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PUBLISHER'S DECLARATION

Research and innovation in teaching and learning are prime topics for the *Journal of Instructional Technology and Distance Learning* (ISSN 1550-6908). The Journal was initiated in January 2004 to facilitate communication and collaboration among researchers, innovators, practitioners, and administrators of education and training involving innovative technologies and/or distance learning.

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IJITDL is committed to publish significant writings of high academic stature for worldwide distribution to stakeholders in distance learning and technology.

In 2 ½ years the Journal has over one million page views and 250,000 downloads of eBooks and monthly journals.

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Editorial

The Readers Speak

Traffic and Activity Summary - LiveStats Report

During the **Month** of **January, 2007**:

- A total of **122,952** distinct visits were made to the site.
- **341** distinct web pages were viewed a total of **93,142** times.
- People spent an average of **2** Minutes and **35** Seconds viewing a page.
- Downloadable files were requested **24,707** times.

The editors and referees are delighted to report the growth of readership. In December 2006, this editorial reported 100% growth in ten months. In December and January, page views increased 73% from 53,746 fin November 2006 to 93,142 in January 2007. In January, there were 24,707 downloads of Acrobat files, a 50% increase in two months. 2611 downloads were for ebooks – 1,785 for the distance education reader and 826 for the dissertation guide.

The Journal is most grateful to our readers, authors, and volunteer staff that make this possible.

In 37 months the Journal published more than 200 articles from over 300 authors. Approximately 15% of page views are for indexes, indicating the majority of readers use direct links from other sites or URLs.

The 20 most requested issues in Acrobat format during January 2007 included 8 from 2006, 6 from 2005, and 6 from 2004.

#	Month/Year	Jan_07	#	Month/Year	Jan_07
1	September 2006	**1,432**	11	January 2006	**699**
2	December 2006	**1,240**	12	October 2004	**534**
3	July 2004	**1,186**	13	January 2004	**613**
4	June 2005	**946**	14	September 2005	**606**
5	April 2005	**890**	15	May 2006	**564**
6	October 2006	**834**	16	October 2005	**551**
7	January 2005	**832**	17	June 2004	**548**
8	December 2004	**754**	18	November 2006	**541**
9	March 2006	**753**	19	November 2005	**529**
10	April 2006	**734**	20	February 2004	**495**

Several articles have been viewed in HTML format more than 25,000 times, the leaders being **Connectivism: A Learning Theory for the Digital Age** by **George Siemens,** and **Learning Objects: A Practical Definition** by **Rory McGreal.** The January 2005 issue and the distance education reader are the most requested Acrobat files, each with more than 20,000 downloads.

The next page shows the 20 most requested HTML pages for January 2007.

TOP 20 ARTICLES FOR JANUARY 2007

#	Title and Author(s)	Journal	Jan07
1	**Connectivism: A Learning Theory for the Digital Age** George Siemens	/jan_05/	1,901
2	**Tips and Tricks for Teaching Online: How to Teach Like a Pro!** Kaye Shelton, George Saltsman	/oct_04/	1,271
3	**Brain-Based Learning: Possible Implications for Online Instruction** Stephanie A. Clemons	/sep_05/	1,245
4	**Comparing Weblogs to Threaded Discussion Tools in Online Educational Contexts** Donna Cameron, Terry Anderson	/nov_06/	1,055
5	**Assessing Student Needs in Web-Based Distance Education** Pamela A. Dupin-Bryant, Barbara A. DuCharme-Hansen	/jan_05/	999
6	**Critical Thinking in Asynchronous Discussions** Greg Walker	/jun_05/	906
7	**Online Learning Teams: Indispensable Interaction** Muhammad K. Betz	/jun_04/	916
8	**Learning Objects: A Practical Definition** Rory McGreal	/sep_04/	808
9	**Building the Academic EcoSystem: Implications of E-Learning** John Witherspoon	/mar_06/	771
10	**Email as an Educational Feedback Tool:** **Relative Advantages and Implementation Guidelines** Jason Huett	/jun_04/	726
11	**Creating Concept Maps: Integrating Constructivism Principles into Online Classes** Brent Muirhead	/jan_06/	744
12	**The Role of Critical Thinking in the Online Learning Environment** Kelly Bruning	/may_05/	731
13	**Encouraging Creativity in Online Courses** Stephanie A. Clemons	/jan_05/	725
14	**University of Phoenix Online Masters in Teaching Program** Cindy K. Knott	/jan_04/	702
15	**Insights into Promoting Critical Thinking in Online Classes** Daithí Ó Murchú, Brent Muirhead	/jun_05/	656
16	**Online Courses Demonstrate Use of Seven Principles** David Batts, Susan M. Colaric, Cheryl McFadden	/dec_06/	627
17	**Making Your Own Educational Materials for the Web** Bruce L. Mann	/dec_05/	625
18	**Bricks and Clicks: A Comparative Analysis of Online and Traditional Education Settings** Freda Turner and Jack Crews	/apr_05/	620
19	**Academic Research Presentations: Practical Advice for Today's Graduate Students** Brent Muirhead	/jan_04/	612
20	**Time Management Strategies for Online Teaching** Min Shi, Curtis J. Bonk, Richard J. Magjuka	/feb_06/	593

Editor's Note: Alternative education methods involving virtual learning led to controversy among faculty, administrators, and researchers. Many saw it as the end of an era, others as an attack on academe as we know it. Research continued to assert the value distance learning as an alternative paradigm for teaching and learning. The predominant growth in higher education for the past decade has been in distance learning as a supplement to, rather than a replacement of, traditional face-to-face instruction. The stages of transition are made evident by this paper which identifies unsolved problems related to faculty.

The Invisible Professor and the Future of Virtual Faculty

Martha C. Sammons, Stephen Ruth

USA

Keywords: faculty online learning distance education motivating future workload responsibilities invisible

Introduction

The Sloan Consortium's latest report, ("Making the Grade: Online Education in the United States 2006") estimates that 850,000 more students took online courses in fall 2005 than 2004, an increase of almost 40 percent. Although the online teaching continues to grow in popularity, it places greater demands on faculty than traditional courses. The Sloan report found that this problem exists at all levels of postsecondary education, from doctoral-granting institutions to community colleges. A significant number of full-time professors are thus understandably reluctant to participate in distance learning, and faculty questions about online teaching continue. Traditional professors are disappearing from online classrooms as distance learning has altered their roles and responsibilities, as well as their professional status, job security, workload, rewards, and intellectual freedom. This article delineates some of the most significant challenges and suggests that distance learning has created new questions about the future of virtual faculty.

The Motivated Professor

Over the past decade, there have been numerous studies, articles, and presentations about faculty attitudes toward distance learning. Some researchers categorize resistance factors as *intrinsic* (challenge, keeping up with technology, acceptance, etc.) and *extrinsic* (time, money, scheduling, flexibility, etc.).

Parker's (2003) analysis of over one hundred articles concludes that faculty generally teach in distance education programs for the same incentives that they teach traditional courses: for intrinsic rewards. This study identifies the intrinsic rewards as self-satisfaction, flexible scheduling and wider audience. Other reported motivators are reaching non-traditional students, developing new ideas, using technology, being intellectually challenged, growing personally and professionally, improving teaching, and building one's own credentials (Wolcott and Betts, 1999). Intrinsic benefits can even include simple things like public recognition and notes of appreciation (Bower 2001; Clay 1999).

The obvious extrinsic rewards include stipends, decreased workload, release time and new technology. Maguire (2005) argues that if the necessary extrinsic and institutional factors are in place, then intrinsic deterrents may be less influential. Intrinsic factors may also be outweighed by social pressures (institutional, peer, student, and community), which either support or deter participation in distance education.

The Unmotivated Professor

Given the potential rewards, why do faculty continue to resist online teaching? Credit toward promotion and tenure and lack of financial and other rewards have been mentioned for years as key factors affecting faculty participation in distance learning. One major barrier is interference with promotion and tenure and lack of recognition from both administrators and peers (Betts 1998; Lee 2001; Rockwell et. al. 1999; Wilson 1998; Shell 2004). Time spent in developing distance learning courses is time not spent on other professional activities needed to receive tenure. The greatest pressures are often placed on the most vulnerable faculty, untenured or adjuncts. Non-tenured faculty seldom get credit for tenure for teaching distance education courses but most often are recruited or required to teach them (American Association of Higher Education 2001; Arnone 2002; Bower 2001; Kiernan 2000).

Monetary rewards (salary increases, stipends, overload pay, grants) are another key motivator to teach online (Betts 1998; Bonk 2001; Jones and Moller 2002; Rockwell et. al. 1999; Schifter 2000, 2002). As new ways of calculating faculty roles in courses are developed, pay may become even more murky. Also, compensation differs depending on whether faculty are tenured or non-tenured and whether the school is a community college or four-year university. (American Association of Higher Education 2001; Frakt and Castnagera 2000; Southeast Missouri State 2002). A lower the status school or teacher correlates with lower compensation. Several studies confirm the obvious: universities that offer stipends, course release-time, money, and credit towards tenure seem to enlist and retain faculty better than universities that offer only intrinsic rewards (Beggs 2000; Bower 2001; McKenzie 2000; Southeast Missouri State 2002).
There are other ways to reward faculty. Compensation for course development can include computer hardware and software, royalties, and additional payments, such as overload compensation or payments based on enrollments (Betts 1998; Southeast Missouri State 2002).

Besides financial incentives such as salary adjustments, merit pay, and continuing education stipends, other extrinsic rewards can include release time, limited enrollments, parking, and student assistance in the form of teaching aids and the like (McKenzie 2000; Clay 1999).

The 24/7 Professor

Compensation in the form of salary and promotion and tenure are usually related to workload. Technology changes faculty roles because it redefines the scope of faculty workload and responsibilities. It is not surprising that after the need for more student discipline, the second most significant barrier reported by Chief Academic Officers in the newest Sloan Report was that faculty need greater time and effort to teach online. An NEA survey (2000) similarly concluded that faculty members' top concern about distance education is that they will do more work for the same amount of pay. The study found that most faculty members spend more time on their distance courses than they do on traditional courses, and 84 percent of them do not get a reduced workload. In addition, 63 percent of distance faculty members receive no extra compensation for their distance courses. So the new 24/7 professors who is dragged from a traditional classroom into cyberspace may not be able to adjust.

There is conflicting opinion about the workload for online course teaching compared to face-to-face. The time needed to teach online courses may vary according to factors such as content area, type and level of course, course design, and a variety of student factors such as graduate and undergraduate levels (Lazarus 2003). In some studies one distance learning course is estimated at least 1.5 to 2 times the coursework of a traditional classroom class (Southeast Missouri State University 2002, Cavanaugh 2005). Faculty can ease into online instruction by offering hybrid courses that combine both online materials and classroom instruction. They can also set more realistic standards and guidelines for their courses, thus reducing the workload barrier.

Time requirements are difficult to measure, as they are dependent on the subject, number of students, instructor skills, type of technologies used in the course, and course quality, but the clear finding is that for most full timers the conversion to online mode is a significant user of previously discretionary time. Regardless of whether the workload actually increases, certainly the pace of work and the working style change. The time spent teaching online may not actually be greater, but the "chunking" or flow of tasks online is different. For example, there is a large amount of development time required up-front, then bursts of work to answer e-mails, run discussion, and download and send back assignments. This change results in a sense of less productive time available for other professional responsibilities (Thompson 2004). There are exceptions. McKenzie found that some faculty are motivated to teach online because of the increased flexibility in schedule (2000).

It takes considerable time to develop a course, especially the first course, and repeated delivery of the same online course still requires extensive preparation time. Several studies have shown that online courses take considerably more preparation and delivery time than traditional approaches because of required activities like revising and converting course content, organizing and uploading course materials, practicing with user interfaces, etc. (Boettcher 2004; Pachnowski and Jurczyk 2003). Numerous surveys show higher levels of work for online vs. face-to-face courses, with several additional hours a day spent online answering student questions and responding to comments, extensive logging on, e-mailing and downloading/sending of student assignments, and problem-solving (Thoms 2005; Sharpe 2005).

Communication, interactivity, and feedback are additional challenges in online teaching. Online courses require constant monitoring and quick response time. An article in the “Chronicle of Higher Education” (Young 2002) appropriately called “The 24-Hour Professor” raises key issues about faculty response time. The need for rapid response may keep professors away from online teaching, fearful of being chained to their computers. Because written communication is the chief mode of activity in an online course, the new teacher must be prepared to budget the proper amount of time required. Reading comments and responding to discussion take longer than verbal communication. Because distance learning students are usually not able to ask their teachers questions in class, materials must be clearer and more specific.

Facilitator

New modes of communication and interaction have contributed even more to alter the traditional teaching environment. Feelings of isolation may affect instructor satisfaction, motivation, and potential long-term involvement in distance learning (Childers and Berner 2000). Faculty may also lose what they like most: interacting with students face-to-face; they are invisible to students, lost behind a computer interface and relying only on electronic communication. On the other hand, faculty members new to online teaching often report being overwhelmed by *increased* interaction levels (Shea 2005).

There seems to be a gradual paradigm shift occurring from faculty as content/information providers to facilitators/mentors/coaches and from teacher-oriented to learner-centered pedagogy. As more faculty become virtual, their classrooms have become “learning spaces.” For many, the prospect of offering student-centered teaching in an online environment may be intimidating. Distance learning violates the instructor’s “identity as a professor and expert, a source of knowledge and information, and a performer at the classroom lectern. It may also explain why faculty research into using the web must deal with more issues than whether students learned as much as in another setting; in other words, faculty must spend substantial time understanding and adjusting their identities in order to see the usefulness of web-based instruction” (Meyer 2004).

Because they already are successful teachers and scholars, many full time faculty members simply do not see the need to change their teaching methods or add to their workloads by learning

new skills. Collaborative learning activities differ significantly from traditional classroom interaction. Teaching online also requires different approaches than face-to-face and also uses different skills, many of which could be classified as "technical" and far beyond simply posting lectures and a syllabus on a Web site. Smith (2005) identifies and describes over fifty unique competencies needed by online instructors.

Computer Geek

Even if they have basic technology skills or are adept instructors, many professors are not experts enough with computers to master the software and design and develop an online course. Technology has always been a barrier to online teaching. Once faculty learn the basics, continued training and course enhancement are required. Not only do course management systems change (for example, the merger of WebCT and BlackBoard), but also new technologies continually emerge, such as mobile computing, new uses of audio and video, Podcasts, live conferencing, e-books, and Weblogs. Faculty may also need to learn to use asynchronous and synchronous tools more effectively. Training must include best practices both technological and pedagogical. For example, learner-centered design, and collaborative learning techniques have impacted attitudes about how distance learning should be structured. In fact, many universities now offer distance learning certification programs for faculty (Riedinger and Rosenberg 2006).

All of this training requires adequate technical support. One of the most frequently mentioned barriers to online teaching is inadequate technical support and faculty often feel abandoned to solve technical issues themselves. Planning should include adequate support resources (Shea 2005) including support staff, training materials, facilities, computer hardware and software. Support for faculty requires varied methods of training, forums, peer mentors, quality instructional materials, instructional design, and templates to ease development. Once again, rewards and time are factors often unrecognized. Many institutions offer excellent resources, training and updating skills, but this still takes faculty time that could be used for other pursuits.

Technology Trainer

Successful online faculty may themselves be thrust into training roles. For example, peer support is a key factor and integral to successful development programs because it motivates participation (Bonk 2001; Hanson 2003). Faculty expect their peers to showcase distance education technologies and share their online experiences (Chizmar and Williams 2001). Thus forums, round tables, and mentoring programs are recommended to allow veteran faculty to share experiences with novices (Rose and Collison 1997; Shea 2005).

A more drastic example of training and managerial roles for faculty is found at Rio Solado Community College in Arizona, which teaches extensively at a distance. Rio Salado has a student body of over 50,000, yet employs 37 adjuncts for every full-time professor, a ratio of 2.7 percent. Most full-time instructors are responsible for hiring, training, and evaluating the adjuncts in their fields. Full-time faculty members are also responsible for developing content for courses in their field. Courses are standardized, so that each adjunct teaches the same material and administers the same tests. Because of demands on their time, most ull-time faculty members teach only one course at a time, so the bulk of the teaching falls to the 1,000 or so adjuncts that the college employs (Ashburn 2006).

Team Player or Lone Ranger

The faculty member's role and workload may depend on the model used to organize distance learning programs, including the use of resources and method of course development. In each model, faculty have a different role. For example, in many institutions, faculty may be responsible for developing their own courses; often called the "Lone Ranger" approach. Some institutions recommend development of easy-to-use course templates to make development

easier. In others, faculty may work with design teams, peers, or students. A recent study found that the team approach is crucial in course development (Oblinger 2006).

Faculty who are less adept at using technology often depend on teams with expertise not required in traditional delivery. For example, as faculty develop their online courses, they may need course templates, computers and software, and work with peers, experts and students. Team members have various titles, such as "Web specialist." "instructional designer," or "online coordinator."

A term used to describe this approach is "unbundling" faculty roles (Paulson 2002). In a traditional model, a faculty member is responsible for both technology-based and competency-based functions. Unbundling separates and reallocates instructional activities like design, development, delivery, mediation, assessment, etc. to the appropriate professionals, such as content experts, instructional designers, technology specialists, and adjuncts, teaching assistants and graduate students. Faculty are involved in a limited way in the process, specializing in what they are good at, such as curriculum design, preparation of materials, lecturing, facilitating, and assessment. Unbundling roles may help assign costs to distinct components of instruction and improve both cost and quality. On the other hand, the faculty member may feel loss of control in the development and delivery process and even their own content and teaching materials.

Course Content Developer or Owner

Once faculty play only specific roles in course development, the question is what happens to the course content, and who owns it? Faculty reliance on teams of developers and programmers or separation from their own course materials raises concerns about copyright, fair use policies, intellectual property, piracy and problems with hackers and viruses. Some faculty may find that the IT experts who provide technical support tend to dictate what features should be used and care little about course content (Rothfork 2005). In addition, faculty may unknowingly give up ownership of their course materials. As a result, there have been several proposals for working out ownership issues (Donohue 2005), including the American Association of University Professors' "Distance Education and Intellectual Property Issues" statement (April 2005). Non-traditional and for-profit schools are minimally concerned with this issue because many of their courses offer considerable teaching material to the professors beforehand to reduce required preparation time. This factor, combined with outstanding technical resources, makes developing learning materials less controversial. The University of Phoenix, for example, requires faculty to take an in-depth training program, followed by work with a mentor. Like other large online institutions, they primarily use standardized course materials (Jaschik 2005).

Other solutions are less drastic. Flexible course designs that encourage high levels of interaction with and between students, coupled with faculty development to support implementation, are likely to increase interaction and faculty satisfaction (Shea 2005). While reliance on prepared online templates, instructional design teams, and teaching assistants is another solution, not every school uses this model or offers such services.

Well-known examples of shared resources include MERLOT (Multimedia Educational Resource for Learning and Online Teaching) and the increasing number of prepared online materials and "e-Packs" sold by textbook publishers and companies like WebCT. An emerging trend is use of Reusable Learning Objects (RLOs). Learning objects—digital resources that can be reused to mediate learning—are housed in a database that can be accessed to support customized learning for groups and individuals. This solution can potentially not only save time and money but also reduce the "Lone Ranger" approach of faculty who design courses in isolation. The new Common Cartridge specifications and standards commonly agreed to by the IMS Global Learning Consortium will allow digitally produced content such as textbook supplements or faculty-produced course add-ons to be integrated in any course management system (Lederman 2006).

Sharing e-learning materials across educational institutions can reduce development time and the number of on-campus teachers. Some colleges—especially community colleges—now buy or swap online course materials developed at other institutions (Carnevale 2004). Experts in their fields may be videotaped so that their lectures can be used at multiple sites or universities. The sharing of courses is attractive to state legislatures as a way of spreading the university's scarce resources, but it is laden with financial, legal and administrative problems.

The Part-Timer

Full-time faculty who are uncomfortable with distance learning will inevitably be replaced by adjuncts who are comfortable using this technology. The just released Contingent Faculty Index confirms that at thousands of colleges, most professors are called "invisible faculty"—off the tenure track (Jacobe 2006). The most significant role in distance education, in terms of numbers represented, is thus the part-time faculty member. There are many terms used for this versatile teacher: temp, permatemp, adjunct, etc. The key difference between the part timer and the full timer, whether the venue is a community college or a top level, doctorate-granting university, is the possibility of being able to teach for life. About half the full-time faculty have tenure, and the rest are on some path toward tenure that gives them six or seven years to qualify. Colleges and universities depend on core instructors to determine content and to deliver the courses, as well as to validate the quality of online programs, but only half the faculty in post secondary education are full-time employees. The half million part timers in post secondary education are not in it for the money. The pay in most cases is low, often approaching the US norms for poverty (AAUP). Part timers receive per-course salaries about one half to one-fifth of their full time colleagues. And the disparity only begins with pay. Very few part timers have offices, phones, administrative support and the other perquisites that give a sense of belonging. According to the most recent Sloan Consortium study, over half of online courses at thousands of US colleges are taught by core (full-time) faculty. This Sloan finding is offset by several mega institutions like Universities of Phoenix that have less than one percent of their teaching staff as full time.

As enrollment in e-learning grows, the part timer will become even more crucial. If the number of online students rises from 3 million now to, say, 6 million in a few years—it won't take long since 850,000 new on line students were added in 2005 alone—there will be a need for tens of thousands of part-time faculty members willing and able to teach at distance. However, quality programs will depend on quality faculty who are both supported and rewarded.

The question remains about whether quality is sacrificed. Many faculty still are concerned about lack of research supporting the effectiveness of distance education. They are also concerned about evaluating student outcomes and distance learning courses and programs, testing and monitoring identity, appropriate subject areas for online courses, and potential adverse effects of relying on adjuncts. There are literally thousands of studies of the results of distance learning. Nearly all focus on a relatively focused student domain in the same institution, as a class, a group of courses, the use of teaching software, etc. The results of these studies, however, are predominantly positive, indicating that is no significant difference between the target group and the distance learning group. Thomas L. Russell's *The No Significant Difference Phenomenon* reports large numbers of these studies, but he suggests that it may not be appropriate to extend these results to broader populations.

Conclusion

As post-secondary education gradually reduces the percentage of full-time to part-time instructors, some full-time faculty jobs may be threatened The American Association of University Professors (AAUP) considers “virtual learning nothing more than a scheme to eliminate much of the teaching faculty” (Maeroff 2003; AAUP’s “Statement on Distance Education”). The AAUP Special Committee on Distance Education and Intellectual Property Issues has thus found it necessary to issue suggestions and guidelines for distance education policies and contract language, including working conditions, workload, compensation, technical support, and intellectual property.

There have been additional concerns about the concept of using design teams or “unbundling” roles. One is that it removes students from faculty content experts (Perley 1999). Another is the significant question of intellectual property rights (Ubell 2001). There is a danger that faculty who conceive and design a course may be “deprofessionalized,” that is, separated from any potential revenues because of the many other contributors in the unbundled process (Benton, 2005). Even more threatening is the idea that an instructor is completely separated from the student because of the availability of online products that are increasingly capable of presenting some of the course work. Faculty members may even develop courses but not actually teach them. As Chisolm put it, “faculty who use commercial course management software become almost invisible. . . This invisibility contributes to the illusion that the twenty-first century instructor is a generic, easily replaceable part in a larger Automated Education Machine” (2006).

The increasing popularity of distance learning will create a need for more faculty to teach online courses. Many full-time faculty have continued to resist changing their teaching methods due to issues of rewards and increased workload. The issue of faculty acceptance of online education continues to be important for academic leaders because it affects the success of online programs. At the same time, the profile of “who will be an effective online instructor” continues to change with new theories about effective online learning.

New models for course development and quality have resulted in new definitions for what is the ideal virtual faculty member. Program accreditation relies on both course quality and faculty credentials, yet it is increasingly evident that not all full-time faculty are suited for distance learning “spaces.” Extensive training, development, and teaching time are required but often invisible to administrators. Using large numbers of adjuncts creates management, training, and quality issues. Once courses are developed and “packaged,” will traditional faculty even be necessary? As the roles of faculty are redefined, will jobs be threatened, or will virtual faculty teach at multiple universities at once? Distance education is no doubt contributing to the restructuring of faculty roles, demographics, and positions.

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About the Authors

Martha C. Sammons is Professor of English at Wright State University, where she has taught since 1975. Her publications include *The Internet Writer's Handbook*, *Document Design for Writers*, as well as articles on teaching with technology. She has taught seven online courses, including writing for the Web, online documentation, desktop publishing, and technical writing and has worked as a contract technical writer and consultant in several area industries.

Dr. Martha C. Sammons
Professor of English|
Wright State University
Dayton OH
martha.sammons@wright.edu

Stephen R. Ruth is Professor of Public Policy at George Mason University, and director of the International Center for Applied Studies in Information Technology (ICASIT). His research interests are focused on the problems of strategic planning associated with leveraging the use of information technology in large organizations, with particular emphasis on the effect of knowledge management policies on the work of dispersed teams. As director of ICASIT, Ruth has received grant and contract awards totaling nearly $4 million and has also served as associate director of the Commonwealth of Virginia’s $2 million Internet Technology Innovation Center. He is author or co-author of over one hundred published articles and four books.

Dr. Stephen Ruth
Professor of Public Policy and Director of the International Center
for Applied Studies in Information Technology
George Mason University
Fairfax, VA
ruth@gmu.edu

Editor's Note: This paper leads us from the basics of wikis for teaching and learning to Wikipedia and a whole new concept of productive activity for faculty and students. It explains the value of wikis for teaching and learning as compared to web pages. It goes on to show the power of open source learning and the Wikipedia. Most important, it shows how the Wikipedia and global peer review can directly and immediately influence the quality and relevance of teaching and learning in classrooms and learning spaces today.

Wikis and Wikipedia as a Teaching Tool

Piotr Konieczny

USA

Abstract

Wikis are a very versatile and easy-to-use tool that is finding increasing applications in teaching and learning. This paper will illustrate how teaching academics can join the wiki revolution. First. it will introduce the common wikis and then focus on Wikipedia, *The Free Encyclopedia*, which has become one of the most popular Internet sites and offers unique opportunities for teachers and learners. It will describe how wikis and Wikipedia are used as a teaching tool and how to develop them further.

Wikipedia can be used for various assignments: for example, students can be asked to reference an unreferenced article or create a completely new one. In doing so, students will see that writing an article is not a 'tedious assignment' but an activity that millions do 'for fun'. By submitting their work to Wikipedia students will see their work benefiting – and being improved upon – by the entire world.

Introduction

Recently some new technology-related buzzwords have been making their rounds around the campuses. Blogs. Podcasts. Wikis. All of them represent far more then just new shiny gadgets for students to play with; they are new tools with potential to help teaching and learning, a continuation of the Internet revolution which happened barely over a decade ago that gave us now indispensable tools like email, web pages and course management systems. This paradigm shift offers us new opportunities, and none as promising as the 'wikis'. The most popular one is *Wikipedia, The Free Encyclopedia*.

Wikis are collaborative websites where anybody can edit and publish. The reason for their growing popularity is they allow users to create and change content more easily and quickly than with traditional websites do. All one needs to edit a wiki is a computer with Internet connection and web browser. Users do not need to spent days learning html or other programming languages – wiki syntax is intuitive and people working on their first wiki can create and publish a basic page in a minute or less. This ease of editing means that the teachers and students can quickly learn and start expanding any page or site, and those pages can be used for discussion, posting assignments, and various collaborative projects. The latter is the real strength of wikis. With wiki technology it is very easy to work on a collaborative document, track work in progress and see how much each individual in a group has contributed to the assignment. Wiki technology promises to revolutionize collaborative assignments in academia and beyond. In particular, Wikipedia, the collaboratively created encyclopedia, is a valuable tool for group writing assignments that involve referencing, translating, or copy editing.

Wikis are relative newcomers to the Internet and recently recognized as viable tools for teaching. Most publications about educational uses of wikis originate from fields related to computer sciences (Augar, Raitman and Zhou 2004, 2005; Gabrilovich and Markovitch 2006 ; Guzidal 1999; O'Neill 2005). The goal of this paper is to illustrate how academia can join the wiki revolution and enhance its courses beginning with a discussion of the common wikis and then focus on Wikipedia., which offers some unique opportunities for teachers. In each of these two sections a description of how it is being used as a teaching tool will be followed by suggestion of ways to further develop and apply wikis to teaching in higher education.

What is a Wiki?

A 'wiki' can refer either to a type of a website or a software run by them. The word 'wiki' comes from Hawaiian and means 'fast', fitting the wiki phenomena quite well. The first wiki was created in 1995, but it was the success of Wikipedia that popularized this technology. There are now thousands of wikis on the Internet and their numbers are growing rapidly. There are three important characteristics that differentiate wikis from traditional websites. First, one does not need to download any software to work with wikis. Second, learning how to edit a wiki is very easy and intuitive. Third, by default, wikis are designed to support collaborative projects and allow virtually anybody to edit anything.

To create a new wiki one can download any of the available wiki packages, many of them free under open source licenses. However it is worth emphasizing that it is not necessary to have one's own dedicated wiki website for the purpose of using wikis as a teaching tool. SCORES of educational wikis AREalready running on existing wiki servers ('wiki farms'), either free of charge (supported by ads) or with subscription around several dollars per month. an increasing number of universities (or their departments) are launching their own wikis for faculty and students[1].

Wiki websites are much more 'content creator friendly' than the traditional html-based websites and learning the basics of editing a wiki is much simpler than learning how to use email or word processing software. Consider the example of hyperlinks, one of the building blocks of the World Wide Web. If one wants to create the link to a website in html, the html syntax is:

- name of website

A wiki syntax, by comparison, could be as simple as

- [http://www.website.com name of website]

if we are linking to a page entitled ‘ name of website ' that already exists in a given wiki. Some wikis, such as Wikipedia, do not even require the user to know the wiki syntax. They provide users with an editing toolbar to add syntax elements similar to the way formatting is added in a word processor (highlight and click). In a recent study of wikis used in classrooms, Augar, Raitman and Zhou (2005) found that 73% of students found the wiki software easy to use while Farmer (2004) notes that Wikipedia, the most popular wiki (see Figure 1), is being successfully used and edited by millions of not always very “tech-savvy users”. A “WYSIWIG”2 Wikipedia editor announced at the Wikimania 2006 conference should make editing Wikipedia and MediaWiki-based wikis even easier.

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1 A fairly comprehensive and updated list of wiki farms can be found at Wikipedia at http://en.wikipedia.org/wiki/Comparison_of_wiki_farms

2 What You See Is What You Get This acronym is used to describe software in which content as seen during editing appears very similar to the final product

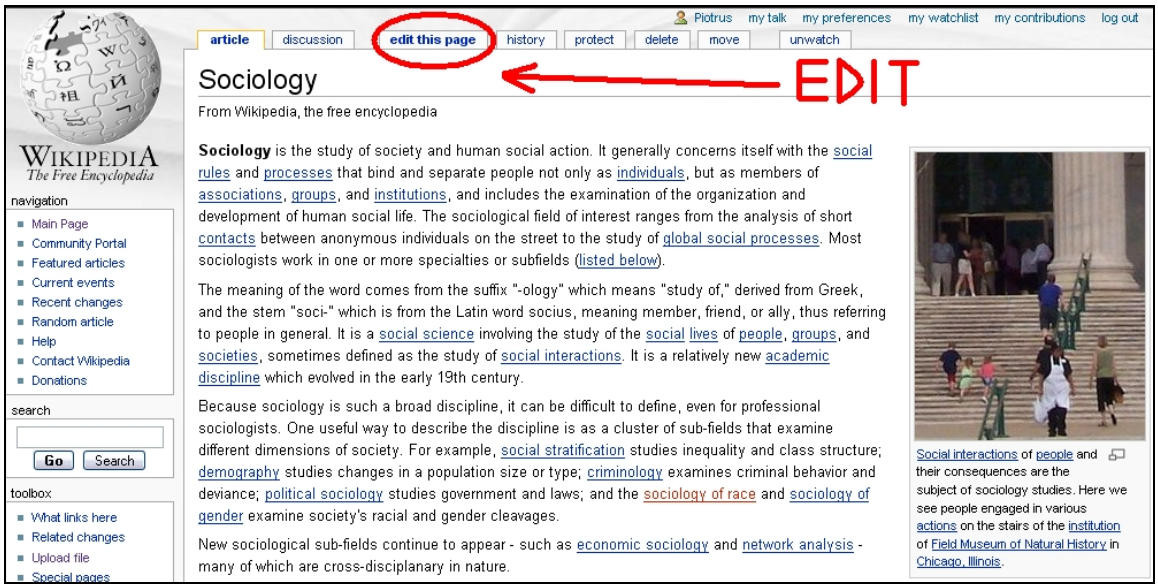


Figure 1 'Sociology' article from Wikipedia.
Note 'edit this page' tab at top of the page.

Because of their nature, wikis have two versions, one for users, and one for editors, which Augar, Raitman and Zhou (2004) name *read* and *edit*. The *read* version is the one seen by all users who are not editing the wiki and it resembles an average webpage (see Figure 1). This is usually the version that the creators of the wiki want to show to the majority of end users, who come use the information, not to contribute. When a user wants to edit a wiki page, they use the *edit* version, which is usually accessed by clicking a link labeled 'edit' on the wiki page (see Figure 1). This launches a miniature version of a text editor built in into each wiki (see Figure 2).

Anybody who uses a wiki is a 'user'. When a person clicks the 'edit' button, changes the article and then clicks the 'save' button, this act transforms the user into an 'editor'. Usually there is no application, external review or other process involved, although many wikis allow their owners to set up various barriers, such as passwords, to control entry. Any person with an Internet connection can, in just a few seconds ,become an editor on most wikis.

However, on any large wiki it is virtually impossible for a single editor to enforce a major change by himself, since any edit can be easily 'reverted' by others, and usually there are many people following the changes to a given article. Controversial edits (or plain vandalism) are quickly spotted and reverted unless the editor in question can convince others of the merit of such edit. Therefore the content of wikis over the longer period will reflect content that has gained approval of the user community or is not controversial. As changes accumulate and the number of editors increases over time, a wiki becomes a representation of the negotiated beliefs and knowledge of the user community (Leuf and Cunningham 2001).

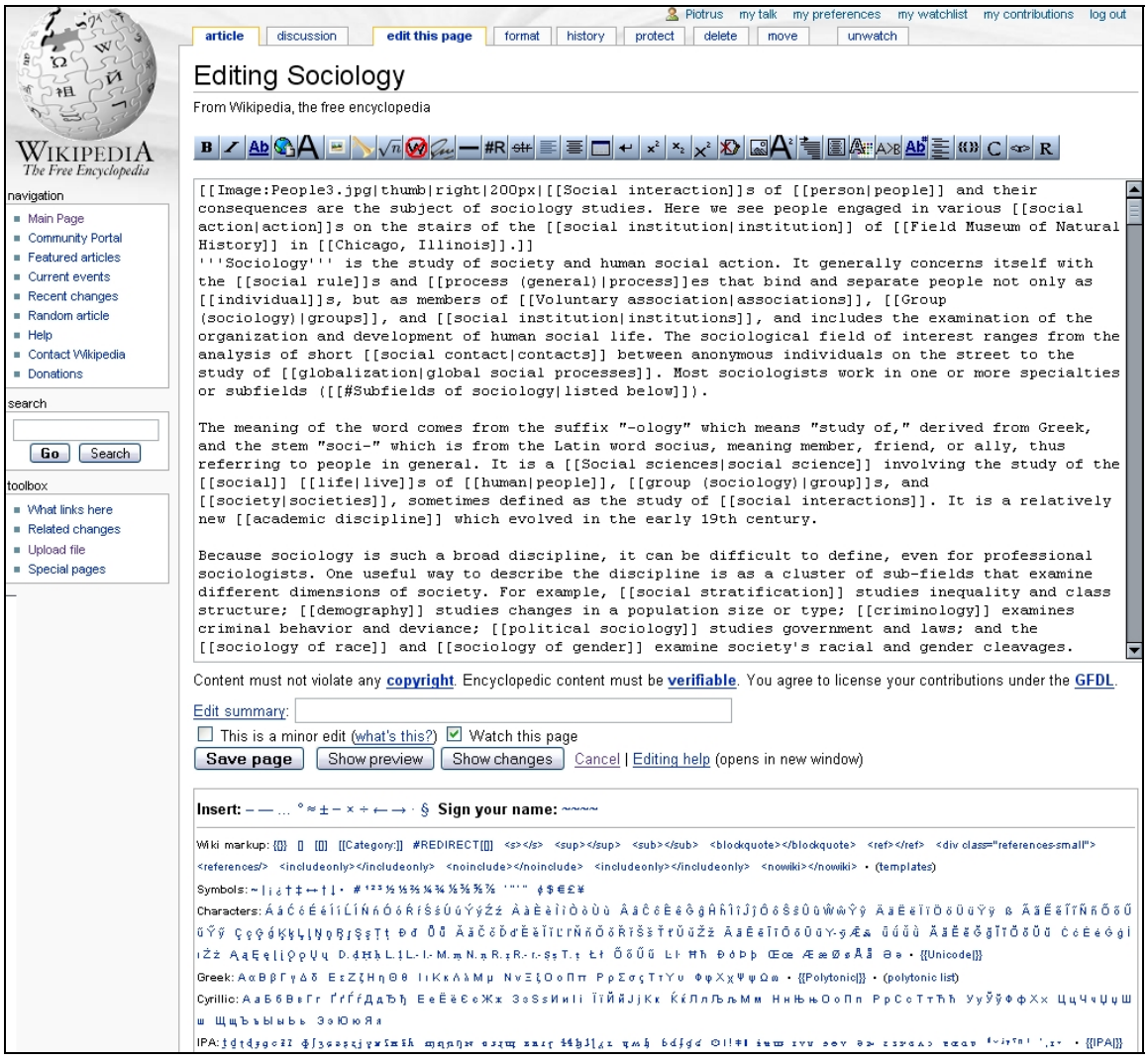


Figure 2 This is the same 'Sociology' page from Wikipedia as seen on Figure 1.
This time we are seeing it in edit mode, with the wiki markup and editing tools at the top and bottom of the screen. The text in the window is editable and can be saved, appearing instantly on Wikipedia.

Because wikis were designed to be collaborative editing tools, they also offer an easy way for editors to hold discussions in a manner similar to listserv or message board. Such discussions usually take place on 'talk' pages which accompany every article (see Figure 3). As such, wikis can be said (Augar, Raitman and Zhou 2004) to have two different writing styles: the *document* style which is used for editing the main content visible to end users, and the *thread* style which is used by editors to communicate with each other.

In *document* style contributors work on websites, collaborative documents or any other type of content whose creation is the primary purpose of a particular wiki project.

In *thread* style the editing is quite different: contributors engage in discussions by posting signed messages representing their individual opinions, others respond below, leaving the original messages unchanged, in what is also known as the 'bottomposting' style. The end result looks strikingly similar to a series of Usenet, listserv or message board threaded messages (Leuf and Cunningham 2001), often resembling 'message trees' enriched with hyperlinks to other relevant discussions, making it easy to follow multiple conversations on wikis.

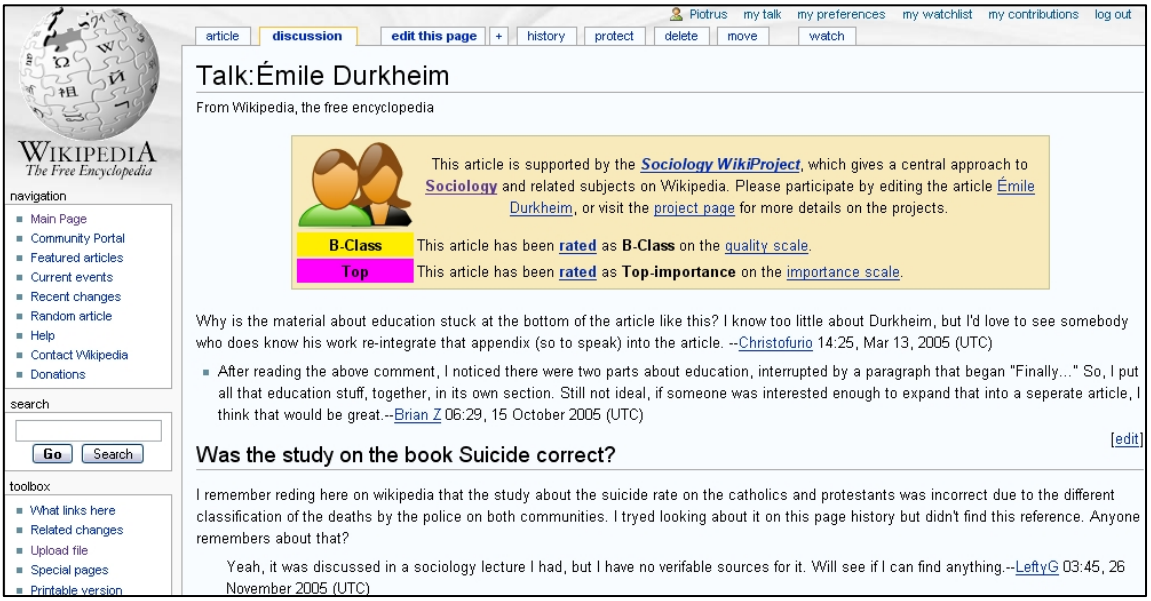


Figure 3 This is the talk page of 'Emile Durkheim' article.
As any wiki page, it can be edited, and this is the usual place where editors discuss various issues related to the content and layout of the article.

In addition to the ease of interaction and operation, wikis have a variety of other features which are useful in the e-learning environment. They record each change that occurs over time, so that at any point a page can be compared and reverted to any of its previous versions – a useful tool that is missing from many text editors (see Figure 4).

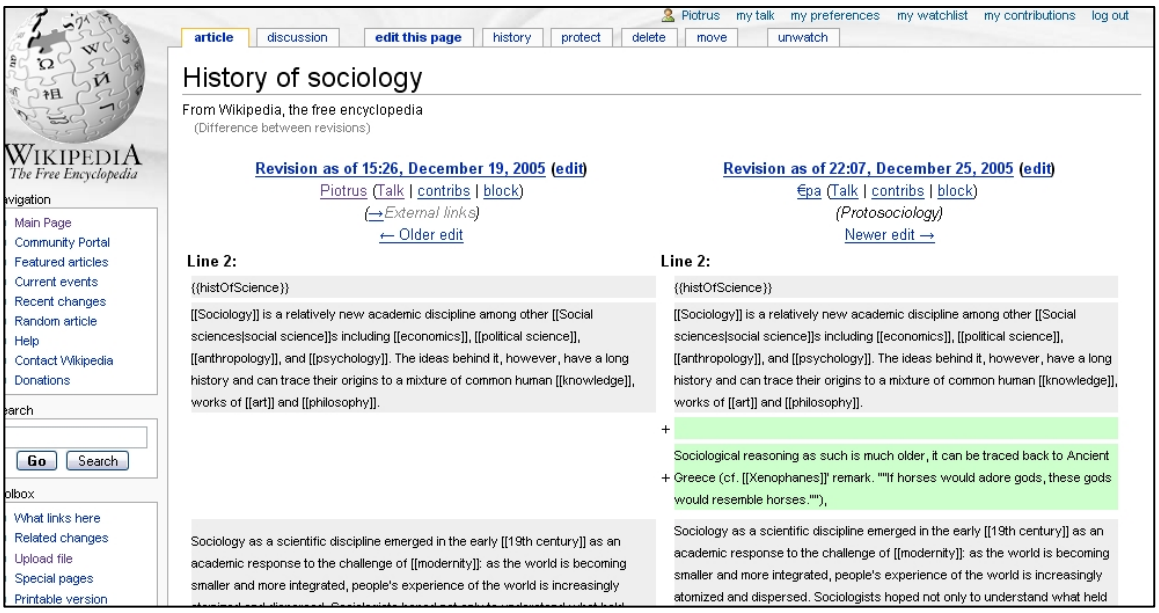


Figure 4 When comparing different versions using the history tab (at the top of every wiki page), we can easily see what has been changed in the article.
Here we see that a new paragraph (green) has been added by the person using nickname '€pa'

Most wikis have an editing toolbar, eliminating the need for one to learn a wiki syntax. They are also searchable and indexable, allowing users to categorize pages into a taxonomic system of their choice. Furthermore, they support easy addition of hyperlinks, provide every content page with its dedicated discussion page, allow for user authentication and different access levels, inform interested users when a particular page has been edited, and allow easy viewing of all contributions by an individual user. These features make wikis an effective tool for collaborative writing.

Teaching With Wikis

Making it easier

Wikis have been successfully used in education as early as 1999 (Guzdial 1999). As with most computer technology, their educational uses were first pioneered by computer science academics (Edington et al. 2005) but now the wiki technology is starting to penetrate all fields of academia and the use of wikis for educational (and other) applications is increasing.(Edington et al. 2005, Schwartz et al. 2004)

Barely two years ago Lamb (2004) noted that “wikis are already making their mark in higher education and are being applied to just about any task imaginable. They are popping up like mushrooms, as wikis will, at colleges and universities around the world”. Schwartz et al. (2004) concluded that they were “able to locate numerous examples of the growing wiki trend in education“ and it is already “difficult to estimate the number of wikis currently used in university settings, and the range of ways in which they are being used.” However a year later Augar, Raitman and Zhou (2005) argued that “Wikis are everywhere, but, unfortunately, the online literature has not yet begun to focus enough on wikis”.

There are those who argue that the introduction of personal computers into the world of teaching means we are witnessing a dawn of a revolution similar to the invention of the wheel for the human civilization (Longworth 2003:158). Certainly, creative use of Internet has enhanced many courses, positively influenced distance learning (Edwards, Cordray, Dorbolo 2000), and strengthened the active learning approach (Longworth 2003:108,158-169). There is an increasing number of positive reviews of wiki technology as well as a growing number of academics who endorse wiki technology in their papers. Bergin (2002) writes about advantages of having a wiki for each of his courses and notes: "It gives me a way to communicate easily and asynchronously with [students] on course topics. They also use it to communicate with me and each other. I also use it to quickly dispel misconceptions and correct errors I might make in class." Prensky (2004) suggested that wiki functionality is so crucial it should be an integral part of the new generation of teaching software. Bruns and Humphrey (2005) note that “the wiki form is one that encourages and enables learning in ways that many other Web-based tools fail to do.”

Yet every coin has another side. Because of this proliferation of Internet-related technologies we often find ourselves often swamped with more available tools that we can learn and use efficiently in the time available to us (Bills, Stanley 2001). This raises the question: are wikis offering us something that is substantially more useful compared to what we previously had? Should we devote some of our time to learning how to incorporate wikis into our teaching activities? I would argue yes! Wikis may or may not herald a 'revolution', but they are certainly one of the best tools to emerge for teaching and learning in the past few years.

Many students now “come to campus to learn about and learn with technology” (Green, 2000) Learning is enhanced through the user friendliness of wikis (Raitman 2005), “minimal technical skills“ for end-users (Schwartz et al. 2004), the intuitive interface compared to html web pages, and the increase in computer-related knowledge of each new cohort of students. (Brooks 1997). This means students are increasingly likely to be familiar with wikis, just as they are quite

familiar with the personal computers, the Internet; and email. What is more, they expect their teachers to be familiar with those tools also.

Wikis can be used for any task served by traditional web pages. Ease of editing means that even without additional features wikis are preferable for many purposes. Wikis duplicate features of html pages – like the ability to display text, images or hyperlinks – and add collaborative editing and other technical options without the need to download and install any software - any user can edit, there is a backup copy of every edit allowing comparisons between various versions and editor, and there is an editable discussion pages for every content page. As a further incentive, wikis are easily integrated with most teaching software, like Blackboard and other course management systems, either through a dedicated plug-ins or addition of a URL link.

Wikis are valuable for active learning. They seamless shift between the teaching paradigm and the learning paradigm and allow students to actively engage the material in ways difficult or impossible to achieve with traditional pages. Wikis are more than 'streamlined webpages', they allow us to design new teaching activities impossible without them. Allowing students to actively discover knowledge can increase the efficiency of teaching (Wagenaar 1995) and has a positive impact upon students' learning (Ruhl, Hughes and Schloss 1987). It increases the students' interest and involvement in the subject matter, the amount of knowledge they retain, and facilitates teacher-students' contact in distance learning.

Wiki is a practical choice for cooperative (team-based) learning activities by facilitating interaction between co-workers. Such active learning often involves group members working together to solve problems leading to increased understanding of concepts to be learned. The less able or less experienced students are helped by these group activities, and more competent students reinforce their knowledge as they explain the material to others (Stahl 1994). Because a students' progress on wiki is visible to teachers and their peers, students may be encouraged to work on a continuous basis, instead of leaving most of the work for the last weeks (or days) of the term. Studies on collaborative and cooperative learning suggest that interaction is the most important part of the virtual classroom; the interaction with other students and increased contact with the faculty have a very positive effect (Kuh 1996), being a key element in active learning and reinforcement of knowledge (Dewald et al. 2000), resulting in an improved academic environment(Astin 1996).

Several useful observations specific to use of wikis were noted by Raitman (2005), who researched students perceptions of working in the wiki environment: 92% of the students participated with continuous activity, 73% found the wiki software easy to use, and although the majority of the students thought that the use of wiki increased their comprehension of material only 'slightly', they also felt that working with wiki was quite enjoyable. Raitman notes that "it is clear that there are many ways in which the students were suitably impressed" by the usage of wiki, especially by a new, asynchronous model of communication, which made collaboration easy and more relaxing, and by the general ease and user friendliness of the wiki technology. There were aspects that caused concern for students: many complained that the wiki used for the course project was 'too simple' and should have more functionality (like in the more advanced MediaWiki engine used on Wikipedia). Students also feared that a malicious user could destroy their work (even through no such incident occurred); this means that it would be prudent to instruct students how easy it is to revert any vandalism done to their work, and recover any data that was edited out at any point in time. It would be worthwhile to encourage or even oblige students to check others progress and comment on it, as many students display an initial lack of willingness to edit the work of others (seeing it as "impolite") and dislike having their own work edited and criticized. Such behavior is not surprising and certainly not limited to online environments (Becker 1986), but with wikis, designed from bottom up to support discussions on work in progress, it seems a shame not to utilize their capabilities in that regard, especially as a

recent study (Forte and Bruckman 2006) further confirms that students appreciate having an audience that can comment on their work, and it improves the quality of their writing.

Many wiki activities can be seen as expansions on what has been already achieved, such as Ammarell's network groups exercise (Ammarell 2000). He divides students into small groups that discuss and critique their writing in class and over the Internet. Ammarell, who builds upon Jaffe's (Jaffe 1997) 'asynchronous learning networks', notes that such an environment can enhance collaborative, interactive and integrating assignments. Students are more likely to take risks, communicate and defend their ideas, discuss controversial issues in online groups and create situations where students are both teachers and learners. Again, wikis with their peer-review functions make such activities much easier, which should likely be even more valuable to courses discussing controversial issues as in social science courses.

Some specific uses for a Wiki in a teaching environment could include (Bristow 2005, Connell 2005, Edington et al. 2005, Godwin 2003, Lamb 2004, O'Neill 2005, Schwartz et al. 2004):

- fast and easy creation of simple websites for any purpose
- easy course administration, timetabling, etc.
- use of online and easy to update course syllabi
- facilitating collaborative contribution to documents and group authoring
- tracking a group project on 'per contributor' basis
- project development with on-site peer review
- discussion boards
- user support and documentation
- virtual group study rooms
- data collection
- student feedback and self-assessment
- review classes, resources and teachers
- collaborative lecture notes

Particularly impressive university wide-wikis can be seen at Case Western Reserve University and the University of Calgary. Case Wiki is “an encyclopedic reference about Case Western Reserve University and its surroundings”, while Calgary Wiki “provides collaborative content management in the context of teaching and learning to the University of Calgary community”. What makes those sites novel is that their content can be created by any member of the university community, not just the site’s maintainers. They offer wealth of information about their respective universities, information that is constantly expanded and updated by interested users. They provide web hosting for faculty and students, featuring pages devoted to online syllabi, students' collaborative projects, departmental webpages and other educational pages. Still, university wide-wikis are relatively rare. Some wikis are run by certain departments, like Microsystems Design Lab Wiki at The Pennsylvania State University, but there are also many wikis run by single individuals, centered around particular courses, such as English 242: The Romantic Audience at Bowdoin College or Eng 602: English Fifteen in 15 Weeks, an instructor-level course for English 15: Rhetoric and Composition at Penn State University, which also has its own wiki, or Ethnographic Methods from Dong Hwa University in Hualian, Taiwan.

Making it better

Benson at al. (2002) note there is a significant difference between using technology to supplement traditional methods of teaching, and using it “to create opportunities for new

objectives that may not be possible without them." Web-based instructional technologies are capable of reshaping role behaviors and social relations between students and teachers. Jaffe (2003) notes that it is vital how we use this technology, which has the potential to revolutionize the world of teaching and learning.

Indeed we can see examples of projects that would be rather impossible before the advent of wiki technology. J. Moxley from University of South Florida created one of the best known academic teaching wikis, the TeachingWiki: "Teaching Wiki aspires to be a community for college-level faculty, particularly faculty teaching rhetoric and composition. However, as we invoke the wiki way here, we invite all college faculty and instructors to be wikiteachers with us. Feel free to use this site to reflect on teaching practices, cite resources and provide lesson plans." This project is quite similar to Wikiversity, one of the newest endeavors of the Wikimedia Foundation (a non-profit NGO responsible for support of Wikipedia). Wikiversity declares its goals as to "create and host a range of free learning resources for educational processes, for all age groups in all languages; generate projects to interface with existing Wikimedia projects; host and foster research based in part on existing resources in Wikiversity and other Wikimedia projects. Other tasks and goals are initiated and pursued as articulated by participants according to personal priorities and self managed efforts". Wikiversity already has dozens of schools, from 'School of Engineering and Technology' to 'School of Fine Arts', offering many free textbooks (like 'Introduction to Sociology', 'Intermediate Microeconomic Theory' and 'Orthopaedic Surgery'), and the interesting opportunity of creating a course exercise in which students collaboratively work on a textbook (incidentally such free textbooks offer a possible solution to the problem of raising costs of our normal academic aids). Interestingly not all wikis are 'top-down', some spring from the desire of students to use the new technology themselves. Consider Sociowiki – "a project dedicated to compiling, organizing, and making available information useful to aspiring and current sociologists. Sociowiki is currently maintained primarily by the Sociology grad students of UNC-Chapel Hill"– a website created by the students for the students and faculty.

Among the most innovative projects, Bruns and Humphrey (2005) describe a very unique example of coursework using wiki technology: "M/Cyclopedia of New Media", a project of Creative Industries Faculty at Queensland University of Technology. M/Cyclopedia is an encyclopedic collection of information on new media concepts and topics developed by over 150 editors, mostly students. Bruns and Humphrey (2005) note that the first edition of this exercise has been very successful, and already international new media academics have expressed an interest in having their classes collaborate on that wiki; similar projects have been considered by others (Santally and Senteni 2005) and others are being actively pursued, such as the 'Science Online' 'online science encyclopedia collaboratively authored by high school and undergraduate students' (Forte and Bruckman 2006). In their review of the otherwise impressive M/Cyclopedia project Bruns and Humphrey point out that by developing their own, separate encyclopedia the authors encountered several problems. Fewer editors means that factual or stylistic errors on M/Cyclopedia may go uncorrected for a long period of time; it is difficult to copy many of Wikipedia's specific tools or solutions (like its categories and templates) and some students duplicate work already done on Wikipedia.. As M/Cyclopedia faculty and students learned much from 'virtual field trips' to Wikipedia, this raises an interesting point: why go to all the trouble to create a dedicated wiki for a small group of students, if one can work on Wikipedia itself?

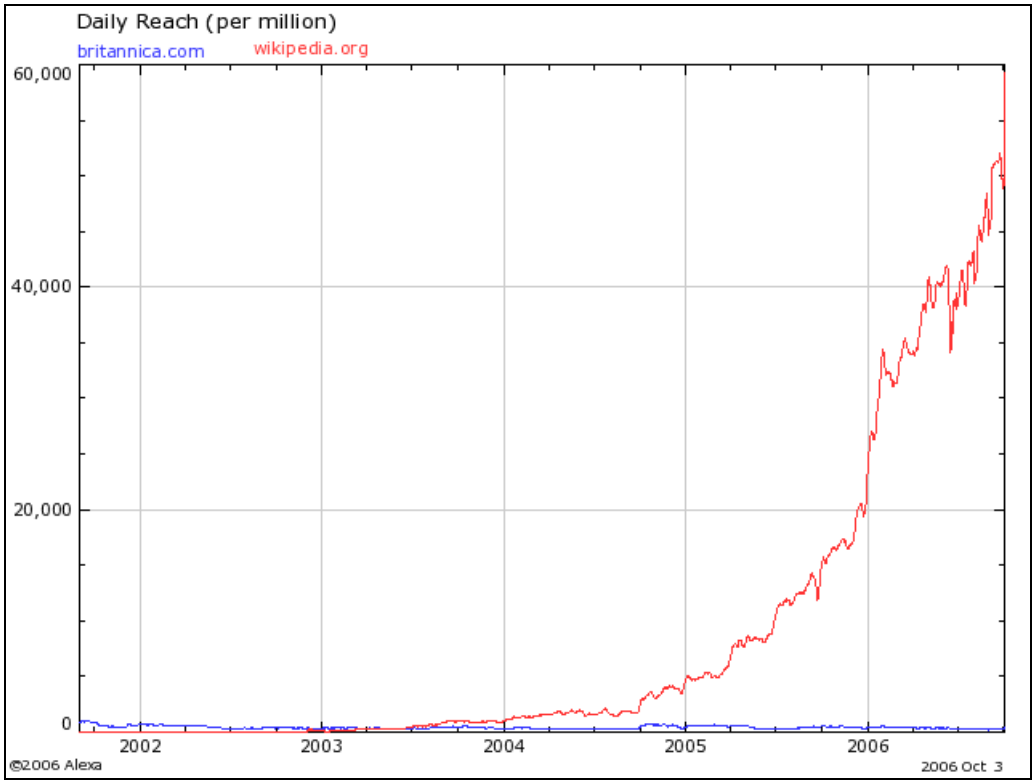
What Is Wikipedia?

Wikipedia is first and foremost an encyclopedia (Wales 2005), or as it defines itself, "a multilingual Web-based free-content encyclopedia" (Wikipedia 2006d). As the name suggests, Wikipedia is a wiki: an encyclopedia written collaboratively by volunteers. Among the guiding principles of Wikipedia are the following four policies. First, "Wikipedia is an encyclopedia",

meaning that it is a secondary source where non-encyclopedic content, or original research, is not acceptable. Second is the "neutral point of view" policy, which advises how to avoid bias and summarizes notable approaches without an attempt to determine an objective truth. Third is “Respect copyrights”, a rather self-explanatory policy, however with a twist: Wikipedia itself is licensed under a GNU Free Documentation License” (GFDL), an open source license developed by the Free and Open Software Movement, which basically gives the users of Wikipedia the freedom to use the content as they wish, provided they don't change the license. Fourth is “Respect other contributors”, an advice good for any community (Wikipedia 2006b).

The project is young, having been launched by Jimbo Wales and several others only on January 15 , 2001, and is now operated by the non-profit Wikimedia Foundation dedicated to supporting the growth of Wikipedia. Yet despite its relative youth Wikipedia's growth has been impressive: Wikipedia's own statistics for 21 August 2006 show that it had more than 5,300,000 articles in many languages, including more than 1,300,000 in the English-language version (Wikipedia 2006e).

This growth was possible because the wiki’s user-friendly technology was able to attract hundreds of thousands of volunteers, from high-school students to professors emeritus, who found that contributing to the project can become a new hobby – something that hopefully an increasing number of students will realize. Wikipedia's free distribution, constant updates, diverse and detailed coverage, and numerous multilingual versions have made it now one of the most-used reference resources available on the Internet, coming increasingly high in search results of Google and other powerful search engines, thus being an important intellectual influence on many students and scholars. Wikipedia is growing nearly exponentially (Xiong 2005) and is now several times as popular as the Britannica (Graph 1).



Graph 1. Comparison of daily reach per million Internet users to Britannica.com (blue, horizontal) and Wikipedia.org (red, exponential) from late 2002 to 3rd October 2006. Source: Alexa Internet, Inc.

Not only is Wikipedia a leader in quantity of information, but its quality is also surprisingly good: a recent study in *Nature* argued that it is almost as reliable as the renowned Encyclopedia Britannica (Giles 2005), while another new comparison, recently published in *The Journal of American History* (Rosenzweig 2006), found it much more comprehensive then Microsoft's multi-million dollars commercial Encarta, and in some instances even comparable with respected academic sources such as American National Biography Online. However we look at it, the new model of Wikipedia seems to be working. Wikipedia's style, tone and content resemble traditional encyclopedic content quite well (Emigh 2005) and it is well on its way to become the 'largest database of human knowledge'.

As with any new inventions, Wikipedia has faced its share of controversies, concerning primarily its reliability and accuracy; it has been criticized for its susceptibility to vandalism, uneven quality and inconsistency, systemic bias, and preference of consensus or popularity over credentials. In the world of academia many have found that Wikipedia's popularity is becoming both a boon and a curse. A boon, as we have little to worry about students starting their research with Wikipedia, which has proven to be a reliable reference source no more to be withheld from students than any other encyclopedia. A curse, because we are increasingly faced with students who decide that they need to go no further in their search for sources, and in worst cases, use the dreaded 'copy&paste' technique and plagiarize content directly from Wikipedia. Yet, as Rosenzweig (2006) writes in his analysis of this problem: "Should we blame *Wikipedia* for the appetite for predigested and prepared information or the tendency to believe that anything you read is true? That problem existed back in the days of the family encyclopedia. And one key solution remains the same: Spend more time teaching about the limitations of all information sources, including *Wikipedia,* and emphasizing the skills of critical analysis of primary and secondary sources." Therefore we should look at Wikipedia's model, not the content, and employ it to teach students, whom we should see as a part of the knowledge-building community. Wikipedia's founder, Jimbo Wales, once wrote that "incidentally and unintentionally, Wikipedia has became 'a grand social experiment'" (Wales 2005). Let's now consider how we can turn Wikipedia into "a grand teaching experiment".

Teaching with Wikipedia

When you decide to experiment with wikis, you can create a free account on one of many wiki farms – but you can also consider joining the largest project allowing one to 'use wikis as a teaching tool'. Wikipedia:School and university project (SUP) is a place where a growing number of participants from around the world is utilizing Wikipedia in their classrooms. As of August 2006 the faculty from over 20 different universities had listed their own projects there (Wikipedia 2006c); it is likely that many more are simply not aware that a centralized listing and coordination project for their Wikipedia-related teaching projects exists. SUP offers advice, examples of what kind of assignments have been attempted, and with what results, and tools, including free copy & paste templates that can be quickly adapted to create wiki syllabi for any course.

Out of those exercises writing assignments are and likely will be the most popular. Writing is of critical importance in developing students' skills and knowledge. The encyclopedic style of writing is fairly compatible with term papers and research reports, which are particularly useful in developing critical thinking and improving the comprehension of course materials (Grauerholz 1999). Bruns and Humphrey (2005) commented on the usefulness of Wikipedia's Neutral Point of View policy which has the "requirement to present both (or the many) sides of an argument" and teaches students the value of objectivity and the collaborative process of negotiating over the content.

Yet the question inevitably arises: why go to all the trouble and tell the students to work on Wikipedia, if they could just as well work on their assignments at a smaller, university- or course-dedicated wiki? There are several good reasons why working on Wikipedia is preferable.

The most visible benefits are related to the Wikipedia's unique scale, which results in several positive 'snowball effects'. First, the immense size of Wikipedia allows any number of students from different courses and universities to interact in a single environment, creating the 'global newsgroup' (Ammarell). Thus the students can receive feedback on their work not only from their teachers, group mates or course mates, but from interested editors from all around the world. Second, Wikipedia's size answers one of the concerns often raised by students: that there is not enough connection between theory they are thought and 'real life' (Kivisto 2004). With Wikipedia it is extremely easy to link theory to relevant examples, as many real-life phenomena, including the realm of pop culture, familiar to students, are covered on Wiki. Thus a paper on 'parasocial interacton' can link to articles on 'talkshow host' and 'fictional character', and a paper on 'hearing loss with craniofacial syndromes' can link to 'Treacher Collins syndrome' and 'conductive hearing loss'. Wikipedia, which has over a million entries, allows students to use hyperlinks to enrich their papers by linking to various important concepts within Wikipedia which would not have their own entries on a smaller wiki, not to mention the ability to use one of over 700,000 free images from the Wikimedia Commons project (see Figure 5).

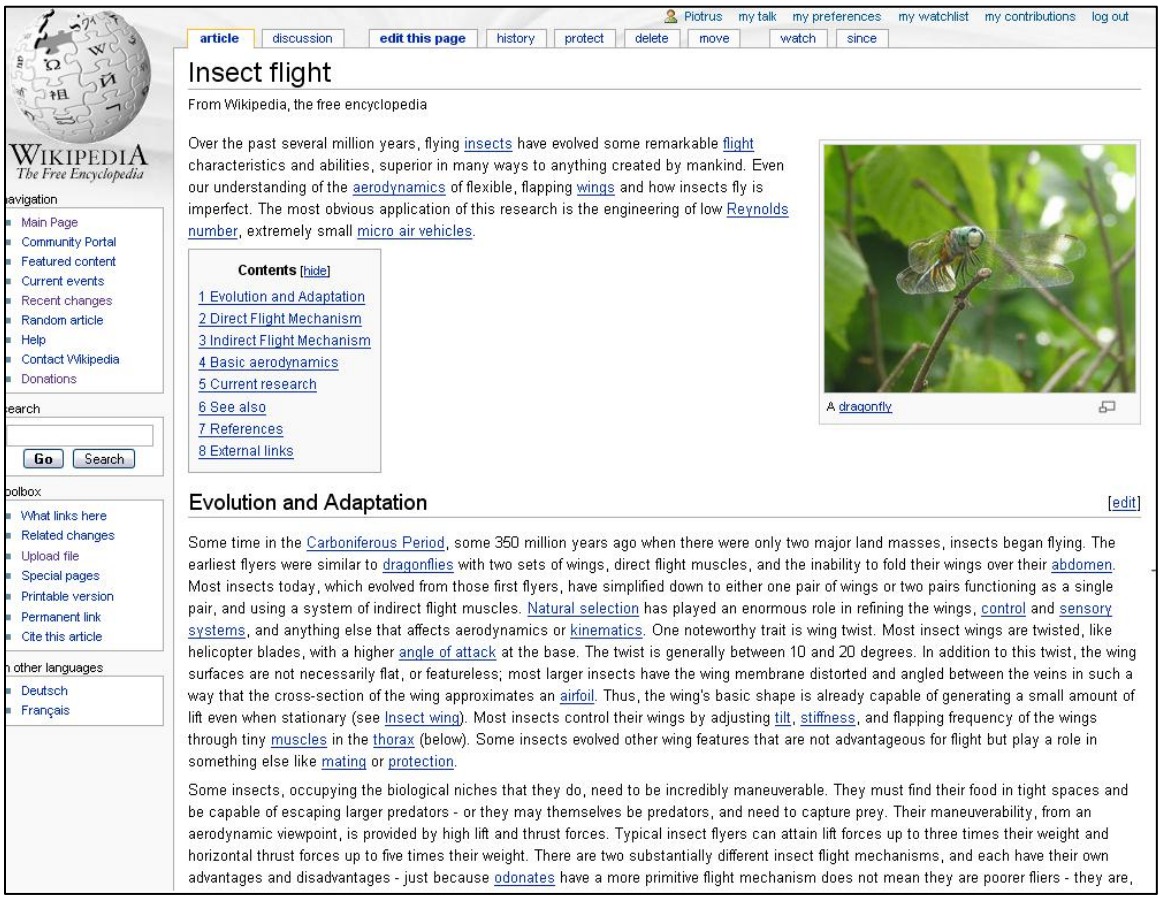


Figure 5 'Insect flight' is one of many Wikipedia's articles created by students as part of their course and listed at 'Wikipedia:School and university projects'.
This article has been created by a student for a Fall 2005 course in 'Science and technology studies' at University of Virginia.

Third, they can use other tools which Wikipedia community has designed over the years but which would be difficult to transfer to smaller wikis, such as its extremely useful taxonomic system of categories (Gabrilovich and Markovitch 2006), International Phonetic Alphabet templates or accessibility tools, like the spoken versions of articles. Wikipedia also has tools developed for editors that can be easily adapted for teachers: for example, articles are categorized based on their quality; tiny articles (called 'stubs') which are in need of significant expansion and improvement are further categorized (as 'sociology-related stub' or 'archeology-related stub' for example) creating useful lists of topics to which one can direct students (particularly from an undergraduate introductory course) looking for a topic related to the course discipline to write about (see Figure 6).

Figure 6 Wikipedia. has thousands of stub categories which can be used as lists of subjects for written assignments.

Each stub category contains at least 60 articles, often, hundreds.
This is a partial list of main subcategories within the history-stub category.

Finally one of the most important benefits of having students edit the Wiki is having them realize that they and everybody else will benefit from their efforts. An incredible amount of creativity is wasted around the world when students' papers are discarded after being graded. By submitting their work to Wiki not only will the students be able to access it from any place, any time, but it will bring benefit to – and be improved upon – by the entire world. Writing on Wikipedia means one is 'teaching the entire world'. In this aspect, Wikipedia contributions achieve the same result as the 'Random Acts of Kindness Journal' exercise described by Angela Jones (1998).

Contributing to Wikipedia, seeing their work used, commented upon and improved by others, and likewise being able to help them with their articles, can show student that they have the power to make a positive impact on the social world, and illustrate how their efforts contribute to building both the largest worldwide encyclopedia and the Wikipedia community.

In that regard Wikipedia's exercises have the additional advantage of falling in the narrow definition of service learning as described by Hollis: a subtype of community work that is structured and has academic attainment as primary goal (Hollis 2002). Further they fit well with the six key elements of service learning as described by Weigert (1998):

1) students contribute to the society (Wikipedia is useful for everyone)

2) their contributions meet a need and have visible results (they create or improve an article)

3) the need is recognized by the community (Wikipedia invites new contributors)

4) the students' contributions are connected to the course objectives (here we can benefit from Wikipedia being a digital encyclopedia, thus accepting entries related to all areas of knowledge, no matter how specialized)

5) the students' contributions allow reflections upon themselves

6) their contributions can be easily assessed and the community can contribute to the assessments (here wiki's collaborative nature and tools like talk pages become very useful).

Another useful exercise one can perform with Wiki is to teach students the difference between primary and secondary sources, and how to move from a general source like Wikipedia to more preferred academic databases. Many students, especially undergrads, are having problems evaluating online sources (Hammett 1999). It is visible when they increasingly cite sources such as Wikipedia, usually without even knowing that it is a wiki editable by everyone.

Even when one takes into account the recent studies about Wikipedia being as accurate as Britannica or Encarta (Gills 2005), the undergrads should avoid citing encyclopedias in their papers – this was pointed out, among others, even by the founder of Wikipedia himself (Chronicle 2006). On the other hand forbidding students to use Wikipedia is counterproductive; it gives them a further incentive to cheat and it delays their familiarization with the useful world of online tools, from Wikipedia to Google Scholar and Google Print.

Such new tools should certainly be used with caution, but the students will benefit more if they are taught how and when to use them properly rather then being faced with a ban on using them. Having the students contribute to Wiki, especially giving them an assignment of referencing an unreferenced article with academic references, will make them realize what is a 'properly referenced, academic source' and what is not – and why Wikipedia is different from a typical academic journal.

Writing and referencing articles is just the tip of an iceberg in terms of activities students can do on Wikipedia. They can join the efforts of projects like ‘WikiProject Countering Systemic Bias’ and see how articles are affected by, for example, an Anglo-centric world view. For research design and article writing classes they can see what it is to be a reviewer by reviewing articles at ‘Wikipedia:Peer review’, or improve their language by following ‘Wikipedia:Manual of Style’. For larger projects, they can create a WikiPortal (like the Rhetoric Portal created by students from St. Cloud State University).

Finally they can simply see the pending task list at many WikiProjects; for example by becoming involved in a ‘WikiProject:Sociology’ they can help to improve the categorization of sociological subjects on Wikipedia, work on the ‘Sociology Collaboration of the Week’ or the Sociology Portal (see Figure 7).

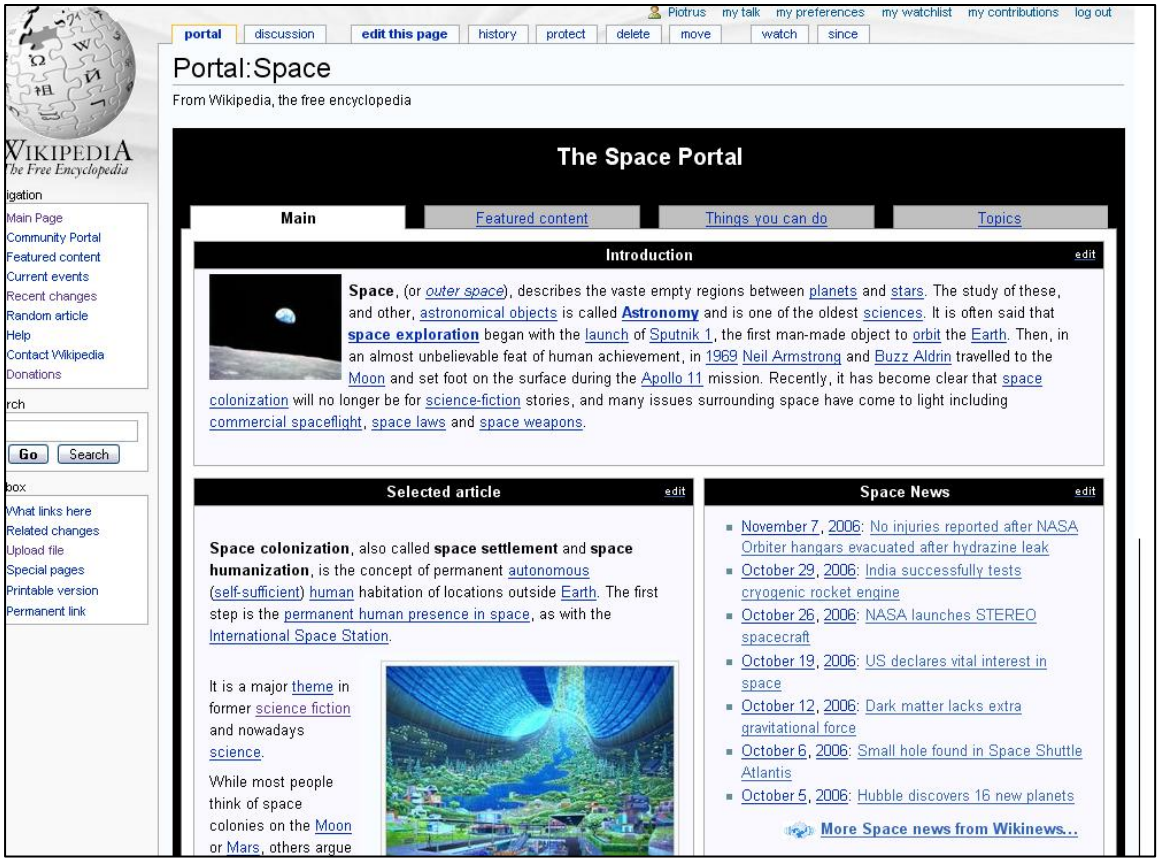


Figure 7 Portal:Space, maintained by members of WikiProject:Space
One of many Portals designed as educational gateways into specific realms of knowledge. Designing and maintaining a portal is just one of many activities that students can do on Wikipedia.

Another interesting idea comes from the adaptation of the 'writing before students' activity suggested by Edwards (2002). If the teachers contribute to one or more Wikipedia articles, and keeps on doing this throughout the course, those experiences can be used to further increase the efficiency of any 'teaching with Wikipedia' activity. The students would feel a closer bond with the lecturers who would help them by illustrating the Wikipedia exercises with the stories of their own experiences on the site. Considering the nature of Wikipedia contributions – which are by their nature somewhat less stressful than contributions to an academic journal or book – we can circumvent some of the drawbacks of the traditional 'writing before students' exercise, such as problems with self-exposure, or overcomplexity of the issue. Wikipedia articles are written for the general public, thus they resemble popular press articles recommended by Edwards (2002). Edwards also notes that a major paradigm in sociology of knowledge states that “knowledge is created socially, is shaped by institutions and organizations, and is created through imperfect process of starts and stops.” Wikipedia certainly illustrates the truth of this paradigm. Many academics who became familiar with Wikipedia, like Rozenzweig (2006), suggest we have a responsibility to contribute our knowledge to that site. If we turn our contributions into teaching exercises, aren't we killing two proverbial birds with one stone?

The classicist James O’Donnell as quoted by Rosenzweig (2006) has noted that Wikipedia may be more beneficial for its editors than for its readers: “A community that finds a way to talk in this way is creating education and online discourse at a higher level”. Rosenzweig also draws our attention to one of the greatest sociologists of our times, Robert K. Merton, and his concepts of “the communism of the scientific ethos,” and “communal sharing”, where scientific knowledge is

treated as a communal good, freely communicated and distributed (Merton 1942). This bold idea is clearly illustrated on Wikipedia, where students will be introduced to the helpful Wikipedia community and see that the task of writing an article is not only a 'must-do assignment' but something millions of people do 'for fun'. I daresay that convincing a student that writing papers is 'fun' is always an impressive achievement, one that is likely to increase their lifelong interest in the academia – and Wikipedia seems to be a perfect tool for doing just that.

Conclusions

This paper introduced wikis and Wikipedia and explained how they work and how they can be adapted to teaching. A brief analysis outlined several main features that make wikis suitable for use in an e-learning setting, with special attention paid to the possible uses and benefits of Wikipedia, the largest and most popular wiki.

Wikis are free, reliable and user-friendly. However, they are not yet widely implemented in the education arena. Projects underway at the Case Western Reserve, South Florida, Penn State, Queensland, Chapel Hill and other universities offer specific examples on how teachers, academics and even students themselves are increasingly employing wikis in the field of social sciences to enhance both the process of teaching and learning.

Although much technology needs yet to be developed before the concept of virtual universities becomes truly functional, wikis and Wikipedia offer an intriguing way for students can collaborate on real assignments in cyberspace. The opportunities offered by Wikipedia seem especially valuable as they merge some proposals from the radical pedagogy and use of computers in social science education paradigms under the service learning approach. Wikipedia is a tool that further “move[s] the discipline into a realm of collaborative learning”.(Brooks 1997) It allows us not only to enhance our portfolio of teaching strategies, but to transform routine class activities into something that can instill in our students the values of lifelong learning and scientific ethos, simultaneously contributing to the wider community.

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About the Author

Piotr Konieczny

Piotr Konieczny is a PhD student at the Department of Sociology, University of Pittsburgh, where he is researching the decision making processes and organizational structure of Wikipedia. He is also one of over a thousand volunteer administrators of Wikipedia, The Free Encyclopedia

Over the past two years he has became increasingly involved in theory and practice of teaching with new media. He is participating in the Wikiversity project, and has given a series of presentations about use of wikis and Wikipedia in teaching, most recently at the 2nd annual Wikimedia conference, Wikimania '06, where he participated in ‘Wikis in education’ track speaking on ‘Wikimedia projects as a teaching tool’.

Editor's Note: Teachers have a unique opportunity to research alternative methods of teaching and learning. The data collected from this pilot study raise interesting questions for those who instruct and those who design instruction. Rather than "teach the test", can we motive students to think critically about the subject matter to promote higher levels of learning. Interactive study questions are a way to focus student research and explore subject matter in greater depth. The retrospective questions gave valuable information about the students' thought processes and perceptions.

Interactive Study Questions: A Pilot Study

Brent Muirhead
USA

The author will discuss a pilot project involving two study participants who used interactive web based WWII study guides. Study participants comments related their learning experiences with the interactive exercises. The project reflects insights into cognitive psychology and computer technology.

Taking American history tests can be a challenging task for high school and undergraduate college students. Students wonder how to focus their study efforts to prepare for class discussions, quizzes and tests that demand having a good working knowledge of specific information. Textbook publishers are making more web based study materials such as quizzes, flash cards and outlines. Salomon (1988) recognized how computer technology can help learners in several ways:

1. assume part of the intellectual burden by handling lower-level functions of the task, thus enabling learners to work at higher-levels:
2. provide learners with guidance by raising questions, signaling errors, suggesting moves, etc.;
3. display intermediate states and processes en route to the final solution; and
4. provide models of how information can be represented and processed (computers & learning, para 2).

Teachers (K-12 and university) are integrating more technology into their courses as relevant ways to promote critical thinking skills. Lipman (1995) states "….critical thinking is skillful, responsible thinking that facilitates good judgment because it (1) relies upon criteria, (2) is self-correcting, and (3) is sensitive to context" (p. 146). The definition reveals the dynamic nature of critical thinking with a strong connection to megacognition. Livingston (1997) defined as "thinking about thinking" (para 2) and involves the executive control or self-regulation of the cognitive information processing. Flavell (1979) has described metacognition in three basic categories: individual knowledge about learning, knowledge of variables to complete a task and learning tactics. Metacognition skills play a major role in a student's ability to analysis their learning needs and create plans to meet them. Students must make a diversity of learning decisions based on their understanding of their skills and study habits (Livingston, 1997).

The project focused on testing the effectiveness of two interactive WWII study guides that had multiple-choice, short answer and matching questions. Two WWII interactive exercises built with Hot Potatoes (2006) software (e.g. Appendix C). The first exercise involved 25 multiple-choice questions and five short answer questions (Appendix A) and the second exercise included 30 matching questions (Appendix B). The author developed study materials that reflected intellectually challenging knowledge expectations of students who could take a high school AP US history class or a college introductory course to American history. The project had two major aims: to identify if there was a particular question type that was more effective for learning or

reviewing American history material and what were the advantages and disadvantages to interactive study guides. Designing the two study guides did consider three usability issues:

1. The number of errors and time to learn how to use the study guides.
2. Time to complete the two quiz exercises.
3. The user satisfaction with the study guide (Shneiderman & Plaisant, 2004).

The study participants for this project were two females (ages 19 and 53) who used their computers to take the two interactive quizzes. The 19-year old participant is a college student and the 53-year old participant has completed a college degree. They did have prior knowledge about the content of the WWII questions. Study participants went to the website www.life-longstudy.com (Figure 1) and clicked the ISR tab to begin work on the two study guides: WWII Study Guide Matching Questions and WWII Study Guide. There were no time limits for completing the two exercises.

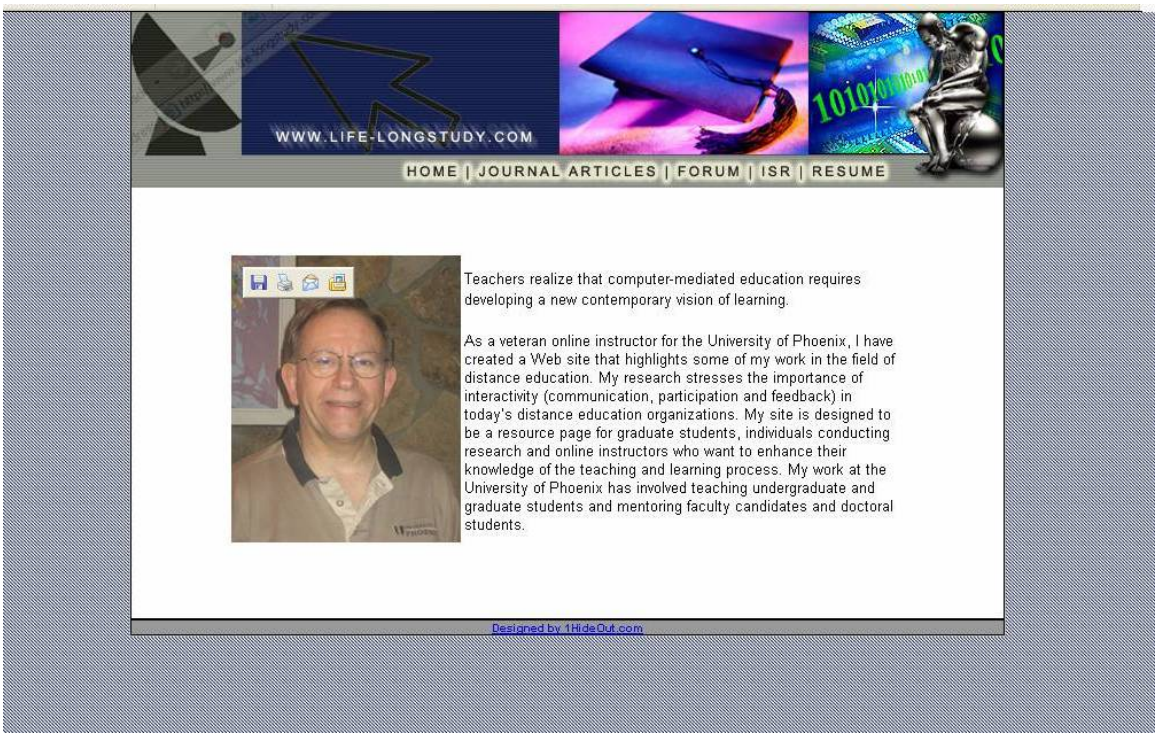

Figure 1: Students click ISR tab on website www.life-longstudy.com

The author posed four questions to the study participants after they had completed their study guide exercises which took 40 minutes. First question, what questions (short answer, matching or multiple-choice) do you prefer to help you learn and review history information? Why this question format is more effective for you? Study participant A related that "multiple-choice; it was effective because my mind works best when eliminating answers to see the most logical response. The short answer is the least effective because it is subjective." This response highlights how students can sometimes view short answer and essay questions as being more subjective which complicates their preparation efforts. Study participant B affirmed that "multiple-choice; eliminating the wrong answer to be more effective way of learning for me." Teachers and technology designers who are preparing virtual study guides often include only multiple-choice

and matching questions. Research literature suggests information recall can depend on the individual's emotional state and the circumstances that they learned the material. Bruning, et al (2004) encourages teachers to provide testing opportunities that are similar to the classroom. Therefore, whenever students take a test in an unfamiliar room, it could have a negative impact on student performance. "Contextual changes in a person's environment can cause added stress to the testing situation. Stressors cause a person's attention to shift, lapse, or narrow. The person's decision speed can be influenced as well" (Jacobs & Troester, 2004, Introduction, para 2). Research literature indicates that virtual study guides should closely align with quizzes and tests to enhance the student recall of information.

The second project question; what are the educational advantages and disadvantages are there to using interactive study guides? Study participant A shared that "there are major advantages such as instant yes or no response, you can keep taking the quizzes over and over tell you get 100, and less boring way of studying than staring at a book. The disadvantage is you do not have the human contact if you think the quiz is wrong." Study participant B noted that "being able to keep working at getting the correct answers helps me learn and retain information than staring at pages in the book. The lack of human contact is the main disadvantage; can't discuss answers you feel are incorrect." The responses reflect an appreciation for learning material in a different format from textbooks. Textbook publishers have developed more web based study guides that recognize students being more technologically sophisticated and enjoy a diversity of learning tools. Jacobs and Troester (2004) tested the context-dependent theory of learning by having students take tests in regular desks and beanbags. The results revealed that student accuracy for recall questions was higher in the beanbags which were more comfortable and less stressful for the students. The study participants did describe some concerns about the absence of human interaction with a teacher that could have a negative impact on their accuracy of their knowledge. Students have diversity of educational needs and cognitive maturity. For instance, some students lack confidence in their academic abilities and need more individual attention, while others are highly autonomous and have different kinds of needs. Teaching responsibilities have moved away from knowledge transmission to a stronger emphasis on guidance.

The third project question asked what are some ways that interactive study guides can be improved to meet your learning needs? Study participant A noted that "this answer depends on how the study guide parallels the test or final. If the test is close to the study guide form then there is little room for improvement. If the test is an essay based one then include more short answer." Study participant B related that "if essay questions use more short answers. If multiple-choice then the study guide is adequate." The research project comments affirmed creating relevant study guides that align properly with tests. Also, research studies indicate the value of stressing the understanding major concepts over memorization of detailed facts and teaching knowledge in a variety of contexts to promote a greater transfer of learning. Teachers should avoid presenting knowledge that is too strictly "context bound" (Branford, et al, 2000, p. 236). It could restrict students when trying to apply knowledge in different circumstances. Teachers who prepare students for SAT tests should focus on recreating the testing circumstances such as using time constraints and questions that are similar to the exam. The wise teacher will always strive to use the best techniques that promote enduring learning in their students. Teachers can aid students by helping them broaden the range of cues associated with encoding and retrieval of information and improves their ability to recall the information in different circumstances.

Craik and Lockhart (1972) argue from their studies that deeper cognitive interactive with the material is essential for long-term recall. The elaboration process must be intentional to help individuals to trigger memory traces from their senses to their long-term memory. Anderson (2005) relates that "the theory called depth of processing held that rehearsal improves memory only if the material is rehearsed in a deep and meaningful way" (p. 178). Therefore, individuals

must engage in elaboration of ideas in a way that makes the material relevant to them. Students can use basic strategies such as asking themselves questions before reading the material to increase their understanding (Anderson, 2005).

A fourth project question asked, what type of Internet resources are useful or have been useful in the past to assist you in learning new information? Study participant A shared that she used the following resources, "Wikepedia.org, online textbooks, GALILEO, google.com, findarticles.com, WebCT Vista, Google book search, textbook web sites, gsu.edu, Owl Perdue Writing Center and easybib.com." Study participant B related that "google.com, WEDMD, ETenet.com and yahoo.com." The comments reflect how the web search engines and specific knowledge sites are becoming an integral part of a student's educational experience. Universities are developing more digital databases that contain journal articles and doctoral dissertations. Information is accessible but it is important to remember that "teachers must not confuse familiarity with knowledge or in-depth understanding. They must constantly evaluate their instruction to ensure they are building on what their students know, not just "giving information." (Critical Issue, 1995, para #9)

Interactive study guides are useful tools that should reflect testing expectations. Teachers who assign essay tests should develop essay oriented study guides. Future research projects could use a different set of survey or interview questions to discover how study guides can address specific misconceptions and inaccurate knowledge about WWII. Also, exploring peer coaching with interactive study guides is a promising study area. Research studies point out students can improve their metacognition skills by having a combination of direct instruction and observing others (Bruning et al, 2004).

In closing, investigating educational technology continues to be a challenging endeavor. Study participants noted the individual who had not a history class for over 30 years had recorded 89% correct answers on the two study guides and the person who had history class two years ago had 70% correct answers. Shneiderman and Plaisant (2004) relate "… predicting performance on complex cognitive tasks (combination of subtasks) is especially difficult because of the many strategies that might be employed and the many opportunities for going astray" (p. 83). Cognitive research continues addressing these dynamic issues as educators strive to create learning environments that help individuals develop productive studying tactics.

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About theAuthor

Brent Muirhead Ph.D.

Brent Muirhead has a BA in social work, master's degrees in religious education, history, administration and e-learning and doctoral degrees in Education (D.Min. and Ph.D.). He recently completed his fifth graduate class in cognition and technology at The Teachers College, Columbia University, New York City.

Dr. Muirhead is the College Campus Chair of the Arts & Sciences at the University of Phoenix campus in Atlanta, Georgia. He teaches a diversity of undergraduate and graduate level courses in Atlanta and online. He mentors faculty candidates and doctoral students. He is an Associate Editor for Educational Technology and Society; Senior Online Editor of International Journal of Instructional Technology & Distance Learning and he has worked as a visiting research fellow to Robert Gordon University, Aberdeen, Scotland.

Contact Dr. Muirhead at: bmuirhead@email.phoenix.edu.

APPENDIX A

WWII Study Guide Multiple/Short Answer

1. What year did WWII begin?
    a) 1938
    b) 1939
    c) 1940
    d) 1941

2. Who was the Prime Minister of Great Britain during WWII?
    a) Neville Chamberlain
    b) Stanley Baldwin
    c) Harold Macmillan
    d) Winston Churchill

3. What WWII naval battle was fought completely with airplanes?
    a) Coral Sea
    b) Burma
    c) Midway
    d) Philippines

4. What was the first nation that Germany invaded that triggered WWI?
    a) Poland
    b) Italy
    c) France
    d) Soviet Union

5. What was the primary military strategy did the US use in the Pacific Theatre?
    a) Air Strikes
    b) Submarine Warfare
    c) Island Hopping
    d) None of the above

6. Senator Gerald P. Nye blamed _____ for getting the US into WWI.
    a) British
    b) weapon manufactures
    c) Germans
    d) French

7. A major underlying reason for the internment of Japanese Americans was
a) Patriotism
    b) Land
    c) Security
    d) Racism

8. What German military leader was known as the "desert fox"?
    a) Erwin Rommel
    b) George Patton
    c) Geroge Marshall
    d) None of the above

9. What the landing site for the D-Day attack?
    a) Sicily
    b) Gibraltar
    c) Netherlands
    d) Normandy

10. Who was the US President that made the decision to drop two atomic bombs on Japan?
    a) Harry Truman
    b) Dwight Eisenhower
    c) FDR
    d) None of the above

11. While lower than other allies, the human cost of WWII for Americans was second only to the
    a) American Revolution
    b) Vietnam
    c) WWI
    d) Civil War

12. President Roosevelt established the atomic bomb project because he feared this nation was working on it:
    a) Japan
    b) Soviet Union
    c) Germany
    d) Italy

13. In the Atlantic Charter, the allies pledged to
    a) Future colonial rights
    b) Self-determination
    c) Freedom of the seas
    d) Economic support of the Soviet Union

14. All of the following were participants in the Yalta conference except
    a) Charles de Gaul
    b) Franklin Roosevelt
    c) Winston Churchill
    d) Joseph Stalin

15. What two nations signed the Non-Aggression Pact in 1939?
    a) Germany and Italy
    b) Germany and France
    c) Japan and Italy
    d) Germany and Soviet Union

16. Women in the military worked in
    a) Mechanical repairs
    b) Combat missions
    c) Kitchen duties
    d) Nursing and administration

17. Why did Stalin want the allies to open a western front?
    a) Stalin supported the Italian campaign
    b) Russian war causalities were enormous
    c) Stalin did not want to send his troops to North Africa
    d) Stalin wanted the Germans to fight in France rather than in Russia

18. What was the name of the project to build the atomic bomb?
    a) Los Alamos
    b) Long Island
    c) Manhattan
    d) Montgomery

19. The last major German offensive was
    a) Battle of Stalingrad
    b) Battle of Britain
    c) Battle of the Bulge
    d) Battle of Leyte Gulf

20. What year did Adolf Hitler come to power in Germany?
    a) 1930
    b) 1931
    c) 1932
    d) 1933

21. What allied conference did the leaders decide to divide Germany into four occupied zones after WWII?
    a) Yalta
    b) Atlantic
    c) Potsdam
    d) Casablanca

22. What US general left the Philippines and stated "I shall return."
    a) Dwight Eisenhower
    b) George Patton
    c) Douglas McArthur
    d) William Leahy

23. What nation lost the most citizens and soldiers in WWII?
    a) France
    b) Germany
    c) Soviet Union
    d) Italy

24. What treaty at the end of WWI caused resentment for the German people?
    a) Treaty of Paris
    b) Treaty of Ghent
    c) Treaty of Berlin
    d) Treaty of Versailles

25. Which of the following WWII participants did not participate in the division and future occupation of Germany?
    a) Italy
    b) Great Britain
    c) Soviet Union
    d) United States

26. Why did General George Marshall win a Nobel Peace prize in 1953?

27. What was the primary reason for President Truman deciding to use atomic bombs against Japan?

28. What did J. Robert Oppenheimer mean when he quoted from the Bhagavad Gita, a Hindu holy book that "now, I am become the Death, the destroyer of worlds"?

29. The U.S. Supreme Court, in the case of Korematsu v. United States, ruled that the forced internment of Japanese residents and citizens. What was the rationale for this ruling?

30. What were two reasons for American isolationism in the 1930s?

ANSWER KEY

1. b
2. d
3. c
4. a
5. c
6. b
7. d
8. a
9. d
10. a
11. d
12. c
13. b
14. a
15. d
16. d
17. b
18. c
19. c
20. d
21. a
22. c
23. c
24. d
25. a

26. He directed the massive rebuilding of Europe after WWII

27. President was concerned about saving the lives of American troops who would have died while taking control of Japan

28. Atomic bombs carried enormous destructive powers that were capable of ending all life on earth

29. This was an appropriate wartime measure in light of fears of Japanese espionage

30. Disillusionment with the outcome of WWI and being fearful of having commitments to other nations that could led the US into another war

APPENDIX B

WII Study Guide Matching Questions	Answer Key
1. US entered WWII	**1941**
2. WWII began in	**1939**
3. The Munich Conference that gave Hitler part of Czechoslovakia	**1938**
4. George C. Scott won an Academy award in 1970 for his performance in this movie	**Patton**
5. US general who directed the occupation of Japan at the end of the war	**Douglas MacArthur**
6. US general who was the commander of the 3rd army during the Battle of the Bulge	**George Patton**
7. US general who overall commander of allied forces at D-Day	**Dwight Eisenhower**
8. British Prime Minister who declared "peace in our time" after the Munich Conference	**Neville Chamberlain**
9. British Prime Minister who stated "never in the field of human conflict was so much owed by so many to so few."	**Winston Churchill**
10. Stalin signed a non-aggression pact with this leader	**Hitler**
11. This international peace organization failed because it lacked military forces	**League of Nations**
12. Kamikaze pilots were part of a war strategy used by this nation	**Japan**
Stalin's "scorched-earth" policy was aimed at _____ soldiers	**German**
14. This international peace organization had military forces	**United Nations**
15. The city where a trapped British army was evacuated by sea to England in 1940	**Dunkirk**
16. One of the concentration camps in Germany	**Dachau**
17. In southern France, the Nazis set up a puppet government in this region	**Vichy**
18. Policy of granting concessions to a potential enemy in order to maintain peace	**Appeasement**
19. Japan's surprise attack on the American Pacific Fleet on December 7, 1941 at	**Pearl Harbor**
20. Leader of the Free French	**Charles DeGaul**
21. The British intelligence misled the Germans into thinking that the main attack in France would be at this city	**Calais**
22. He lost the 1944 election to FDR	**Thomas Dewey**
23. Leader of Italy who made a military alliance with Germany and Japan	**Benito Mussolini**
24. A social and political ideology with the primary guiding principle that the state or nation is the highest priority, rather than individual freedom	**Fascism**
25. The deliberate and systematic destruction of a racial, political, cultural, or religious group	**Genocide**
26. The military alliance of Germany, Italy and Japan	**Axis Powers**
27. The leader of Vichy France	**Philippe Pétain**
28. Japanese emperor during WWII	**Hirohito**
29. The Republicans nominated him for the 1940 presidential election	**Windell Wilkie**
30. United States admiral of the Pacific fleet during WWII who used aircraft carriers to destroy the Japanese Navy	**Chester Nimitz**

APPENDIX C

WORLD WAR II STUDY GUIDE MATCHING QUESTIONS

Match the items on the right to the items on the left.

US entered WWII in

WWII began in

The Munich Conference that gave Hitler the Sudetenland area of Czechoslovakia in

George C. Scott won an Academy award in 1970 for his performance in this movie

US general who directed the occupation of Japan at the end of the war

US general who was the commander of the 3rd army during the Battle of the Bulge

US general who overall commander of allied forces at D-Day

British Prime Minister who declared "peace in our time" after the Munich Conference

British Prime Minister who stated "never in the field of human conflict was so much owed by so many to so few."

Stalin signed a non-aggression pact with this leader

This international peace organization failed because it lacked military forces

Kamikaze pilots were part of a war strategy used by this nation

Stalin's "scorched-earth" policy was aimed at _____ soldiers

This international peace organization had military forces

The city where a trapped British army was evacuated by sea to England in 1940

One of the concentration camps in Germany

In southern France, the Nazis set up a puppet government in this region

Policy of granting concessions to a potential enemy in order to maintain peace

Japan's surprise attack on the American Pacific Fleet on December 7, 1941 at

Leader of the Free French

The British intelligence misled the Germans into thinking that the main attack would be at this city

He lost the 1944 election to FDR

Leader of Italy who made a military alliance with Germany and Japan

A social and political ideology with the primary guiding principle that the state or nation is the highest priority, rather than individual freedom

The deliberate and systematic destruction of a racial, political, cultural, or religious group

The military alliance of Germany, Italy and Japan

The leader of Vichy France

Japanese emperor during WWII

The Republicans nominated him for the 1944 presidential election

United States admiral of the Pacific fleet during WWII who used aircraft carriers to destroy the Japanese Navy