require advanced technical skills to use their features, allowing users to focus on the information exchange and collaborative tasks themselves without first mastering a difficult technological environment (Kirkpatrick, 2006). Such "transparent technologies" (Wheeler, Kelly, & Gale, 2005) allow the user to concentrate more on the task because they can "see through" the technology with which they are interacting.

3. Web 2.0 tools for PKM

PKM tools can be classified into six categories:

1. Personalized WebPages that enhance organizing and presenting information and sharing it with others. An example of a personalized webpage service is iGoogle, MyYahoo, Live.Com, etc. These sites allow people to create personalized WebPages by subscribing to specific content through RSS feeds and aggregating different types of information (e.g. blogs, favorite websites, weather forecasts), widgets or applications (e.g. calendars, dictionaries) in one place. This integration of different information sources facilitates access to information and the possibility of creating knowledge.
2. Personalized search tools that provide for retrieving and sharing of information. Swicki (<http://www.eurekster.com>) is a personalized search portal on topics of one's choice powered by a community. A Swicki learns from the community's search behavior; thus, it is easier to find something interesting.
3. Social bookmarking that provides a simple way for a community of people to share bookmarks of internet resources. Heystaks (<http://www.heystaks.com>) is tool that offers the collection, classification and sharing of web search results. Search results can be added to one's own lists called stacks, but it is also possible to join existing lists and benefit from others. Lists can be declared private or public, and can be shared with colleagues and friends. Links can be evaluated to indicate their quality to others. Using Heystaks, the management of bookmarks becomes a social activity.
4. Personalized live discussion forums that assist in analyzing, evaluating, presenting and sharing information. With Tangler (<http://www.tangler.com>), it is possible to create a live discussion forum and to share discussions with others.
5. Virtual worlds that encourage sharing of information. SecondLife (<http://www.secondlife.com>) or Vastpark (<http://www.vastpark.com>) are 3D platforms that allow users to create their own virtual world that they can own and share with others. It can be used for 3D gaming, building 3D presentations or creating social networks in shared worlds where users communicate, cooperate, learn and collaborate.
6. Blogs and wikis that support editing, presenting and organizing information or knowledge by individuals or in collaboration with others. A special category of wikis is personal wikis. They allow people to organize information on their desktop or mobile computing device in a manner similar to normal wikis. They are installed as a standalone version and can be seen as personal information managers. An example of a

personal wiki is Pimki (<http://pimki.rubyforge.org>), which includes mind maps, search functions or to-do lists. Pimki is a PIM (Personal Information Manager) loosely based on Instiki's Wiki technology (<http://instiki.org/show/HomePage>).

4. Introduction to wikis

Wiki applications facilitate collaborative editing supported by revision mechanisms that allow the monitoring of changes. Wiki technology can be used as a community platform but also as a personal authoring environment. Wiki was developed in 1994 by Ward Cunningham. Wiki comes from the Hawaiian word "wiki-wiki" meaning fast. "WikiWikiWeb" was created in 1995 by Ward Cunningham as an online manual for software programmers to share knowledge (Taylor, 2005). Jimmy Wales built on this idea and created Wikipedia, and now everybody is familiar with Wikipedia, which is itself a Wiki in the form of an online encyclopedia that can be edited by any user. Educators are now experimenting with using Wikis in pedagogically sound ways. Each user has the ability to modify any part of the Wiki space, analogous to a mini-website. Users create new nodes in the hierarchy each time that they want to elaborate, change or add content. Using Wikis can allow for a numerous opportunities for collaboration between students, but students do not have to be in the same physical location to meet with each other. These kinds of programs "allow for cooperation between the instructor and students or among students by using different formats of social interaction" (Godwin-Jones, 2003).

Evaluating the quality of contributions in such collaborative authoring environments is a challenging task (Korfiatis et al., 2006). However, based on the "wisdom of the crowd" principle, one collects and aggregates enough data until there is a consistently reliable answer. Oren et al. (2006) acknowledge that wikis are successful for information collection, but point out that they do not fully satisfy the requirements of PKM. A semantic wiki allows users to make formal descriptions of resources by annotating the pages that represent those resources. Whereas a regular wiki enables users to describe resources in natural language, a semantic wiki allows users to additionally describe resources in formal language. Semantic wikis augment ordinary wikis by using the metadata annotations, and thus may offer better information retrieval and knowledge reuse.

Wikis enable users to collaboratively create and edit web content directly, using a web browser. In other words, a wiki is a collaborative web site whose content can be edited by anyone visiting the site, allowing them to easily create and edit web pages (Chao, 2007). Wikis can serve as a source of information and knowledge, as well as a tool for collaborative authoring. Wikis allow visitors to engage in dialog and share information among participants in group projects, or to engage in learning with each other by using wikis as a collaborative environment in which to construct their knowledge (Boulos et al., 2006).

As defined in Leuf and Cunningham (2001), the proper term "Wiki" is used to refer to the essential concept rather than to any particular implementation, the latter being called simply a "wiki". From a technical standpoint, the Wiki concept rests on the World Wide Web, and the underlying HTTP protocol defines how the client-server communications occur. At the functional level, the essence of Wiki can be summarized as follows:

- a wiki invites any and all users to edit any page or to create new pages within the wiki site, using only a simple web browser without any additional add-ons;
- wiki encourages meaningful topic associations between pages by making the creation of page links almost intuitively easy;

- rather than serving as a carefully crafted site for casual visitors, a wiki seeks to involve the visitor in an ongoing process of creation and collaboration that constantly changes the web site content;
- semantic wikis extend wikis with formal annotations describing the content and create views;
- semantic wikis introduce background knowledge;
- semantic wikis for PKM – formal structure gives automated support and flexibility of wiki gives people freedom.

4.1 Background

Wiki modifications are easy because the processes of reading and editing are both quite simple. In essence, a wiki is a simplification of the process of creating HTML web pages. Simply clicking an "edit this page" link allows instant revisions (Lamb, 2004). Wikis are editable through a browser, and the editing interface is generally simple and easy to use.

Wikis provide a mechanism to record every change that occurs over time as a document is revised. Each time a person makes changes to a wiki page, that revision of the content becomes the current version, and an older version is stored. Versions of the document can be compared side-by-side, and edits can be "rolled back" if necessary. This means that it is possible to revert a page (if necessary) to any of its previous states.

Further, the administrator of the site has control over access, determining which portions are user-editable. Some wikis restrict editing access, allowing only registered members to edit page content, although anyone may view it. Others allow completely unrestricted access, allowing anyone to both edit and view content (Olson, 2006).

Many wiki systems are adding functionalities such as web-based spreadsheets, calendars, documents, photo galleries, private workspaces, hierarchical organization, WYSIWYG (what you see is what you get) web editing, importing Word or Excel files, and even integration with centralized content management systems (Lamb, 2004). WikiMatrix (2007) provides a tool to compare the features of various popular wiki engines.

Educational benefits of wikis revolve around the fact that they offer an online space for easy interaction and collaboration. Both teachers and students can easily create web pages using wikis without prior knowledge or skill in web development or programming, eliminating the extra time necessary to develop these skills. A wiki offers the ability to interact with evolving text over time as well, allowing teachers and learners to see assignments as they are drafted, rather than commenting only on the final draft. Considering the complications of scheduling after-hours meetings for students, a wiki can also be extremely useful for communication within groups. Further, as more organizations adopt wikis for internal and external collaboration and information dissemination, interacting with them at the educational level builds important work skills.

4.2 Observations and discussions

Varna Free University incorporated a wiki module in its e-Learning system (Fig 1), which encouraged both tutors and students to harness their collective intelligence in order to achieve their common educational goals and the exploration of new and effective uses of the Wiki tool is also presented.

Moodle has the most transparent and easiest navigation especially for a generation of students well trained in text editing in programs such as Microsoft Word (Fig. 2, Fig.3, Fig.4, Fig.5).



Fig. 1. VFU E-learning System.



Fig. 2. Wiki HTML Editor.

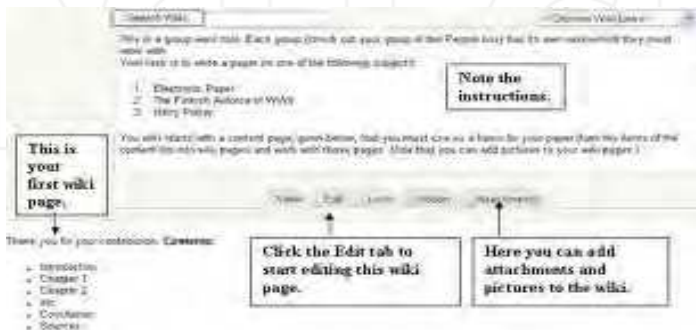


Fig. 3. Wiki in Moodle



Fig. 4. Adding images to a wiki in Moodle.



Fig. 5. Moodle Wiki Editing.

Wikis find application in the educational process and in the university management system as well. Placement centers use wiki pages to store and organize content for job postings and career development. Wikis act as a sounding board so that students can voice opinions about university policies.

The free-form, collaborative nature of wikis makes them easy to apply in creative ways. Any sort of group process can be facilitated using a wiki. Creating a wiki for group lecture notes after a lecture gives students a chance to combine their notes. Those that missed information get it from their peers. The group decides what information is critical and gives it proper emphasis. Group lecture notes are done.

The most straightforward use of a wiki is as a tool for group collaboration for creating group projects. A teacher assigning a group project gives students a place to work by creating a wiki with the group mode enabled. This gives each group their own space to record research, to develop outlines and to create the final product. The teacher creates a submission date on which to turn off editing capabilities for students so that he/she can grade the final projects. Afterwards, the teacher enables visible groups so that everyone can see each other's work. Also, a teacher develops a wiki for a student group and urges people to submit ideas around a brainstorming topic. People can add ideas as they occur and link to other pages for elaboration.

A teacher might assign students the task of contributing to another wiki on the Web, on any study topic, perhaps by assigning students to groups and challenging them to collaboratively create an article they would feel confident posting to a public-information space. Students use the course wiki to create drafts of the article they will eventually publish to the community at the end of the semester.

This type of assignment has a number of benefits:

- It gives students additional motivation to do their best, since they know their work will be viewed and critiqued by the public instead of just by their instructor.
- It can act as a summarizing activity for an entire semester's worth of material.
- Students will know their work will be used by other people, not just graded and filed away.

Response	Ease of use	Enhanced learning	Useful for exam prep	Fair assessment of students' efforts
1 - strongly agree	15	13	25	22
2 - agree	65	24	27	40
3 - neutral	13	59	30	17
4 - disagree	7	4	18	21
5 - strongly disagree	0	0	0	0

Table 2. Student Survey of Wiki Projects (MBA 257 - 60% response rate).

An inquiry was made among 257 MBA students and as a result they had mainly positive reactions to the Wiki projects. Some 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 viewpoints 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.

4.3 Conclusion to wikis

Using Wikis in an LMS such as Moodle can be a useful teaching tool and can support a student-centered learning experience. Maybe the two most important factors to consider when implementing a Wiki are how to integrate the Wiki project and how to assess student learning and participation in the Wiki project. Students are quick to realize when a project is an add-on requirement and perceive this as extra busy work. The teacher must provide a clear assessment procedure that will be as objective as possible. For this purpose student

self-assessments can be used and this procedure could also include more specific requirements concerning the number and length of each post, or could include a note grade instead of pass-fail based on content and form.

By carefully designing the implementation, integration, and evaluation of a Wiki, a new, enjoyable collaborative space can be created which allows for much more efficient, asynchronous, and evaluated interaction between groups of students and teachers. Also, the flexibility of this medium allows for extremely varied adaptations in an extraordinarily large range of educational contexts.

Some educational uses of wikis can be outlined:

- Students use a wiki to develop research projects, with the wiki serving as ongoing documentation of their work.
- Students add summaries of their thoughts from the prescribed readings, building a collaborative annotated bibliography on a wiki. Wiki is used for publishing course resources like syllabi and handouts, and students comment on these directly for all to see.
- Teachers use wikis as a knowledge base, enabling them to share reflections and thoughts regarding teaching practices, and allowing for versioning and documentation.
- Wikis map concepts. They are useful for brainstorming, and editing a given wiki topic can produce a linked network of resources.
- Wiki is used as a presentation tool in place of conventional software, and students are able to directly comment on and revise the presentation content.
- Wikis are tools for group authoring. Often group members collaborate on a document by emailing to each member of the group a file that each person edits on their computer, and some attempt is then made to coordinate the edits so that everyone's work is equally represented in a single, central wiki page.

Wikis usage in an e-Learning system can be a powerful teaching tool that enhances and increases collaboration outside of class.

5. Introduction to blogs

Blog posts or blogs are primarily textual and can vary widely in their content. They can be devoted to politics, news and sharing opinions or dedicated to technical developments. Blog entries are usually maintained in chronological order, but are usually displayed in reverse chronological order. Nardi et al. (2004) identified five reasons why blogs are used:

1. to update others on activities and whereabouts;
2. to express opinions to influence others;
3. to seek others' opinions and feedback;
4. to "think by writing";
5. to release emotional tension.

Bloggng is increasingly finding a home in education (both in school and university), as not only does the software remove the technical barriers to writing and publishing online - but the 'journal' format encourages students to keep a record of their thinking over time. Blogs also of course facilitate critical feedback, by letting readers add comments - which could be from teachers, peers or a wider audience.

Students use of blogs are far ranging. A single authored blog can be used to provide a personal space online, to pose questions, publish work in progress, and link to and comment

on other web sources. However a blog needn't be limited to a single author - it can mix different kinds of voices, including fellow students, teachers and mentors, or subject specialists. Edu-blogging pioneer Will Richardson (author of the main books devoted to Blogs, Wikis and Podcasts) in 2001 used the blog software Manila (<http://manila.userland.com>) to enable his english literature students to publish a readers guide (<http://weblogs.hcrhs.k12.nj.us/bees>) to the book *The Secret Life of Bees*. Richardson asked the book's author, Sue Monk Kidd, if she would participate by answering questions and commenting on what the students had written - to which she agreed. The result was a truly democratic learning space.

Richardson marked 10 years since his first blog post, a full decade of writing and sharing online. He defines the education reform: "We don't need better, we need different" (Richardson, 2011)

Today's students are immersed in the digital age, but can our educational system keep up? Best-selling author Will Richardson's comprehensive collection of posts from his acclaimed blog (<http://weblogg-ed.com>) outlines the educational reform we must achieve to stay ahead of the curve:

- Project-based learning
- Student-created media that develops critical thinking
- Extending learning beyond the classroom and school hours
- Cooperative and collaborative learning
- Student empowerment and career readiness

The necessary shift will not magically happen, but experts agree that it must happen now. This compilation will inspire educators and parents to engage in the technology their children already embrace, and to take an active role in transforming education to meet the challenges of the digital revolution.

5.1 Observations and discussions

Herring et al. (2004) defined three types of blogs: personal journals, "filters" (because they select and provide commentary on information from other websites) and "knowledge logs". The majority of blogs are the online diary type. Bloggers are interested in reading new information, sharing knowledge and being connected with other users. While blog writers are more extroverted, blog readers are more consumerist.

The use of blogs and semantic blogs has recently been associated with a decentralised form of knowledge management (Cayzer, 2004, Breslin & Decker 2007). Semantic blogging is a technology that builds upon blogging and enriches blog items with metadata. For publishing information such as research publications, there is need of some structure and semantic blogging provides this. Items may be classified using ontologies. Semantic links may exist between items (Cayzer, 2004b). 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 (Cayzer 2004a; Cayzer, 2004b).

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 (Cayzer, 2004b). 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.

There is newly developed framework for semantic blogging capable of organizing results relevant to user requirement (Shakya, 2006). Attempts for implementation of that framework are made at Varna Free University (VFU) to provide more effective navigation and 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.

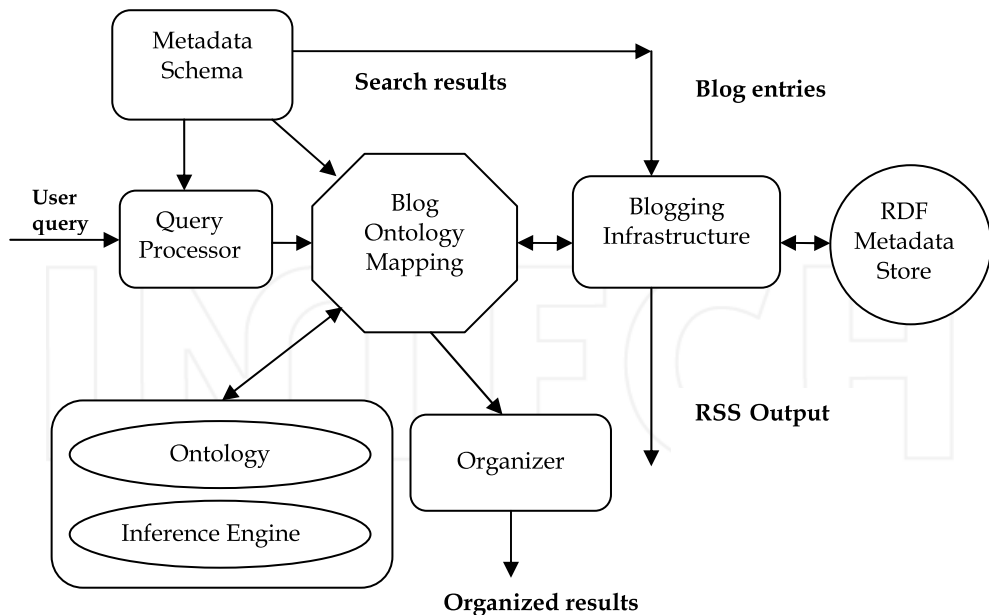


Fig. 6. System architecture of the semantic blogging framework.

Some edu-blogs that are used at Varna Free University (Fig. 7, Fig. 8, Fig. 9):



Fig. 7. Edu-blog for the Ranking System for the Bulgarian Universities.

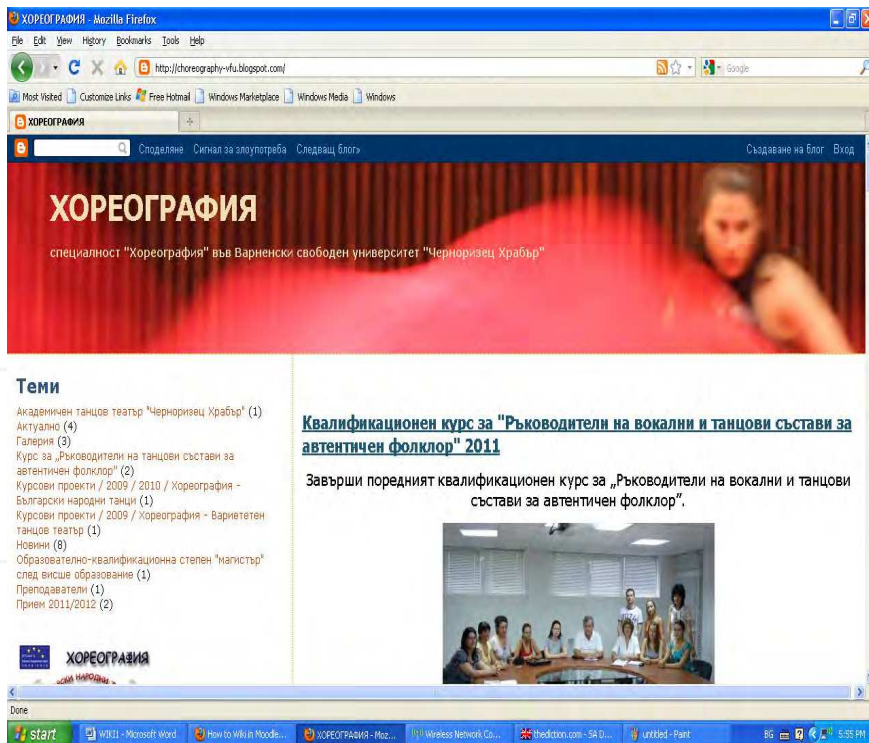


Fig. 8. Edu-blog for Choreography



Fig. 9. Edu-blog for Spatial Design.

5.2 Conclusion to blogs

Teachers are using blogs to provide up-to-date information and commentary on their subject areas, as well as posting questions and assignments and linking to relevant news stories and websites.

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.

6. Challenges

The wave of new web 2.0 technologies, such as blogs, wikis, and especially e-portfolios, and open source content management software such as WordPress enable students as well as instructors to create, load and edit content. This increases active learning, and provides means to collect, organize and assess student work in more authentic ways than tests or essays.

However, learning management systems still have major advantages, in that they provide an institutionally secure environment, enable the management of learning, and integrate with administrative systems. Thus designers are looking for ways to integrate web 2.0 tools with learning management systems (Mott, 2010).

Also as students get more tools and more encouragement to use these tools for learning, there is the 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 such as Facebook (Bates, 2011)

Students now have access to mobile phones with camera and audio recording capabilities and access to video editing through software on their laptops and video publishing through YouTube. Students now can collect data, organize and edit it, and publish it. In addition, through the Internet, they can access a multitude of resources far beyond the limits of a traditional class curriculum. They can do all this outside the confines of the classroom. This is resulting in new course designs focused on learner-generated content, but working to overall academic guidelines and principles established by the instructor.

The traditional best practice instructional system design model of analyze, design, develop, implement, and evaluate (ADDIE) is giving way to the new, dynamic web 2.0 tools, and learner-generated content.

As a result, we are beginning to see some high quality design models that are developed, in response to changing input from students, the arrival of a new technology course, or breaking news in the subject area. This allows courses to appear more spontaneous and more authentic, grounded in the real world. These new developments are happening more in the area of training and vocational education than academia, although they have potential especially for professional programs.

7. The future is mobile & learning analytics

The major technology development during 2010 was the launch of Apple's iPad. The iPad has yet to prove its worth as an educational tool. It is valuable for 'consumption', for example access to media and e-books, but has more limitations on 'production', as it stands at the moment. Version 2 includes more 'production' functionality, such as a camera, and software to facilitate multimedia creation. With the movement towards learner-generated content this is a major limitation of tablets so far for educational purposes. Furthermore, phones, tablets and laptops are converging, so that, combined with cloud computing, the full functionality of a computer will eventually be available on the smallest devices.

Also there were further improvements in 2010 on the functionality of mobile phones, although educational applications remain tiny compared with other areas, such as entertainment and publishing. One barrier to educational applications is the multiplicity of mobile operating systems; another is the lack of a clear model of design for mobile learning. The release of the HTML5 standard for web applications, which will provide a 'standard' platform for mobile applications, is unlikely before 2012.

Open content is most likely to be used in a context where courses are explicitly designed around the concept of open content. Instead, students would be encouraged, within certain guidelines and academic criteria, to search the Internet and to collect local data to create their own blogs and wikis that would demonstrate their knowledge within a particular subject domain. Another strong development in these resources is the increased use of multimedia such as video, animations, simulations and, to a much lesser extent, games.

The application of business intelligence software to learning and learners is likely to be the next perspective in e-learning. Institutions accumulate a great deal of data about students. This is rarely used for the purposes of academic decision-making, mainly because it has up

to now required a huge effort to analyze such data in terms of specific decisions. Learning analytics do this through software that 'sits on top' of the several different databases used in universities, such as student information systems, learning management systems, and financial systems.

8. Main conclusions

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.

Web 2.0 brings new possibilities and tools to e-learning. Social software supports active social networking processes and a community model to foster knowledge sharing and collaboration. Blogs and wikis represent new repositories of information and knowledge for personal and organisational purposes. High quality contributions are assured not only by guidelines, but also by reputation and rating the contributions. Through social software, students especially in LLL process are more motivated to share knowledge with others. Organizations have to decide whether they want to build their own internal proprietary solutions with blogs, wikis and/or social networks or with the use of existing tools. Although anyone can use social software and edit a blog or a wiki, not everybody does. Effective social structures may create incentives and guide fruitful collaborations.

The Web 2.0 era has emerged as a shift of perspective from a world of plentiful information that has to be searched using powerful search engines to a world in which the social process has become central for identification and access to information and knowledge. In this new world, a variety of tools have been developed to better manage the social capital (with social networking systems such as Plaxo, LinkedIn), to communicate more effectively with blogs, and/or to harness collective intelligence with systems such as wikis.

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.

This chapter suggests that Web 2.0 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 networking 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.

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.

In blogs and wikis externalisation of personal knowledge is self-initiated. Furthermore, despite using Web 2.0 tools it is still difficult to find the right piece of information. Better

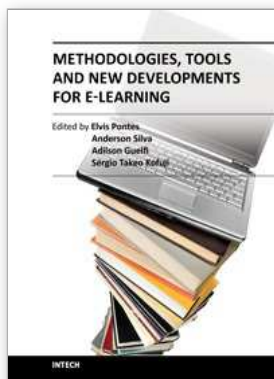
search functionalities and sorted entries are an issue that needs to be addressed in further development. Semantic Web technologies enhance Web 2.0 tools and their associated data with semantic annotations and semantic-enhanced knowledge representations, thus enabling a better automatic processing of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

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Methodologies, Tools and New Developments for E-Learning

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With the resources provided by communication technologies, E-learning has been employed in multiple universities, as well as in wide range of training centers and schools. This book presents a structured collection of chapters, dealing with the subject and stressing the importance of E-learning. It shows the evolution of E-learning, with discussion about tools, methodologies, improvements and new possibilities for long-distance learning. The book is divided into three sections and their respective chapters refer to three macro areas. The first section of the book covers methodologies and tools applied for E-learning, considering collaborative methodologies and specific environments. The second section is about E-learning assessment, highlighting studies about E-learning features and evaluations for different methodologies. The last section deals with the new developments in E-learning, emphasizing subjects like knowledge building in virtual environments, new proposals for architectures in tutoring systems, and case studies.

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