

A comparative study towards using Web 2.0 tools into the development of learners thinking skills

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Abstract

Abstract— The use of technology is introduced into the educational system to enhance the quality and quantity of the process of teaching and learning by way of computer-assisted instruction and the use of the Internet. Blogs, podcasts and wikis have been adopted by many online professional and educational providers and services to carry a certain learning needs. This paper aims to introduce the importance of Web 2.0 tools in the learning process especially the development of higher order thinking skills among students. A model was constructed based on the recommendations extracted from the prior research towards using Web 2.0 as a knowledge management tool to develop students thinking skills in different educational domains. Finally, this paper has introduced the potential benefits from using the proposed model into the learning process.

Index Terms— Wiki, Web 2.0, collaborative editing, higher level thinking skills, course management system, interaction

1. INTRODUCTION

There are a number of changes that occur in our learning path towards the integration of other techniques. One of these changes is related to the development of new technologies and its impact on the learner thinking skills. In fact, technology has been rapidly developing and influencing society and daily life for centuries.

Web 2.0 technologies make use of the Internet to allow greater collaboration and sharing of resources among a community of learners. The technologies include wikis, blogs, RSS feeds, social bookmarking and social-networking sites. Ubiquitous computing describes the widespread way in which computers and our lives are becoming indistinguishable [1].

However, another compilation illustrated that Web 2.0 technology towards learning contents holds great promise to reform schools and their instructional programs. This revolution in technology has also dramatically changed students' information seeking behavior that when computers are used, the following learning processes are engaged:

- Gather information;
- Teacher as facilitator;
- Involvement in experiential learning;
- Face-to-face communication;
- Expanded creativity, and;
- Testing of new knowledge

Generally, the thinking skills classify into two parts, higher order thinking and low order thinking skills. These skills involve the creating, evaluating and analyzing of knowledge [2] and pedagogies that promote definite actions which also varied but include challenging the learner, promoting active participation, argumentation, problem solving, conducting investigations and tackling subject matter that is complex [3]. Figure 1 presents the

relationship between the web 2.0 tools and the learning activities which formulated based on using a certain strategies.

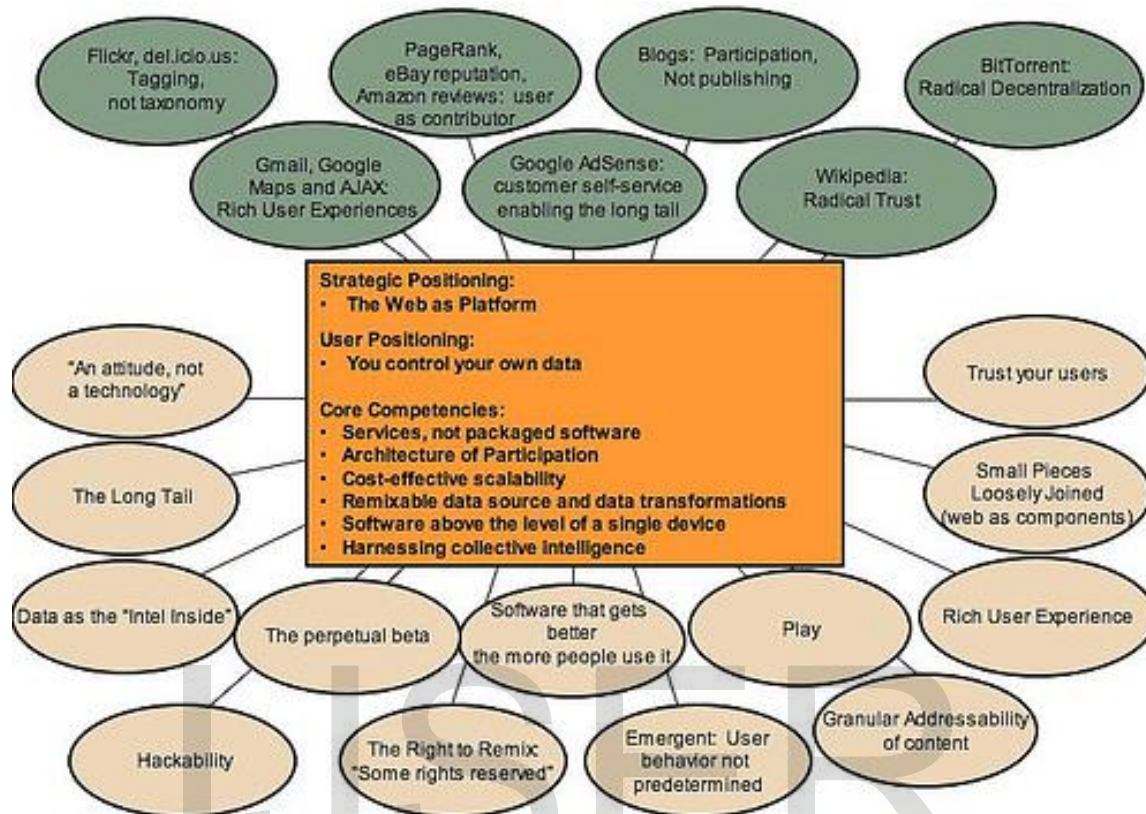


Fig 1. Web 2.0 tools along with the learning activities

The development of Internet services along with implication of knowledge management for the learning purposes has played an important role in providing both teachers and students with more options and flexibility in learning and teaching practices. According to [4] “users use Web 2.0 services and tools such as blogs and wikis in that way that are transforming the curriculum and offering learning to continue long after the class ends”. Educators are increasingly considering the Web 2.0 as a powerful tool for improving the productivity of students, one capable of creating a revolution in the learning process. [4] stated that the emergence of different online tools such as Wiki is certainly consider the single biggest factor impacting education during the past couple of decades. Integrating Web 2.0 technology in schools in general and classrooms particular has become a recognized and a significant strategy for preparing the new generation for the 21st century.

Furthermore, the universal nature of information technology has created widespread ideas regarding democratization of information, which presented as a right and opportunity for everyone to access information and knowledge of how to use it [5]. E-learning applications help users and lecturers to identify their learning path in term of certain abilities which give those users to social growth, problem solving, peer teaching, independent work, exploration, students need to be proficient at accessing, evaluating and communicating, and information; and schools need to increase their productivity and efficiency.

E-learning based knowledge is the knowledge and ability to use computers and technology efficiently. E-learning based knowledge can also refer to the comfort level someone has with using the computer programs that are associated with computers. An important aspect of E-learning based knowledge is to know how the computers work and operate. To achieve basic

computer skills is an important advantage for this modern era. Different researchers illustrated the importance of E-learning based knowledge based on the amount of the time spent on the computer, ownership of computer and number of computer related courses taken.

1. ISSUES & CHALLENGES

There are vast array of services that one can currently find online. These services are constantly growing, some of which are of general nature while others are specialized for students such as information on the Web that students can find, include news, weather, sports, movies, e-learning applications such as Moodle, Stera, Metak, Blog, etc.

Most students find learning based Web 2.0 to be a difficult and tedious task. Some students may depend on their visual ability to absorb information others may find vocal tutoring more suitable some will need both, which usually depends on the learner thinking level. In the field of education; research and communication are exceptionally fundamental essentials which the students cannot do without. The students in their learning journey will require all the assistance they could get, let it be visual, vocal or hands on material. Without these tools the quest for seeking knowledge can be a terrifying experience for students with low order thinking [6]. Therefore, this study aims to suggest a learning model towards using Web 2.0 tools to develop the learner thinking skills.

2. REVIEW OF PRIOR RESEARCH

Kumar in [7] addresses the development aspects of learner from using Web 2.0 tools based on a pilot survey that assesses undergraduates' use and their perceptions of the usefulness in higher education. He administrated the survey among 21 undergraduate students and use of the term 'new technologies' and specific names of applications, e.g. Facebook instead of 'social networking' in higher education. He found that using Web 2.0 tools into learning helps to clarify the learning goals. Participants indicated that the usefulness of Web 2.0 tools such as blogs, audio or video podcasts of classroom lectures, and collaborative document sharing were found to be the most useful technologies across disciplines. Students' prior use of new technologies in on-campus courses greatly influenced their perceptions of their usefulness in higher education.

Chittleborough and others in [3] conduct their study towards the use of Web 2.0 tools for promoting successful teaching and learning in science. A case study methodology was used to describe how individual teachers used ICT and Web 2.0 in their settings. Data included interviews (focus group and individual), questionnaires, monitoring of teacher and student use of smart tools, analysis of curriculum documents and delivery methods and of student work samples. The applied an interpretive methodology to determine the effects of higher-order thinking, metacognitive awareness, team work/collaboration, affect towards school/learning and ownership of learning. Then, they provided different examples of the relationship between student and teacher in the blogs to illustrate how such technologies encourage students and teachers to look beyond text science.

Wang and Beasley in [8] established their study to investigate the impact of Web 2.0 tools such as Wiki in helping learners to create and modify their own knowledge structures within any discipline. They reported the major benefits of using Web 2.0 tools in an educational environment. They also provided some recommendations for educators considering the possible use of a wiki as one of the more powerful Web 2.0 tools currently available.

Adcock in [9] discussed the changes in the learner thinking skills after using Web 2.0 tools in learning. They also addressed the changes in a social studies teacher education program and the role Web 2.0 tools played in helping to rethink pedagogy.

3. PROPOSED MODEL

In the Web 2.0 environment, learners are usually asked to design and create both the structure and the content of online information. This is very much in the constructivist mode. Based on the observation of [10] and [11] "Deliberate structuring of meaning through language links the old with the new technology" and as [12] stated "It is the generation of 'knowledge structure' at the level of concepts and ideas that is essential for learning and the development of expertise". They also acknowledged that effective learning is concerned the knowledge structures generated by the students. The idea of using a wiki as a tool in education is relatively new in the public consciousness. Figure 2 presents the study model for ordering the learner thinking skills in terms of thinking skills knowledge, Web 2.0 tools, analyzing, connecting parts, and observing.

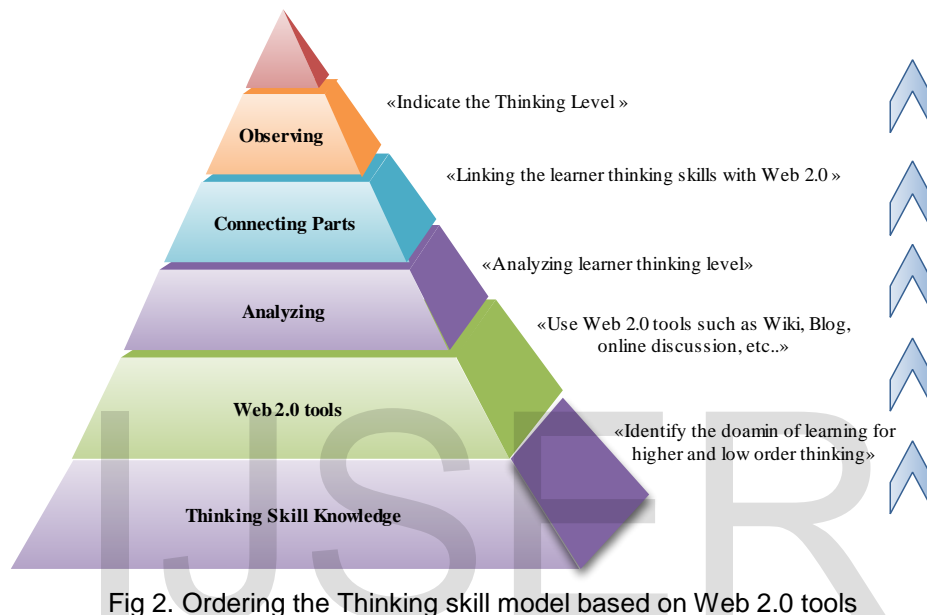


Fig 2. Ordering the Thinking skill model based on Web 2.0 tools

4. POTENTIAL BENEFITS

Using Web 2.0 into learning would help to enhance the learners thinking skills in the terms of the following aspects:

- 1 Increase the quantity and quality of students' thinking and writing through the use of word processors;
- 2 Develop students' critical thinking and allowing them to organize, analyze, interpret, develop, and evaluate their own work;
- 3 Encourage students' artistic expression;
- 4 Enables students to access resources outside the school;
- 5 Bring new and exciting learning experiences to students;
- 6 Offers comfortable using for computers;
- 7 Creates opportunities for students to do meaningful work;
- 8 Enables teachers to individualize instruction, and;
- 9 Allows students to learn and develop at their own pace in a e-learning environment;

5. CONCLUSION

Students from different disciplines highlighted the usefulness of certain Web 2.0 technologies for learning and simultaneously rejected others as not enhancing their learning in that discipline. Based on the prior research, its appear that learners found Web 2.0 tools such as blogs, wiki, etc... useful for learning or improving their thinking skills. Therefore, this paper constructed a new model towards the use of Web 2.0 as tools for developing the learner thinking skills followed by the recommendations of previous researches.

REFERENCES

1. Siemens, G. and P. Tittenberger, *Handbook of emerging technologies for learning*. 2009: University of Manitoba Manitoba,, Canada.
2. Atherton, S. *Learning and teaching: Deep and surface learning*. 2002 [cited 2012 2-01]; Available from: <http://www.dmu.ac.uk/~jamesa/learning/deepsurf.htm>.
3. Chittleborough, G., et al. *The use of Web 2.0 Technologies to promote higher order thinking skills*. in *International Education Research Conference 2011*. Brisbane, Australian Association for Research in Education: Australian Association for Research in Education.
4. Kayama, M. and T. Okamoto, *Knowledge Management Framework for Collaborative Learning Support Agent-Mediated Knowledge Management*, L. van Elst, V. Dignum, and A. Abecker, Editors. 2004, Springer Berlin / Heidelberg. p. CH442-CH442.
5. Jensen, H.S., *Management and Learning in the Knowledge Society*. JRAP, 2008. **38**(2): p. 130-137.
6. Mcelroy, W., *Integrating complexity theory, knowledge management and organizational learning*. Journal of Knowledge Management, 2000. **4**(3): p. 195-203.
7. Kumar, S. *Undergraduate perceptions of the usefulness of web 2.0 in higher education: Survey development*. in *Proceedings of 8th. European Conference on E-learning*,. 2009. USA.
8. Wang, L. and W. Beasley, *The Wiki as a web 2.0 tool in education*. International Journal of Technology in teaching and learning, 2008. **4**(1): p. 78-85.
9. Adcock, L. and C. Bolick, *Web 2.0 Tools and the Evolving Pedagogy of Teacher Education*. Contemporary Issues in Technology and Teacher Education, 2011. **11**(2): p. 223-236.
10. Farabaugh, R., *'The Isle Is Full of Noises': Using Wiki Software to Establish a Discourse Community in a Shakespeare Classroom*. Language Awareness, 2007. **16**(1): p. 41-56.
11. Nicol, D., A. Littlejohn, and H. Grierson, *The importance of structuring information and resources within shared workspaces during collaborative design learning*. Open Learning: The Journal of Open, Distance and e-Learning, 2005. **20**(1): p. 31-49.
12. Jonassen, D.H., K. Beissner, and M. Yacci, *Structural knowledge: Techniques for representing, conveying, and acquiring structural knowledge*. 1993: Lawrence Erlbaum.