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## Technical Evaluation Report

# 27. Educational Wikis: Features and selection criteria

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## Abstract

This report discusses the educational uses of the 'wiki,' an increasingly popular approach to online community development. Wikis are defined and compared with 'blogging' methods; characteristics of major wiki engines are described; and wiki features and selection criteria are examined.

## Defining Wikis

According to Leuf and Cunningham (2001), creators of the original wiki concept, "a wiki is a freely expandable collection of interlinked webpages, a hypertext system for storing and modifying information – a database, where each page is easily edited by any user with a forms-capable Web browser client" (p. 14). Content can be directly linked to that found in other wikis (interwiki) and in Web documents.

Browser-based access means that neither special software nor a third-party webmaster is needed to post content. Content is posted immediately, eliminating the need for distribution with the associated risk of virus transmission. Participants can be notified about new content, and they review only new content. Low graphic use results in pages that load quickly. Access is flexible – all that is needed is a computer with a browser and Internet connection. Modular construction means that wikis can be simple or complex to meet user needs and skill levels.

Mattison (2003) states that "a wiki can be a blog, but a blog does not have to be a wiki." Wiki use is often compared with blogging. Blogs, or weblogs, are chronological online journals written mainly by individuals (although group blogs exist), to which readers post comments.

The main differences between the two approaches relate to notification of new content, editing format, and structure. Blogs typically use RSS (Really Simple Syndication) feeds to sort information and alert users to new content. Wikis usually use email notification. For students, an advantage of blogs is the use of 'What You See Is What You Get' (WYSIWYG) editing. Wikis usually employ a simplified markup formatting (although there are also WYSIWYG wikis). A

disadvantage of using markup is the lack of standardization across various wiki programs (Mattison, 2003).

Blogs are arranged chronologically, while wiki structure can be based on hierarchical subject divisions through new page creation and internal and external hyperlinking. These features make wikis highly suitable for educational use. Blogs are more structured; wikis are more flexible. Most wikis include a search feature; many blogs do not. Once a blog addition is posted, it often cannot be edited. User communities are found at both blog and wiki sites.

## Educational Uses

It is difficult to estimate the number of wikis currently used in university settings, and the range of ways in which they are being used. In order to attempt this, 24 university wikis were examined. The universities using them are located in countries including Canada, the US, Germany, New Zealand, Switzerland, and the UK. A natural tool for distance education (DE), wikis enable instructors to create interactive activities for their students, and to present course information such as resources, external links, project information, and frequently asked questions (FAQs). Instructors may also wish to monitor wiki discussions to determine problem areas for students. University wikis are commonly used as knowledge repositories. Godwin-Jones (2003) suggests that wikis may be ideal for building communities of practice by creating a collective repository of expertise in a subject area, which is refined over time by the contributions and problem-solving of interested individuals. It is this function that distinguishes communities of practice from other online communities, such as chat groups or bulletin boards.

Wikis may also exhibit some of the elements that Wenger (2001) considers fundamental to the creation of successful communities of practice – among them, a virtual presence, a variety of interactions, easy participation, valuable content, connections to a broader subject field, personal and community identity and interaction, democratic participation, and evolution over time. Many wikis also have a core group or individual that takes active responsibility for directing the community. They provide a forum for learners to discuss topics and obtain information relating to courses, extra curricular activities and associations in their fields of interest. Personal home pages and discussion areas help to humanize the learning experience, and to provide social interaction among students.

Typically, universities integrate wikis seamlessly into their main website pages. Many of the wikis surveyed are currently in the early stages of development. Most are purely text-based with few images. In general, university wikis appear to be used more by specific departments or for particular topics, than for campus-wide uses (e.g., institutional information). The use of wikis for administrative scheduling, faculty use, learning support materials, and course management, appears to be rare. Of those we examined, more dealt with activities, events or clubs, than with curricular issues. Project management is a fairly common function, by course/ group projects in particular fields including music and languages. University-based wikis seldom appear to be used for entertainment, student feedback, or journaling purposes. Wikis with a definite purpose and structure appear to be more common than wikis left basically unstructured, or for personal student use. Perhaps the open access to wikis for editing deters regular university use for content that must not risk change.

# Basic Features and Comparison of Major Wiki Engines

Evaluating wikis is different from evaluating vendor supplied or proprietary programs, which have a fixed set of features. All wikis can potentially adopt all features found in other wikis, simply by accessing and customizing the source code. Rather than attempting to categorize the myriad wiki versions, this report describes the basic characteristics and features of wikis, and attempts to provide an easy approach to selecting wiki features.

According to *Meatball Wiki* (2003), there are more than 200 wiki programs although only a handful might be considered unique: *Dolphin Wiki, Php Wiki, Moin Moin, Swiki Clone, Twiki Clone, UseMod Wiki, Tikki Tavi, Zwiki Clone,* and *Open Wiki*. In addition to these nine core wikis, we compared *WikiWiki Web* (the first wiki) and *Seed Wiki* (a WYSIWYG wiki). Feature categories include: source code, wiki management, page formatting, access control, communications, support, and advanced features.

Generally, there were more similarities between them than differences. While written in several different programming languages, each with its own set of formatting rules, most of the wikis used the same basic page formatting functions (i.e., text editing and image, table, list, hyperlink and file insertion). *Seed Wiki* was the only one with a WYSIWYG text editor. All of these programs are open source. Additional features, such as polling and administrative levels, can be added to *Seed Wiki* for a fee. Other consistent features included interwiki linking; archiving; a "sandbox" area to practice formatting, and user support. Three of the wikis had spell-check features, and two allowed the insertion of emoticons.

Disparities were evident in access control, and appear to be based on the underlying philosophy of the developers as to the degree of freedom they are willing to pass on to the users. While some wikis provide the ability to password-protect pages, restrict users, and provide various level of administrative control, others allow open access to the entire wiki. Very few of the wikis we examined had advanced features such as blogging, polling, calendars, and the use of RSS. This seems to coincide with research by Leuf and Cunningham (2001) who suggest that a wiki that functions independently of any special add-ons or plug-ins, tends to meet the needs of a fairly broad audience.

### *Wiki Selection Criteria*

The following list outlines criteria for consideration when selecting a wiki for educational use. (These are consistent with the criteria adopted earlier in this Report series.)

1. **Cost:**
    - Open source software vs. financial outlay required
    - Licence fees (scaled per user)
    - Supportable programming language

2. **Complexity:**
    - Online technical support (documentation, manual, FAQs)
    - Help by email/ phone/ fax/ online forum
    - Plug-in or scripting exchange
    - Sandbox
    - User community

- Web-hosted or download required

3. **Control:**
   - User registration
   - Password protection of core pages
   - Levels of user rights to edit
   - Active user list
   - Participants online
   - Easy to restore damaged or deleted pages

4. **Clarity:**
   - Index/ site map
   - Interwiki – format that facilitates linking content between different wikis; two common formats are are *CamelCase*, and [free links]
   - Back-linking
   - Page hierarchy
   - History of all versions (revision tracking)
   - Archiving of all pages
   - New page creation
   - Page deletion
   - New content identified (version compare)
   - Email notification of changes

5. **Common Technical Framework (CTF):**
   - Editable by anyone with a forms-compatible browser
   - Cross-platform
   - Internet and Intranet installation
   - Resolution of simultaneous editing conflicts
   - Plain ASCII text storage

6. **Features:**
   - Editable by major browsers (Internet Explorer, Netscape)
   - WYSIWYG editing
   - HTML support
   - Text editing (italics, font size, colour)
   - Image insertion
   - Hyperlink insertion
   - Tables
   - Lists (numbered, bulleted, hierarchical)
   - Media insertion (streaming audio/ video)
   - Search
   - Spell-check
   - Emoticons
   - Blogging
   - Polling
   - Calendar
   - RSS
   - Link checking
   - Drawing tools
   - Equation editor

- Synchronous text messaging

## Further Educational Considerations

Although the evaluation team was able to locate numerous examples of the growing wiki trend in education, few were in distance education contexts. Yet wikis can provide an efficient, flexible, user friendly and cost-effective interface for collaboration, knowledge creation and archiving, and student interaction. Lack of standardized formatting across wiki programs makes WYSIWYG editing attractive. The need for minimal technical skills allows users to concentrate on content rather than on the technical process of writing, and reduces the need for student support. For example, while 'bolding' may require HTML tags ( word ) in one wiki, it may require three single quotes in another (‘‘’word’‘’). Udell (2000) makes the point that most formatting is not mnemonically designed. Clicking the B icon in a toolbar is more familiar and user-friendly.

In some WYSIWYG wikis, users attempting to cut and paste content from word processors should be cautioned to use simple ASCII text to avoid formatting difficulties. With the advent of free tools such as *htmlArea* (2003), that can turn any text area into a WYSIWYG editor, it is hoped that all wikis will be able to offer WYSIWYG editing. WSYIWYG wikis currently include *Seed Wiki*, *EclipseWiki* and some versions of *Plone*.

Features rarely incorporated in wikis are: equation editor, synchronous text messaging, link checking, and drawing whiteboard (some do have drawing tools). If coursework requires these capabilities, an integrated collaborative software program may be a better choice.

While open source programming may make wiki use cost effective, it may be necessary to have support staff with programming skills in the appropriate language for server maintenance, customization and component creation (Mattison, 2003), particularly for campus-wide use.

Unlike threaded discussions where the writer is identified, it is usually impossible to identify contributions to a wiki. This makes apportioning credit difficult and the authority of the content hard to establish.

## Conclusions

It appears that the full DE potential of wikis remains to be realized. Further evaluation of the contribution of wikis for developing communities of practice in DE education is warranted.

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The next report in the series reviews *Speak2Me*, a synchronous audio system used for ESL teaching in Taiwan.

**N.B.** Owing to the speed with which Web addresses are changed, the online references cited in this report may be outdated. They can be checked at the Athabasca University software evaluation site: http://cde.athabascau.ca/softeval/. Italicised product names in this report are assumed to be registered trademarks.

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