Morphing Public Spaces into Learning Spaces with Social Bookmarks: An Exploration of Current Progress and Prospects

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Abstract
Over the past 15 years, varying insights of cognitive psychologists, learning theorists, and educational researchers have converged on a shared realization of how people learn; and they have all recognized the need to change current patterns of teaching and learning to reflect the new understandings. they claim that the special characteristics of the new global knowledge economy requires a new kind of learner who is autonomous, self-directed, self-motivated, and able to use the opportunities afforded by modern information and communications technology (ICT) to construct knowledge for himself, or collaborate in the construction of shared meanings. Social needs are also changing, bringing increased need for life-long learning. the predominant face-to-face, contact hour model of instruction that has so far been successful in previous years can no longer provide effective learning environment for the kinds of lifestyles that technology has brought about.

Alternative learning delivery methods are made possible by technology which may lead to technology-enabled, learner-centred, and learner controlled paradigm of teaching and learning. Currently, the preferred environment offering learner-centred teaching is the Virtual Learning Environment (VLE). But VLEs are not cheap are always successful as learner-centred environments. This essay reflects on Social Bookmarking as an alternative, cheaper, and potentially more effective, learner-centric environment for organizing learning and teaching. An attempt is made to describe how teachers may use SBM as an extension of classroom teaching and learning to enhance students' cognition, while inculcating the desirable 21st century learning habits of social interaction, collaboration, and critical thinking in them. This paper is also significant in the sense that it may introduce yet another tool to colleagues who may yet not be aware of the

potential of web 2.0 tools to enhance their own learning, as well as that of their students, and collaboratively.

Keywords: VLE, Web 2.0, Social Bookmarking, Lifelong learning

1 Introduction

Advances in educational technology have changed the face of educational delivery. In Finland, a strategy for the adoption of information technology in schools called Information Society Programme for Schools 1995-1999 aimed to provide basic ICT skills knowledge and opportunities for lifelong learning to all students and the general public (Kiesi, Ella 2000).

Lifelong learning has been recognized and touted as a worthwhile goal for governments and educational policy makers to strive for. And with the inclusion of early education as essential part of the education system, lifelong learning is usually taken to mean from "cradle" to "grave" educational participation, viewed as an essential concept for creating a participatory democracy, and encouraging personal development within the context of the society. Again in a knowledge-based society and economy where access to timely information, and the willingness and skills to access it is seen as both beneficial to the individual worker and to the state generally because it strengthens the competitiveness of the economy and improves the employability and adaptability of the workforce (A Memorandum of the European Commission, 2000). The importance the European Union attaches to lifelong learning is paramount as it regards people as its most important capital (Markku Markkula, 2006).

Thus the EU has developed policies to enhance the quality of its main asset, whom it claims need to adapt to new realities of the 21st century. Social Partners, together with local and regional bodies, civil society and service providers, in addition to Central Government, have a role to play at different levels and sectors of education and training to create a person-centred network of opportunity. The aim is to guarantee universal and continuing access to learning for gaining and renewing the skills needed for sustained participation in the

knowledge society. Basic skills were defined at the Lisbon Summit as: IT skills, foreign languages, technological culture, entrepreneurship and social skills. 'This Memorandum defines new basic skills as those required for active participation in the knowledge society and economy'. But perhaps one of the most unique aspirations of the Memorandum is how Teachers and non-teachers playing an educational role in its widest sense, need in-service training to enable them to meet the challenge of new roles, new technologies, new learning contexts and new learners; and how ICT can be combined with human pedagogies to produce learners who can adapt to ongoing changes in the economy, and be able to meet personal development challenges throughout their life time. The above discussion impinges on the perception that the Internet can help solve knowledge transfer challenges in teaching and learning, collaboration, dissemination of information, and beyond; and that every effort must be made to harness technology to support excellence in teaching, learning and research. Increasing pressure is now being brought to bear on educational institutions to adapt to the new demands. As more students choose to study from remote locations, on their own schedules and for individual purposes, course content, student-faculty interaction, library and other student support services become crucial, education has to be provided electronically as well as in person. Programs will become more flexible to accommodate life-long learning for a variety of students: on- campus and distance learners, full- and part-time students; those requiring ongoing professional development and those requiring special access due to disabilities.

Currently in Finland, as in most parts of the advanced world, majority of pre-university institutions have internet connectivity, and are able to offer some form of learning via the internet. The landscape of educational technology use in higher institutions shows even much higher promise.

The training of teachers with ICT skills was made a high priority in the ICT strategy mentioned above, as measures were proposed to enhance the production of digital learning materials locally. The Jyväskylä University of Applied Sciences of, for example, offers an entire teachers' professional programme partly on-line. A good number of higher institutions are able to offer some form of learning or teaching on-line.

1.1 Educational Rationale of On-line Environments

There is currently a general recognition among educational stake-holders that the state of education can benefit from reform. And several reasons are assigned for the implementation of technologically enhanced environments for teaching and learning. One reason that is often given to support the introduction of technology in education is the need to train students to use ICT tools as an essential precondition for successful living in an information society. However, some researchers critique a view which supports the implementation of ICT in schools merely on the grounds of equipping students with a technical know-how as a way of moving abreast with time, as narrow.

As part of a wider perspective is, perhaps, the assumption that traditional classroom education in its present form is an anachronism and obsolete for learning and that it does not inculcate 21st century skills in students. In the article "Engaging and Supporting Problem-Solving in Online learning", Jonassen (2002) laments that the pedagogy of traditional face-to-face education, based of the "acquisition of facts", that merely requires the learner to memorize a set of facts and reproduce it to show learning contradicts the nature of the occurrence of learning in the real world. He emphasizes that

modern education needs to be able to offer its recipients crucial skills that they will need in the real world.

Similarly, Erno Lehtinen (2002) takes the view that

> the possibilities of for interactive relationship between the learner and the system, and *between learners* (italicised addition mine) are assumed to be beneficial to learning…it seems obvious that multimedia features of ICT …illustrate learning tasks and facilitate understanding of phenomena.

Also, instructional models based on peer cooperation or collaboration have been hailed in the research of learning and teaching. In order to increase the possibilities of sharing of knowledge from multiple perspectives on a piece of learning task, tools for interaction are needed to provide flexible access to learning materials and discussions (King, Alison. 1990; Singh, 2002).

1.2 The Constructivist Paradigm

The Collaborative knowledge-building approach is a learning theory that is based on a socio-constructivist cognitive world view that relates the individual's experience with the world. Moreover, a knowledge building strategy treats the learner as an active participant interacting with others in a group. Learning is a social activity: our learning is intimately associated with our connection with other human beings, our teachers, peers, family as well as casual acquaintances, including the people before us or next to us at the exhibit. We are more likely to be successful in our efforts to educate if we recognize this principle rather than try to avoid it. Much of traditional education, as Dewey pointed out, is directed towards isolating the learner from all social interaction, and towards seeing education as a one-on-one relationship between the learner and the objective material to be learned (Dewey, 1930 as cited by Dimitrios Thanasoulas, 2002).

In contrast, progressive education with the learner at the centre (to use Dewey's formulation) recognizes the social aspect of learning and uses conversation, interaction with others, and the application of knowledge as an integral aspect of learning. This way the learner actively constructs knowledge by formulating ideas built on reactions and responses of others formulated into words. Therefore a constructivist learning model is proposed as an alternative to the current objectivist approach to organizing learning and teaching because of its position that real learning must build on students' own existing knowledge, needs and interest, and its affordance of the opportunity to emphasize authentic, context relevant problem solving. According to Andrews (1997), the negotiation required by group work encourages semantic webbing, gives practice in the evaluation and organization of gathered information, models the coherent structuring of that information, and offers reflection on the development of knowledge.

An article from the Eric Digest (September 1999) suggests that available technology increasingly allows for positive exploitation of this group learning effect by providing framework that will support the formation of

> heterogeneous groups where collaborative learning, problem-solving and higher order thinking skills can be developed…These are processes that can be difficult to encourage in normal classroom, but are the norm in well-designed and constructed distance learning packages, including those delivered via videoconferencing and the internet.

Although the education community opened its doors to ICT rather late (compared to Business, for example), there is a widespread perception that information and communications technology have already had an impact on education in many countries around the world, especially, in the so-called technologically advanced countries

of the world. But even in those countries where harsh economic realities did not permit a rapid take-off in Education, the situation is changing rapidly as a growing number of educational institutions provide computer and internet access to staff and students.

Web-based courses have become quite popular, and are now being run across distances both within and across borders to afford educational access to people who would otherwise have found it impossible to participate in education or training either because of cost or distance. But, Inspite of the advances in educational and communications technology, however, most web-based courses offered by educational institutions rely on costly proprietary platforms for course delivery. Furthermore, Jonassen (2002) notes that the architecture of these inflexible course delivery platforms are based on traditional face-to-face classroom culture, and lack opportunities for learner interaction and collaboration for learning; they are also not designed to inspire a sense of life-long learning in learners once they complete their course and leave the confines of the institution. The architecture of Virtual Learning Environments (VLE) usually used to implement institution-based online learning programmes is not learner-centred, after-all. This is because as Jonassen (cited by Lefoe 1998) asserts, emphasis is placed on building learning environments rather than the instructional processes. In any case, because by its very nature Constructivism seeks to challenge the main stream, and defies the concept of 'model', the instructional designer is called upon to come up with an arrangement that takes cognizance of the contextual nature of knowledge construction.

By contrast, the use of other more learner-friendly and inexpensive digital tools such as Wikis and Social Bookmarking systems offer the opportunity to build a joint information pool while learners are engaged in collaborative knowledge-construction by collaborative annotation of the information or already published work.

1.3 Social Collaborative Tools in Education

The assumption that Information and communications technology (ICT) is changing the nature of knowledge is now a foregone conclusion. A corollary to this perception is the somewhat resigned idea that this current is perhaps irresistible and, also, good.

In a review published by the association of Information Technology in Teacher Education, Michael Bonnett (2001) observes that Lyotard (1979) already hinted at the potential benefit of ICT in education and the huge impact it could have on what was counted as knowledge in his book, "The Post modern Condition." Here Lyotard argues that technological transformations – " that the miniaturisation and commercialisation of machines is already changing the way in which learning is acquired, classified, made available, and exploited." But Lyotard also makes the claim in his book that the world of post-modern knowledge can be represented as a game of language where speaking is participation in the game whose goal is the creation of new and ever-changing social linkages.

Access to these social linkages is increasingly becoming crucial to a learners' ability to succeed. This has given rise to the development and appropriation of a conglomerate of tools collectively referred to as "web 2.0." In this essay I would first review the web 2.0 tool, Social Bookmarking as a constructivist collaborative tool, particularly, in relation to networked hyper-media- and to outline one of its several potentially serious educational implications, in this case, exploring the potential use of the tool to increase learner engagement.

From the above it is already clear that social reconstruction of knowledge through learner collaboration was already of particular concern in Literary Criticism as it is now in Educational practice and research. Significantly, a number of commentators have suggested that what is driving the push towards pluralist generation of ideas in

learning is the 'miniaturisation' of computers and the availability of cheap high-speed bandwidth internet connectivity. In effect a participatory culture involving being a part of on-line communities producing digital media, problem-solving collaboratively and shaping the public discussion through the web has evolved. Understanding the implications and limitations of social bookmarking in education will highlight its importance in the implementation of truly learner-centred environment for teaching and learning.

In the review that follows I will characterise the now ubiquitous virtual learning environment as a dominant technology that may be combined with web 2.0 technologies such as the social bookmarking to create a more student-centred, learning environment which is found on the view of learning as an active process which recognise and take into account that:

- learning is a social process and development is linked to the specific context in which learning is shared.
- learning activities need to b authentic
- learning involves the interaction of learners and experts within a learning environment.
- successful learning involves perceiving the relationship between specific and general knowledge and skills
- The need for both learning activity and assessment to be clearly related to syllabus and to reward understanding

(adapted from Styles, 2000).

2 Literature Review

2.1 Dominant VLEs

The term dominant design was first used by Utterback and Abernathy in 1978 as quoted by Kristinson and Rao ( ) "to signify the emergence of a dominant technology in an industry." Because of the ubiquity of Virtual Learning Environments in the educational landscape as, perhaps, the ultimate platform for the course delivery, some in educational research have described these platforms fulfilling the 'dominant design' attribute. According to Kristinson and Rao, "technology becomes dominant as a result of a complex process where several different and competing alternatives are deselected until one set of technologies or standard is left, thus becoming the dominant technology trajectory."

There is a dearth of research on the use of other platforms than the virtual learning environment to engage learners. VLEs have, therefore, become the dominant design in educational technology; A dominant design in this case being the particular 'class' of a design that controls the market place (Essa, 2005; Wilson et al. 2005).

Wilson et al. note that even though a dominant design may not offer the best possible solution to a particular problem, it nevertheless persists for a considerable time. By this, Wilson and others mean that while the dominant design is being persistently used, all other designs that happen to be incongruous to the dominant designs are ignored, and the dominant one gets improved to continue in its role.

Thus, instead of searching for better alternatives as solution, current efforts are only geared at improving existing designs such as the WebCT and Blackboard, for example (Andy Williams, 2004). Even the open source Moodle, that was clearly positioned as a non proprietary alternative to the dominant design has the same features as its

predecessor virtual learning environments, and lacks the innovation that it promised to offer in education delivery.

The design of current online learning environments have therefore not appealed to many watchers of the educational landscape. In the article "Engaging and Supporting Problem Solving in Online Learning, Jonassen (2009) opines on what he thinks is the state of current learning environments:

> Based on my own observations of numerous examples of online learning environments, more often than not online learning functions and activities replicate face-to-face instruction…The teach-and-test ontology and the reliance on traditional subject-matter ontologies ensure a lack of innovation in online learning.

Jonassen argues, hence, for a substitution of current design systems with a more learner-centred, and user-friendly architecture in which individuals are active participants among a community of learners in meaningful problem-solving situations that reflect learning in the real world.

2.2 Design Elements of the "Dominant Design"

According to Korschman (quoted by Gerry stahl et al…), much of the epistemology that inspired the early years of computer or online education was behaviourist, and considered learning as consisting in the imbibing and recalling of facts. Items to be learned were, thus, broken down into episodic series that were presented to students in a logical sequence through computerized drill and practice. The second application of computers in education, based on intelligent tutoring systems was predicated on the cognitive tradition that saw learning as mental structures and potentially mental representations. The cognitive philosophy rejected the behaviourist tradition of accounting for learning without regards for how students represented and processed knowledge.

This led to the creation of computer models of students' understanding, and then responded to students' actions based on what errors were identified in students' mental models. The third use of computers in education, according to Stahl et. al,() was based on the constructivist approach which analysed learning as knowledge construction. This view of learning aimed at providing stimulating environment in which learners can explore and discover the power of reasoning as illustrated in programming constructs such as functions, loops, variables, recursions and so on.

Currently computers are employed in education with the understanding that they could bring students together to learn collaboratively in small groups, and in learning communities. Entrenched in social-Constructivist and dialogical theories, these efforts seek to provide and support opportunities for students together by directed discourse that would construct shared knowledge.

2.3 Collaborative support

Within research on computers in education, the focus is on learning through collaboration with peers other than directly form teachers. Therefore, the role of computers shifts from providing instructions either in the form of facts in computer-aided instruction or in the form of feed-back in intelligent tutoring systems to support collaboration by providing a media of communication and scaffolding for productive interaction. Support is usually provided through a network of computers to provide a medium of communication which usually takes the form of chat, email, discussion fora, video conferencing and instant messaging, and so on.

Virtual or managed learning environments used for the provision of collaborative learning platform generally provide a combination of several media and added functionality. Cheng and Yen (1998) observe that the functionality of current dominant learning environments usually has the following features:

(a) electronic lecture notes offering student-customized learning materials;

(b) message system connecting course participants for communication and collaboration;

(c) real-time chat or threaded discussions is enabled;

(d) interactive puzzles and tools for self assessment, usually marked by the server;

(e) Course creation systems allowing instructors to construct or modify course materials;

(f) a course management system which helps to organize course material;

(g) data-based management system which helps to organize student information, and track the user so that customized services can be provided.

Wilson et al (2006) further describe these systems as 'consistent designs', and group them into five categories of (a) tools integration; (b) asymmetric relationships; (c) homogenous experience; (d) access control and management. The integration of tools and data such as quizzes and forums and students follow a predictable pattern in which courses are arranged in modularized units. It is also of importance to observe that inspite of the oft-talked about need for VLEs to be about learners' own experiences, these are usually top-down institutional control mechanisms. This suggests that the asymmetric relationship

between instructor and learner in traditional teacher-led learning environments is perpetuated instead of being removed for a truly learner centred experience. According to the authors, the lack of individual experience is taken even further by making available the same content in similar context with the same tools. This, they say contradicts calls for "...life-long learning for an individualized experience tailored to personal needs."

Restriction on access to content often means that most content is within a VLE is closed to students after they finish or leave a course. It is further claimed that one consequence of the closed nature of these learning environments packaged into a standardized learning platform is that the system precludes the use of potentially significant tools such as the RSS.

In addition the pedagogical relevance of these dominant designs are often sacrificed for elaborate user interface, so that "...their focus is more on creating the usual classroom practice on the net rather than transforming the existing learning system into a more pedagogical sound learning environment on the net (Cheng and Yen)."

In reacting to this inconsistency, Scott Wilson (2005) suggests, for example, that the VLEs of the future would be 'personal learning environments with features that will support informal as well as formal learning situations, and a whole range of social activities that we would barely "recognize as learning today" in a constructive, collaborative learning environment, although Graham Artwood acknowledges that it will be very difficult to get universities to adopt these pedagogically more flexible tools, let alone talk them into abandoning their love affair with the current design VLEs. Liber and others suggest that the new development will reflect the characteristics of individual users learning with diverse technologies

rather than with dominant software licensed to institutions with managed rights access.

The advances in technology and changes in the organizational infrastructure put an increased emphasis on teamwork within the workforce. Workers need to be able to think creatively, solve problems, and make decisions as a team. Therefore, the development and enhancement of critical-thinking skills through collaborative learning is one of the primary goals of technology education. The present research was designed to study the effectiveness of collaborative learning as it relates to learning outcomes at the college level, for students in technology, but it has implication across other educational levels.

In my view, Social Bookmarking is one of such diverse technologies as Liber and others envisage. By exploring the innovative use of social bookmaking in teaching and learning, emphasis will be shifted to learning that is actually self-motivating, self-directed, and peer-supported. This paper will, thus explore the conceptual use of social bookmarking as a learning environment, to be used either as an alternative to the dominant design, or as an addition to enhance the functionality of the dominant design.

3 Method of Research

The research is a qualitative review of mostly web-based resources, clearly evaluated to establish their authenticity. Although the web is often assumed in educational circles to be a vast library of learning resources, very often material published onto the web is unsupervised. Also the almost unbridled freedom for anyone to post material onto the web, with almost no second review implies that much of what gets to be published on the web contain more "landfills" than libraries.

3.1 Analysis of sources and Scope

Hence in order to ensure unbiased and reliable data for my sources I first performed an initial appraisal to verify authors' credentials; date of publication, where possible, to ensure the currency of the articles or books; the publisher, to be sure whether they are scholarly or only a popular journal. Where difficulties or doubts about such materials are felt, I have done my best to cross-check the information with other verified sources to ensure the information is not biased or simply irrelevant.

After satisfying myself with the initial appraisal of the sources, I conducted a content analysis on them first scanning the content to get a broad overview and the relevance of material covered; I then tried to identify the intended audience, and whether the material is a mere propaganda or facts properly reviewed. I then performed my own triangulation, cross-checking on the material with my own hypothesis and, also, with information from other sources that confirmed the sources and content I used. And it was only when I was satisfied with the source that I read and cited it in this work. The research was carried out to establish what currently published information was available about the Web 2.0 tool Social Bookmarking, its performance and influence on the practice of on-line

teaching and learning. This research is not considered to be fully comprehensive, but the major objective is to offer some considered views in an important area of educational advance.

4 Bookmarking

4.1 Brief Origin of Concept

According to the peer-reviewed encyclopedia wikipedia, "a bookmark is a marker used to keep one's place in a printed work." By one account (Coysh 1974), book marks have been used since ancient times when papyrus scrolls were the only reading matter offered. Coysh believes that bookmarks must have been used then to mark one's place on the long papyrus scrolls. Evidence from printed material found in monasteries indicates that bookmarks made from the rest of the leather material used for the cover of the book were already popular in the Middle Ages.

It was the emergence of printing, in the 16th century however, that popularized the use of bookmarks. Books that were being published on very limited scale at the time needed to be protected for the next generation. As A.W. Coysh states, there was clearly "the need for some device to mark the place in a book was recognized at an early date. Without bookmarkers, finely bound volumes were at risk. To lay a book face down with pages open might cause its spine, and crease on the page that had the corner turned down remained as a lasting reproach."

The apparently noble use of bookmarks gained for it a royal recognition as earliest accounts indicate that Queen Elizabeth's printer, Christopher Barker presented her with a fringed silk bookmark (Coysh) in 1584. During the Edwardian and Victorian era, usually referred to as the great period of bookmark design, a variety of materials was used for the design of bookmarks, although much of it were "bound into the book at the top of the spine and extended below the lower edge of the page." The ancient and noble intention and use of bookmarks have, however, carried into contemporary times, albeit the nature of bookmarking itself has moved on into step with the technological developments and needs of twenty-first century.

4.2 Digital Life-Styles and Innovations in bookmarking

With the advent of the internet and web surfing, more and more people are using the web for work, learning and in people's personal relationships. Indeed, such has been the pervasiveness of this trend that already the death of the traditional book, as we know it, was predicted in 1979 by Evans Christopher (cited by Marshal, 1979).

In his book Micro Millennium", Evans wrote that due to the persistence of the electronic media, "the 1980's will see the book as we know it, and as our ancestors created and cherished it, begin a slow but steady slide into oblivion." Also, a study published by the center for the application of technology to Biblical and technological studies forecast that by the end of the 1990s every college student would own a computer…and over 90% of the world's print media would be electronic, and little information would continue to be printed on paper. And with the introduction of Microsoft's Reader, a software application designed to enable people read books on their computers in 2000, it was thought that the publishing world was being dealt the final blow.

Evidence suggests, however, that traditional book publishing is still thriving. David Mash found in a study that since the advent of the www in the mid 1990s, at least in the U.S.A., average annual book title production has gone up 28% higher than the decade preceding the WWW. According to Mash, this may be due to the difficulty that is associated with verifying internet sources. However, it has also been suggested that both the electronic and traditional books meet important needs in vital and effective ways in their own right.

But there is no denial that ICT permeated 21st century life, and has changed the way people live their lives in very dramatic ways. People

use the affordances engendered by high-speed, broadband internet technologies for a variety of services including, dating and marriage; trade and commerce; banking and money transfers systems; video-conferencing for business or collaborative learning and all kinds of educational services. There is, therefore, more to the internet than merely reading a book on it. Life-style changes brought about by advanced internet communications technologies and cheap Ethernet access also means that web access become more frequent and important in an ever-globalizing world. Web pages and sites that individual web users visit must be managed for reuse or revisits. The most common web browser tools explicitly developed for tracking and managing previously accessed web content are the Bookmark or Favourite (depending on browser) and History.

4.3 Browser-based Bookmarks

In the age of the internet, 'bookmark' is often used to describe actual web page or site that has been visited and saved to be visited or retrieved later. The distinction between the pre-internet sense of 'bookmark' and the modern sense is made clear by the following quotation attributed to Alan Irwin, "I am talking about the physical save-your place-in a book type of bookmark, rather than the virtual, hey-I-want-to-remember-this-place-on-the-net type of bookmark[1]." Bookmark may also be used to indicate the actual process of saving a 'bookmark' or web page for future retrieval; and the term may actually be used to describe any of those concepts. The particular signification that is being conveyed at any point in this essay is made explicit according to the context in which the word is embedded.

The Bookmark, however, is an information retrieval system used to manage web-based data (books, articles, photos and so on) that a user has accessed and which he/she wishes to re-access at a future time and to reuse without necessarily having to go through the process that was initially used to access the page. Bookmarks have

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[1] This quotation can be accessed at:
http://www.miragebookmark.ch/wb_bookmark_quotes.htm, where the interested reader may read all about traditional bookmarking by

become a widely used web activity. In a survey of 6,619 respondents, Pitkow and Kehoe (qtd by William Jones, Harry Bruce, and Susan Dumais 2001) found that over 80% of web users cited bookmarks as a strategy for accessing web information. Similarly, in an empirical study on users' revisitation patterns on the web, Wen-Syan Li et al (1995) reported that 58% of an individual's pages are revisits.

People use the back button, history, favourite or bookmark facility in web browsers to make reviewing of pages they discover on the web, and find useful. According to Dix and Marshal (2003), although book marks are more heavily favoured it has problems.

4.4 Limitations of Browser-based Bookmarking

Bookmarks are useful as FAVORITES in a menu for quick access to websites and as a large INDEX of marked websites with valuable content. And, although bookmarking solved a lot of problems relating to the retrieval of items on the internet, especially when it relates to articles and such, it had not proved a perfect panacea for all the troubles of having to locate web data. When a user's bookmark list became long, locating vital information became unwieldy. Also, since current browsers provide no way of context-labeling key saved pages, bookmarks remained a mere long list of meaningless visited pages (http://tdot.blog-city.com/evolution_bookmarking.htm). And even when bookmarks could be placed in special directory trees, there is always the possibility of placing a bookmark in multiple places of the directory tree but not in a unique place for easy location, and one ended up looking for a piece of data in the wrong directory.

The frustrating experience of having to locate a bookmark in a long list of saved bookmarks, or favourites folder , and the need to share bookmarks on one's personal computer or synchronize local bookmarks with online services fuelled discussions as part of over-all result of life-style change gave rise to a new system for meaningful bookmarking. Whatever the case, emergent technologies in a 'new' version of the web (web 2.0) have made it possible to have it both

ways: a new bookmark manager that supports tagging and can synchronize the local bookmarks with the online service. But now I will turn to a short discussion of Web 2.0 and its relevance to bookmarking on the web.

5 Web 2.0 and Bookmarking

One of the most interesting and controversial description of the worldwide web to date is, perhaps, its "versioning" (Bill de Hora 2005) — the idea that there must be an initial level of the web and, now, a second; therefore seeing the web in terms of an old and a new model.

It is now thought, however, that 'web 1.0' describes an historical phase of web evolution which was marked mainly by static web contents, and which was largely used to buoy commerce (Bryan Alexander 2006; Barsky and Purdon 2006). The term was actually coined by Dale Dougherty (2005) to describe a trend in computing which is aptly summed up by Tim Bray (2005) as follows:

> ...Web 2.0 is the era when people have come to realize that it's not the software that enables the web that matters so much as the services that are delivered over the web. Web 1.0 was the era when people could think that Netscape (a software company) was the contender for the computer industry crown; Web 2.0 is the era when people are recognizing that leadership in the computer industry has passed from traditional software companies to a new kind of internet Service Company. The net

has replaced the PC as the platform that matters, just as the PC replaced the mainframe and minicomputer.

During the last three years, or so a group of open programming interfaces have emerged on the computing scene that allow participation, making it possible for people to collaborate in online projects in a network of learning communities. Barsky and Purdon (2006) describe these networks as a "new kinds of virtual communities that are structured to delineate and build on relationships … by virtue of …being part of that community." (Myspace.com; FaceBook.com); thus, the crucial characteristic of web 2.0 is that it facilitates use. Therefore, the multiplicity of tools and affordances collectively called "web 2.0" are a collection of social software tools primarily designed to help people transcend barriers and to help them come together in communities to enable information sharing , and to pursue their common interest: "blogging", "podcasting", and even "videoblogging", are all examples of web 2.0 in action, and they are social in nature because they are ultimately geared to the sharing of online activities, primarily information. Seldow, Adam (2006) observes that the need for online communities to find a way to search and conveniently store and share their "gold mine" of websites with friends and colleagues gave rise to the social bookmark revolution. Perhaps, Tim O'reilly (2005) aptly sums up the essence of web 2.0 when he describes the phenomenon as "the power of the net to harness collective intelligence."

5.1 Social Bookmarking (SBM)

It emerges from the above that Social Bookmarks are a relatively new phenomenon in web computing. The concept describes the activity of web users saving a bookmark for a web page on line, in a publicly accessible website, so that others can see your bookmark and be ideally exposed to something that they otherwise might not encounter.

Social Bookmarks systems are described thus:

> ...a new class of online tools [that] lets you bookmark web sites
> you find into a personal web archive, lets you organize them by
> categories or subject tags, lets you share them by subject with
> others, and recommends other web content or users' archive
> streams similar to what you've bookmarked. ...Typically, you are
> given a bookmarklet to put on your tool bar that can be clicked
> whenever you visit a web page you want to save in your archive.
>
> Marshal Kirkpatrick 2005.

It is at once clear from the definition above that Social Bookmarking
(SSB) systems do a lot that the regular browser-based bookmarking
systems do not, namely: bookmarks are easy to navigate; they are
organized meaningfully, not alphabetically; sense-making bookmarks
can be easily shared; and bookmarks can be accessed on any internet
connected computer anywhere in the world.

Although it is only in the last few years that the concept has caught
on, social bookmarking dates back to 1996 with the launch of itList
.com (Wkipedia.com). This was during the era of the conceptual web
1.0; and many others that followed itList.com collapsed with it during
the burst of the dotcom bubble. According to Wikipedia the place of
these pioneer SSB sites was taken in between 2003 and 2006 by now
thriving sites such as delicious; Simpy; Diig; Simpy, and many others,
and their number continues to swell. The next paragraph discusses
the primary conceptual use of social bookmarks.

5.2 Functional Overview

SBMS allow registered users to use a bookmarklet, a small JavaScript
stored as within most popular web browsers, or stored within a
hyperlink on a web page. Bookmarklets are saved and used as normal
bookmarks. As such, they are simple "one-click" tools which add
functionality to the browser.

With the advent of social bookmarking, shared bookmarks have
become a means for users sharing similar interests to pool web

resources, or to store their bookmarks in such a way that they are not tied to one specific computer or browser. Web-based bookmarking services let users save bookmarks on a remote web server, accessible from anywhere; instead of saving web pages to a browser, and photos to computer hard diskettes, users save bookmarks and photos, for example, online, sharing them with others, but most importantly labelling the items with words that make more sense to them, and which they can easily remember. Examples of server-based SBM clients include Delicious, Google bookmarks, Yahoo Bookmarks, Windows Live Favorites and iloggo. Social Bookmarking sites are, therefore, online venues where everyone shares their favourite sites to create a huge collection of favourite sites about different topics. The site listings, like search engine listings are searchable or could be located by keywords, and or by tags.

Currently, the increasing popularity and competition have further added to the services of social bookmarking sites to offer more than just sharing bookmarks, such as rating, commenting, the ability to import and export, add notes, reviews, email links, automatic notification, and web annotation, create groups and social networks, and even collate business data. There are now social bookmarking sites that operate with a business function.

On a social bookmarking system or network, users store lists of Internet resources that they find relevant and useful. These lists can be made available to the public by users of a specific network or website. Other users with related interests can view the links by topic, category, tags, or even randomly. Other than web page bookmarks, services specialized to a specific subject or format, such as feeds, books, videos, shopping items, map locations, wineries, photography, and many more - can be found. In a social bookmarking system, users store lists of Internet resources that they find useful.

5.2.1 Metadata, Folksonomy and Tagging

The last section above, discussed the "tagging" or labelling of resources that users found useful with SBMS. "Tagging" and "labelling" of useful resources that are personally meaningful to the one who assigned the label can be regarded as merely applying metadata about data found on the web. Metadata has long been applied to archived materials so that they can be retrieved relatively easily whenever they are required (Menchen, Erica 2005). However, descriptive data or classification systems, such as the ones used for archiving purposes in the libraries are machine readable systems often top-down taxonomies created by professionals. Star (1998) thinks that such classification systems are based on categories that "reflect political choice and the often silent wielding of bureaucratic exercises of power…the enemy [of faceted classification]…is reified rigid attempts at universal descriptions of knowledge that are not grounded in people's needs or experience."

A metadata, or simply a tag, acts like a subject or category. A keyword is used to organize Web pages and objects on the Internet. Each user "tags" a Web page or image using his/her own unique tag. An image or Web page may have multiple tags that identify it. Web pages and images with identical tags are then linked together and users may use the tag to search for similar Web pages and images. The del.icio.us site describes tags as "one-word descriptors that you can assign to your bookmarks on del.icio.us to help you organize and remember them… (http//de.li.cio.us). Tagging, then, is the process of marking information on the web with the view to coming back to it. But more commonly, "tagging" is used to refer to the process of assigning meaning to objects via "tags". Since tags are chosen by individual users, and they do not form a hierarchy, they are described as a "bottom-up" approach to classification. This unhierarchical, collective and spontaneous, grassroots approach (Mathes, Adam 2004) to classification of web materials is what is described as "folksonomy." The terminology (folksonomy) was created in response to an online

conversation by Thomas Vander Wal (2007). His actual response to a solicitation by Gene Smith to find a name for the service of web-page labelling which Delicious and others had just started to offer was: "… so the user-created bottom-up categorical structure development with an emergent thesaurus would become a Folksonomy?." And, since then "folksonomy" is widely used to refer to "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."

5.2.2 Limitation and strengths

The appeal of folksonomies over formal taxonomies,perhaps, lies in folksonomy's relative flexibility and its dynamic creative use. If there is a new item, "social collaboration", for example, introduced into a collection, the navigation changes in response to the frequency with which users have used the same tag or tags to label that particular item. Unlike formal taxonomies, no explicit, formal decision is needed to assign a description to the item. And as long as people are discussing the particular item and they are tagging it because it is relevant to them, it remains in the navigation system.

Social bookmarking, however, does have its own share of mishaps, such as the probable misinterpretation due to lack of actual tags that can be easily linked with the words applicable. One of the limitations of folksonomy Mathes, Adams (2004) has found is the problem of ambiguity. According to him, ambiguity of tags can emerge in an uncontrolled system where users can generate and apply the same tag in different ways. On the other hand the lack of synonym control can lead to different tags being used for the same concept. This apparent problem of synonymy leads to another problem, namely, Philosophical relativism. Because of the inherent sensitivity of language in context people tends to have varying interpretations on the same issue,and since people are tagging foremost for their own

benefit, the lack of synonymy should not be a problem. Similarly, the use of acronyms does also present problems (ibid. Mathes).

Not withstanding the disadvantages that I have outlined above, "folksonomy" seems to have its own advantages. And the seemingly semiotic confusion engendered by ambiguity or synonymy in folksonomy is, indeed, its strength. According to Vander Wal (quoted by Daniel Terdiman 2005) a "broad" folksonomy has the advantage of depth: and no matter what one calls something, one will be able to get back to that object. According to Wal, the probability of one being able to access something he or she tagged away in the wild world of social bookmarkings "is the benefit of the network effect and the power curve because so many people are involved." One other advantage of tagging is that it allows social groups to form around similar interests and point of view. If people are using the same tags, they probably have similar interests. Ever since Delicious allowed tagging on its site in 2003 with a key word or two, users have used tagging to organize the immense wealth of information they find on the web in the hope of finding those sites later.

5.3 TAGGERS: SBM Users

Despite the usefulness of tagging for research and community building, the use of this tool is still far from widespread. Rainie, Lee (2007) has observed that users of social bookmarks are likely to be early adopters of technology, and tend to be well educated and have higher incomes. Additionally, they are more likely to have broadband internet connections at home, rather than dial-up connections. In a survey by Ericka Menchen (2005), she discovered that 71% of people who regularly used social bookmarks were under 30, and that 92.5% of her respondents were male. Besides, occupations in the ICT industry and Education predominated.

One of the most telling aspects of users is that (Ericka Menchen) out of the number of those who indicated their world region, (65) 57% was from North America, 28% from Western Europe and the UK; and

the remainder from the Pacific, South Asia, and the Middle East. South East Asia and Africa were not represented. Although this representation may be due to the small population sampled it indicates that the most users of SBMS are likely to come from the technologically advanced North, further giving credence to the seriousness of the technological divide between the Advanced world and the developing world. Rainie, however, thinks that with email clients like Gmail and others providing the capability of tagging, the act is more likely to be mainstream as it becomes easier to tag internet content.

6 Social Bookmarking in Education

Social bookmarking has become one of Web 2.0's success stories, tapping into the social dimension of the evolving internet, the power of online collaboration and turning hierarchies upside down, with its bottom-up folksonomy. The web is vast. Far too vast for anyone to have a hope of negotiating by themselves. When you start to look for information online, very often the first place you turn to are the search engines to bring home web pages that will fit what you are looking for. Search engines, however, are not always the best of even the most efficient way of finding suitable online content. Anyone that has ever waded through page after page of Google results hoping that they found that elusive keyword can confirm that.

Social bookmarking brings to the equation something that search engines cannot compete with - the human touch. Just as the internet has millions of pages, so it also has millions of users, and if even a fraction of those users share the sites they have found interesting or useful there is suddenly a vast resource for anyone searching the web to tap into.

Social bookmarking services make this possible, giving users the opportunity to quickly and easily find and ''tag'' web pages, effectively bookmarking them as they would for themselves, but sharing them through centralized services, and leaving useful annotations and notes for other users to come across. As sites are tagged, over time vast collections of these user-generated tags are gathered together, and can then be searched by anyone making use of the social bookmarking services.

As an example, should you wish to find some great content on the subject of ''online collaboration'' you could tap this term into a social bookmarking search, and would then be given all of the latest pages tagged under this term by hundreds of thousands of users across the web. You are tapping directly into the web browsing experience of other people, people who, more than likely, are sharing interests with you, rather than relying on a machine to pick out keywords from online fields of text.

In this section, I will discuss why I think social bookmarking makes a unique and effective tool in Education. Social bookmarking tools are now being explored in education as researchers find that the internet-enabled tool can aid in the search to move learning and teaching into the "new educational paradigm", where students are empowered and motivated to take charge of their own learning.

As was indicated at the very onset of this essay, conversations and notions about teaching and learning have changed from the traditional transmission to collaborative, embracing a model of learning that draws on social constructivism that is reflected by participative, proactive, collaborative, and involve students in the construction of meaning (Bruner, 1996). This collaborative approach to learning makes use of language (conversation), social interaction and scaffolding, and suggests how these elements can be incorporated in even the most teacher directed strategies. These principles have emerged as a contemporary view of learning in a new education paradigm; further, collaboration is thought to have five components (Lejeune, Noel) which are: common task; small group interactions; collaborative behaviour; positive interdependence; individual and group accountability and responsibility. It usually works through conversation, which consists of verbalizing through writing, audio or video; multiple perspectives — reading, reflecting, cognitive restructuring; and argument, which is realized through conceptual conflict resolution, and establishing internalized concepts.

Online learning environments, because of their inherent capacity as instructional delivery systems, do not constrain the learner to be physically present in the same location as the instructor, or even other learners. At present, virtual environments have been used to connect students and instructors in a classroom-like atmosphere. This atmosphere takes little cognizance of the new paradigm of leaning, and do not provide the support facilities needed in this kind of learning mode—communication and the sharing of learning artefacts, and collaboration.

Since the social bookmark concept is cheap, and offers a better facility for people sharing common interests to research together and tap into common findings, it provides, in my opinion, a more natural and ready link for learners and offers exciting research possibilities for building and exploring social learning networks and opportunities from learning together. Evidence is accumulating on the educational benefits of social bookmarking and Wikis. It is gradually emerging that exploring the use of Social bookmarkings as a learning space. Students can be provided with a high level of autonomy independent of actual classrooms, while, at the same time, providing opportunity for greater interaction with peers in a collaborative spirit. One limitation that was mentioned early on was the inability of VLEs to support life-long learning. Currently governments across the world emphasize not only the widening participation in education, but also focus on lifelong learning. Because SBMS can be maintained long after a person had left the institution it becomes an individual's personalized learning and development centre, where the individual can reflect internally, especially when the object of their reflection is their study. The experiences they have can then be shared with others on SBMS sites.

6.1 Key Concepts of Social Bookmarking Services

Since the first SBM, Delicious appeared in 2003. Several others like Connotea (http://.connotea.org), CiteUlike (http//:citeulike.org/faq/all.adp), and many more (http://wired.org)

have appeared on the scene and they are all proving their education value. The two mentioned above are actually tailored to academic needs by making them design systems for academic citations and bibliographic gathering tools. Although all try to differentiate themselves by offering something extra, they all provide online storage of references and web artefacts online, which makes it possible to link to digital literature directly. Secondly, instead of storing information away in hierarchically organized folders, the filing system adopted by the SBS are "flat, but multi-faceted, space… data can be viewed from the perspective of tags, or users, or links (Ben Lund, Tony Hammond, Martin Flack and Timo Hannay (2005). Bookmarks saved on a SBM system are then opened to other registered users and visitors as well. This enables people with similar interest to come together to discover new information and share. Lastly, with SBS users are no longer tied to their desks as the new bookmarks become portable and they can be accessed wherever, and be easily updated away from home or work.

6.2 Navigating the Web in the Classroom with DIIGO

My own favourite social bookmarking system is DIIGO. Diigo is the acronym for Digest of Internet, Information, Group and Other Stuff. It was founded by Dr. Ren (formerly a UC Berkeley EECS professor) out of personal needs to read and digest large amount of information online and the need to share thoughts and interact on those information. It combines a number of really useful tools and tasks into a simple but powerful interface It's also a pure-bred web 2.0 service, which means it is mainly a collaborative platform.

Many teachers and students are seeking new products (tools) and technologies to help them transform their academics. With the increase of teachers using blogs and wikis, and students networking and utilizing online tools, the demand for easier and more efficient ways of learning is on the rise.

Diigo is much more than a powerful personal research to: with its social bookmarking and networking, groups and in si-tu annotation features, it is also appropriate for collaborative research, storing of information, and problem-solving. In the educational setting, project-based learning is known to be effective way to teach students to cultivate the skills of finding, organizing, synthesizing and presenting information as well as the social skills of working in groups, all of which are essential in the knowledge-based global economy.

Diigo is built for this kind of exploratory and collaborative learning and for teaching as well. Teachers and students can use Diigo to highlight critical features within text and images, and even video and audio, web pages and sites into a coherent and thematically facilitate online conversations within the context of the materials members collect together.

6.2.1 How does it Work? Bookmarklet

First of all, registered users need to be able to quickly and easily switch to their bookmark manager while in the middle of another task, the most important which is a light weight Programme, a bookmarklet that Diigo calls, Diigolet. Both allow a user to add to Diigo the web page they are currently viewing (http://www.diigo.com/tools). viewing. Figure 1 shows the diigo tool bar right above the main diigo page shown in a Firefox web browser (this should work in other common browsers too).

6.2.2 Tagging

Once the URL has been sent to Diigo and once the import process has been completed, the user can add personalized information. The most essential information is the list of tags to associate with the article. Tags are the means by which references are organized. Suitable tags should therefore be meaningful in the context of that particular article and that user. For this reason, Diigo allows tags to be almost anything (including both single words and phrases). As discussed above, tags can be thought of as a list of categories for the article, or as folder

names, albeit without the potential inconvenience of hierarchy and with the bonus of being able to store the article simultaneously in multiple folders. Once a page has been found, or the article in question has been identified, and a few suitable tags have been entered. There is also an option to add a personal description of the resource being bookmarked. The right pane (see the appendix 1) shows tags that are associated with the web pages shown in bold blue on the left pane.

6.2.3 Annotation and Comment

The other noteworthy piece of personal data is the user's comment. Each user can comment any number of times on any bookmark in their library, and comments from different users are combined to display a chronological, and conversational, thread about a resource. The idea is that when a user is viewing an article that they already have in their Diigo library, they can quickly and easily add a public note about it.

Users can bookmark a page and highlight text and images on the page to take note of. Highlights on a page by the user will then save and appear as a blue dashed underline whenever they visit the site again; hovering the computer mouse over a highlight will bring up a menu where the user can optionally add a note to the highlight and make the note private or public. Highlighted text with notes attached to them will appear as a solid underline in blue. Also, if you browse to a site that other Diigo users have highlighted or added notes to, you will see their highlights on the page (if saved publicly) coloured in orange. Being able to bookmark and annotate a page is very helpful. In terms of research, you can bookmark and annotate all the sites related to the topic you are researching. When you are done getting all the information you need, select all the bookmarks in the "My Bookmarks" area and select in the top right drop down, "Extract highlights." This will then grab all your notes from all the sources you've saved and display them on a clean page for you to look over and print. This is a great tool for bloggers as well. Gather up all your

sources for a post one is working on, add your notes, and when ready, select all the bookmarks and blog about it using Diigo's built in blogging tool. Alternatively, such notes can be part of a paper being planned.

6.2.4 Searching

The last note-worthy feature in Diigo worth discussing is "searching." Diigo provides you with two main options when searching (Search Tag and Search Full-Text) as well as advanced search options. Searching by tag is nothing new, as all the other services provide it; but very useful to have so you can easily find bookmarks that other users have saved under a specific tag. But full-text search functionality is a rare service (http//w.w.w.diigo.com/tools). Because Diigo stores a cache of every website bookmarked, it can index all of the content including annotations, making searching much like a normal search engine.

You can search in all public bookmarks or your bookmarks only, search for words specifically in a highlight that has been saved, and even find text in comments that Diigo users have made. Also, every list of bookmarks in Diigo, offers a corresponding RSS feed, and any user or visitor can subscribe to any of these. This means that if, for example, you find the collection of a particular user interesting, or find that informative articles are often being assigned a particular tag, you can be alerted, via RSS to any new items that are added (http://blog.smallofficeaustralia.com/rss-explained). But, the power of Diigo lies in its 'group' utility, and it is this functionality that I believe can be exploited effectively, either in tandem with other tools such as 'Facebook', 'Mystuff', or Google Notebook for efficient classroom learning.

7 A Hypothetical Language Arts Lesson using Diigo

Below is a hypothetical example of how I might use Diigo in a Language Arts class, in Literature class involving one of the most often studied plays of Shakespeare, Hamlet. One of the issues that are raised in Hamlet is Revenge. The idea of revenge might be foreign and quite outside the Law in modern society. In Shakespeare's time, however, it might have been a way of exacting justice for a crime against one personally, or against his relatives.

After studying and acting Hamlet in class, extend students understanding of the concept of revenge through the web. First I would use Diigo's central storage system to bookmark and leave a comment on the page, "internet Shakespeare.uvic.ca/llibrary/SLTPlays/revenge.html", for example, which I then share to the class in "Revenge" group in Diigo. After that, I would leave a comment that would contain the guideline for a research assignment on Revenge, which would read like "discuss the concept of blood revenge - personal injury inflicted by an individual or a family member, was a common practice in communities or societies where no formal legal systems existed. Then ask students to research the history of this primitive form of justice and write a research paper about it to be posted to the same page in Diigo in the form of individual comments, or to an address in GoogleNotebook (if diigo is used along with Googlenotebook).

Students opening the page in diigo would see the url which is the source of the page I bookmarked, a title of the material, which could in this case be "hamlet-revenge." The "add your description" space might contain the lesson plan as well as the rubrics for completing the assignment together with an assessment criterion. I might then forward the page by e-mail to students in the group with a password to assess the material on the Diigo page.

One of the rubrics for the assignment would be for students to collaboratively search the web for relevant sources for information on revenge, bookmark and tag these appropriately on the Diigo group page where students would be required to interact on the material and select the most relevant sources from among the polled references. This would be an exercise in critical thinking which is regarded as a crucial literacy trait in today's world of digital… where the unwary, uninitiated student might be tempted to access and use information that could very well have credibility problems. It would also be an exercise in social negotiation, and an opportunity for students to learn to be active and responsible members of a group.

A student interacting in the group clicks the expand button to expand the comment containing the rubrics, or a comment in a sticky note left by a colleague on the saved page, and leaves his own comment. While all this is taking place, the teacher in a scaffolding role might decide to ask questions about the site bookmarked or have students carry on conversations about some text on the page, perhaps about the veracity of some information. These notes or conversation can then be made public; in this case, shared to the group. Different assignments can be created on the same webpage on a different topic, perhaps, this time have a different group of students discuss "mourning in Hamlet", and give short written account on mourning practices in different cultures after using the comment facility in Diigo to brainstorm a list of questions about mourning such as, what rituals do family members perform?

How are people supposed to express sorrow? How are the dead memorialized? Then ask students to name cultures whose mourning practices they would like to learn more about. If this is taken as an assignment for the whole class, the teacher could have the class form small groups and assign each group a different culture, and then have students in each group research mourning practices of that culture. Students can decide among themselves how they will share in the information. As an added activity, students could, after they have

finished their research and left their written their assignment on Diigo, present oral group presentation to the class. This technology is useful for any class, but I am sure it will also be suitable for a one on one project assignment.

7.1 Current Use of SBM

In the above section I discussed a hypothetical use of SBM. I think that the most important instructional role of ICT is to enhance student engagement. SBM can certainly help us create an integrated environment that is truly learner-centred with emphasis on active learning.

One very important goal of education in the new paradigm is that it should aim at bridging the goal between authentic and educational activities. Goodyear and Steeples (1998) suggests that the context in which we teach our students should closely resemble the authentic practice; thus we help to reduce the scepticism in the real world concerning the value and relevance of academic knowledge. A significant advantage of technology-based learning is that it provides the opportunity to promote technology literacy, a skill that is very important in itself in our connected world where much of our social and work life is online.

Another advantage that both teachers and students enjoy in technology-based learning such as above is that the asynchrosity that comes with it makes it possible for teachers to construct activities that target higher levels of Bloom's taxonomy. Students then reflect and construct thoughtful contributions to assignment which is again accessible to instructors who are able to observe and probe students' higher levels of thinking as identified with Bloom's taxonomy (Shaw, 2000). If all this and more could be said about technology, in this case, the implementation of SBM in education, then it is worthwhile, at this point, to explore how Social Bookmarks are being used currently, and by whom.

The implication of the snow-ball effect of ICT technology in education is that we hardly are able to explore all the opportunities offered by one before the next thing happens then we start to dally with that as well. Currently the landscape of educational technology is awash with all kinds of web 2.0 utilities such as wikis, podcasts, and blogs which are being explored for their pedagogical benefits. A large number of the people that use SBMs use them to simply store web articles, news items, music and photos that they discovered on the internet or that were put there by them, and which they hope to come back to again, or wish to share with others. So, people use SBMs largely for storage, as resource discovery tool, and for amusement. A large-scale educational use of SBMs for storing information is the example provided by the University of Pennsylvania Library to build Internet subject guide. The site -http://tags.library.upenn.edu/ - provides up-to-date user behaviour at the university's library. This provide information on what books users read most including, for example, what books visitors might wish to read. This information might then be used to serve the students better (Barsky and Pudon, 2006).

As part of my research for this essay, I tried to scout the web to see whether there were any lesson plans or any lessons, for that matter, being delivered via the SSB. My search did not yield anything of substance apart from the reviews of SBMs that usually ended in statements like "this tool will be useful for research." Indeed, there are plenty of reviews extolling the research capabilities of the Diigo social bookmarking client; but I think the tool's major importance lies in its being able to offer itself as a realistic alternative to the traditional virtual learning environment. When appropriately used, it can offer a seamless transition between the classroom and the world wide web, and engage students in a technologically enhanced active learning.

7.2 The Future of Social Bookmarking in Education

An effective use of information technologies, like the SBM can help education, and further education institutions to meet complex responsibilities, including the commitment to enhance the experience of learners, meet their learning expectations for the twenty-first century, and prepare them for life in the global information economy. There is no question that technology has the capacity to make the learning process flexible.

In the above example, it clearly makes a student-centred lesson possible; and it is used to complement and enhance the classroom experience in a collaborative approach that emphasizes peer-to-peer learning. Kurhila, Jaakko, Mikka Mietinen, Petri Nokelainen, Patrik Floreen and Henry Tirri (2003) have observed that "…peer-to-peer activity in learning means resource-sharing, active communication, forming learning communities in shared information spaces and building trust and social relationships between peers."

Similarly, in a study that examined the effectiveness of individual learning versus collaborative learning in enhancing drill-and-practice skills and critical-thinking skills, Anuradha A. Gokhale (1995) found that students who participated in collaborative learning had performed significantly better on the critical- thinking test than students who studied individually. The same study also revealed that both group of students did equally well in the drill- and –practice test, giving further credence to the theory that group diversity in a learner-centred collaborative learning environment enhances learning (Bruner 1985). The use of technology such as SBM as a cognitive tool (http://edutechwiki.unige.ch/en/Cognitive_tool#Jonassen_2006) has high potential for enhancing student learning, but several challenges needs to be overcome. Experience shows that many students when given the chance to use computers as learning aid, only use them check their mail and roam the web for interests that are not related to the work at hand. Markey, Holmes, Edgar and Schmidt (2007) found that technologies used to support learning in educational settings

often become a nuisance, although many students involved do not often think technology becomes distractive element.

Secondly, it has been observed that all technologies have some failure rate, and not surprisingly, newer software such as SBMs could have their own problems that may cause some students to concentrate their attention on solving the technical problems rather than focusing on using the software. On the other hand, Markey et al., (2007) also suggest that since most students are more eager to use new technology in their learning, teachers using technology in teaching must make the effort to help the less proficient users of the technology to acquire the skill of the particular technology. This need is also discussed by Laurillard (1993), when she refers to the importance of students' previous experience as a success factor in their future knowledge construction. According to Markey et al. (2007), "…education has not led the way when it comes to assessing students' entry or prerequisite knowledge and, yet, we continue to make assumptions that students already know how to use technology or they will learn it on their own concurrently with their studies." The consequence of education systems overlooking the importance of previous knowledge in students learning in terms of technology infusion is diminished learning and high levels of student frustration.

8 Conclusion

The potential for using Social bookmarking managers to support student-driven learning in blended learning environments is tremendous. While it can be said that SBMs themselves are in their infancy, we have yet to fully realize their potential in education. I have attempted to show that social bookmarks can enable teachers to transform the classroom to provide active, adaptive, and applied

learning opportunities. Many hurdles, however, remain to be cleared before we can realistically reach those goals. While some of these challenges pertain specifically to ICT implementation in education, many others relate to the readiness and competence on the part of both teachers and students to use social bookmarks in education.

The ability of SBMs to extend learning beyond the classroom is one strength of technology in education. For example, it increases the chances and the ability of students to cultivate autonomy and independence and a sense of empowerment that is prerequisite to life-long learning in a knowledge intensive global economy. But students will need to be guided on how to roam the world-wide-world, and use its learning resources effectively. Teachers will have to be willing to explore the possibility of extending their instructional reach for out of class learning.

Experiences with Virtual Learning Environments and other such internet-based environments for learning indicate that it is already playing a positive role in enhanced students' learning. This experience positive with VLEs indicates that SBMs when implemented in education will expose students to active, applied learning in which students can be supported at various stages. This use of SBMs also have the potential to help students to gain broader perspectives on issues that are discussed in class assignments, and eventually inculcate the habit of critical discernment in students. As with every new venture, there will be teething problems here too, but the flexibility of SBM means it can be done.

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