Vol. 1, Issue II / March 2011, pp.42-48

Research Paper - Education

Knowledge construction in School Subjects by using 'Wikis'

Dr. Mrs. M. M. Mehendale & Mr. Prasad Joshi
E.C.C.E.R. Pune.

Introduction-

With the technological advancement and ICT revolution education has crossed the geopolitical borders and is becoming more global. The emergence of open source software on the Web like Wikis have been instrumental in repurposing the manner in which pedagogy is conceived and delivered in schools, Not only are the materials& pedagogy becoming more influenced by the rich global environment, but communication among students at all levels are also playing an increasingly important role. E learning 2.0 patterned after Web 2.0 places increased emphasis on social learning, uses blogs, wikis, pod casts as resources. It is built around collaboration. It assumes that knowledge is socially constructed. Learning results through conversations about context & grounded interaction about problems & actions.

What our schools teach to our students is good, but we need to change the context in which they learn, provide our students with opportunities to interact with the "real world" in real ways. The future of education is interactive. Anything that needed to be taught could probably best be learned by the students themselves, therefore (hopefully) classes are becoming more learner centric. Wikis are collaborative effort to stimulate communication between teachers, students, parents etc. Where a daily log of our class activities, explanations for assignments, and a showcase of student work can be found. Wikis are means by which knowledge can be socially constructed in the course. Wikis are collaboratively created web pages.

The chief purpose of this paper is to study the potential of Wikis as learning resource for students within the school education sector. To this end, there are examples given explaining how wikis serve the educational purpose in school education.

Theoretical background & related review-

Wikis provide a good opportunity for collaborative learning & facilitates student-teacher communication and also between student-student communication. This approach is based on the constructivist theories. According to constructivist theories, people learn by constructing knowledge through social interaction. People learn within social contexts, building upon their existing knowledge through exposure to new ideas and information, often introduced to them by others. Knowledge rather than being transmitted through instruction is created by learners as they build their own cognitive structures. Construction of this kind of knowledge is mediated not only through interaction with others, but also by maintaining internal dialog, through the process of reflective

thinking (Vygotsky 1978).

Results of research have shown that Wikis help users to develop literacy skills, critical thinking skills, knowledge construction ability, academic development & reflective thinking. Reflective students tend to think more about what they are doing while they are doing it (Scho¨n 1983), leading to an ability to think quickly and can apply previous learning to new situations. (Knowledge construction) In a society where knowledge goes out of date very quickly and new skills are required "just in time," it is clear that students need to develop reflective skills simply to keep pace with change and survive. Wikis enable users to generate and broadcast content, share resources, connect into communities of interest, and communicate to a potential worldwide audience. The potential of this is recognised by teachers worldwide to promote deeper learning within socially rich and collaborative online environments.

The wiki structure and weekly subject-matter contributed to the phases of knowledge construction on the wiki (Bower, Woo, Roberts & Watters, 2006; Marra, Moore, & Klimczak, 2004;Phillipson & Hamilton, 2004).

Future use of wikis in higher education should take these effects into consideration (Wheeler 2008).

The work of (Bermejo (2005)) shows how to design cooperative learning activities on the Internet by using basic principles derived from contemporary pedagogical research results. The education community (Hadjerrouit (2005)) in engineering supports the view that a combination of constructivist approach to learning and exploitation of WEB technologies is beneficial to students. Thus the review of related research suggests that Wikis have contributed to a knowledge construction.

A **wiki-**

It is a website/webpage that allows users the easy creation and editing of any number of web pages via a web browser. Ward Cunningham, the developer of the first wiki software, WikiWikiWeb, originally described it as "the simplest online database that could possibly work."Wiki" Hawaiian word for "fast". That is precisely what they are: quick & easy to set up.

In the early 2000s, wikis were increasingly adopted in enterprise as collaborative software. Common uses included project communication, intranets, and documentation, initially for technical users. Today some schools and universities use wikis to enhance group learning.

A single page in a wiki website is referred to as a "wiki page", the entire collection of pages, which are usually well interconnected by hyperlinks, is "the wiki". A wiki is essentially a database for creating, browsing, and searching through information. Bruns and Humphreys (2005) like the idea of a nonlinear, evolving, complex, and networked environment which is created and sustained by multiple authors. These conditions, they suggest, provide opportunities for increased collaboration, argument, and interaction between group members.

Many wikis are open to alteration by the general public without requiring them to register user accounts. Many edits, however, can be made in real-time and appear almost instantly online. This can facilitate abuse of the system. Private

Wiki servers require user authentication to edit pages, and sometimes even to read them. Wikis can also be created on a "wiki farm", where the server side software is implemented by the wiki farm owner. PBwiki, Social text, wet paint, and Wikia are popular examples of such services. Some wiki farms can also make private, password-protected wikis software used.

Wikis have been used in the academic community for sharing and dissemination of information across institutional and international boundaries. Wikis can be used as a source for obtaining information and knowledge, and also as a method of virtual collaboration, e.g., to share dialogue and information among participants in group projects, or to allow learners to engage in learning with each other, using wikis as a collaborative environment to construct their knowledge or to be part of a virtual community of practice. In those settings, they have been found useful for collaboration, documentation, and committee work. Educational wikis have following important features mentioned.-

Homework Page
Educational Links
Lessons
Student Work
Take Poll
Movie Maker Page
Pen Pals
Just for Teachers
Parent Page

Use of wikis in school education-

The purpose of using Wikis in education worldwide can be classified in to following main categories.

General The site provides a place where we all can download and upload information, to chat to fellow students/ ask for help in a safe environment, as well as to help students showcase examples of their work for others to view.

Information centre for different school subjects The information station where a daily log of our class activities, explanations for assignments, and a showcase of student work can be found which is subject specific.

- **History class** wikis are designed around students investigating and doing history, not having it fed to them.
- For subject **Geography** Learning Portal, containing all lessons, revision, coursework and homework resources are there.
- **Applications of Wiki use in science classrooms** are only limited by the creativeness of the teacher and students to support science learning. The following are a few examples.

Students collaborate in:

- Defining science terms using images
- Links to detailed explanations
- Online videos on Teacher Tube
- Glossary of Scientific Terms: students develop an interactive glossary for defining physical science terms throughout the entire school year.

- *Taxonomy* A student is able to identify, name, and classify living things during their life science or biology course. eg. Students are able to develop the taxonomy of specific plants using definitions and images.
- *Investigations* student groups report on experimental designs and submit investigation reports to their teacher. eg. Students collaborate in the investigation of the mystery, why honey bees are disappearing.
- *Collaborate with Other Schools* teachers and students can develop working relationships with other schools around the country or world to collect data for scientific investigations. Example: students work with students in other parts of the country or countries to determine acidity of rain.

➢ **Mathematics**

Applications of Wiki use in math classrooms are only limited by the creativeness of the teacher and students to support learning. There are teacher resources, online resources (e.g. online and interactive dice, spinners, dictionaries, where all the units are posted with notes, technology assignments, tutorials/remediation, guided practice, extending/refining, practice tests, tasks, projects and open ended questions.

The following are a few examples:

Problem Solving - students can write about and provide images of where they applied math to solve a problem. *Real World Math* students provide examples of how they solved everyday math problems.

Problems of the Week students work in groups to solve challenging word problems. *Glossary of Mathematical Terms* students collaborate in defining math terms using images, links to detailed explanations, and online videos on Teacher Tube.

➢ **Languages**

Setting up a wiki as an added class component are a motivating way to get students practicing more language (English, Spanish, French) outside of the classroom. A site for French beginners- There are notes, flashcards, videos, and several online exercises, stressing differentiated instruction. All assignments, lessons, and links are on or wiki page. Students complete assignments on discussion pages and wiki pages. Wiki is created to speak about Spanish Literature and make argumentative texts about topical subjects. A site created for English language students and teachers that serve as a cooperative learning and teaching environment. There are links for ESL students and teachers. Lesson plans and other resources for English teachers and secondary students who are native English speakers. There are also links for ESL students' English courses and links to poetry, literature and writing workshops. There are notes, flashcards, videos, and several online exercises, stressing differentiated instruction. A lot of links to practise, games, videos, music and topics which we can use in the classroom are given.

Campus happenings

A site to promote and provide info on nearby, and campus happenings (events, clubs, speakers, get-togethers), A place where students

can connect with each other (including distance students), and can find the resources they need to be successful (think financial aid, library access, etc). A site maintained by students to distribute news and other happenings at the school and a space that can collect for public review course work that is a valued.

Remedial work

The wiki is an attempt to provide "remedial" work to students who are (falling) behind, having difficulty in keeping up with class work. Variety of exercises are created based on texts in their textbook and on audio files that come with the textbook, always based on units that have covered previously in class. For example, Reading comprehension exercises, some involving a short answer that students can write online. Teachers would then correct it and give feedback about their mistakes in the wiki, as well as the final score; vocabulary and grammar exercises with the correct answers and feedback whenever they made a wrong choice to help them think again and correct themselves; and, listening exercises. Several students use the wiki and it help the students recover. It is a worthwhile and very gratifying experience that can be adapted to any grade level and **to other subject** areas.

Home assignments

There is also information about what to do if a student is absent from school. Students message teachers and other students for assignments, to ask and answer questions, and also to learn communication skills.

Subject teachers association

This wiki is used to communicate, schedule, plan, and collaborate with the teachers. It is intended for teachers to share their best practices in teaching. For example a Resource wiki for Early Childhood Educators and Primary Teachers who want to integrate technology in their learning environments.

References & general reading

A Wiki is designed to encourage reading for students and staff, and serve as a forum to share those reading experiences, promoting reading book reviews and podcasts, literacy .The Collaborative digital book club that assists teachers/librarians in introducing books and reading activities to students while providing a venue for students to express their thoughts and opinions on books read. This wiki is designed as an interactive space for students who collaboratively write wiki-books and engage in discussions about books they have read and enjoyed.

Developing 21st Century Skills

This wiki is designed to expose faculty, staff and students to a variety of Technology tools, activities and resources. It is created to support technology and 21st Century skills integration.

Show casing

This wiki site is a collection of life's work as a teacher & teach the students how to create their own wikis to share their life's work.

Debate

The wiki involves in researching the issues, taking positions on them, developing an action plan, and creating a database of links to valuable information regarding the topic. They use this wiki to answer all of the great questions of society (What is the role of government, what is the responsibility of the individual, etc.) and come

to a collaborative consensus about what a society truly needs in order to reach for perfection and sustainability. Students identify a topic of interest. A WIki page is created for that topic. This page is used to identify specific learning goals, to locate and post links to sites that support those interests, and to begin creating web-based projects to creatively demonstrate their learning experiences. Students are encouraged to work on that page with one or more other students from their own classroom and from other classrooms who join the project.

Curriculum

This site is for curriculum design, curriculum planning, curriculum delivery, evaluation.

Use of web 2.0

A site to help teachers and students find web2.0 tools to suit their needs and purpose. The wiki is designed to teach students, and teachers, about Web 2.0 and how to apply the technologies for learning. Each application is defined and, in some cases, multimedia resources used to explain what and how principles underlying the technology. It is a living, breathing document and is always accepting input on how to improve the work to better help educate the value of Web 2.0 in education**.**

Advantages of Wikis in learning -

It is an amazing Web 2.0 application which keeps getting better.

Students' love visual learning and the opportunities to embed flash, video and mp3 files have made the potentially very dry subjects come alive.

It is a great way to teach children how to collaborate online and responsibly. Wiki spaces allow them to collaborate online. They love being able to share pictures, work with their parents, and are always so proud of themselves when they publish something on the Internet.

Wikis have completely changed the way we teach. It allows for an almost paperless class, a place for students to discuss outside of class, a place for parents to see what is happening in class and for colleagues a place to post interesting video clips and assignments.

They have transformed teaching as it is simply wonderful to have such a user-friendly, engaging resource - and for free.

It allows parents to find out what their son or daughter is doing in the courses.

It also is a great way for teachers to get feedback from their students.

We can see who has not done the work and post a educationally sound and socially responsible' comment on their page.

The wiki creates a running record of students' progress.

Wikis motivate the students to take their writing more seriously because it is going to be read by many people. When they start peer-reviewing each other's statements and pointing out confusing portions it helps them think about their own written communications.

A site for building content that is easy to access and easy to use by students.

Wikis are dynamic & versatile learning environment.

Simple RSS feed, social bookmarking tools, Skype are wiki tools which can be used to

encourage more student autonomy within the wiki. They are completely free.

Status of Wikis in India

Most of the educational Wikis are either for giving academic information about different courses & other details like syllabus, duration etc. some give links to a particular lesson. Very few classroom Wikis prepared by teachers or students are seen. Given below are two sample cases.

1) Open-education-wiki:

This is a collection of simple lessons, targeted at middle school kids, in science and math. Most of the lessons are in the form of illustrative yet simple experiments and are written in the format: apparatus required, procedure of the experiment, observations and an explanation of the science behind the observations. Seven Lessons created on 4/7/07.

2) Example of classroom wiki:

Exploring Geography: By- Suryaveer Singh fromS. D. Public School, Pitampura, India Setting up a extended classroom wiki gave Class 10 Geography students extra opportunities to post and edit their work- lessons, links, handouts, presentation, videos, games and comic movies - online, thus allowing their teacher and fellow students to provide comment and feedback. This is an integrated approach towards 21st century learning. It is also open for collaborate on a project.

The stake holders in education use Wikipedia but Classroom Wikis are seldom used.

Conclusion

Web 2.0 tools such as wikis can be used as shared, collaborative spaces to enable students to create and discuss their own content & reflective thinking thus help in knowledge construction. They help us to integrate learning as a natural part of everyday life. Wikis have been used successfully in authentic teaching and learning contexts, and they have a great deal to offer in an age of digital communication.

Inherent creativity of Wikis provides an open environment for topic advancement that helps students to become autonomous, creative, helpful and cooperative human beings which are important life skills. Thus both have a great potential to be effective e learning 2 tools for academic discourse in education.

References-

- http://knowledgetree.flexiblelearning.net.au/edition04/pdf/Blogging_to_Learn.pdf
- Boulos, M.N.K., Maramba, I., & Wheeler, S. (2006). Wikis, blogs and podcasts: A new
- generation of Web-based tools for virtual collaborative clinical practice and education, BMC
- Crowe,C & Tonkin, J. (2006). Fifteen megabytes of fame: blogging, learning and assessment. Synergy, 24, University of Sydney.1-6. http://www.itl.usyd.edu.au/Synergy/article.cfm?articleID=287
- Gupta, B. (2010). Audit the learning resources, University News, 48(02) 11-17
- Wikis, Information Technology based Higher Education and Training, Sydney. 187198. Group Research, 36, 704 - 745.
- Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes.
- **http://www.suite101.com/content/using-wikis-in-math-classes-a67900**)