




WikiSkills

Empowering and fostering social, professional, cultural and civic skills through pedagogical use of Wiki technologies and methodologies.

DELIVERABLE 2.1– European state of the art report

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Summary

WikiSkills -Empowering and fostering social, professional, cultural and civic skills through pedagogical use of Wiki technologies and methodologies- is a project partially funded by the European Commission, Lifelong Learning Programme Centralized, KA3 Multilateral projects (2012-2013).

In this perspective, Deliverable 2.1 – European state of the art report – aims at describing the situation in Europe regarding Wiki tools uses within the 4 LLP target groups. To this end, a desktop research and a selection of good practices have been conducted in each partner country, in order to identify the status of those wiki tools in European educational environments. Moreover, the report includes an on-line national survey addressed to educational practitioners of each partner country.

To facilitate the readability of this document, the following table summarizes the project's partners, acronyms and countries.

Acronym	Partner full name	Country
YORG	Fondation Yinternet.org	Switzerland
die Berater	"die Berater" Unternehmensbertungs GmbH	Austria
EA	Ellinogermaniki Agogi School	Greece
UB	University of Barcelon	Spain
MAC-Team	Pôle Européen des Coopérations Multi-Acteurs (aisbl)	Belgium
HEIG-VD	Haute Ecole d'Ingénierie et de Gestion du canton de Vaud	Switzerland
CESGA	Fundación Centro Tecnológico de Supercomputación de Galicia	Spain
Wikimedia.se	Wikimedia Sverige	Sweden

(Table 1.1: WikiSkills consortium)

The present document sums up the results of the desktop research of wiki tools, existing projects, good practices and results of the national on-line survey. Finally, an analysis of success factors using wikis in educational contexts is included as a result of the previous parts of the report. This document will be, together with D2.2 -Needs analyse report-, the bases of the Pedagogical Framework.

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1. LITERATURE REVIEW

This section aims at introducing the concept of wiki from their history, going through collaborative learning and wiki applications in educational contexts and finally a comparison between wikis and other similar software's and tools. This will give us a general vision and state of wiki tools to going through next steps of the document.

1.1. General definition and history of wiki

1.1.1. Definition of wiki

A wiki is a website whose users can add, modify, or delete its content via a web browser using a simplified mark-up language or a rich-text editor. It supports hyper links and has simple text syntax for creating new pages and cross-links between internal pages. Wikis are typically powered by wiki software and are often created collaboratively by multiple users. There are over 100 different wiki software. Some enable controlling different functions (levels of access), for example editing rights may permit changing, adding or removing material. Others may allow access without enforcing access control or particular rules may also be imposed for organizing content.

Wikis allow asynchronous communication and group collaboration across the Internet, it's been sometimes described as a composition system, a discussion medium, a repository, and a tool for collaboration. Wikis allow users, with both author and editor privileges, to edit the overall organization of contributions as well as the content itself. Examples include community websites, corporate intra-nets, knowledge management systems and note-taking. Wikis embodies the idea of a potentially collective, democratic, open, and dynamic design. However, this somewhat romantic vision has been challenged by vandalism and "information wars" and required registration is not uncommon in some wikis. Many wiki platforms are open to alteration by the general public without requiring them to register user accounts. On the other hand, private wiki servers require user authentication to edit pages, and sometimes even to read them. Some wiki platforms welcome hundreds of thousands of editors at the same time. But most wiki platforms have much less participants, ranging from a handful to a couple hundred. It is also possible to run a personal wiki.

Thus a wiki holds technology as well as community aspects. What separates the wiki from other online, distributed environments, such as Learning Management Systems (LMS) and groupware applications, is its open architecture. The design implies that structure is not imposed or pre-determined (as in an LMS) but emerges as a result of participation. Wikis uses at school have consequences within learning and teaching. Content and networked structures are built from within as users add material and make use of a simplified hypertext mark-up language to create links to add features. In LMSs and groupware, activities are often linked to individual work (learners' personal folders etc.) that can be shared later, while in a wiki it is the collective (e.g. class) activities that give rise to content formation, structure, and (indefinite) growth. And while degrees of interdependence can be observed when people jointly draw and take notes, the wiki allows for immediate and unlimited participation due to its distributed nature; interdependency is not an option but its rationale.

A wiki will typically provide a series of meta-features such as the history of a page (including comparison of versions and roll-back to earlier versions), notification of revisions, and discussion spaces assigned to particular pages. In this way, producing content and structure in the wiki can be accompanied by comments, discussion, and annotations. This is where the interdependent and collective orientation of the wiki emerges.

The essence of the wiki concept may be described as follows:

- A wiki invites all users to edit any page or to create new pages within the wiki website, using only a Web browser
- Wikis promote meaningful topic associations between different pages by making page link creation almost intuitively easy and showing whether an intended target page exists or not.
- A wiki is not a carefully crafted site for casual visitors. Instead, it seeks to involve the visitor in an ongoing process of creation and collaboration that constantly changes the Web site landscape.

A wiki is essentially a database for creating, browsing, and searching through information. A wiki allows for non-linear, evolving, complex and networked text, argument and interaction. While most people will associate a wiki with collecting and publishing information, a wiki may also be used for authoring new content.

The word wiki is sometimes interpreted as the acronym for "What I Know Is"¹, which describes the knowledge contribution, storage and exchange functions of wikis.

According to The Wiki Way², "Open editing' has some profound and subtle effects on the wiki's usage. Allowing everyday users to create and edit any page in a Web site... encourages democratic use of the Web and promotes content composition by non-technical users." Because the user interface is simple, so barriers to modifying wiki pages are minimal. Moreover, the results of the users' actions on the content of the site are instantly visible to other users.

Ward Cunningham, the creator of wikis, originally described wiki as "the simplest online database that could possibly work."³

JARGON

A **wiki page** describes one page working with wiki features.

A **wiki** or a **wiki-platform** usually describes a website running with a wiki software (wikipedia, Jurispedia...)

A **wiki software** or wiki program is a type of collaborative software that runs a wiki system, allowing web pages to be created and edited using a common web browser. It is usually implemented as an application server that runs on one or more web servers. The content is stored in a file system, and changes to the content are stored in a relational database management system. Examples of wiki software are MediaWiki, Confluence, XWiki etc.

A **wiki farm** or **wiki hosting service** is a server that offers tools to simplify the creation and development of individual, independent wikis. With a wiki farm, the farm's administration installs the core wiki code once on its own servers, centrally maintains the servers, and establishes unique space on the servers for the content of each individual wiki with the shared core code executing the functions of each wiki. Both non-commercial and commercial wiki farms are available for users and online communities. While most of the wiki farms allow anyone to open their own wiki, some impose restrictions. Many wiki farm companies generate revenue through the insertion of advertisements, but often allow payment of a monthly fee as an alternative to accepting ads.

¹"WIKI - What does WIKI stand for?". Retrieved 2007-03-09.

² B. Leuf and W. Cunningham, *The Wiki Way: Quick Collaboration on the Web*, Addison-Wesley: Boston, 2001.

³ Cunningham, Ward (June 27, 2002), *What is a Wiki*, WikiWikiWeb, retrieved April 10, 2008

1.1.2. What is a wiki for?

Wikis may serve many different purposes. Examples include community websites, corporate intranets, knowledge management systems, and note-taking.

Here are some examples of uses:

- Collecting historical data; building encyclopedic content: purpose heavily inspired from wikipedia, it is frequently used within companies as well or on local territory wikis.
- Drafting and reviewing material: promotional flyers, public documents, reports, books, grant requests, documentation, annotated bibliography, minutes of a meeting, writing assignments etc.
- Directory for teams, officials, local media: great use for a wiki, each person can keep her or his information up-to-date.... as well as information for others. Administration is quick and easy. A famous example is Diplopedia, the wiki of the US Diplomatic Department.
- Project knowledge management: brainstorming, sharing of ideas, coordination of activities etc.
- Publishing : all of the above, course resources
- Website supporting a temporary event, such as a conference: the wiki may host information about the program, about the speakers, content of talk, list of attendees, travel details and much more. Information can be easily and quickly updated by editors in a context of relative urgency. One such example is Wikimania website.

1.1.3. History

In 1972, researchers at Carnegie-Mellon University developed the ZOG database system for a multi-user environment. The ZOG database system consists of text-only frames (WikiPages) which, in turn, consisted of a title, a description, a line with standard ZOG commands, and a set of selections (hypertext links) that lead to other frames. Two of the original developers of ZOG, Donald McCracken and Robert Akscyn, developed KMS, Knowledge Management System, an improved version of ZOG that uses a GUI (web browser). KMS is a collaborative tool in which users modify contents of frames. Frame changes become visible immediately to others through dynamically updated links (hypertext).

HyperCard, originally released in 1987, is an application program for Apple Computer, Inc. that was among the first successful hypermedia systems before the World Wide Web. It combines database capabilities with a graphical, flexible, user-modifiable interface. HyperCard also features HyperTalk, a programming language for manipulating data and the user interface.

But it was Howard G. "Ward" Cunningham, an American computer programmer, and a pioneer in both design patterns and extreme programming, the first to put together all the fundamentals of Wiki in one place and make editing it freely available online without authentication and attract sufficient numbers of powerful and generous authors to make content.

Cunningham started developing the first wiki, WikiWikiWeb, in Portland, Oregon, in 1994. According to Cunningham, the wiki concept can be traced back to a HyperCard stack he wrote in the late 1980s, making HyperCard one of the grandparents of the Wiki idea. Cunningham experimented with HyperCard and a database. He wanted to make a database which was ragged and irregular and he wanted to let the HyperCard become what it wanted to be. In order to demo what he was trying to do he decided to do a database using a stack of HyperCards which tracked all the ideas that had floated through the company where he then worked. WikiWikiWeb was installed on the Internet domain *c2.com* on March 25, 1995.

"Wiki" is a Hawaiian word meaning "fast" or "quick". It was named by Cunningham, who remembered a Honolulu International Airport counter employee telling him to take the "Wiki Wiki Shuttle" bus that runs between the airport's terminals. According to Cunningham, "I chose wiki-wiki as an alliterative substitute for 'quick' and thereby avoided naming this stuff quick-web"⁴.

In the early 2000s, wikis were increasingly adopted in enterprise as collaborative software. Common uses included project communication, intranets, and documentation, initially for technical users. Today some companies use wikis as their only collaborative software and as a replacement for static intranets, and some schools and universities use wikis to enhance group learning. There may be greater use of wikis behind firewalls than on the public Internet.

On March 15, 2007, 'wiki' entered the online Oxford English Dictionary.

The most famous wikisite is the on-line Encyclopedia wikipedia.org which uses Wikimedia software. It is the 6th most-visited site on the web with 410,000,000 unique visitors monthly (users). The 1 billionth edit took place on April 16, 2010. There are currently 3,894,465 articles in the English wikipedia and almost 10,000,000 within all languages⁵. Many of the currently most notable wiki farms got their start in the mid-2000s.

Adapted as an instructional technology in the past few years, wikis are being used for a wide variety of collaborative activities. In addition to compiling information, faculty and staff in higher education use wikis as repositories for meeting notes. Agenda items are contributed prior to a meeting; notes added during the meeting are saved in a public archive. Some institutions experimented with wikis as e-portfolios. Artefacts within a wiki-folio are easily shared when the wiki is used as a presentation tool.

Educators and students, as well as amateurs and professionals (artists, writers, collectors), have found wikis useful in expanding community involvement and interest in their subjects and activities. Wikis are also making inroads as rough Web-content composition tools for both faculty and students.

1.1.4. Strengths of using wiki-based environments

In this document we are going to analyse and describe the advantages using wiki in educational environments. Here we list some of the general strengths :

- Information 1) unique 2) updated, 3) accessible
- Fewer email
- Less versioning troubleshooting (as observed when circulating by e-mail a document to be updated by several actors)
- Decrease of individual effort (distributed workload)
- No predefined rules, structure and limitations by default (may be decided and modified over time by users rather than by developers or management, according to needs)
- Better management of individual skills (beyond expertise skills, other qualities may be identified such as writing skills, facilitation skills etc.)
- Speeding up production and publishing delays (crisis management)

⁴ Cunningham, Ward (November 1, 2003), *Correspondence on the Etymology of Wiki*, WikiWikiWeb, retrieved March 9, 2007

⁵ Currently data from www.google.com/adplanner/static/top1000/ and en.wikipedia.org/wiki/wikipedia:Statistics

- Decrease of intermediaries (middle management...)
- Increase of transparency over individual activity and productivity
- Facilitate collecting and sharing knowledge
- Facilitate ownership and responsibility feelings in a group
- Facilitate interactions, in particular when actors are not physically in the same place (or even in the same time-zone)

1.1.5. Success factors

There are a number of difficulties in setting up a wiki-based environment.

1. Choice of platform (using a wiki or using another software)

In many cases, prospective users have a problem to solve but do not know which is the best technological choice. Should they set up a wiki? Should they set up a blog? Should they set up a social network software? This first challenge may only be solved by personal search of information on what each type of software is best used of, in examining current projects with similar goals and in interviewing wiki users who may be able to help identify whether a wiki based platform is a good idea or not.

More information may be found at Comparison between wikis and other tools.

2. Choice of the wiki platform (which wiki software, stand-alone wiki or wiki farm)

Once a decision has been made of using a wiki, the prospective user need to identify which wiki software is the best choice for him. Decision may be made based on:

- each wiki special features (eg, wysiwyg⁶ editing, Word import etc.)
- on the availability of a specific interface language (English is always available. Greek far less)
- on the specific technical environment required (for example, in many large companies, PHP-MySQL are not set up)
- on the software licence (open source or proprietary)
- on price (to get the licence, or to install the software platform, or to get access to a cloud version)
- on technical-business support (may exist or not; may be provided in own language or only in English from a far away company.)
- on the existence of a lively tech community (a warranty of planned improvement of the software. Last release date is a good sign of a lively tech community)
- on prior familiarity (users are already using this platform in another context)
- on training availability for the users

More information may be found at Wiki Software and Wiki Farms parts of this report.

⁶ Acronym of What You See Is What You Get, is an editing interface that allows users to see directly the result without programming code.

3. Designing the wiki

Various questions should be considered:

- What issue will the wiki resolve? Remember that a wiki is result-oriented, not people oriented. There needs to be a problem to solve or an operational efficiency to be gained.
- How will success be measured? A frequent method is to measure the wiki adoption (number of people registered, number of pages created...). Another method is to measure the impact on needs (for example, did the wiki reduce email traffic or the number of meetings?)
- What is the expected ROI (return on investment)? This will depend on the issue to solve
- Where will the content come from? Will it be new content? or imported content? What will be the licence of the content published? Which organisation will be legally responsible as hosting organization? Who will own the content?
- Who will use the wiki initially? In the future? Would the wiki be publicly readable or not?
- Who will be the editing community? Which controls will be needed for day 1? Which structure is mandatory from day 1? Which navigation and structural hierarchies? Which expectations for participation?
- And finally, who will be the seed team?

More information may be found at the Legal considerations part of this report.

4. Growth and development of the wiki

Once the wiki is running, other questions may arise, such as

- How to welcome and train new users?
- How to encourage participation and co-writing?
- Who will take care of maintenance tasks?
- Which wiki-patterns may be identified? How to fix the bad ones? How to push the positive ones?
- How to build a happy and productive community?
- Etc.

Main difficulties reported in setting-up and using a wiki-based environment

After those points, we are going to list the main barriers found building a wiki-based project.

- learning how to use the software itself (and in some cases the wiki syntax);
- lack of motivation from prospective users (often related to the loss of power related to knowing something that others do not know) or decrease of motivation (upon waiting for too long a new feature or a bug fix);
- availability of participants (in particular when participating to the wiki is not clearly part of their official mandatory tasks);
- lack of a facilitator (also called gardener in wiki world);
- facilitator (or manager) gives too much direction (attribution of roles and responsibilities, attribution of tasks, pre-definition of most rules);

- difficulties to see text produced by self be modified by others (in particular for experts);
- difficulties in daring to modify others text (in particular for non-experts and young members of a team);
- difficulties in accepting that a work-in-progress text would be published (as opposed to waiting for it to be finalized and approved);
- trying to request from participants that they should trust each other (trust cannot be ordered. In most cases, assumption of good faith and good will is sufficient);
- inability to build a holistic process where tasks 'taking care of' and tasks 'uncared for' are visible;
- insufficient communication tools for the participants (in particular when participants are expected to only talk in face to face meetings every couple of months or through a social network platform elsewhere);
- too restricting reading and writing rights (a tendency might be to only allow experts to write, whilst non experts may also take in charge important tasks such as fixing typo, organizing information, improving readability, welcoming new comers etc.),
- Addition of numerous unnecessary features (making access more complex and learning curve too steep to climb).

Conclusions

Most success factors may be identified from those difficulties. Major recommendations include:

- train new users to use the software
- do not design the wiki on a pre-existing process. Let it grow organically as much as possible. Keep rules and structure as low as possible and let the users create or at least participate in setting things up.
- encourage and engage. Foster a sense of ownership from all participants.
- keep the process as transparent as possible (so that participants know what's going on and what needs to be done).
- provide as many communication areas online than offline (think about the office, the coffee area, the restaurant, the library, the conference room... and reproduce that online).
- assume good faith from participants. Prefer a situation where a mistake is made but fixed to a situation where nothing can be done due to restricted rights. Allow users to try, fail and finally succeed.

At the end of this report, and after the entire analysis and the national survey, a global success factors part will be provided.

1.2 Use of wikis in educational context. Collaborative learning

1.2.1. Collaborative learning

Traditional learning environments are often characterized by one-way knowledge transmission processes in which the teacher, as the only source of knowledge, assigns a learning activity that is carried out autonomously by the student. Such processes strip the learning process of its social dimension (Sullivan, 1994). Collaborative learning strategies can strengthen this dimension by creating the conditions for learning, or individual cognitive development, as a result of group interaction (Garrison, 2003).

Collaboration is the process of interaction amongst people who share the same goal. It requires individuals to be jointly engaged and coordinate their efforts in order to solve a problem or produce a product together (Dillenbourg, 1999). Thus, collaborative learning is a social activity. It involves individual learning processes, but is not reducible to it (Stahl et al., 2006). Collaborative learning is defined as an instructional method in which students at various performance levels work together in small groups toward a common goal (Coutinho and Bottentuit, 2007). The expected outcome of collaborative learning is shared construction of knowledge among students, or the creation of an artifact or product of their learning. Collaborative learning activities can include collaborative writing, group projects, joint problem solving, debates, study teams, and other activities.

Collaborative learning implies a change in the roles of the instructor and students. Indeed, collaborative instruction is student-centered and knowledge is viewed as a social construct which is enhanced by both the instructor and the peers (Harasim, 2000). Thus, learning shifts from instructor-oriented instruction to student-oriented collaboration, and students build a community of students as they are learning with and for others. Students learn expressing their questions, pursuing lines of inquiry together, teaching each other's and seeing how others are learning (Stahl et al., 2006). As a result, collaborative learning processes put learners not only as responsible for their own learning, but also for constructing new knowledge with other learners.

Collaborative learning processes can offer numerous benefits, such as increasing student involvement with the subject matter, enhancing critical thinking skills, promoting problem-solving skills, and encouraging student learning and achievement (Stahl et al., 2006).

Associated theories

The following theories are associated to collaborative learning environments.

Socio-constructivism

Constructivism argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas (wikipedia). Thus, learners actively construct knowledge by interpreting new knowledge based on their prior knowledge (Kuiper and Volman, 2008). Constructivist teaching approaches provide students with opportunities to participate in authentic activities requiring them to interact with their environment and create their own understanding. Constructivist teaching moves students beyond the accumulation of knowledge, as it involves them in critically thinking, reflecting, and using knowledge (Tynjal, 1998).

Furthermore, socio-constructivist theories consider learning as socially constructed by "*competent participation in the discourse, norms, and practices associated with particular communities of practice*" (Kuiper & Volman, 2008, p. 244). In such contexts, students are offered the opportunity to learn through social, collaborative activities that occur in a meaningful context and allow them to make connections between their prior experiences and their new experiences.

In these learner-centered educational contexts, teachers act as facilitators who guide students who explore their environment and construct their own knowledge.

Zone of proximal development

Collaborative learning is heavily rooted in Vygotsky's view, that there exists an inherent social nature of learning. The author introduced the concept of zone of proximal development, which defines the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers (Vygotsky, 1978). Vygotsky stressed that collaborative learning, either among students or between students and a teacher, is essential for assisting each student in advancing through his or her own zone of proximal development.

Situated and distributed cognition

Situated cognition considers social and physical contexts as integral components of learning (Brown, Collins, and Duguid, 1989). In order to fully understand concepts, learners must learn and use them in the social and physical contexts in which they are embedded (Brown et al., 1989). Situating learning in context ensures that it can be transferred to other activities. Furthermore, distributed cognition applies to the co-building of learning and knowledge in collaborative digital libraries, student group work, communities of practice, networks of practice, human-computer interactions, etc. In such contexts, learners work in groups to solve problems and negotiate understanding, so the cognitive burden is distributed throughout the environment (Brown et al., 1989).

Computer Supported Collaborative Learning

Computer-supported collaborative learning (CSCL) has emerged with the increased use of technologies in educational settings. CSCL takes advantages of Internet resources (online communication tools such as discussion boards, e-mail, video conferencing and chat rooms) to facilitate communication and collaboration among students. Thus, students can reorganize their thinking, present new forms of knowledge, and are exposed to multiple views from groups (Uribe, Klein, and Sullivan, 2003).

A wide range of empirical studies have provided evidence that a CSCL environment can enhance the learning process and outcomes. Such discussions focus on how technology infrastructure affects the social nature of learning. Online collaborative learning processes can fit into different categories, according to a time-space matrix: whether the collaboration is collocated or not, and whether it is synchronous or asynchronous (Ellis et al., 1991).

More specifically, web 2.0 technologies, such as blogs, wikis, podcasts, and RSS feeds, have the potential to complement, enhance, and add new collaborative dimensions to learning (Parker and Chao, 2007). Web 2.0 technologies are perceived as being especially connected, allowing users to develop Web content collaboratively and open to the public (Alexander, 2006). Owen et al. (2006) formulate some key attributes of social software in relation to education, such as:

- the communication between groups (to review each others' actions and to allow those actions to benefit each other member of a community);
- the communication between many people (to publish for a large audience);
- gathering and sharing resources (gathering and making material available);
- collaborative collecting and indexing of information (new ways of organizing and finding knowledge objects);
- new tools for knowledge aggregation and creation of new knowledge.

Wikis represent a powerful 2.0 technology which tend to lend themselves particularly well to collaborative learning processes (Schaffert, Bischof, Bürger, Gruber, Hilzensauer, and Schaffert, 2006).

1.2.2 Current state of wikis in education

Wikis are collaborative websites whose content can be edited by visitors to the site, allowing users to easily create and edit web pages collaboratively (Chao, 2007). In a Wiki-based learning scenario, students co-write and co-edit web pages. When contributing to a web page, they must read related materials carefully and therefore yield high achievement. Furthermore, being aware of the fact that articles can be read by the public, students may read critically and write responsibly (Guth, 2007). During such learning processes, peer interaction can motivate participants, who collaboratively construct shared knowledge. Wikis enhance asynchronous communication and cooperative learning among students, and promote cooperation rather than competition (De Pedro et al., 2006).

1.2.2.1 Use of wikis in current education contexts

Wiki software is relatively flexible, and can be adapted to a wide range of learning environments and to various educational levels (Boulos, Maramba, & Wheeler, 2006). For instance, Schaffert, Bischof, et al. (2006) suggest the use of wikis in project-based learning, collaborative story writing, and interdisciplinary and inter-cultural learning.

Possible pedagogical applications of wikis

Duffy and Bruns (2006) list several possible educational uses of wikis:

- the development of research projects, with the wiki serving as ongoing documentation;
- the creation of summaries of thoughts from the prescribed readings, building a collaborative annotated bibliography on a wiki;
- the publication of course resources;
- the use of wikis as a knowledge base, enabling teachers to share reflections and thoughts regarding teaching practices;
- the use of wikis as map concepts (e.g. for brainstorming);
- the use of wikis for presentations, which students can directly comment.

Furthermore, Tonkin (2005) identifies four different forms of educational wikis:

- a) Single-user wikis enable collecting and editing thoughts using a web-based environment.
- b) Lab book wikis enable students keeping notes online and allow peer reviewing and edition by fellow students.
- c) Collaborative writing wikis can be used by a team for joint writing.
- d) Knowledge base wikis provide a knowledge repository for a group.

In addition, Parker and Chao (2007) highlight different uses for wikis in pedagogical contexts, which are resumed below.

Writing assignments

Wikis can be used for class project with a encyclopedic format (instructions, user manuals, glossaries, etc.) or a bibliographic format (that requires students to locate websites related to a

topic). They can also support the creation of handbooks (e.g. students can build a guide to correct punctuation, which could be compiled and evaluated as a class, giving every student a stake in the project and benefiting each from the authoring process). Furthermore, Schaffert, Bischof, et al. (2006) discuss the concept of collaborative creative writing, in which students collaboratively write a story through a wiki.

Project-based learning

Wikis represent a powerful tool for project planning and documentation (Schaffert, Bischof, et al., 2006). When used for collaborative class projects, they allow students to meet virtually at their convenience and work on projects together. Schaffert, Gruber, et al. (2006) suggest ways in which wikis can be useful in project knowledge management, including brainstorming and exchange of ideas, coordination of activities, coordination and records of meetings, etc.

Online / distance education

Wikis are useful tools for facilitating online learning groups (Augar et al., 2004). Indeed, they can support the dissemination of information, thus enhancing the exchange of ideas and facilitating group interaction. Further, wikis can be used to create a set of documents that reflect the shared knowledge of the learning group (Augar et al., 2004).

1.2.2.2 Benefits of using wikis as learning tools

Schwartz et al. (2004) highlighted several benefits of using wikis in the educational arena:

- Cost: most of wikis are open sources;
- Complexity: wiki writing is easy to learn, and technical support is available online;
- Control: access can be restricted;
- Clarity: wiki content and evolution is easy to consult;
- Portability: wikis can be accessed from any browser;
- A common set of editing features: WYSIWYG editing image insertion, etc.

Furthermore, recent literature underlined many other advantages of using wikis for pedagogical uses, as described in the next paragraphs.

Promoting reflective learning

Reflective learning refers to structured approaches that enable students to reflect upon their learning and to understand their own learning processes. Wikis can increase students' reflective learning, by offering them a context for comparing and contrasting information from diverse sources, thus stimulating reflection, knowledge sharing and critical thinking (Scardamalia and Bereiter 2003). Indeed, by participating in a wiki-based activity, students are able to perceive multiple interpretations of the same topic (Cunningham, 1991), as well as the natural complexity of interrelations within the realms of knowledge.

Involving learners in their own knowledge construction

Wikis can provide an environment that embodies social-constructivist principles, since groups of learners are actively involved in their own co-construction of knowledge (Boulos, Maramba, and

Wheeler, 2006). Furthermore, wiki environments also promote peer and self-assessment, which is considered one of the keys to self-regulated learning.

Improving co-writing processes

Wikis provide a context for distributed collaborative writing processes, as well as facilitate their monitoring (Lowry et al., 2004). Collaborative development of a written text provides strong benefits on a social and cognitive level (Sullivan 1994), and enables students to master co-writing techniques, which are increasingly being required in the world of work. (Lowry et al., 2004). Furthermore, co-writing is conducted asynchronously, so students can reflect on what they read and write, besides practising their language skills (Flower, 1996).

Promoting non traditional roles

The use of wikis in educational settings implies a change in the roles of learners and instructors, by inviting contributions by every member of the community. Students can use knowledge published by instructors as easily as instructors could use contributions made by students. Thus, every member of the community is at once an instructor and a student, as the focus moves away from specific content knowledge, and moves towards the process of building a knowledge community.

Facilitating students' assessment

The characteristics of wiki technologies, including revision tracking features, facilitate rich assessment processes (Pusey and Meiselwitz, 2009). Indeed, wiki software tracks changes to wiki pages by individual users, which permits the instructor to view and analyse all contributions. Several studies reported higher student satisfaction in group work because of the capability of individualized assessment in wiki learning (Pusey and Meiselwitz, 2011).

Enhancing communities of practice

In communities of practice, learners collaborate as they pursue a common goal, thus learning from each other as they acquire a shared understanding (Wenger, 1997). With 2.0 technologies, such communities are not constrained by classroom walls and can be situated in various learning contexts. Wiki environments can enhance communities of practice, in which students create and share knowledge with the group, put up interesting pieces of information, work together, discuss issues, etc. (Schaffert, Bischof, et al., 2006). Indeed, wikis provide a context for a variety of interactions, easy participation, valuable content, democratic participation, and evolution over time (Schwartz, et al., 2004).

1.2.2.3 Limitations of using wikis as learning tools

Some recent studies highlighted several limitations to the use of wikis as a learning tool, including difficulties in using the technology (Pedro et al., 2006), the lack of active participation by students when the assignment is voluntary, a sense of individual ownership over their own work, reluctance to edit each other's work (Désilets and Paquet, 2005). Furthermore, Vratulis and Dobson (2008) outline that students may not all be able to play an equal role in contributing to a wiki. As in other forms of collaborative work, some students dominate, while some others fail to participate fully. Thus, the final product may not be representative of all students' perspectives. This can cause a lack of clear ownership of contributions.

1.2.2.4 Recommendations for the successful use of wikis as learning environments

Based on recent research using wiki tools in educational contexts, several recommendations have emerged for a successful use of wikis as learning environments, as summarized below.

Technical recommendations

Pusey, and Meiselwitz (2009) list several technical requirements to facilitate the use of wiki technologies by students: the wiki platform should provide a user authentication system (to account for copyright and student privacy laws and to provide for accountability), support popular browsers (to enable all students to access and edit the wiki platform easily), thread mode (direct interaction among students can occur in threaded discussions that are linked directly to each student's webpage), image and video uploads (images and video can, in some cases, illustrate a topic better than only text does), tracking portfolios of edits and updates tied to individual users (to permit the instructor to see the amount of time spent online, the pages most often visited, and provide qualitative / quantitative data on students' contribution to the wiki), as well as offer a page locking system (to avoid students editing the same page simultaneously), and help links.

Pedagogical recommendations

Based on recent studies, the following list describes some recommended features for an effective implementation of wiki learning environments.

- Remind students of copyright laws that prohibit copying and pasting content from other websites and of giving credit for others' work (Belle, 2003).
- Make clear, for students, that the collaboratively created text is owned by all contributors (Botterbusch & Parker, 2008), and that their writing can undergo revisions and changes even though it is published once it appears on the wiki.
- Provide students with a clear organizational structure for the wiki (Engstrom & Jewett, 2005), while giving them autonomy with regard to the scope and content of the wiki. Professors should act as moderators of the wiki rather than supervisors, by tracking students' participation (new contributions and edition of existing content).
- Discuss, with students, the roles and protocols that they will use during the collaborative activity. As stated by Vratulis and Dobson (2008), this process can be a valuable experience *per se*.

1.3 Comparison between wiki and other tools

To be able to compare wikis with other tools, things need to be simplified so that only basic traditional original features of tools are compared. Today, features that originally belonged to only one of the following categories, blogs, wikis, content management systems and social networks, are mixed. New concepts like blikis (wiki+blog), structured wikis (wiki+traditional CMS), social enterprise platforms (wiki + blog + traditional CMS + social software) have emerged. In short, tools that have proven to be a success have been partly or fully assimilated into modern software platforms. Hence, have in mind that today's state of modern software platforms based on the wiki concept may include all the tools in the table below.

Most modern wiki platforms are not just wiki

During the last roughly 20 years, since the wiki concept was coined, wiki software development has been continuously moving forward. Communities, developers, companies, users behind more advanced specific software platforms based on the wiki concept may have pedagogic trouble explaining the fact that their specific platform is not "just a wiki" any longer. Many people (that is.... potential customers and users) don't know what a wiki is and those that have a clue often associate wikis with the features of wikipedia without realizing that wikipedia is only one specific project running on one specific wiki platform. They seldom reflect about the fact that there are hundreds of different wiki software platforms which include functionalities that are not "just wiki" any longer. This situation creates an issue for people working in wiki communities and wiki companies, especially if the niche is so called enterprise wiki engines where features can be substantially different from those well-known in open knowledge projects like wikipedia.

Strategy of communication of wiki platforms

Over the years, people behind software engines based on the wiki concept have used several strategies to make the point that their software is more than a wiki.

One strategy is to rename the software project to exclude the "wiki" part. For example, Socialtext includes a wiki but does not mention the word "wiki" on their main page. They prefer to call themselves "enterprise social software", though they originate from a wiki software called Kwiki. The same is true for MindTouch TCS. They also do not mention the word wiki on their main page and do not use it either when describing their product. Still, MindTouch is based on MediaWiki. PBwiki has become PBworks and speaks about online team collaboration etc.

Another strategy is to list all tools of the software engine in the software name: Tiki is a project which includes Wiki and CMS Groupware, hence they call themselves "Tiki Wiki CMS Groupware".

Yet another strategy is to extend the concept of wiki to encompass new features by using the concept "next generation wiki" where first generation wikis are used to collaborate on content and second generation wikis can be used to create collaborative web applications. For example, XWiki claims to be a second generation wiki and a toolkit for the web where the "X" stands for what you shape XWiki into.

Comparison of traditional features

Hence, the comparison that follows is about the original meanings of static website, wiki, blog, CMS and social software.

Static website is the oldest tool in the comparison. Static websites are the most basic types of websites. The pages of a static website contain fixed code and will display the same information to every visitor. In order to change the content of a static website, one needs to be administrator/webmaster and know some HTML, to update the code manually and then publish the

HTML-pages to a web-server. Since static websites are troublesome to update, they are usually not updated often. Large sites consisting of static pages will be difficult to maintain.

A traditional blog is meant for publishing new blog posts more or less regularly. A blog consists of its blog posts and a blog engine which accommodates the blog posts. The blog posts are displayed in reverse chronological order, that is, the most recent blog post appears first. It can be used by common people with only basic technical knowledge. A blog may be owned by one or many people. Many blogs are themed on a person's life and thoughts – the personal blog, usually owned by one individual. Other blogs are themed on a single subject. If a blog is owned by many people, these people usually take turns in writing blog posts. However, a blog post is usually owned by one person and written to present the view of its author.

A traditional content management system (CMS) was originally defined as a collection of data within which many users with proper authorization can query, add, or delete records and have the results displayed in a unified manner. A traditional CMS has a formal, hierarchical structure and require its users to follow this formal structure and a certain workflow in order to put in new formal info and documentation. For example, official content is very seldom (if ever) published instantly but is directed through a workflow for other people to review and approve before publishing. Also, a CMS was originally not very good at handling unstructured free form text but rather used for structured info. The threshold for new users to contribute was (is?) high. A traditional CMS usually only authorizes a small group of trusted people to participate. A person needs to qualify before he or she gets authorization rights.

A traditional wiki is a multi-user-system which lets users add, modify or delete centrally stored content via a web-browser. A traditional wiki is usually open for anybody to participate and lets the community detect and throw out users that misbehave and vandalize ("Easier to use than abuse"). This openness was made possible because a wiki is version controlled: everybody can see exactly who made what change. All activity on all wiki pages can be followed on the recent changes page. A traditional wiki is set up with few rules and content is added in an informal way. A wiki is very good at handling unstructured hypertext. A page in a wiki is not organized in a hierarchy but has a flat, non-linear structure which makes searching and linking easy. A page is usually identified only by its name. Empty pages (red links) can be created for others (not defined or assigned users) to fill out. Content is constantly changed and updated/published without mandatory prior review in an ongoing process of creation and collaboration. Content on content pages can usually be discussed on corresponding discussion pages.

An online social software provides easy-to-use publishing tools aimed at letting users build and reflect social networks or social relations. The social networking service (tightly/inseparably bound to the social software) allows and encourages users to share backgrounds, ideas, activities, events, and interests. User profiles are central and are often generated by answering personal questions and adding personal pictures and media files. Users build their own individual networks within the social networking service by social linking to other users' profiles. There are features to search for, find, compile lists of, share and manage user profiles of contacts/friends. Control features let a user decide who can view their profile, contact them, add them to their list of contacts, and so on. Feeds of comments and recent activities let a user follow his or her individual social network, or other groups which allow so. Usually online social networking services are free or inexpensive for its users.

Next page table shows a schematic view of the differences between those tool.

	Static website	Blog	CMS	Wiki	Social software
Site structure	fixed	reverse chronological order of blog posts	hierarchical	flat, free-form linking	user-profile centric
Community	no	possibly a community of readers	formal community of authorized users	informal community	informal community hosting many individual user communities; a user may control who gets access to the user's own community and user profile
Content	static pages	blog posts	documents, attachments	content pages	user profiles & user feeds
Commenting & reviewing	by channels outside website or possibly in "guestbook" page or contact form	comment space adjacent to blog posts	possibly during workflow	discussion pages adjacent to content pages	comments of posts in user feeds
Content ownership	reflects site owners view	blog posts reflect authors view	reflects official view of organization	content pages reflects consensus view of community	reflects view of individual user
Content editing	by web-master	by authorized authors	by authorized users	by users/community	by users/community
Publishing process	technical & slow	non-technical & fast	non-technical & slow – approval after review	non-technical & fast	non-technical & fast
Search	Not always. Search engine	Search engine	Hierarchical links (pre-defined structure meant for all). Search engine.	Several methods (search engine, random page, link by link, self-made lists etc.). Fosters creativity and serendipity	Limited
Version handling	no	no	not originally	yes – and recent changes log	no
Updating frequency	very low	medium	low	high, around the clock	low
External linking	difficult	easy	easy	easy	easy
Internal linking	difficult	easy if possible but not so frequent as in wikis	medium easy – internal linking must reflect document hierarchy	very easy; "red links" signal either links that are broken or links to non existing internal pages which should be written	no need; possible?
Good for	cheap and easy websites if content does not need to be frequently changed	starting a dialogue, dissemination of longer texts	formal documentation, workflows	informal documentation, high-speed publishing, collaborative group-work	building and maintaining social networks, starting a dialogue, rapid dissemination of short messages.

1.4 Legal consideration about wikis.

There are two major legal issues to consider with regards to setting up a wiki.

1. The legal responsibilities of the different actors involved in the wiki (host, editor, author).
2. The intellectual property rights of the content produced and published on the wiki.

1.4.1 Copyright considerations

Content licences issues

Copyright is a legal concept, enacted by most governments, giving the creator of an original work exclusive rights to it, usually for a limited time. Generally, it is "the right to copy", but also gives the copyright holder the right to be credited for the work, to determine who may adapt the work to other forms, who may perform the work, who may financially benefit from it, and other related rights.

In the case of co-writing on a wiki, this creates specific challenges since the work done by one is going to be adapted by others afterwards.

When participants of a wiki are all staff members of one organization, the issue is generally quite easily solved. A copyright, or aspects of it, may be assigned or transferred from one party to another. In the case of a company and its staff, the copyright of a work is usually transferred to the company itself, and the participants get a salary in exchange of their work.

However, when the participants of a wiki belong to several companies or when some of them are volunteers, the default transfer of copyright is not so easy.

- For example, when a wiki is edited both by teachers and learners in a school, who should be the owner of the content? The teachers? the learners? The school?
- For example, when a company set up a public wiki, with content produced by company staff members and by the general public, who is the owner of the content?

These issues need to be tackled beforehand to avoid any future misunderstanding. It may done in three steps.

What goal ?

First deciding how you would like content to be reused by others. Do you want it to be accessible by everyone or private? Do you want to allow the reader to copy your text? Would you allow anyone to copy and sell your content? Who will be the owner of the wiki website and of the content?

In most private company based wiki, the content is private, copyrighted by the company. No one can access it, read it, modify it, reproduce it without the company's explicit agreement.

In many wiki websites, the content is free to read and enjoy, but the reader is not allowed to copy and even less to sell it.

In other wiki yet, anyone can read, modify and reuse the content, even for commercial reasons.

This decision needs to be made in advance.

Clarifying the publishing licence

If no specific decision is made, by default, all content produced is copyrighted (no right to read, modify and reuse without explicit consent).

In most cases of public wikis, the authors may decide to grant more rights to readers. Authors will make the conscious decision to publish the content under conditions they all agree with. For example, one may use and reuse, but not modify. Or one may read but not reuse. Note that when the wiki is public and may be editable by anyone, choosing a licence not allowing to modify the content is clearly weird. Note as well that when a wiki is open to edit by all and in particular by the volunteer public, the public will be less likely to participate if the only owner of the content is ultimately a private company. So think carefully ahead of which licence is preferred.

Typical licenses used on wikis are Creative Commons licences as they allow fine tuning of which rights are offered or not (see below).

Crafting terms of use

Once a publishing licence is chosen, terms of use must be crafted so that all authors are fully aware of what they do, which rights they give up and which right they keep. Make sure that the situation is clear for everyone.

Terms of use are also necessary for readers so that all of them know what they are allowed to do or not with the content.

Notes

Most private wikis are copyrighted by the company.

Most public and editable wikis are either CC BY SA (Creative Commons license, content can be modified and redistributed freely) or CC BY NC (Creative Commons license, content can be modified, reused but not for commercial purposes).

1.4.2 Creative commons licences

Creative Commons licenses consist of four major condition modules:

- Attribution (BY), requiring attribution to the original author;
- Share Alike (SA), allowing derivative works under the same or a similar license (later or jurisdiction version)
- Non-Commercial (NC), requiring the work is not used for commercial purposes; and
- No Derivative Works (ND), allowing only the original work, without derivatives.

These modules are combined to currently form six major licenses of the Creative Commons:

- Attribution (CC BY)
- Attribution Share Alike (CC BY-SA)
- Attribution No Derivatives (CC BY-ND)
- Attribution Non-Commercial (CC BY-NC)
- Attribution Non-Commercial Share Alike (CC BY-NC-SA)
- Attribution Non-Commercial No Derivatives (CC BY-NC-ND)

As of the current versions, all Creative Commons licenses allow the "core right" to redistribute a work for non-commercial purposes without modification. The NC and ND options will make a work non-free according to the Definition of Free Cultural Works.

An additional special license-like contract is the CC0 option, or "No Rights Reserved." This license dedicates a work to the public domain (or an equivalent status in jurisdictions where a dedication to public domain is not possible). Compared with a "public domain" statement added to the work, a CC0 statement is less ambiguous and achieves the desired effect on a global scale, rather than limited to some jurisdictions.

1.4.3 Legal responsibility of authors, editors and host providers

For all purposes

- authors are here meant to be the people creating, modifying, removing content on the wiki.
- editor is the moral or physical person that legally owns the wiki platform (owner of the domain name, trademarks...) and the ultimate decision maker of the editorial policy.
- host is the moral or physical person technically hosting the wiki (owner of the servers on which runs the wiki).

To put it simply

- the author is always the primary person responsible for something he writes on the wiki. He is legally responsible of what he writes and should not write anything contrary to the law of his country even though the wiki may be hosted and run in another country.
- the editor/host is usually not made liable for something illegal on the wiki, unless he knows about it. Once the editor/host is informed of the existence of an illegal content on the wiki, he must remove the content and if necessary set up systems to prevent the illegal content to be put back. If he does not comply, he becomes liable.

One of the challenges is that whilst the editor may physically run a wiki from a certain country, authors may come from any country.

For example, Wikimedia Foundation is the host/editor of wikipedia and is a San Francisco company. As such, wikipedia should respect the US laws as well as California laws. When a UK author writes in wikipedia, he must respect UK laws as well as California laws. When a Swiss author writes in wikipedia, he must respect Swiss and California laws. However, if a content is illegal in the UK but legal in California, it is unclear as to whether the Wikimedia Foundation should respect it or not.

Another challenge is that the wiki editor/host may be bound to inform a jurisdiction willing to identify an author responsible of an illegal edit. As such, the wiki editor/host must make sure which private information is collected about which author (it may depend on which jurisdiction it is located in), how long it should be secured and under which circumstances it should be provided (upon simple request from the police? upon request from a lawyer? upon request by legal decision issued by a tribunal?). Editor/host should provide information with regards to which data is collected, saved and how may be released in the terms of uses of the website.

By "illegal", various interpretations may be given: Misrepresentation, slander, libel, public disclosure of private facts, sedition, profanity, author right violations... are all possible cases that may be seen on a wiki.

In short, there are specificities to running an openly editable website which probably require prior checking with an appropriate lawyer.

However, it should be kept in mind that most cases can be fixed quite easily by providing

- a feedback system (reporting system for cases of abuse);
- appropriate contacts (be transparent about who is the editor/host and provide means to contact someone);
- diligent action (in removing illegal content);
- empathy and kind apology (to the plaintiff).

2. EXISTING PLATFORMS

This section will show a complete analyse of the existing wiki-based software and farms. After the concept, the history and the learning applications shown in previous section, here we go through existing tools and their characteristics. This sections aims at helping with the selection of the best wiki tool for each project.

2.1 Analysis of existing wiki software

2.1.1 In a nutshell: what is a wiki?

A **wiki** is a website whose users can add, modify, or delete its content via a web browser using a simplified mark-up language or a rich-text editor. Wikis are typically powered by wiki software and are often created collaboratively by multiple users.

The essence of the Wiki concept may be described as follows:

- A wiki invites all users to edit any page or to create new pages within the wiki website, using only a web browser
- Wiki promotes meaningful topic associations between different pages by making page link creation almost intuitively easy and showing whether an intended target page exists or not.
- A wiki is not a carefully crafted site for casual visitors. Instead, it seeks to involve the visitor in an ongoing process of creation and collaboration that constantly changes the Web site landscape.

A wiki is essentially a database for creating, browsing, and searching through information. A wiki allows for non-linear, evolving, complex and networked text, argument and interaction. While most people will associate a wiki with collecting and publishing information, a wiki may also be used for authoring new content.

A defining characteristic of wiki technology is the ease with which pages can be created and updated. Generally, there is no review before modifications are accepted.

Many wiki platforms are open to alteration by the general public without requiring them to register user accounts. This is typically the case of wikipedia. On the other hand, private wiki servers require user authentication to edit pages, and sometimes even to read them. Some wiki platforms welcome hundred of thousands of editors at the same time. But most wiki platforms have much less participants, ranging from a handful to a couple hundred. It is also possible to run a personal wiki.

There are over 100 different wiki software to support wiki platforms. Some software allow control over different functions (levels of access). For example, editing rights may permit changing, adding or removing material. Others may permit access without enforcing access control.

2.1.2 How does it practically work?

2.1.2.1 How to edit a wiki page?

There are many different ways in which wikis have users edit the content. Ordinarily, the structure and formatting of wiki pages are specified with a simplified mark-up language, sometimes known as **wikitext** (for example, starting a line of text with an asterisk often sets up a bullet list). The style and syntax of wikitexts can vary greatly among wiki implementations, some of which also allow HTML tags. Wikis generally favour plain-text editing, with fewer and simpler conventions than HTML, for indicating style and structure. The benefit is easier editing but the drawback may be less ability to nicely format a page.

Increasingly, wikis are making WYSIWYG (What You See Is What You Get) editing available to users. In those implementations, the mark-up of a newly edited, marked-up version of the page is generated and submitted to the server transparently, shielding the user from this technical detail. However, WYSIWYG controls do not always provide all of the features available in wikitext, and some users prefer not to use a WYSIWYG editor. Hence, many of these sites offer some means to edit the wikitext directly.

Most wikis keep a record of changes made to wiki pages; often, every version of the page is stored. This means that authors can revert to an older version of the page, should it be necessary because a mistake has been made or the page has been vandalized. Many implementations allow users to supply an **edit summary** when they edit a page; this is a short piece of text summarising the changes. It is not inserted into the article, but is stored along with that revision of the page, allowing users to explain what has been done and why; this is similar to a log message when making changes to a revision-control system.

2.1.2.2 Navigation within a wiki

Within the text of most pages, there usually are a large number of **hypertext links** to other pages. This form of non-linear navigation is more "native" to wiki than structured/formalized navigation schemes. That said, users can also create any number of index or table-of-contents pages, with hierarchical categorization or whatever form of organization they like. These may be challenging to maintain by hand, as multiple authors create and delete pages in an *ad hoc* manner. Wikis generally provide one or more ways to categorize or tag pages. These tags may then be used to generate sidebar list of categories or even sometimes a tag cloud.

Most wikis have a **backlink feature**, which displays all pages that link to a given page.

It is typical in a wiki to create links to pages that do not exist yet, as a way to invite others to share what they know about a subject new to the wiki.

2.1.2.3 Linking and creating pages

Links are created using a specific syntax, the so-called "**link pattern**". Originally, most wikis used CamelCase to name pages and create links. These are produced by capitalizing words in a phrase and removing the spaces between them (the word "CamelCase" is itself an example). While CamelCase makes linking very easy, it also leads to links which are written in a form that deviates from the standard spelling. To link to a page with a single-word title, one must abnormally capitalize one of the letters in the word (e.g. "WiKi" instead of "Wiki"). CamelCase-based wikis are instantly recognizable because they have many links with names such as "TableOfContents" and "BeginnerQuestions." Most modern wikis have "free linking" using brackets, such as [[Table of contents]].

2.1.2.4 Search

Most wikis offer at least a title search, and sometimes a full-text search. The scalability of the search depends on whether the wiki engine uses a database. Some wikis, such as PmWiki use flat files, hence limited search capabilities. MediaWiki on the contrary is a database application and allows a more efficient search system. Indexed database access is necessary for high speed searches on large wikis. Alternatively, external search engines such as Google Search can sometimes be used on wikis with limited searching functions in order to obtain more precise results, but their indexes can sometimes be very out of date (resulting in poor search results).

It is probably better to develop a metadata strategy to tag and categorize pages to assist built-in search engines.

2.1.2.5 Changes

Wikis are generally designed with the philosophy of making it easy to correct mistakes, rather than making it difficult to make them. Thus, while wikis are very open, they provide a means to verify the validity of recent additions to the body of pages. The most prominent, on almost every wiki, is the "**Recent Changes**" page—a specific list numbering recent edits, or a list of edits made within a given time frame. Some wikis can filter the list to remove minor edits and edits made by automatic importing scripts (called "bots"). On small wikis, the Recent Changes page may feature only a couple of modifications per day, which are easy to check. On very active big platforms, such as wikipedia, the Recent Changes may feature dozen of modifications every second, making it difficult to make full use of this feature.

From the change log, other functions are accessible in most wikis: the **revision history** shows previous page versions and the **diff** ("difference") feature highlights the changes between two revisions. Using the revision history, an editor can view and restore a previous version of the article. The diff feature can be used to decide whether or not this is necessary. A regular wiki user can view the diff of an edit listed on the "Recent Changes" page and, if it is an unacceptable edit, consult the history, restoring a previous revision.

For every active "recent changes" page, some wiki engines provide additional content control. A person willing to maintain pages will be warned of modifications to the pages, allowing him or her to verify the validity of new editions quickly. A **watchlist** is a common implementation of this. Other wikis may provide an email alert.

2.1.3 Software implementations

As is usually the case with popular wiki engines, they are available either hosted on a wiki farm or downloadable to be installed locally. The software license decides on what conditions certain software may be used. Among other things, the software license decides conditions to run, study the code, modify the code and redistribute copies or modified copies of the software.

2.1.3.1 Comparison of wiki software

The first wiki was a very simple tool with limited features meant for developers. Back then (soon 20 years ago) wiki software stood out from traditional systems for documentation. Today, modern non-wiki platforms and modern wikis share many functions. They have borrowed features and functions from each other and much wiki software have been invented, with numerous features and various focus. Some wikis are open source whilst others are proprietary. Some wikis are rather meant for public use whilst others are typically meant for enterprise use. Some wikis are meant to handle very large communities whilst at the other end of the spectrum, some wikis are meant to be for an individual. There are many players out there who want to make their case. Hence, it is not easy to choose wiki software. Non-technical users probably look a lot at the list and the description of today's available functions of a wiki-software and tend to go for what is popular whereas a developer probably looks more on the software license, the way code is committed, how the

project is governed, the software architecture etc. For example, a proprietary license may even stop a developer from adding code or using a modified version of the software; a sloppy software architecture and governance may make development of new functions tedious and slow.

One popular resource for wiki software comparison is <http://www.wikimatrix.org/> where over 120 different wiki engines are presented. Popular wikis (by alphabetic order) according to the 13 with "Most views" on WikiMatrix 16 March 2012 are listed below. However, note that this website is sponsored by CosmoCode which is specialized on DokuWiki consulting. Hence, note that WikiMatrix is not only a resource for wiki software comparison but also a showcase for DokuWiki which is the wiki engine behind WikiMatrix. Therefore one can suspect that visitors come to the site not only to compare websites in general but also to watch DokuWiki in special. Have such things in mind when you check statistics. Also note that the quality of a claimed feature for a wiki software may vary a lot. For example, about 50 % of all wikis listed on Wikimatrix claims that they are WYSIWYG – a feature many users care a lot about. However the quality of the WYSIWYG differs a lot between different wiki software.

2.1.3.2 Confluence

1. Name of the tool: Confluence.
2. Reference organisation: Atlassian. <http://www.atlassian.com/software/confluence>.
3. Technology based / Developers: Java.
4. Licences (Open source or not): proprietary software. A zero-cost license program is available for non-profit organizations and open source projects.
5. Brief description and history: Created in 2004, the software development is still ongoing with many plug-ins. The Confluence wiki is arguably the most widely deployed wiki software in the enterprise market. Written in Java, it is designed primarily for corporate environment, with unlimited wiki spaces, granular access rights, LDAP integration, integrated search, and some networking tools. There is an extensive library of third party plug-ins. It is deployed world wide.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description): very frequently met in corporate environment.
7. Languages available: English, Spanish, Simplified Chinese, Finnish, French, German, Russian, Swedish, Japanese, Norwegian, Polish.

2.1.3.3 DokuWiki

1. Name of the tool: DokuWiki.
2. Reference organization: As freely licensed software many companies are specialized in providing support and consulting on DokuWiki.
3. Technology based / Developers: PHP. Originally authored by Andreas Gohr.
4. Licences (Open source or not): GPL 2.
5. Brief description and history: Created in 2004. DokuWiki is a wiki application aimed at small companies' documentation needs. It works on plain text files and thus needs no database. Its syntax is similar to the one used by MediaWiki.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description): frequently met in small to medium size corporate environment.
7. Languages available: 50. languages.

2.1.3.4 DrupalWiki

1. Name of the tool: DrupalWiki
2. Reference organization: kontextwork.de. Other consultants are possibly to be found through the extensive Drupal community.
3. Technology based / Developers: PHP. Originally authored by kontextwork.de.
4. Licences (Open source or not): GPL2+. However it turns out that the DrupalWiki software is not easy to get your hands on: DrupalWiki is not really distributed as freely as is usually the case with GPL2+.
5. Brief description and history: DrupalWiki is based on the Drupal core which is a popular free and open-source content management system. DrupalWiki is intended for enterprise use
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description):
7. Languages available: 12 languages.

2.1.3.5 Foswiki

1. Name of the tool: Foswiki.
2. Reference organisation: Foswiki community, As freely licensed software many companies are specialized in providing support and consulting on Foswiki.
3. Technology based / Developers: Perl, Foswiki community.
4. Licences (Open source or not): GPL2 or later.
5. Brief description and history: A TWiki-fork. A wiki where you can organise and query your data like a database, but write it with the flexibility of a wiki. Foswiki is a wiki + structured data + programmable pages.
6. Special features matching with WikiSkills project proposal/examples of educational uses (with a very brief description).
7. Languages available: 22.

2.1.3.6 MediaWiki

1. Name of the tool: MediaWiki.
2. Reference organisation: Wikimedia Foundation and others. <http://www.mediawiki.org>.
3. Technology based / Developers: PHP with a backend database.
4. Licences (Open source or not): GPLv2+.
5. Brief description and history: MediaWiki is probably the best known wiki software as it is the one used by wikipedia. It was created in 2002 to serve the needs of wikipedia, that is, the software is largely (though not exclusively) developed for encyclopedic-type of wiki projects such as wikipedia and features functionalities typically adapted to such needs. It benefits from an active developing community, some being staff at the Wikimedia Foundation. Due to the strong emphasis on multilingualism in the Wikimedia projects, internationalization and localization has received significant attention by developers. It is able to support very large wiki site with big communities. On the side of limitations, it has been difficult to create WYSIWYG editors, finely-tuned read/write/comment/delete access control and support for the creation of dynamically-assembled documents (pages that aggregate data from other

pages). MediaWiki audience is primarily education, public services or private knowledge-based sites.

6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description): must try.
7. Languages available: > 300.

2.1.3.7 MindTouch TCS

1. Name of the tool: MindTouch TCS.
2. Reference organization: MindTouch, Inc. based in San Diego.
3. Technology based / Developers: PHP, C# on Mono.
4. Licences (Open source or not): MindTouch TCS License (proprietary) and MindTouch Core License (GPL?). MindTouch Inc. packages some proprietary connectors on top of the open source MindTouch Core (formerly Mind Touch Deki) edition to provide a proprietary version of their software, currently branded 'MindTouch TCS', which is commercially supported. Partly open source and partly private extensions (see especially comments). What is the license of the farming component?
5. Brief description and history: The MediaWiki fork DekiWiki (made available from late 2006) evolved into what is known as MindTouch Core today. In 2008 support contracts for MindTouch Core was sold. In 2010 MindTouch started cloud based distribution
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description):
7. Languages available: 26.

2.1.3.8 MoinMoin

1. Name of the tool: MoinMoin.
2. Reference organisation: Jürgen Hermann & Thomas Waldmann. <http://moinmo.in/>.
3. Technology based / Developers: written in Python, initially based on the PikiPiki wiki engine. Storage mechanism based on flat files.
4. Licences (Open source or not): GPL 2..
5. Brief description and history: Started in 2000. A number of organizations use MoinMoin to run public wikis, including notable free software projects Ubuntu, Apache, Debian, FreeBSD, and others. This wiki engine appears to be very popular within technical savvy communities. Support both free linking and CamelCase linking. It is rather intended for small to middle size workgroup.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description): a rather popular wiki engine software amongst technical communities.
7. Languages available: 10+.

2.1.3.9 PhpWiki

1. Name of the tool: PhpWiki
2. Reference organization: Originally written by Steve Wainstead, PhpWiki community? (however the community is not very visible... where do they cooperate? The official website does not say much.).
3. Technology based / Developers: Php, Reini Urban and Marc-Etienne Vargenau maintain it today (according to wikipedia).
4. Licences (Open source or not): GNU GPL.
5. Brief description and history: Actually, the wiki seem to be used by many. Its relative popularity may be because PhpWiki is one of the oldest wikis and a feature-for-feature re-implementation of the original WikiWikiWeb. However the project seem to have stalled?. Last release date was 2007 according to WikiMatrix.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description).
7. Languages available: 9.

2.1.3.10 PmWiki

1. Name of the tool: PmWiki.
2. Reference organisation: <http://www.pmwiki.org>
3. Technology based / Developers: PHP/ Patrick Michaud.
4. Licences (Open source or not): GPL.
5. Brief description and history: Started in 2002. PmWiki is designed to be easy to install and customize as an engine for creating professional web sites with one to any number of content authors. The software focuses on ease-of-use, so people with little IT or wiki experience will be able to put it to use. The software is also designed to be extensible and customizable. The PmWiki mark-up engine is highly customizable, allowing adding, modifying or disabling mark-up rules, and it can support other mark-up languages. Access control is enabled.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description).
7. Languages available: 37.

2.1.3.11 DokuWikiTiddlyWiki

1. Name of the tool: TiddlyWiki.
2. Reference organisation: Jeremy Ruston <http://www.tiddlywiki.com>.
3. Technology based / Developers: HTML, CSS and Javascript.
4. Licences (Open source or not): BSD (open source).
5. Brief description and history: Created in 2004. TiddlyWiki is a single-page application designed to be used as a personal notebook. It is highly customizable and has an active community of developers and users. It allows anyone to create personal hypertext documents that can be published to a webserver, sent by email, stored in a DropBox or kept on a USB thumb drive (WikiOnASTick). As a single HTML file, TiddlyWiki is useful in corporate environments where red tape or IT resources might prevent the use of a wiki that

requires a more complicated installation. Uses: individuals (on desktop) or small groups (hosted system available).

6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description): demonstration of individual use of a wiki.
7. Languages available: 10.

2.1.3.12 Tiki Wiki CMS Groupware

1. Name of the tool: Tiki Wiki CMS Groupware.
2. Reference organization: tiki.org, large international community and many individual consultant companies.
3. Technology based / Developers: PHP, Developers: the community.
4. Licences (Open source or not): LGPL 2.1.
5. Brief description and history: The project was originally known as TikiWiki but changed name to Tiki so that it would be easier to understand that the project offers more than only traditional wiki features. Tiki Wiki CMS Groupware consists of four categories of components: content creation and management tools, content organization tools and navigation aids, communication tools, and configuration and administration tools.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description).
7. Languages available: 40+.

2.1.3.13 TWiki

1. Name of the tool: Twiki.
2. Reference organisation: TWiki.net / Peter Thoeny and the community Twiki.org.
3. Technology based / Developers: Perl. Wiki pages are stored in plain text files.
4. Licences (Open source or not): GPL.
5. Brief description and history: Created in 1998. Initial version, based on JosWiki, an application created by Markus Peter and Dave Harris. TWiki is primarily used at the workplace as a corporate wiki to coordinate team activities, track projects, implement workflows and as an Intranet Wiki. Over 400 extensions based on corporate needs. Very flexible access control and authentication/authorization features. TWiki was forked 2008 because of conflicts around the community governance model. The fork is called FosWiki.
6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description).
7. Languages available: 19.

2.1.3.14 XWiki

1. Name of the tool: Xwiki.
2. Reference organisation: XWiki SAS / Ludovic Dubost + XWiki community.
3. Technology based / Developers: Java.
4. Licences (Open source or not): LGPL.
5. Brief description and history: Created in 2004. XWiki is a generic platform for developing collaborative applications using the wiki paradigm and projects developed on top of it.

Some features that the XWiki community wants to point out are robust WYSIWYG editor, strong rights management, LDAP authentication, PDF export and full skinning. It can be used for intranets, public web sites, knowledge managements, simple CMS needs, project collaboration and as a portal with external mixed data. By using structured data and in-page-scripting users and developers can extend the capabilities of an XWiki site.

6. Special features matching with WikiSkills project proposal / examples of educational uses (with a very brief description): The annotation function is interesting when many people want to make comments to a text (directly in the text). The analogue to using your marker pen and writing notes in the margin of an article.
7. Languages available: 25.

2.2 Analyse of existing wiki farms

When someone wants to set up a wiki, several options are to be considered depending on various requirements (price, confidentiality, simplicity, tolerance to advertisement, license of the content etc.)

Wiki initiators need to decide whether to implement a stand alone wiki or whether to use a wiki hosting service. A wiki hosting service or wiki farm is a server or an array of servers that offer users tools to simplify the creation and development of individual, independent wikis. With a wiki farm, the farm's administration installs the core wiki code once on its own servers, centrally maintains the servers, and, on demand from customers, establishes unique space on the servers for the content of each individual wiki with the shared core code executing the functions of each wiki. This is what can be referred to as Cloud computing. Cloud computing is the delivery of computing as a service rather than a product, whereby shared resources, software, and information are provided to computers and other devices as a utility over the Internet.

Both non-commercial and commercial wiki farms are available for users and online communities. Many wiki farm companies generate revenue through the insertion of advertisements, but often allow payment of a monthly fee as an alternative to accepting ads. While most of the wiki farms allow anyone to open their own wiki, some impose restrictions. Many of the currently most notable wiki farms got their start in the mid-2000s, including XWiki (2003 or 2004), Wikia (2004), PBWorks (2005), Wetpaint (2005), Wikispaces (2005), Wikidot (2006) and Referata (2008).

2.2.1 Wiki farms compared to stand-alone wikis – pros and cons

Wiki initiators need to decide whether to implement a stand alone wiki or whether to use a wiki farm. Stand-alone wikis need to be implemented, configured, maintained, adapted and backed up by the wiki initiator. Routines for updating software are crucial in order to take part of new functions and correct bugs but more importantly, to avoid security issues. All these technicalities are more demanding than setting up a wiki on a wiki farm where the wiki initiator follows a simplified set-up process proposed by the wiki farm. However, a wiki on a wiki farm is technically limited compared to a stand-alone wiki. A wiki farm owner/administrator strives to streamline the handling of all wikis on the farm and hence wants to avoid too much technical variation between the wikis. Too much technical variation would affect the technical administration. Many wiki farms offer stand-alone solutions for customers/users who want more flexibility and control. However, as these stand-alone wikis need to be individually adapted and handled separately, stand-alone wikis cost more, often much more. Reasons for choosing a wiki farm solution over a stand-alone wiki can be that the wiki initiators and users...

- are satisfied with a standard solution and do not have any special technical extra requirements

- want a cheap wiki
- want to start a wiki fast
- lack technical knowledge and resources to implement and maintain a wiki in a professional and secure way
- want to test the wiki software which the farm is offering

Reasons for choosing a stand-alone wiki over a wiki farm are that the initiator and users...

- want features which are not included in the offer by the wiki farm
- do not want outsiders (wiki farm employees etc.) to be able to access content or technical architecture. The typical example is a company-owned closed wiki, hosted internally behind a firewall.
- want to integrate the wiki with existing IT-infrastructure, for example allow unified login to the wiki and to other services etc.
- want own identity and a generic URL

From the wiki initiators perspective:

Characteristic	Stand-alone	Hosted by wiki farm
Technically flexible and controlled	+	-
Access to closed content	+ insiders only	- insiders and employees at the Wiki farm
Generic URL	+	- but sometimes available as a premium service
Cost	-	+ <i>but</i> free usually means advertisement and/or lightweight wiki instance
Easy to install and maintain	-	+
Access to wiki farm network and wiki farm page ranking	-	+

2.2.2. Commercial examples of wiki farms

Some wiki software (the majority) are released under a free licence, which means anyone can download them and start using them. Other wiki software are "proprietary" and require to pay a licence fee to use the software. Wiki farms may propose both proprietary or freely-licenced software.

If the license of the wiki engine and the wiki farming software allows it, dedicated wiki farm companies can do the wiki farm hosting or traditional web hosting companies can offer wiki farming. Below, dedicated wiki farm companies are listed. The Wiki Farm sometimes is named by the software it proposes.

2.2.2.1. Wikia

1. Name of the service: Wikia.
2. Brief description of the goal of the service : Wikia is a free web hosting service for wikis (also called wiki farm) based in San Francisco (USA).
3. Reference organisation: Wikia, Inc.
4. Technology based / developers: Mediawiki.
5. Description and history: created in 2004, Wikia hosts Wiki projects. It covers a very wide range of topics. In 2012, it is the largest wiki farm in the world with over 300 000 wikis and over 60 million unique visitors. Wikia often initiates new wikis on popular themes and products and seeds them with info until they are adopted by other users. The economical model is advertisement which allows wikis to run free of charge. It is possible to remove external advertisements for small wikis against a fee. Two observations worth noting: there is no easy way for individual communities to switch to conventional paid hosting, as Wikia usually owns the relevant domain names. Besides, all contents published on Wikia must be under a copy left licence.
6. Languages available: over 50.
7. Links: <http://www.wikia.com>.
8. Special features matching with WikiSkills' project proposal / possible educational uses (with a very brief description): playful place to create, edit and study an editing community on a "light" topic. Hosting place for a test wiki.

2.2.2.2. Wikispaces

1. Name of the service: Wikispaces.
2. Brief description of the goal of the service: Hosted service (wiki farm) based in San Francisco (USA).
3. Reference organization: Tangient LLC.
4. Technology based / Developers: Proprietary software.
5. Description and history: Founded in 2005, Wikispaces offers private wikis with advanced features for businesses, non-profits and educators for an annual fee. Free and ad free wikis for the education sector unless/until upgrading to a complete wiki environment. The content may be under any licence. Space can be public or private.
6. Languages available: 8 – Welsh, German, English, Spanish, Basque, French, Italian, Polish.
7. Links: <http://www.wikispaces.com/>
8. Special features matching with WikiSkills' project proposal / possible educational uses (with a very brief description): Useful and cheap hosting place

2.2.2.3. PBWorks

1. Name of the service: PBWorks.
2. Brief description of the goal of the service: A free/premium hosted workspace service based in San Mateo (USA).
3. Reference organisation: PBWorks.
4. Technology based / Developers: PBWorks proprietary software written in PHP. David Weekly.

5. Description and history: Started in 2005. Former name PBwiki. The company's original name stems from their belief that "making a wiki is as easy as making a peanut butter sandwich". Supports WYSIWYG editing. The company operates on a freemium basis, with basic features being offered for free and more advanced features for a fee. No advertisement. Any licence can be used for the content. It features specific editions for legal, medical, education, non profit sectors. It is rather intended for small to middle size wikis. The audience is rather small to medium size workgroups. PBworks appears to be primarily focused on the United States (no toll free number for international calls, no consultant listed for support outside of the USA) and is not localized (only available in English).
6. Languages available: English.
7. Links: <http://pbworks.com/>.
8. Special features matching with WikiSkills' project proposal / possibles educational uses (with a very brief description): PBworks is a good option in particular to discover what a wiki is with no hassle.

2.2.2.4. Wikidot

1. Name of the service: Wikidot.
2. Brief description of the goal of the service: Free and Pro Wiki Hosting service based in Toruń, Poland.
3. Reference organization: Wikidot Inc.
4. Technology based / Developers: an open source Wiki software (engine). 2008 Wikidot Inc. released the Wikidot software as open source under the AGPLv3 licence.
5. Description and history: Was launched 2006. Pro account features are offered since 2008. One of a few wiki farms which use a free software wiki farm engine. Today there is an active community working with the software. Wikidot lacks WYSIWYG.
6. Languages available: English and Polish, however there are roughly 30 experimental available languages too.
7. Links: <http://www.wikidot.com/>.
8. Special features matching with WikiSkills' project proposal / possibles educational uses (with a very brief description).

2.2.2.5. Referata

1. Name of the service: Referata.
2. Brief description of the goal of the service: Provide customers with free or premium wiki instances. The free wikis are also ad-free.
3. Reference organization: WikiWorks, located in New York?
4. Technology based / Developers: uses MediaWiki as its wiki engine. It specializes in Semantic Mediawiki and some of the related MediaWiki extensions.
5. Description and history.
6. Languages available: 140+ (same number as for the MediaWiki interface)
7. Links: <http://www.referata.com/>.
8. Special features matching with WikiSkills' project proposal / possibles educational uses (with a very brief description).

2.2.2.6. Wikis by Wetpaint

1. Name of the service: Wikis by Wetpaint.
2. Brief description of the goal of the service: Provide customers with free wikis. Wetpaint places ads on pages which are contextually relevant to the content of the page. Premium service: Ads can be removed by paying a monthly fee.
3. Reference organization: Wetpaint based in Washington (USA).
4. Technology based / Developers: Wetpaint's own proprietary software.
5. Description and history: Wetpaint tried to offer ad-free education wikis (as Wikispaces still do) but ended the program as it was too expensive to administrate.
6. Languages available: English.
7. Links: <http://www.wetpaintcentral.com/>.
8. Special features matching with WikiSkills' project proposal / possible educational uses (with a very brief description).

2.2.2.7. XWiki Cloud

1. Name of the service: XWiki Cloud.
2. Brief description of the goal of the service: Free and premium services mainly aimed for enterprises, workgroups and developers.
3. Reference organization: XWiki SAS, based in Paris (France) and in Iasi (Romania).
4. Technology based / Developers: XWiki which is freely licensed software.
5. Description and history: XWiki was originally developed by Ludovic Dubost, released as GPL and later changed to LGPL. Decisions about the direction of the software is made by consensus of the committees in the XWiki community. XWiki is built to handle not only free text but also structured data. Some features worth mentioning are robust WYSIWYG editor, strong rights management, LDAP authentication, PDF export and full skinning. It can be used as intranets, public web sites, knowledge managements, simple CMS needs, project collaboration and as a portal with external mixed data. By using structured data and in-page-scripting users and developers can extend the capabilities of an XWiki site.
6. Languages available: English and French while the XWiki software is available in 26 languages.
7. Links: <http://www.xwiki.com/xwiki/bin/view/Offer/CloudPricing>.
8. Special features matching with WikiSkills' project proposal / possible educational uses (with a very brief description): Offers semantic annotation which makes it possible to collaboratively annotate a text.

2.2.2.8. Socialtext

1. Name of the service: Socialtext.
2. Brief description of the goal of the service: Social software to enterprises.
3. Reference organization: Socialtext incorporated, based in Palo Alto (USA).
4. Technology based / Developers: Socialtext uses a software derived from Kwiki (written in Perl).

5. Description and history: Kwiki was the foundation of Socialtext. Socialtext claims to be the first company to bring wikis to enterprise customers. Socialtext has released Socialtext open which is supposed to be Socialtext released under a "standard open source license" in 2006. However, the developer community does not seem to be publicly open. Customers and partners are welcome but otherwise the community seem to be closed. This does seem to be a contradiction according to the project's licensing strategy Socialtext does offer a Socialtext hosted solution (similar to a wiki farm). However, in order to set up an instance one has to contact the sales department.
6. Languages available: At least English.
7. Links: http://www.socialtext.com/solutions/deployment_options.php.
8. Special features matching with WikiSkills' project proposal / possibles educational uses (with a very brief description).

2.3 Wikimatrix, a reference website

A private initiative from Germany, WikiMatrix is the meeting point for all those who want to compare all wiki engines. The most popular feature of the website is a comparison tool of the selected Wikis in a side-by-side table. A search engine and a Choice Wizard further support the visitor in identifying which wiki engine would be the best fit for his project. A forum is available to ask questions and discuss everything Wiki. Developers may ask for the wiki engine to be added to the WikiMatrix website.

Last, professionals ("wiki experts") are welcome to list their services (consulting, training, set up, customizing etc.) in a marketplace.

WikiMatrix was created by the people of www.cosmocode.de.

Website : <http://www.wikimatrix.org>.

3. EXISTING WIKI BASED PROJECTS

Previous section describes software's and farms, and here the objective is to draw existing real projects based on wiki technology. Each example will show a complete list of characteristics and their possible links with WikiSkills project.

3.1 Wikipedia

1. Name of the project: wikipedia.
2. Brief description of the goal of the project: wikipedia is an online encyclopedia.
3. Languages available: 270+.
4. Licences (Open source or not): CC BY SA 3.0 /GFDL.
5. Reference organisation: Wikimedia Foundation.
6. Technology based / developers: MediaWiki.
7. Description and history: Founded in 2001, wikipedia is a freely licence encyclopedia which seeks to give access to knowledge to all human being on that planet. As of early 2012, over 20 millions articles in over 270 languages. That's THE wiki reference.
8. Links: <http://www.wikimediafoundation.org>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Open for participation to all. Suitable for teenager and adult participation. Broad topics.

3.2 Wikibooks

1. Name of the project: Wikibooks
2. Brief description of the goal of the project: Wikibooks is an open-content textbooks collection
3. Languages available: 50+
4. Licences (Open source or not): CC BY SA 3.0 and/or GFDL
5. Reference organisation: Wikimedia Foundation
6. Technology based / developers: MediaWiki
7. Description and history: Created in 2003. While some books are original, others began as text copied over from other sources of free content textbooks found on the Internet.
8. Links: <http://www.wikibooks.org/>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Open for participation to all. Suitable for teenager and adult participation. Broad topics. Opportunity for group-based collaboration on a given book.

3.3 Wikitravel

1. Name of the project: Wikitravel.
2. Brief description of the goal of the project: Wikitravel is a project to create a free, complete, up-to-date, and reliable **worldwide travel guide**.
3. Languages available: 22.
4. Licences (Open source or not): cc by sa 3.0.
5. Reference organisation: Internet Brands (a for profit company).
6. Technology based / developers: MediaWiki.
7. Description and history: Created in 2003 by Evan Prodromou and Michele Ann Jenkins. The wiki is editable by everyone.
8. Links: <http://www.wikitravel.org>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Wikitravel is a very wikipedia-like project with a very specific focus. It is open to editing to the public and its content may be freely reused. Though the English based version is the most developed, it also exists in other languages. It provides an interesting wiki for beginners as most people would have something to write in the area covered by this wiki.

3.4 Appropedia

1. Name of the project: Appropedia.
2. Brief description of the goal of the project: Appropedia is a public wiki for collaborative solutions in sustainability, appropriate technology and poverty reduction.
3. Languages available: 40.
4. Licences (Open source or not): cc by sa.
5. Reference organisation: Appropedia Foundation, registered U.S. 501(c)3.
6. Technology based / developers: MediaWiki, semantic MediaWiki.
7. Description and history: Created in 2006 by Lonny Grafman, Aaron Antrim and Gabriel Krause. Merged end of 2006 with WikiGreen.
8. Links: <http://www.appropedia.org>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Appropedia is a very wikipedia-like project with a very specific focus. It is open to editing to the public and its content may be freely reused. Though the English based version is the most developed, it also exists in other languages.

3.5 Ekopedia

1. Name of the project: Ekopedia.
2. Brief description of the goal of the project: Ekopedia is a project dedicated in providing answers and spreading practical knowledge related to environmental sustainability. The goal is to help everyone become more independent and establish the foundation necessary to build a better world.
3. Languages available: 7 languages.

4. Licences (Open source or not): cc by sa.
5. Reference organisation: Ekopedia Foundation. Created in 2007.
6. Technology based / developers: MediaWiki.
7. Description and history: Created in Quebec in 2002 under the name Newlimits.org, the project was initially in French and under the Free Art Licence. It was using TWiki but migrated to MediaWiki in 2004 so as to facilitate content sharing with other projects such as Appropedia and wikipedia. Ekopedia articles are organized around 12 topics in order to meet the basics needs of people: Birth, Education, Food, Lodging, Clothing, Art and craft, Thinking, Living together, Health and care, Travel, Play and Communication.
8. Links:<http://www.ekopedia.org/>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Ekopedia is a very wikipedia-like project. It is open to editing to the public and its content may be freely reused.

3.6 Vikidia

1. Name of the project: Vikidia.
2. Brief description of the goal of the project: an encyclopedia for children. The site focuses on presenting articles readable by children from eight to thirteen years of age.
3. Languages available: French and Spanish.
4. Licences (Open source or not): GFLD and cc by sa.
5. Reference organisation: Non profit association Vikidia.
6. Technology based / developers: MediaWiki.
7. Description and history: Created by Mathias Damour. The site is now run by a French Non profit association (association loi 1901). It is open to editing to the public and its content may be freely reused. Vikidia encourages use in the classroom for school projects and research. Various schools in France, Belgium and Quebec have involved Vikidia in their curriculums. Many contributors of Vikidia are also participants of wikipedia. Wikimedia France is a member of Vikidia association.
8. Links:<http://www.vikidia.org>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Vikidia is a very wikipedia-like project but dedicated to 8-13 and is interesting for classroom experiments.

3.7 Minecraft Wiki

1. Name of the project: Minecraft Wiki.
2. Brief description of the goal of the project: The ultimate source on information about the game: Minecraft.
3. Languages available: a dozen languages.
4. Licences (Open source or not): cc by nc sa 3.0.
5. Reference organisation: Created by "citricsquid" in 2009. Now hosted by a private company. Probably owned by Mojang, the company producing the game.
6. Technology based / developers: MediaWiki.

7. Description and history : created in 2009, this wiki is an active place where players of the game Minecraft build an encyclopedia of the game. Best practices, FAQ, updates, news, events, gameplay information and external links to other sites about Minecraft form the core of this wiki. Open for edit to anyone.
8. Links:<http://www.minecraftwiki.net>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description) : playful place to edit and study an editing community on a "light" topic.

3.8 MeatballWiki

1. Name of the project: MeatballWiki.
2. Brief description of the goal of the project: **MeatballWiki** is a wiki dedicated to online communities, network culture and hypermedia
3. Languages available: English.
4. Licences (Open source or not):?
5. Reference organisation: Sunir Shah.
6. Technology based / developers: hacked-up version UseModWiki.
7. Description and history: Founded in 2000 by Sunir Shah (prior to wikipedia). It began as a fork from the original WikiWikiWeb created by Ward Cunningham, in order to provide a place to have discussions about Wiki outside of the original WikiWikiWeb. Its original goal was to focus on collaborative hypermedia, but current topics range from intellectual property to cyberpunk to the confusion of URIs. The wiki is editable by everyone but is no more active as of 2012. Its content is nevertheless preserved and constitute a very interesting database about wiki culture. The original intent of MeatballWiki was to offer observations and opinions about wikis and their online communities, with the intent of helping online communities, culture and hypermedia. Being a community about communities, MeatballWiki has become the launching point for other wiki-based projects and a general resource for broader wiki concepts and has reached "cult status". It describes the general tendencies observed on wikis and other on-line communities, for example the life cycles of wikis and people's behaviour on them.
8. Links: <http://meatballwiki.org>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): General resource for broader wiki concepts. Runs on a very early software which is interesting to show as a starting point to learners.

3.9 Scholarpedia

1. Name of the project: Scholarpedia.
2. Brief description of the goal of the project: a peer-reviewed open-access encyclopedia focusing on the fields of computational neuroscience, dynamic systems, computational intelligence, physics and astrophysics.
3. Languages available: English.
4. Licences (Open source or not): mixed licencing.
5. Reference organisation: Created by Eugene M. Izhikevich

6. Technology based / developers: MediaWiki with features more commonly associated with open-access online academic journals.
7. Description and history: Created by Eugene M. Izhikevich. Articles are written by experts, either invited by the editor-in-chief or other curators, or selected by a public election. As of May 2009, the list of authors included four Fields medalists and sixteen Nobel Prize winners. Registered users must provide their full real name, and a recognised affiliation to an academic institution. Only registered users can edit an article, and those edits are subject to approval by the *curator* of the article, who is typically the author. Users have a *scholar index* attribute which is incremented or decremented by various activities and which affects the user's capabilities on the website.
8. Links: <http://www.scholarpedia.org>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): Scholarpedia is a peer-reviewed encyclopedia which may appeal to researchers. Its unusual model is of interest for the sake of model comparison and as an example of semi-open and peer-reviewed wiki-based projects.

3.10 Jurispedia

1. Name of the project: Jurispedia.
2. Brief description of the goal of the project: an encyclopedia of academic law.
3. Languages available: Arabic, Chinese, English, French, German, Spanish and Dutch (possibly more).
4. Licences (Open source or not): cc nc sa 2.0.
5. Reference organisation: Hosted by several universities in Vietnam, Netherlands, Canada, Germany, France and South Africa.
6. Technology based / developers: MediaWiki and semantic MediaWiki.
7. Description and history: Created in 2004 at the initiative of several universities. Participants must register but participation is open to everyone.
8. Links: <http://www.jurispedia.org/>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): interesting experience of a totally decentralized wiki, with good content. But also an example of an inactive wiki.

3.11 Kinesiology

1. Name of the project: Kinesiology.
2. Brief description of the goal of the project: the source for information related to sports medicine, injury prevention, and fitness training.
3. Languages available: English.
4. Licences (Open source or not): CC BY SA 3.0.
5. Reference organisation: Crescenta Valley High School.
6. Technology based / developers: Wikispaces.
7. Description and history: This wiki is created and maintained by students in the Kinesiology program at Crescenta Valley High School. No more active.

8. Links: <http://kinesiology.wikispaces.com/>.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): example of a wiki created by students. Example of a wiki on wikispaces.

3.12 WikiEducator

1. Name of the project: WikiEducator.
2. Brief description of the goal of the project: an international online community project for the collaborative development of learning materials, which educators are free to reuse, adapt and share without restriction.
3. Languages available: English.
4. Licences (Open source or not): CC BY SA 3.0.
5. Reference organisation: Owned by community and supported by OER Foundation.
6. Technology based / developers: MediaWiki.
7. Description and history: Created by Wayne Mackintosh. WikiEducator was launched in 2006 and is supported by the non-profit Open Education Resource (OER) Foundation. A variety of learning resources are available on WikiEducator: direct instructional resources such as lesson plans and full courses, as well as learning-support resources, such as individual school portals and funding proposals.
8. Links: http://wikieducator.org/Main_Page.
9. Special features matching with wiki-skills project proposal / possibles educational uses (with a very brief description): based on a wiki and providing learning materials.

4. GOOD PRACTICES

In this part of the European state of the art report we are going to describe existing wiki-based learning scenarios from different European countries. Those experiences are very important for the project because they are learning application through wiki tools, some of them have been implemented jet, and others are prototypes. Each learning scenario show a detailed list of guidelines to develop it.

4.1 Collaborative storytelling with wikis

Brief introduction

The SoRuraLL project (LLP Program, KA3, 2009-2010) aimed at investigating the potential for enhanced lifelong learning offered by social networking tools and platforms to those living in geographically and socio-economically disadvantaged rural areas. In this context, several Spanish rural multigrade primary schools, with students aged between 3 and 12, have been conducting common educational activities enhanced by social networking tools. Their participation has been coordinated by Future Learning research team (www.futurelearning.org), an initiative within the University of Barcelona. One of the main outcomes of the SoRuraLL project was a web-based platform called SoRuraLL Virtual Learning World (VLW). It was co-designed by the project's partners and consists of a user friendly web interface to a private environment adapted to the evolving interests of the rural communities. The VLW, by providing a private Wiki platform, enabled Spanish teachers to conduct a collaborative Wiki-storytelling activity, which they would not have been able to conduct within other applications. This activity consisted, for two schools (CEIP Rellinars and CEIP Sant Serni – Prats), in co-designing a hypermedia story of the “choose your own adventure” type, by using a Wiki application.

Keywords

Wiki, Storytelling, Choose Your Own Adventure, co-writing.

Application in educational context

- Reference link to lesson: Storytelling.
- Number of students: 20.
- Relevant contact person: -

Targeted educational sector

primary and secondary education.

Learners' special characteristics

Students from rural schools who are used to express themselves in Catalan.

Learning subject/ field

- Spanish

- reading
- writing
- digital literacy

Specific educational objectives

- practice creative writing skills, artistic skills.
- practice linguistic communication skills (Spanish).
- practice reading skills.
- practice digital skills.
- improve social and collaboration skills face-to-face and virtually.

Narrative/sequential description of the learning activities

Each participating school participated in the design of the story. Students, guided by their teacher, wrote assigned sessions of the story and illustrated them with pictures, drawings and other types of media (videos, sounds effects, etc.). The story was organised in different nodes (each node represents a place of the story, in which a specific action takes place) and actions (that go from a place to another). Each node corresponds to a wiki page. Thus, the story constitutes an interactive hyper-textual environment.

1) The first school designed the beginning of the story, by asking the following questions (brainstorming among teacher and students):

- What is the story about?
- When does the story take place?
- Who is the hero (age, appearance, etc.)?
- What is the objective of the story?

On this basis, students wrote the first section of the story (the first node) in a collaborative way in the wiki platform, with texts and other types of media. Moreover, they wrote two possible actions between which the hero will have to choose.

2) The other participating schools read the story, corrected the eventual errors, and continued it, according to a predefined time scheduler, by writing the following of one of the actions set by the first school.

3) Repetition of the second phase until the end of the story.

All along the activity, teachers of the different participating schools communicated, through a dedicated forum topic, in order to plan the details and directions of the story and the collaboration.

Learning resources involved

None.

Wiki application

The wiki platform of the SoRuraLL Virtual Learning World.

Other ICT applications involved

- Dabbleboard, in order to edit the structure of the story visually (mandatory).
- Image editing tools, video editing tools, sound editing tools (optional).

Infrastructure / equipment

- Mandatory: PC with Internet connection.
- Optional: digital/video camera, microphone.

Prerequisite competences

- Teacher: knowledge on wikis usage, acquaintance with choose-your-own-adventure type of games/stories/scenarios.
- Students: depending on the grade -> responsibility for concrete activity.

Evaluation approach

Indicators of success:

- at the end of the pilot implementation, to have a complete and consistent Choose Your Own Adventure story.
- equality of the participation level of all schools or at least high participation of several schools.
- quality of the written text (e.g. if the teachers do not correct errors, misprints, malformed sentences, etc. whether the story is readable/contains many errors).

Typical learning time

- 6 sessions of 2-3 hours per school, organized weekly.

Typical learning location

Classrooms.

Other aspects to consider

None.

Opportunities

A. Familiarization with 2.0 technologies

The activity provided the schools with a context to use 2.0 technologies in learning settings. Indeed, students could experiment new social software applications, such as Wikis. Moreover, they had the opportunity to practice their previously acquired skills with 2.0 tools (e.g. Youtube), and discover new ways of their possible utilizations in educational settings. Indeed, they could appreciate new possibilities of such tools, such as communication, achievement of a common project, co-construction of knowledge and rapprochement.

B. Collaboration skills

As students were aware of the fact that what they wrote would be read and edited by other students, they felt more involved in the activity. Indeed, they realized that they had to adapt their discourse, language and narrative to the other school's students.

C. Language learning and narrative skills

The activity enabled students to practice Spanish reading and writing, which is important as the two participating schools are located in Catalonia, and most of the students do not have the occasion to practice Spanish. Moreover, the narrative aspect of the activity enabled students to develop reading, writing and imagination skills, in reaction to what the other students had written.

D. Motivation

The collaborative aspect of the activity increased students' motivation, who were aware of the fact that their contributions would be read by other students. They were very impatient to see the other school's feedback. Furthermore, the complete story is open for view from external audiences (i.e. the Internet). This represents a motivational element for students and teachers when conducting the activity. Indeed, as students and teachers are aware that they have an audience which goes outside the classroom, they feel more responsible and involved with the content they publish, and adapt this content according to the type of audience, thus increasing the quality of the produced content.

Obstacles

It has been observed that schools did not edit the pages posted by others, in order to not offend at each other.

Certain aspects of the activity might further be improved. As an example, the story has evolved in many ramifications, which caused difficulties for students in perceiving it globally. Students sometimes got confused and lost in its structure.

4.2 Learning scenario CESGA

Brief introduction

Students will learn how to create basic digital materials to use in their classes. This knowledge will be created and shared among all users through a wiki, in Galician language.

Keywords

Teachers, researchers, learning materials, sharing, repository.

Targeted educational sector

Professional training and adult training in Galicia.

Learners' special characteristics

Potential students will have different digital skills, from little experience to very experienced. They are educators from primary school teachers to post-graduate professors working in universities in Galicia (Spain). Also educators from language schools who teach languages using ICT to adult people in Galicia (Spain).

Learning subject/ field

- Open Source software
- Cloud resources
- Multimedia
- English and languages in general
- Pedagogy

Specific educational objectives

Students will acquire:

- basic knowledge on how to edit wiki pages and wiki structured sites
- technical knowledge on how to create educational materials in various online services: multimedia editors, online presentations and posters
- pedagogical criteria on how to apply these materials in class strategies and teaching proposals
- collaborative skills

Narrative/sequential description of the learning activities

This proposal will start by appointing the interested users through different online media: our web page, our Twitter account (@elearningcesga) and through Wiki-Skills web page.

A wiki will be created in Wikispaces where the main activities of the learning proposal will be shown.

The first stage will be an open call to propose tools, strategies and needs from students in order to organise collaboration, contents and roles in the wiki.

Once this stage is clear, participants in the course will contribute to create wiki contents and edit others. There will be a constant support in wiki-related questions from Cesga and more wiki-skilled participants to users who are novice to wikis.

Finally, the activity will be evaluated by participant users and contents shared and disseminated among educators in Galicia community.

Learning resources involved

- online resources such as (this list is just tentative and to be discussed among users):
 - Wikispaces
 - Galipedia
 - Wikimedia Commons
 - Pixlr
 - Prezi

- Etherpad
- Google docs
- Screen-cast-o-matic
- Edu Glogster
- eXe Learning
- Seminar (Cesga's own webinar tool)

Wiki application

A site created in Wikispaces

Other ICT applications involved

Openoffice tools

Infrastructure / equipment

- Internet connection
- Browser (Firefox or Google Chrome preferred)
- Webcam and microphone (optional)
- Any operative system (Windows, Linux, Mac)

Prerequisite competences

Basic digital literacy skills (e-mail management, web browsing)

Evaluation approach

- Group assessment
- Anonymous online survey

Typical learning time

- Five sessions
- One hour per session

Typical learning location

- Classroom with computers at Cesga
- At home (through video conference)

Opportunities

- Opportunity for teachers of sharing their ICT knowledge with other teachers and help them in beginning to use ICT for those who are not used to.
- Sharing strategies for encourage students to use wikis and ICT tools related with teaching.
- Encourage students to share their knowledge with other students from another learning areas (ICT, languages and so on).
- Opportunity for teachers and students of improving their use of e-learning tools.
- Opportunity for teachers and students of learning about new technologies used for teaching.

Obstacles

- Participants of the scenario loose interest in learning.
- Participants don't like to use wikis for teaching and learning collaboratively.

4.3 Learning scenario Communication and Networking

Targeted educational sector

Primary and secondary education

Learners' special characteristics

Experienced teachers aged 40+ or those with more than 20 years of teaching experience but who have little experience of using ICT in the learning process (this group includes most teachers in Europe)

Learning subject/ field

- Characteristics of virtual communication
- Teachers as E-Moderators
- Working collaboratively

Specific educational objectives

- awareness raising for the need and advantages of adequate implementation of ICT elements in school lessons;
- strengthening of teachers basic ICT competencies;
- development of a course designed to deliver the acquisition of ICT competencies for the pedagogical practice;
- implementation of the course as a European standard ICT qualification for school teachers.

Narrative/sequential description of the learning activities

Overall task:

teachers are required to plan, deliver and evaluate a lesson where the students have to use collaborative and informative Internet-tools.

Task 2 (re criterion 1):

Undertake a brief, informal survey of the existing digital skill levels of the students. This could take the form of group work.

(1 lesson à 1 page)

Task 3 (re criterion 1):

Review what tools students use to share information in a group environment. Select a learning activity that students would normally undertake in groups.

(1 lesson à 1 page)

Task 4 (re criterion 2):

Propose/integrate the most suitable communication digital tools to develop the learning activity. Involve the students in this process.

(1 lesson à 1 page)

Task 5 (re criterion 1):

Discuss and agree with your students on appropriate monitoring protocols (norms, times and roles) for a group work

(1 lesson à 1 page)

Task 6 (re overall task):

Describe the concrete lesson as a teaching plan (one day – one week).

Describe the plan (activities, time, material, etc.)

Describe the choices you made along the way (reflection)

Evaluate the lesson

Hand in the teaching plan including reflections on choices the teachers had to make in the building of your plan.

Learning resources involved

- Blog
- Wiki
- Internet Forum

- Chat
- youtube
- Social Networks

Wiki application

MediaWiki

Infrastructure / equipment

- Internet connection
- Computer with browser

Prerequisite competences

Basic computer skills

Evaluation approach

- online survey
- group assessment (groups of students)
- teacher training

Typical learning time

- Five sessions (online and face-to-face)

Typical learning location

- Computer room
- At home

4.4 PhD students and young researchers to create and disseminate expert content

Brief introduction

The goals of this scenario is to help PhD and young researchers to:

- 1) learn how to use the MediaWiki software and;
- 2) learn how Wikimedia projects work;

A side benefit is for them to create and disseminate expert content on wikipedia or other Wikimedia projects.

Keywords

Research, co-writing, review, creation of expert content, dissemination of knowledge.

Application in educational context

- http://fr.wikiversity.org/wiki/Recherche:Atelier-projet_«_Wikipédia_et_MediaWiki_»

Experimented in 2009/2010, 2010/2011 and 2011/2012 at "collège doctoral de l'université Lille nord de France". 15-20 students each year. Person to contact: Rémi Bachelet: remi.bachelet@wikimedia.fr

- <https://outreach.wikimedia.org/wiki/User:Awadewit/syllabus> (Syllabus created as part of wikipedia for Education)

Targeted educational sector

- Higher education
- The trainees are typically PhD students or recently hired researchers

Learners' special characteristics

- knowledge of expert field (unlikely to be fully and well covered in wikipedia)
- basic skills in ICT

Learning subject/ field

- wikipedia
- Wikiversity
- Wikimedia Commons
- Wikibooks
- MediaWiki software

Specific educational objectives

- learn how to use MediaWiki
- learn how Wikimedia projects work
- co-editing and co-writing skills (including cooperation and negotiation with other co-authors)
- Improve research and fact-checking skills
- Understand the difference between fact-based and persuasive writing styles
- understanding of authoring laws and copyright issues

Narrative/sequential description of the learning activities

The project is facilitated by one or two teachers for a group of up to 25 students and occurs both face-to-face and online.

The process is supported by several tools and platforms:

- Wikiversity is the central meeting point for project management
- Powerpoint is typically used for face-to-face presentations
- Skype and Etherpad are used for online meetings.
- Wikimedia projects for content production.

The action starts by 2 face to face sessions. 3 hours a week. 3 hours the following week. This time is dedicated to the discovery of Wikimedia projects as well as their editorial and behavioural rules on one hand; and on the discovery of the MediaWiki Software syntax on the other hand. Sessions are powerpoint supported sessions (see some power-points available here: <http://rb.ec-lille.fr//CentraleWiki.htm>) with Questions & Answers from the students.

- After the first session, students are given a set of tasks for the second face-to-face session: creation of an account on Wikimedia projects
- reading the project management page on Wikiversity
- presentation of self on the project management page
- inventory of existing pages in expertise field

During the second face to face session, each student defines a set of tasks. For example: learning wiki-syntax, creating an article, reviewing another article, updating a portal page, looking for articles related to field of expertise etc. Students may define individual or group-based tasks.

Online meetings occur every two weeks. It is done online, using Skype for the voice discussion and Etherpad for note-taking. Each student will summarize state of his own learning on the Wikiversity page. This may be annotated by the teacher. Online sessions will be the opportunity to share discoveries, difficulties, ideas.

Knowledge, Skills, Attitudes (KSA) should drive the approach.

In wikipedia terms, the Knowledge might be an understanding of the core policies of Verifiability, Neutrality and No Original Research and a recognition that there are more policies that apply. Policies, rules and other “don’ts” should only be taught when they are specifically needed – not in advance or “just in case”.

Basic skills for editing wikipedia are being able to:

- navigate the interface;
- edit the existing content using the simple parts of the code;
- link two articles [[building the web]];
- fix typos;
- add a correct but simple reference;
- add images;
- find the community.

Attitudes are important because without the “right” attitude any learner in any field will lose interest or be unsuccessful in the environment. In the context of wikipedia, the learner needs to know there is a supportive community available to help and also that the community forms a social space for undertaking the work. The other component of attitudes is to communicate that wikipedia addresses various personal motivations (e.g. contributing and sharing, fun, personal development, working with interesting people). The training needs to reinforce these motivators, especially since learning itself can be frustrating and mastery of the skills often seems a long way off.

Learning resources involved

- pre-defined powerpoints presentations
- wikipedia and Wikimedia projects
- Search engines and expert resources
- Sheet Cheat for MediaWiki

Wiki application

MediaWiki

Other ICT applications involved

- Skype
- Etherpad
- PowerPoint

Infrastructure / equipment

- Internet connection
- Microphone

Prerequisite competences

Teacher: knowledge on wiki usages, knowledge about Wikimedia projects

Students: basic ICT skills

Evaluation approach

It is done with 3 criteria:

- contributions to the articles (revision tracking) (requires an estimate of the initial state of the art of the topics the student is going to contribute)
- communication and general input to the workshop (group or teacher assessment)
- integration to the community (use of discussion pages, project-pages or coordination spaces in general) (teacher assessment)

Typical learning time

- 2 half face-to-face meetings with all participants
- Group-based online meeting of 1-2 hours twice a month for 3 months

Typical learning location

Face to face meetings are held in the teaching building at the university (classroom), with computers.

Online meetings are held outside the classroom, with computers. Typically at home.

Other aspects to consider

Links to educational experiments

- http://fr.wikipedia.org/wiki/Wikipédia:Projets_pédagogiques (general list in French)
- educational experiments on Wikimedia projects (general list in English)
- http://en.wikibooks.org/wiki/Human_Physiology (an example of Wikibook produced with students in English)
- http://en.wikibooks.org/wiki/Social_and_Cultural_Foundations_of_American_Education (an example of Wikibook produced with students in English)
- http://en.wikiversity.org/wiki/Wikiversity:School_and_university_projects (current, past and future courses on Wikiversity)
- <http://rb.ec-lille.fr//CentraleWiki.htm> (example of such a teaching scenario, implemented in France. Teaching content)

Resources for Teachers

- http://en.wikiversity.org/wiki/Wikiversity:Being_educational
- http://en.wikiversity.org/wiki/Wikiversity:Wikiversity_teachers
- http://upload.wikimedia.org/wikipedia/commons/7/79/Sample_Syllabus_for_wikipedia_assignment%2C_June_2011.pdf (sample syllabus for wikipedia assignments)
- <https://en.wikipedia.org/wiki/wikipedia:Ambassadors/Resources> (resources for assignments)

- [https://outreach.wikimedia.org/wiki/wikipedia_as_a_Teaching_Tool_\(Bookshelf\)](https://outreach.wikimedia.org/wiki/wikipedia_as_a_Teaching_Tool_(Bookshelf)) (wikipedia as a teaching tool)
- <http://www.framablog.org/index.php/post/2009/02/16/wikipedia-education-exemple-projet-pedagogique-1> (Report on an experiment, in French)
- https://outreach.wikimedia.org/wiki/wikipedia_as_a_Teaching_Tool:_Grading_Rubrics (Grading)
- https://outreach.wikimedia.org/wiki/Education/The_Syllabus (Samples of syllabus)

Opportunities and obstacles

Student Engagement

Student motivations and learning outcomes vary widely, but one constant is that students are more engaged in a wikipedia assignment than a traditional assignment. Here are some of the benefits students state for using wikipedia as part of curricula:

- The global audience — most students appreciate that their work could be viewed by thousands.
- The usefulness of the assignment — a lot of students like that their work serves a purpose, it isn't just graded and forgotten.
- The résumé builder — some students add a new skill to their professional summary.
- The "cool" factor — some students like showing their work to family and friends.
- The feedback — some students like getting input from the broader world.
- The different experience — some students like an alternative assignment format and learning new things.

Learning Outcomes

Students learn a variety of skills through using wikipedia, some of the main ones are:

- Media literacy — students identify bias and partisanship; particularly with respect to wikipedia, students recognize whether an article is credible or not.
- Critical thinking — in contrast to many class assignments which require an argumentative or persuasive paper, wikipedia's neutral point of view policy helps students think about class material in a new way.
- Expository writing — students practice writing in an encyclopedic summary style.
- Collaboration — students work with others to develop high quality encyclopedia articles.
- Community of practice — some students find a group of people within the wikipedia community who work and learn in the same field.
- Literature review — students get a lot of practice finding and summarizing appropriate sources for their topic.
- Citation — students learn how to reference and use reliable sources correctly.
- Online etiquette — in today's computer driven environment, it is common to work with people one may never meet in person; students learn this essential skill.
- Wikimarkup — students learn simple basics of coding and working with wikis.

- Understanding copyrights — students learn the basics of free licenses.
- Practicing digital and online citizenship — students embrace the opportunity to participate in a large-scale knowledge project as peers and face the unique obstacles associated with such participation in a digital and online environment.

Obstacles

Resistance from wikipedia community that could discourage the student.

4.5 Learning scenario Photo hunt

Brief introduction

This scenario is a half day wiki scavenger hunt and free content photography contest conducted in a particular locale, where participants compete to take photographs of as many pre-defined local sights as possible. Pictures are then uploaded on Wikimedia Commons and may be used afterwards to illustrate wikipedia articles where they are needed.

Keywords

Pictures, photo hunting, illustrations, cities

Application in educational context

- This scenario has been experimented at least 25 times in various cities around the world, with great success. It has been applied under the name "wikipedia Takes Your City".

See http://en.wikipedia.org/wiki/wikipedia:wikipedia_Takes_Your_City

Targeted educational sector

- Secondary education
- Higher education
- Adult training

Learners' special characteristics

Learners should be able to move around preferably as the learning activity involves exploring streets and monuments.

Learners should have a basic understanding and interest for photography.

May be more appropriate for learners from rather artistic background.

Learning subject/ field

- Photography
- Wikimedia Commons

Specific educational objectives

Learn students:

- collaboration skills
- applied artistic skills
- knowledge of historical and cultural patrimony
- technical skills

Narrative/sequential description of the learning activities

The teacher should plan the activity with the following points:

1. Choose a location. The location for the hunt can be as specific as an art museum or as big as an entire country. Once you have decided on a location, figure out a good meeting place where everyone can get together at the end of the event. Make sure the place you choose has free internet access available. If your location is geographically broad, you may want to have everyone meet at a virtual location, such as an online chat room, rather than in person.

2. Compiling a list of targets (photographs to be taken)

A list of articles needing photographs can be compiled. It can also be that some articles which do have photographs need more modern photographs, or photographs of specific things at the location. The list should be broadly organized by neighbourhood, with addresses and cross-streets included. It is also possible to not refer to wikipedia articles but to decide to create or improve a whole category in Wikimedia Commons (such as one related to a village or a neighbourhood).

3. Meeting face to face with the entire group of learners.

- Explain the photo hunt process
- Check they know about photograph and proper use of the camera
- Build the teams (2-3 people)
- Make sure they understand the terms of use of Wikimedia Commons (all images uploaded must be under a free licence)

4. Instruction packets

The finalized list of spots to be photographed should be printed in an instruction packet to be given out on the morning of the event, with full instructions and a code number for each of the locations.

5. Photo Hunt itself

Meeting all together at the starting point. Make sure every team has the instruction material and a camera. Define a meeting time at the end of the hunt. Start the hunt.

It is important that participants take a "context photograph" of an index card with the location code written on it (held up in front of the camera and the target location), before actual photographs of the target location. This helps reconstruct which photographs are of which location. Participants should be encouraged to compete in teams of two or three members if they want to, which increases the fun factor. Still, they should share one camera/memory card, because this also helps reconstruction.

Scores can be tallied with a point system: 10 points for normal locations, 5 bonus points for locations that also had interior photographs, and 30 points for locations far from the city centre or for building of specific interest. This is mostly interesting with teenagers 😊

6. Uploading images

The uploading can be held at a party in the evening or during the next day. Scores can also be tallied and prizes given to members of the winning teams.

Make sure to tag the images appropriately (category, licence, full legend).

([Wikimedia_Commons_licensing_tutorial](#) and [Contributing your own work](#)).

Use on wikipedia articles if appropriate.

A way to do massive uploads is through the Wikimedia Photo Scavenger Hunts site. Alternatively, a program such as Commonist can be used. Or the regular upload wizard tool on Wikimedia Commons (upload of images one by one. Video).

Additional suggestions to give to the participants:

Do's:

- Wear light-colored clothing that can be seen at night.
- Bring index cards and markers for reference photos.
- Take a reference photo of each target, that is, a photo which includes the name of the target. (That way you'll know where the subsequent photos were taken.)
- Take photos of each target from different angles and vantage points.
- Use one memory card per team. Make sure the memory card is empty before you start taking the photographs.
- Bring a laptop to the after-party if you can.

Don'ts:

- Do not take pictures of people without their consent.
- Do not include personal photos.
- Do not loiter around or block sidewalks or streets.
- Do not take photos where it is prohibited to do so.

Learning resources involved

For learners

Wikimedia Commons is the primary learning resource involved.

<http://en.wikibooks.org/wiki/Category:Photography> may bring interesting information with regards to taking pictures.

http://commons.wikimedia.org/wiki/Commons:How_to_take_pictures_for_Wikimedia_Commons (how to take pictures).

For teachers

http://commons.wikimedia.org/wiki/Commons:Wiki_Loves_Monuments/Organizing_a_Wiki_takes proposes good ideas for how to organise a wiki take and some case studies.

http://commons.wikimedia.org/wiki/Category:Wiki_Loves_Monuments list all specific events organized to take picture of monuments.

When the teacher is familiar with using wikipedia, he may use the special recommendations for Wikimedia Photo Scavenger Hunts.

A way to do massive uploads is through the Wikimedia Photo Scavenger Hunts site. Alternatively, a program such as Commonist can be used. Or the regular upload wizard tool on Wikimedia Commons (upload of images one by one).

However, this is absolutely not mandatory in setting up a photo hunt. Links may be nevertheless interesting as resources to set up the context:

- <http://toolserver.org/~contests/> (tool to organise a hunt)
- <http://toolserver.org/~contests/startahunt.php> (how to organize a hunt)
- http://commons.wikimedia.org/wiki/Commons:Photo_scavenger_hunts

Wiki application

MediaWiki

Infrastructure / equipment

- Digital camera
- Data cable or card reader for transfer of photos
- Vehicle for getting around (or public transport)
- A room for original and final meetings

Prerequisite competences

- Basic to advance knowledge in photography
- Basic ICT skills

Evaluation approach

- Presence and respect of the rules (teacher assessment with group feedback)
- Number of pictures taken & Quality of pictures & Pertinence of pictures (group assessment, contest)
- Final sharing on Wikimedia Commons (teacher assessment)

Typical learning time

- 2 hours pre-meeting to set up the context
- half a day photo hunt
- 4-8 hours to report back, evaluate pictures, contest, upload pictures (face-to-face meeting plus online presence)

Typical learning location

- Classroom with computers
- In the streets

Opportunities and obstacles

Weather!

4.6 Villa Mimmi – portraying fellow humans using a wiki 1

Brief introduction

Students shall describe and portray tenants in a renting house. The task is performed in a wiki.

Keywords

storytelling, apartment house, tenants, portraying your fellow humans.

Application in educational context

- Reference link to lesson: Villa Mimmi (google translated).
- Number of students: 23.
- Relevant **contact person**: The teacher Sandra Wisting, sandra.wissting@nacka.se.

Targeted educational sector

primary and secondary education

Learners' special characteristics

None

Learning subject/ field

- languages
- psychology
- art
- drama
- ICT
- citizenship

Specific educational objectives

Learn students:

- drama & storytelling
- writing & formulation skills
- empathy and understanding of other fellow humans when writing portraits describing the tenants
- how to give feedback and seek consensus about wiki content among fellow students

- art & how to draw a portrait (either by hand or with aid of graphics software)
- wiki skills (adding, changing, commenting, uploading etc.)

Narrative/sequential description of the learning activities

Villa Mimmi (google translated):

- Prepare a wiki site:
 - Either use a wiki farm or use a stand-alone wiki.
 - On the front page, describe a rental house with the same number of tenants as number of students in class. Take care to make the description of the house vivid and add at least one relevant image.
 - Add all students as users (unless you want to let them do it themselves. Students real names are not mandatory. However it is probably good that you, as a teacher, know who is who)
 - List the student tasks which should be carried out on the wiki:
 - **Describe a place.** There is a framed photo on the wall of your tenant's apartment. Photo shows a place that he or she thinks a lot about. Describe the site! Where is it? Why is this place special? Remember that your story will get us interested in the site.
 - **Describe a typical day.** What does your tenant do an ordinary day? Work? Hobbies? Dreams?
 - **Describe the apartment.** How big is it? How is it furnished? How does the balcony look like? How has your tenant put his personal imprint on the apartment?
 - **Draw a picture of your tenant.** Put it next to the personal description of your tenant. Alternatives:
 - Picture by hand – photo or scan the picture – upload it
 - Picture with aid of graphics software – save the picture – upload it
 - **Write a letter.** In a drawer, well hidden, is a letter that your tenant had long ago. The sender was someone who meant a lot to your tenant. What the letter said? Write it!
 - **Extra tasks:**
 - Your tenant is secretly in love with one of the other tenants! Who then? What is your tenant like about this person?
 - Your tenant find it scary to go down in the laundry room. Why? What has happened? Write and tell us.
 - Your tenant knows a secret about one of the other tenants! Who carries the dark secrets and what is it...?
 - This summer your tenant goes on holidays expected for a long time. Where does he/she go? With whom? What will they do?
 - The hammers and pounds from below the basement and your tenant can not sleep at night... What's going on down there anyway?

- Your tenant spends his best day in life with one of his best friends! Tell me about that day. What do they do? Where are they?
- Insert a photo from Flickr or Wikimedia Commons depicting a place that is important for your tenant. Insert the image adjacent to the text.
- Insert a video from YouTube or Wikimedia Commons where you can watch and listen to your tenant's favourite artist.
- Make a link to your tenant's favourite site!
- Add an example of a tenant which your students can be inspired by
- Present the wiki site and demonstrate briefly how it works. A short instruction film could be useful.
- Let the students write about their tenants.
- Have a discussion on how to give feedback in a constructive way. Then, let students read and comment others tenants.
- Finally, you, as a teacher write a short evaluation about every portrait.

Learning resources involved

- Dictionary/Thesaurus
- Wikimedia Commons
- Flickr
- YouTube

Wiki application

Either use a wiki farm or a stand-alone wiki. Villa Mimmi has previously been performed with Wikispaces.

Other ICT applications involved

Incscape, a free software graphics editor (similar to Adobe Illustrator).

Infrastructure / equipment

If the graphics software is not used, you need a camera or a scanner to digitize your illustration.

Prerequisite competences

None.

Evaluation approach

- peer-to-peer assessment (comment or possibly change others tenant descriptions)
- teacher evaluation of tenant description

- group assessment where students together discuss how they liked the task, what was easy and what was difficult

Typical learning time

- Five sessions
- One hour per session

Typical learning location

Wherever the student has access to internet connection. However, the first sessions should perhaps be performed together with the teacher. If there is short of computers, the class can be divided so that one part of the class do portraits by hand of their tenants while the others write in the wiki.

Other aspects to consider

No

Opportunities and obstacles

Will see.

4.7 Learning scenario Wiki writing on paper

Brief introduction

Discovering collaborative writing on a paper.

Keywords

co-writing, learning-game.

Application in educational context

No reference link. Activity used by Florence Devouard during adult training.

Targeted educational sector

All sector targeted, but possibly more interesting for a public of adults (professional training and adult training) not used to co-writing and not very comfortable with ICT tools.

Learners' special characteristics

More interesting for learners who approach wikis with a certain degree of anxiety due to rather low digital skills.

Learning subject/ field

General field.

Specific educational objectives

Cooperation skills.

Narrative/sequential description of the learning activities

This scenario has been applied typically for training of adults in a professional context (adults working in the same team within a company) when not familiar at all with wiki software and not very familiar with ICT tools generally. Group of 6-12 people.

6 pages (number as an example) were put in a central table (if it is possible, rather than pages, use large sheets fixed on the wall). These pages were meant to host an "encyclopedic article" on various topics. The choice of topics was done in such a way that all participants would have something to say. For example, an article about their company, an article about their city, an article about one product manufactured by the company. Some of the pages only featured a title (eg, "name of the company"). Other pages featured a title, with subtitles (eg, "name of the city", then "history", "geography", "culture", "famous people"). Other pages featured title, subtitle and some pre-filled content.

Learners were given pens of various colours. They were invited to add or modify or remove (strike) some content to at least 3 of the pages, in turns (free choice of the page to fill).

After 10-15 min, modification of pages is stopped and we reflect together on what was done

- were some pages improved more than others? If so, why did people tend to go modify these ones and not the other ones? Did having pre-filled content versus blank pages made a difference?
- what sort of editing pattern did people follow? Did they only content or did they dare modify or even strike other authors text? If they did not dare, why? If they did dare, how did it feel? If someone content was removed, how did it feel?
- examine the pattern of colours. Do the colour mix or are clearly separated in different paragraph? Are they able to say who wrote what? How does it feel that people know what they wrote?
- did some adding illustrations (drawings)?
- did some practice adding stupid or incorrect content for fun? How did it feel? Did others remove what was stupid/fun? Did someone scratch or dump a page or did a plane with it? How does it feel?
- would you do it differently if we did the exercise again?

Take the opportunity to introduce the notions of

- co-editing (not only adding content of person A after the one of person B; but truly being a mix of inputs by various people to the point one does not know any more what he wrote)
- history and tracking of who edited what (here, somehow illustrated by the colours)
- structuring the page (a little is helping but too much may inhibit)
- the fear of the white page?

Learning resources involved

Encyclopedia-type of resources to "pre-fill" some contents

Infrastructure / equipment

Papers, coloured pens.

Prerequisite competences

Writing

Evaluation approach

- Data sheet produced
- Group assessment of the learning activity

Typical learning time

- 1 sessions
- 30-40 min per session

Typical learning location

In a room together. Walls pin pages is best.

Other aspects to consider

Great to consider for an early afternoon when learners are a bit sleepy after a powerpoint-based presentation and hearty meal

5. RESULTS OF NATIONAL SURVEY

5.1 Introduction

An online questionnaire with 15 questions was distributed by partners in March 2012 to educational experts, practitioners and wiki pioneers among the six countries of the consortium. The objective was to identify opportunities, barriers and solutions to the use of wikis in educational settings, in the eyes of the European educational communities

This point of the report aims at showing the results of this on-line survey. First of all a national analyse of the results will take place as a synthesis with the most important impacts and conclusions. After national analysis we will show graphically the complete results of the survey, which will bring us the possibility to have a global point of view just after the analysis of individual situation for each partner's country. At the end of this point we will make a final conclusion that will summarize the entire analyse of the survey results.

For the survey we have had 150 participants from 12 different countries, that is not a huge sample but that give us a valuable real feedback of the situation. In this analyse we try to extract the key points that will let us find the success factors for the next steps of Wikiskills project.

5.2 National results

In this point we are going to show individual analyse of the results grouped by country. The idea is to give a global vision of each country with the main results and impacts and a general conclusion of the situation.

5.2.1 National results : Austria

1. Short general national impressions

According to the national survey, the most known wiki in Austria is wikipedia; other Wikis are not very well know by the participants and therefore wikis are not broadly used in educational organisations. The most common use of wikis in Austria is to add content to existing pages.

2. Impact on educational issues

Participants seem to be fully aware of the many advantages wikis offer, nevertheless they do not use wikis in educational settings.

One reason why wikis are not a common tool for educational settings are the technical barriers and the lack of computer skills of the students.

3. Conclusions

Raising awareness of the simple use of wikis in education is an important next step to take. Barriers mentioned by the participants have to be taken seriously and have to be eliminated to allow the adoption of wikis in educational settings.

Detailed Analysis:

In Total 17 people answered the survey.

Contribution to wikis:

Two out of those 17 people said that they use wikis a lot. Most of the participants contribute occasionally.

In terms of how they contribute, 8 respondents answered that they added content to an existing page. Only 4 people added content to a page that they had created. Also 4 people added comments to a discussion page. Only one has socially administrated a wiki and no one has programmed new functions for a wiki engine.

Which wiki-based projects are most familiar in Austria?

wikipedia is by far the most known wiki-based project (14 answers). After that follow Wikibooks (4 answers), Wikimedia Commons and Wikitravel (3 answers) and Wikiversity (1 answer). Citizendium, Ekopedia, Jurispedia, Curriki are not known at all.

Which wiki-based projects are the respondents familiar with?

MediaWiki and DokuWiki are the most know wiki engines or wiki farms. Xwiki, Pmwiki, MoinMoin, Wiki within Moodle is know by 1 respondent and non of the respondents familiar with Drupal, TWiki, PhPWiki, Foswiki.

Target group and beneficiaries

The target audiences of the respondents are mostly vocational adult trainers (9 answers) and also primary and secondary teachers (3 answers). The respondents do not only want to use wikis for their target audience but also with their colleagues.

Some would also like to use wikis with their colleagues

Examples of wiki-based learning-scenarios

- Translations, creating reports, texts and summaries
- Creating presentations, platform for information, collection of ideas
- Wiki application
- Research for Information on potential work space and the own residence
- Edumoodle
Research with content from wikipedia and verification of its truth content
- Creating own project-based Wikis for documentation or as project handbook.
- Company-intern Wiki

Support to use wikis in teaching:

Regarding the support of the superiors most have full or part support (7 in total). Only 2 of the respondents said they have no support at all.

Concerning the support of colleagues most of the respondents answered that they don't care. Students care fully or party about giving support for using wikis in teaching.

Involvement in a Wiki Community for external support

Only two of the respondents are involved in a wiki community for external support, all other respondents do not take part in a wiki community.

Main advantages of using wikis in teaching / learning settings:

- Transfer of knowledge
- Knowledge building
- Preparation for exams
- Intensify the knowledge concerning the Learning material
- Deepen the knowledge through exercises
- Creative and content-related freedom
- Room for creativity
- Transparency
- Common webspace
- Can be used for everything

Main barriers to the use of wikis in the actual educational society

- Technical barrier to install own Wiki
- Time exposure
- skills of the students / participants
- Basic computer and internet knowledge is missing
- Do not want to share

5.2.2 National results : Belgium

1. Introduction / General Impressions

Very few answers from French targeted people: 10 answers

7/10 targeted Vocational Trainings

4/10 targeted Universities

4/10 targeted Primary/Secondary Schools

With this amount of answers, we cannot have any serious global vision

2. Quantitative and Qualitative Detailed analysis

Primary and secondary school teachers:

All are aware about Wikis through wikipedia and Wikimedia but about other wikis, only 1 (25%) knows sister projects;

3/4 contributes regularly in wikis and only one seems to be an active contributor (but with more accurate analysis; this person is a UK native individual). None of them have support from their hierarchy

University teachers and adult trainers:

All users seem to be actors better for primary/secondary teachers. They all contribute to wikis by adding content but also pages.

2/4 (50%) are connected occasionally, 1/4 (25%) very often and 1 very few.

2/4 (50%) are involved in social activities of wikis supervision.

3. Impact on educational issues

Advantages:

- Research Methods courses prepared for students who prepare personal work for the end of studying periods.
- Work Assessment by distance
- Pedagogical work groups
- Content sharing opportunities for collaborative management organisation.

Barriers:

Primary and secondary school teachers:

- lack of knowledge of wiki value for education
- low quality of internet access in many school area
- lack of ICT competences of teachers
- Threat of traditional practices changes due to the implementation of new pedagogical scenarios
- people are not comfortable in committing/sharing their unbaked ideas to an open space or showing them as a work in progress and not a finished glossy product. Some people do not manage to work in collaboration and accept their ideas may be edited
- "term about "bad" quality content for education" hide in fact the question of practices of "copy/paste" action of trainers

University teachers and adult trainers:

- We are not trained to use these tools, it is a new dimension for me
- I don't know the vocabulary for
- Poor ICT culture of Decision Makers
- Very few trust to new tools used by students like social networks
- Very few students involved in new collaborative practices / "better prepared to compete than to cooperate"

Conclusions of these free text answers:

1. Main barriers are linked with the culture of change through the acceptance of new tools and their impact on existing practices.
2. Wikis are better identified by the content created by contributor than by relevancy of such tools for new educational practices.
3. No support to develop new usage.

4. Conclusions

Due the number of answers, we can't have an accurate vision about the status, but whatever the education level, all answers pinpoint a lack of knowledge of management and decision makers and very few have a real experience in common wiki based projects.

Because of that, the impact of using wikis in the field of knowledge increase for teaching their students is very relevant for support the few "pioneers" facing decision makers threats. Students seem more involved and autonomous in using wikis but the pedagogical processes should give them better vision of the potential global impact of wikis. The pedagogical cases may include all dimensions of wikis for the community of users through real collaborative works.

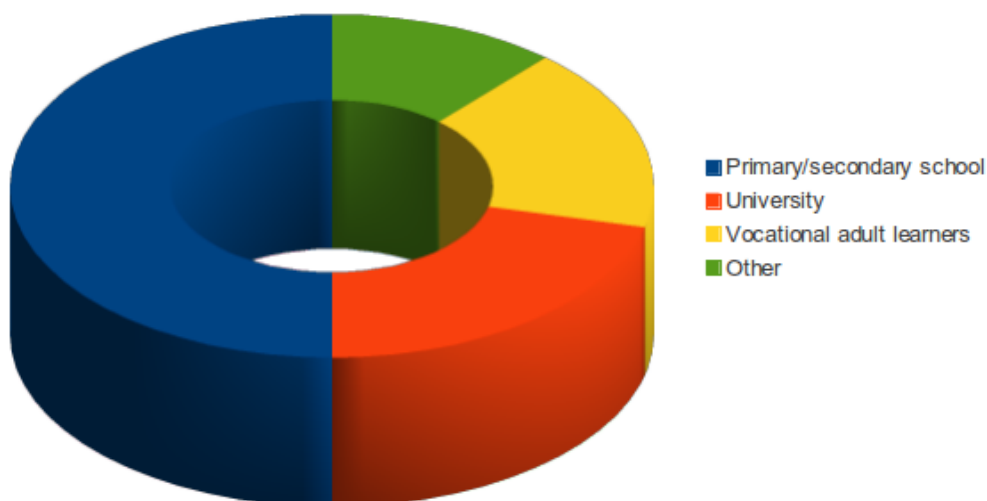
5.2.3 National results: Spain

Introduction.

This report summarizes the results of the WikiSkills online survey which was conducted in Spain in order to analyse educators' current use and needs regarding wiki environments in their teaching contexts. In total, 41 educational practitioners have answered the survey. The report analyses the results of the survey for 26 primary secondary school teachers, as well as for university teachers and adult trainers (15 respondents).

Here we can see that half of our educators are from primary/secondary school. The other half are from university and adult. The "Other" group can be included in adult because they are teachers who teach other teachers.

What is your target audience?



1.- Short general national impressions

1.1.- Primary and secondary school teachers

Half of teachers are experienced with wiki environments, and demonstrate a high level of knowledge regarding the functionalities and the educational opportunities offered by such tools. However, they also perceive some obstacles to the implementation of wikis in the classroom, which can be overcome by promoting awareness of institutions, as well as facilitating adapted teacher training solutions.

1.2.- University teachers and adult trainers

Taking a first look to the survey results we can see that our users don't have much experience and knowledge in using wikis. Some of them are wikipedians and they are an exception to this. These wikipedians have experience in using MediaWiki software.

Among the other users, we have some educators who have been using wikis inside Moodle or Chamilo, this means, inside eLearning platforms. The other educators have never used a wiki before.

2.- Impact on educational issues

2.1.- Results interpretation

Primary and secondary school teachers

Out of 26 respondents, 9 do not have experience in contributing to wikis, while 8 state that they contribute a lot. Furthermore, 4 teachers state that they contribute "occasionally", and 4 others "not much". Generally, teachers have conducted tasks such as adding content to existing pages (16 respondents), creating new pages, editing typo and grammar in text, and adding graphical elements. Furthermore, about 10 respondents have been involved in administrating wikis socially. However, most of respondents do not have any experience with technical administration of wikis. Graph 1 shows the tasks conducted by teachers through wikis.

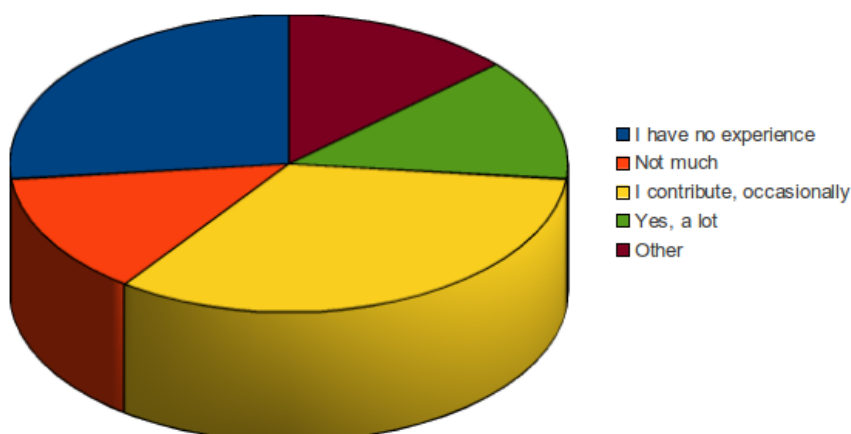
24 out of 26 respondents are familiar with wikipedia, or local wikipedia chapters (e.g. "Viquipedia" in Catalonia). Furthermore, 9 teachers are familiar with Wikimedia Commons and 6 of them with Wikibooks. Finally, respondents use other wiki projects, among others Viquilletra (a Catalan collaborative project to share lectures), Experimenta_wiki (a wiki dedicated to science education), and Wikipartido (a wiki for creating a new political parti in Spain). Finally, some teachers mention their own wiki projects, such as "HKpWiki" and "Sopadepedres".

Almost half of respondents are familiar with Wikispaces and MediaWiki. The other engines are almost unknown among them.

University teachers and adult trainers

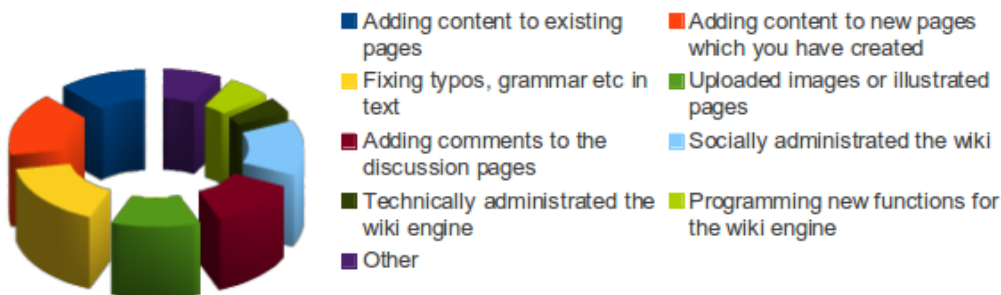
As we said in the previous section, some of our users have experience in using wikis, but just a few of them. Here we can see a chart of this.

Have you been contributing to a wiki?



Here we can see how some of our users have experience, but many of them have little experience (or any). We can say that the red and blue one have little experience, yellow and green have experience and brown are other cases. So, half of this target group have little experience with wikis.

What kind of tasks have you mainly been engaged with on wikis?



Anyway, these users with little experience have contributed with wikis in the past by doing some tasks such as adding new content or fixing typos and grammar. It's interesting that these educators used wikis in the past but they said that they have little experience. Here we can see a chart from the results of the question regarding the kind of tasks they did.

We can see that tasks are much dispersed, and it seems that everybody is doing some work with wikis, but this chart is a little tricky. Taking a look into the results we can differentiate between 3 kinds of users:

- The first ones are users that make a lot of work with wikis in all its areas (Adding content, fixing, administrating...)
- The second ones are users who add comments or edit some content. They contribute whenever they can
- The third one are users who never used a wiki

The users who are used to contribute in wikis are also used with almost all the wiki based projects mentioned in the survey. On the other hand, users with little experience are used just with the most famous wiki based projects (wikipedia and so on).

2.2.- Educators answers

There are a lot of interesting answers to the free text questions regarding advantages and barriers of using wikis for teaching. Among them we have:

2.2.1.- Advantages

Primary and secondary school teachers:

- Opportunities for collaborative activities: possibility of organizing of collaborative projects among equal peers, consulting the evolution of the project and the contributions of each member; fostering the respect of peers' opinions, decision making processes, and contrast

of information (several points of view on a same topic); promoting the symmetry among teachers and students in the follow-up and evaluation of the projects.

- Fostering students' motivation: involvement in innovative and unusual activities enhance students' receptivity.
- Providing a context for constructivist activities: learners get involved in participative learning processes through the collective creation of content, within an interactive environment, and can learn in an autonomous way.
- Flexible learning environment: wikis enable the adaptation and structure of content.
- Elimination of space time barriers.
- Presence of an external audience: possibility of involving external parts in a same project, communitarian support and correction of errors.
- Fostering expression skills.
- Promoting digital literacy: students loose fear in editing content on the web.
- Usability: easiness of use and maintenance of the environment, easiness of sharing graphical and textual resources, rapidity of publication, visibility of the history, free of use.

University teachers and adult trainers:

- Wikis allow constructing knowledge in a collaborative way. They promote personal competences related to teamwork and they require responsibility and autonomy from students during the learning path.
- To transfer the ability of creating to the students. Possibility to compare present versions (corrected by the teacher) with previous versions created by students.
- It's free, universal and allows knowledge dissemination
- Possibility of sharing and modify a work document
- Wikis are motivating, practical, visual and they can be adapted.
- Social discussion.
- Possibility of present a case and students can participate in its resolution, giving oppinions about it and correct each other before they can know the solution.
- Wiki format and the idea of social collaboration. It allows constantly upgrade.
- Being open source, you can program new extensions for personalize it.

Conclusions of these free text answers

Teachers valued their free / open source and collaborative nature, mostly the possibility of collaboratively sharing and modifying documents, promoting debate among students and teachers, and possibility of updating published information.

Wikis are seen flexible and dynamic tools, promoting personal competences linked to group work.

2.2.2.- Barriers

Primary and secondary school teachers:

- Lack of teacher training: basic ICT skills, technical use of wiki platforms (e.g. integration of pictures), norms of participation / supervision, bibliographic quotation norms in wikipedia, content licences, etc.
- Technical barrier: teachers sometimes feel uncomfortable with a tool that students manage better than them.
- Lack of motivation of some teachers to learn how to use ICT tools and unusual tools, as it represents added work.
- Lack of Internet connection and technical resources (computers, projectors, mobile phones, etc.) in all classrooms.
- Freedom of publication: the supervision of content is mandatory; furthermore, teachers may be afraid of giving freedom of creating and editing to their students.
- Free advertising in some platform providers.
- Time: the creation, maintenance of the platform, as well as the evaluation process, involve more time than other learning activities. In a teacher words, the time spent in elaborating resources has to be compensated.
- Familiarization with the interface (internal browsing, no WYSISYG edition, etc.) and the methodology (intellectual property of texts and graphical elements), for students and teachers.
- Lack of recognition of the authorship, as the contributions are only visible in the history.
- Reflection processes implied by wiki activities may be difficult for young students.
- Divergence of opinions among distant groups / people.
- Usability: a more intuitive interface is needed.
- Lack of support from the institutions.
- Lack of diffusion of the wikis.

University teachers and adult trainers:

- Students don't accept wikis.
- Deficient ICT formation
- Copy of work
- There is no self-learning mind among students. It's complicated to evaluate the quality of contents
- Methodology is focused in teaching but in learning, so, it's more oriented to contents accumulation than to the use of tools that can encourage the student to do his/her own research, thinking and create collaboratively with other people, the subject knowledge,... It forces to a change in the teacher role, who goes from being the main character in the learning process to become just a motivator, and that is not easy. However, it needs better technological resources equipment in the classroom and/or access to the internet at students home
- Ignorance and don't see clear the advantages of learning to do it

Conclusions of these free text answers:

One of the main barriers is the quality of the contents of wikis used in education, where some kind of quality certification is seen as a possible solution.

Training and information on wikis is seen as the main tool to overcome barriers in their use, as well as a change in the traditional training model.

Simplification in wiki editing is also noted, as a key to introduce them to novice users. (Providing similar editors to word processors).

2.3.- Impact

Taking a look to the results we can see that the impact of the project can be very good for education because of the following reasons:

- Students will be more involved in the work.
- Teachers and students will be able to work collaboratively.
- Teacher will be able to know is students are learning in the correct way.
- Students will be motivated by doing this work.
- The pedagogical opportunities provided by wiki environments will be disseminated to institutions and to the educational society in general, innovative teaching practices will be valued, and ways of teaching will be reconsidered.
- The opportunities offered by wiki environments will be demonstrated, by showing the different kinds of wikis and their functionalities, through existing good practices and practical examples of application of wikis in the classroom.

Of course, this may have some risks:

- The main one is that students don't accept wikis as a tool for doing their job because they are used to the teacher making the materials and they "to study" it at home.
- A lot of students have in mind that they don't need to know anything about the subject until the exam, and they don't care about the subject. The point of these students will be probably not to contribute to the wiki.
- Freedom of publication: the supervision of content is mandatory; furthermore, teachers may be afraid of giving freedom of creating and editing to their students.

3.- Conclusions

Regarding primary and secondary school teachers answers, they often show a good experience in using wikis in educational contexts, and in identifying adequate solutions for their successful implementation. Less experienced teachers show a high level of interest in such tools, as well as a positive attitude towards adopting new teaching methodologies.

In addition, university teachers and adult trainers who answered the survey don't have much experience by using wikis (nor in education or in general) except a few of them who have a lot of experience in common wiki based projects.

Because of that, the impact of using wikis in their fields of knowledge for teaching their students will be very high and very productive. Students will be more involved in their own learning process and will have the satisfaction of sharing their knowledge with their partners and also with the teacher.

Of course this will happen just in case that the students and the teacher accept the wiki as another tool in their learning process.

5.2.4 National results : Sweden

Wikimedia Sverige disseminated the survey on the web through social media and blog. However, the survey was open for everybody to answer and, hence, nothing is known about the selection bias. In the survey invitation it was pointed out that potential respondents should have used wikis for teaching. In total there were 13 respondents whereof 9 valid respondents who completed the survey.

Short general national impressions

Most of the respondents targeted learners in primary and secondary education even though a few targeted university students and vocational adult learners. All respondents who completed the survey were to a varying degree familiar with wikis. Most of them had either contributed to existing pages or started new pages, a few had made comments, fixed typos and socially administrated a wiki. Technical administrations or programming was, not surprisingly, very rare. The wiki-based projects wikipedia and Wikimedia Commons were very well known by the respondents. The other Wikimedia sister-projects were less known. The rest of the wiki-based projects were very poorly known. Two other wiki-based projects were mentioned: wikiskola.se and wikimaps. Surprisingly enough, the wiki engine MediaWiki which is used for the Wikimedia projects were less known than the wikifarm Wikispaces. However, this may be explained by the Wikispaces campaign towards teachers. Wikispaces offers free space and basic wiki-functions without advertisement to the educational sector.

Impact on educational issues

When using wikis for teaching activities, roughly half of the respondents felt that they had full support from their superiors and colleagues, while the other half had partly support or the superiors and colleagues didn't care. The audience, however, were seldom indifferent but partly or fully supported wiki based teaching.

In teaching, wikis were used:

- as learning object repository (wikiskola.se)-
- as a learning management platform where assignments were discussed and reported, while the teacher posted information and instructions during passing of time.
- to perform various wikipedia-editing projects about lesson relevant topics. Fact reviewing-
- to write and develop stories in class. Students create and edit stories / texts written by each other.

Respondents reported some main advantages with wiki-based teaching and wikis:

- Accessibility, asynchronous availability, openness and freedom. Everyone can contribute – students, parents, colleagues, course participants etc..
- Easiness. Simple and rapid to create, change and improve.
- Updateable and shapeable. "We get up-to-date knowledge into the course, not found in older textbooks". "Information that is alive, that is changed/updated".
- Structure: Help to structure thoughts and develop educationally; all texts in one place
- Safety. The data/tasks can not be lost-

- Stylishness-
- Enable cooperation and group-work. Easy to cooperate and to develop things in groups.
- Line in for feedback and improvements from participants. A learning management system which is improved (material, layout, language, structure) by course participants.
- Access to a community, to actual receivers and active users. Engagement. Makes it easy to encourage students. Natural ethical discussions, understanding the surrounding world. "I don't need to give feedback on everything they write in detail – students still receive feedback by other users of wikipedia and by each other".
- Dissemination/promotion. "Show the world what we are doing in school"

Respondents reported some main barriers with wiki-based teaching and wikis:

- Lack of clarity and uncertainty for students on grading criteria when participating in wiki-based lessons.
- wikipedia articles on course material starts to become "complete and ready".
- There may be extra job if the teacher is forced to rewrite some poor student contributions to wikipedia so as prevent the course from getting bad reputation. For newbies to the lesson topic and on wikipedia it can be difficult to make good contributions without guidance
- Tradition.
- Competing web platforms and mixed messages. Ambivalence on what tool to use for cooperation.
- Lack of computers.
- One teacher stated that some engineering students are afraid to express themselves in writing.

Conclusions

Barriers to the use of wikis can be overcome by:

- better access to computers and Internet. Policy decision about more computers to school needs to be taken.
- generous tuition and instructions for wiki newbies. Lab manuals and initial direct feedback from teacher to the students on the students' first contributions.
- letting "TEACHERS determine which tools they want to use with the students – not the education bureaucrats!"
- demonstrating opportunities with wiki based teaching in order to broaden the knowledge among colleagues and overcome tradition
- giving students teacher's feedback in the form of supplementary information – otherwise, the score will come as a surprise.
- active teacher who for each new edition of a course suggests new topics and change the course set-up a bit to avoid topics being so complete that they are not in need of improvements by the students.
- sticking to one web tool (for example a wiki) to avoid a lot of places to keep track of.

Wikispaces is a popular wikifarm focused on teachers as target group and with all the advantages of a wikifarm. A few respondents with more technical knowledge and more administrative demands

preferred to set up a MediaWiki as learning platform. As with all tools, students need some running-in period "The more students work with wiki, the better they like it..."

5.2.5 National results : Switzerland

1. Short general national impressions

Thanks to the experience of HEIG-VD and Yinternet.org Fondation we have some interesting results. Those results from the survey will complete this report with important resources, even if the amount of answers, to draw up a complete statistic analysis, was not high.

First important impression is that almost all the public knows wiki tools or at least they have heard about it, mostly thanks to the most known wiki (wikipedia). On the other side, there are only a few that contributes. Between those who contributes, the most usual activity through wiki tools is adding content to existing or new pages. Almost half of the public have no wiki skills, the other half is divided in power users without technical skills and those interested mostly in technical issues.

Concerning existing tools and platforms, everybody knows wikipedia, and, in some way, MediaWiki as the platform. Out of wikipedia, there no significant results for other wiki-projects or platforms.

In educational environment there is a little advantage for Vocational adult learners as target audience followed by High Schools and Universities. An important feedback for the survey is the reaction to the question "*In teaching how to use wikis / teaching with wikis, do you have the support of your institution / hierarchy (superiors)?*", almost 60% answer No. As an anecdote, one of the participants said "*It's categorically forbidden to use it..*".

Listed as most valuable advantages using wiki tools we have collaborative work-in-processes, interlinked information and the idea of sharing knowledge. On the other side, as main barriers we found an important amount of answers worry about the truthfulness of the contents. This is possibly motivated by the general discussion about contents in wikipedia. As a minor reaction but not less interested, we have the resistance to change inside institutions.

2. Impact on educational issues

There some interested points to learn from the survey results concerning educational issues. First of all there is a wide difference between points of view motivated by the nowadays quick and increasing spread of new technologies everywhere. In that way, people who do find those tools useful, are generally exciting and have a positive attitude to learn more and to share it with others. On the other hand, people who don't want to deal with those technologies usually offers a resistance to adapt it or learn it. What is true is that real experiences show the advantages of wiki as a collaborative work-in-progress tool that, out of its technical approach, it is a place to team working, to promote collective intelligence and to share knowledge. Those characteristics are inevitably linked to education.

Another important result is the relation with institutions and the ability to introduce those new learning models or tools in the current teaching activity. Sometimes we found technical resistances coming from information technologies departments, and sometime from pedagogical directions who aren't dynamic with changes. So, it takes always a moment to consolidate new learning models and tools, and in those periods, there are people worried about newness and people with a more developed resistance to changes.

Finally, in Switzerland, main High schools and Universities are really awake with new technologies and we found some interesting wiki projects promoting collaborative work between students, and also to promote these tools for any research project.

3. Conclusions

We are in a kind of transition period with the inclusion of different new technology tools. Wiki tools starts to show their potential in educational environments, so that's why we have answers with a positive, excited and constructive approach and also answer totally against these tools. But as a matter of fact, we have look for those constructive approach to build new models and tools in order to grow within society and new technologies advances.

5.2.5 National results: Greece

1. Short general national impressions

According to the national survey, the most known wiki in Greece is Wikipedia; other Wikis are not very well know by the participants and therefore wikis are not broadly used in educational organisations. The most common use of wikis in Greece is to add or edit content to pages that already exist.

2. Impact on educational issues

Participants seem to know many things about what wikis offer, nevertheless they do not use wikis in educational settings.

The main reason why wikis are not used for educational settings is the lack of support from educational organisations and also the lack of training for the teachers.

3. Conclusions

Raising awareness and knowledge of the use of wiki could help to overcome barriers like lack of knowledge of wiki value for education, low quality of internet access in many school areas and lack of ICT competences of teachers.

Detailed Analysis : In Total 14 teachers answered the survey.

Contribution to wikis: Two out of those 14 people use wikis a lot. Most of the participants contribute occasionally. In terms of how they contribute, most respondents answered that they added content to an existing page or change existing pages. Only 3 people added content to a page that they had created. Also 2 people added comments to a discussion page. On one has socially administrated a wiki or programmed new functions for a wiki engine.

Which wiki-based projects are most familiar in Greece? Wikipedia is by far the most known wiki-based project (14 answers). After that follow Wikibooks (3 answers), Wikimedia Commons and Wikitravel (1 answers). Wikiversity, Citizendium, Ekopedia, Jurispedia, Curriki are not known at all.

Which wiki-based projects are the respondents familiar with? In Greece participants are not familiar with any wiki based project.

Target group and beneficiaries: The target audiences of the respondents are mostly secondary teachers. The respondents want to use wikis for their lessons and their students. Some would also like to use wikis with their colleagues.

Examples of wiki-based learning-scenarios:

- Find information for their lessons
- Creating presentations, platform for information, collection of ideas

- Wiki application

Support to use wikis in teaching: Regarding the support of the superiors most have no support at all (13 in total). Only 1 of the respondents said they have support.

Concerning the **support of colleagues** most of the respondents answered that they don't care. Students are giving more support for using wikis in teaching.

Involvement in a Wiki Community for external support: None of the respondents take part in a wiki community.

Main advantages of using wikis in teaching/learning settings

- Transfer of knowledge
- Knowledge building
- Preparation for exams

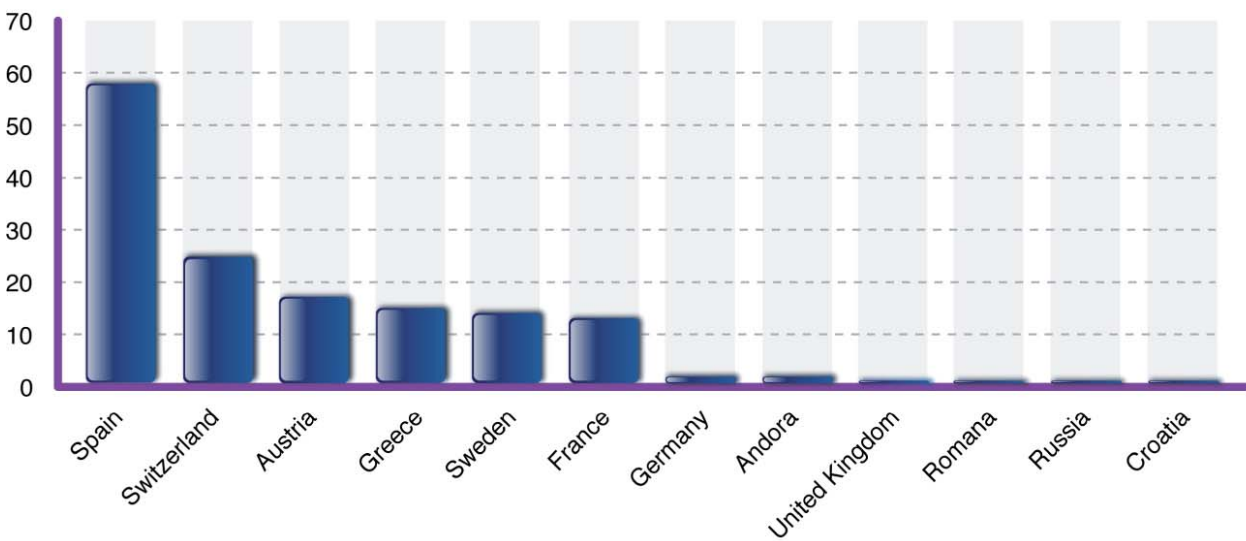
Main barriers to the use of wikis in the actual educational society

- Technical barrier
- Time exposure
- Language
- Basic computer and internet knowledge is missing
- Do not want to share

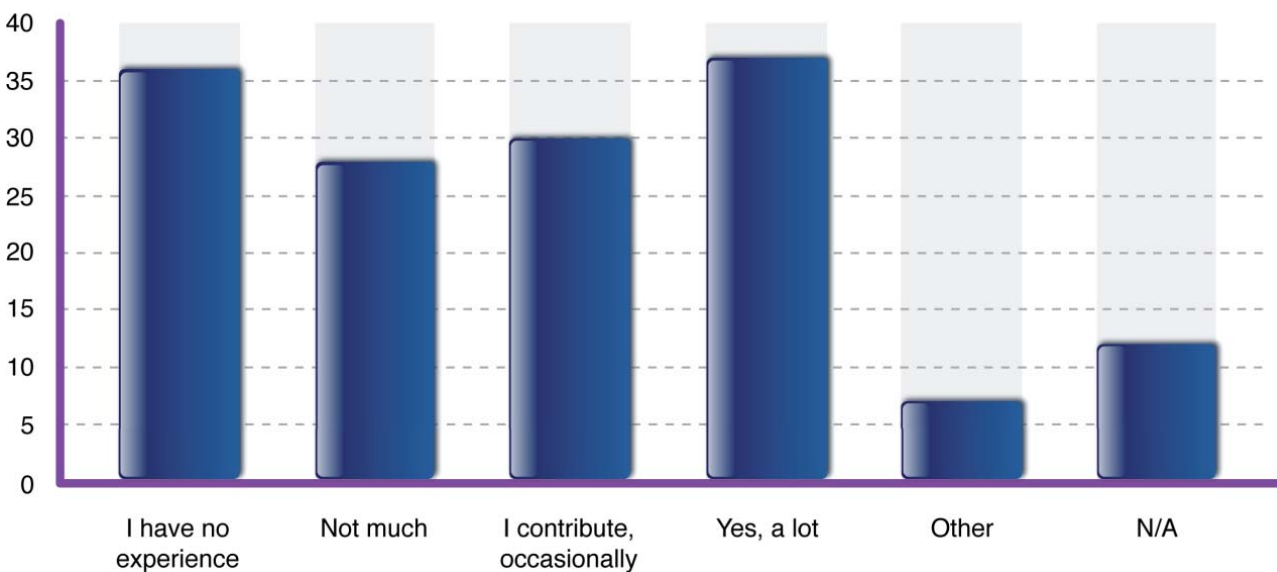
5.3 Global Graphs results

After individual analyse of the results, we are going to show in a graphically way the results of the entire survey. For the most representative results we will also show graphical results per country compared to the total.

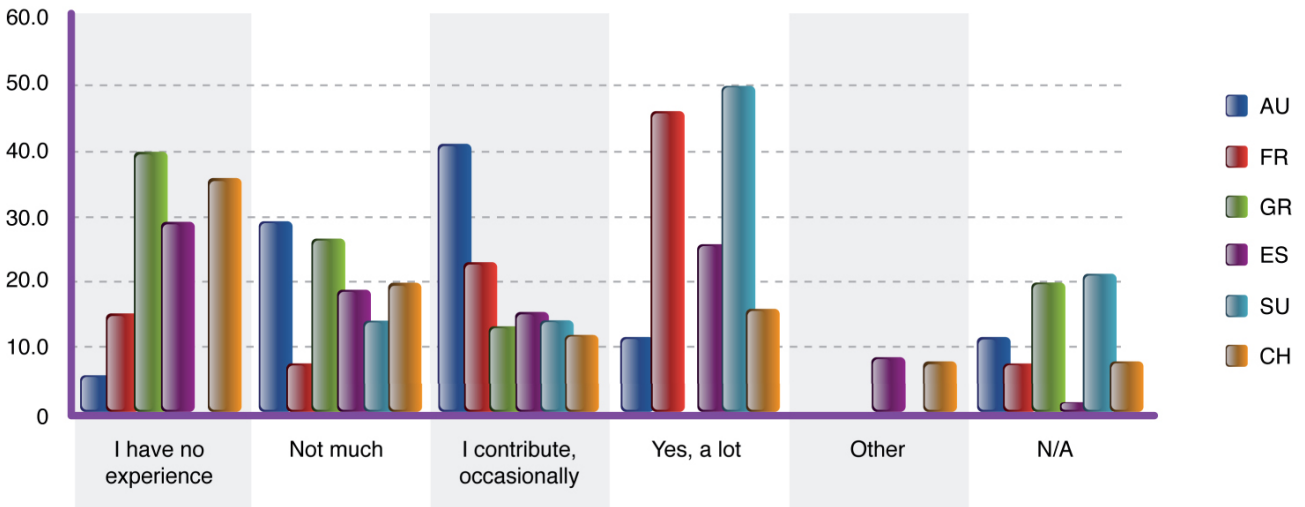
To the question « Which European country are you from? », we have 150 responses from 12 different countries:



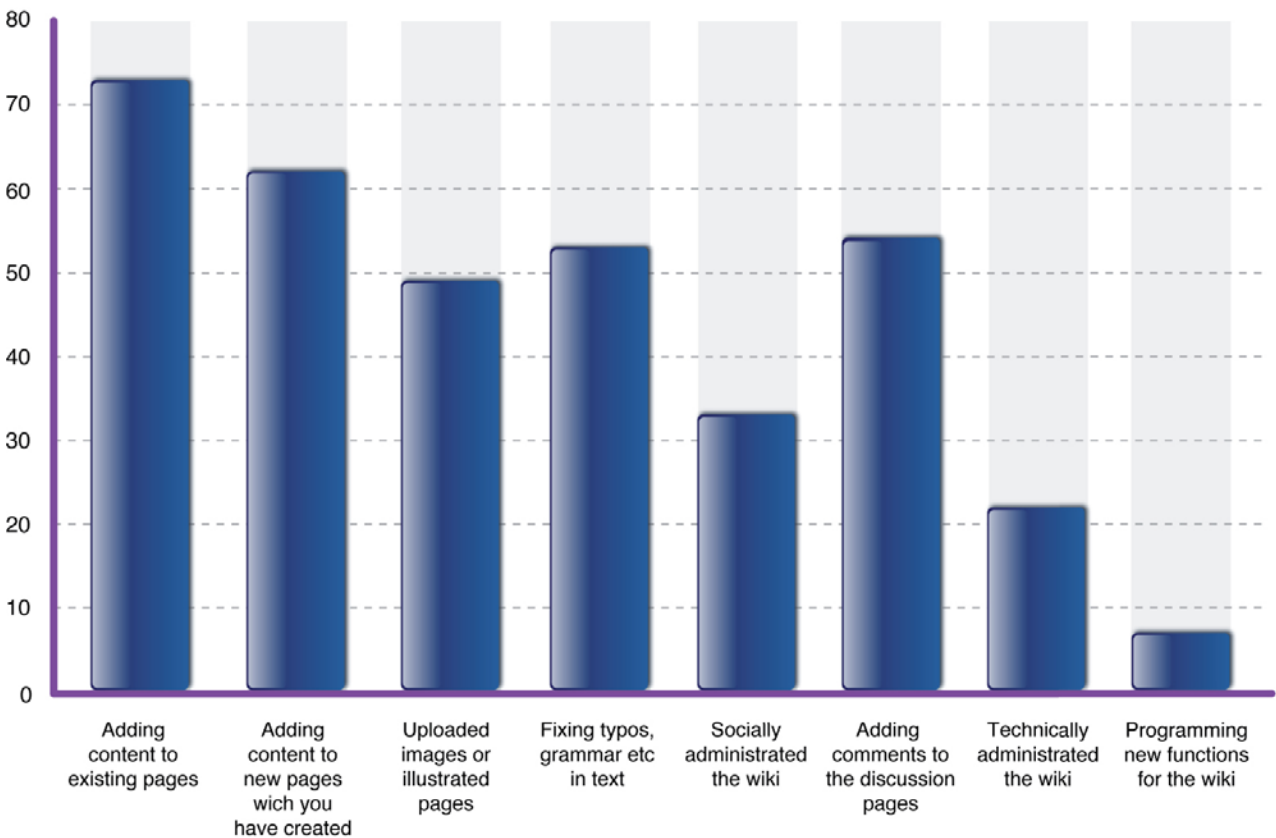
1. Have you been contributing to a wiki, that is, editing a wiki?



By country (relative values), for countries > 10 answers:

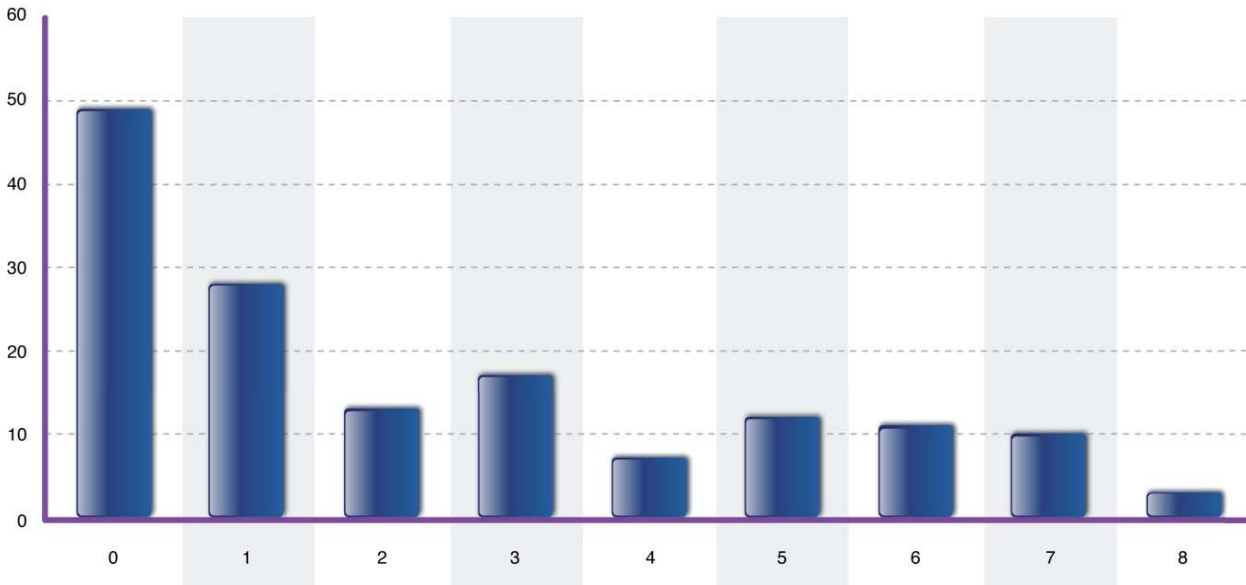


2. What kind of tasks have you mainly been engaged with on wikis?

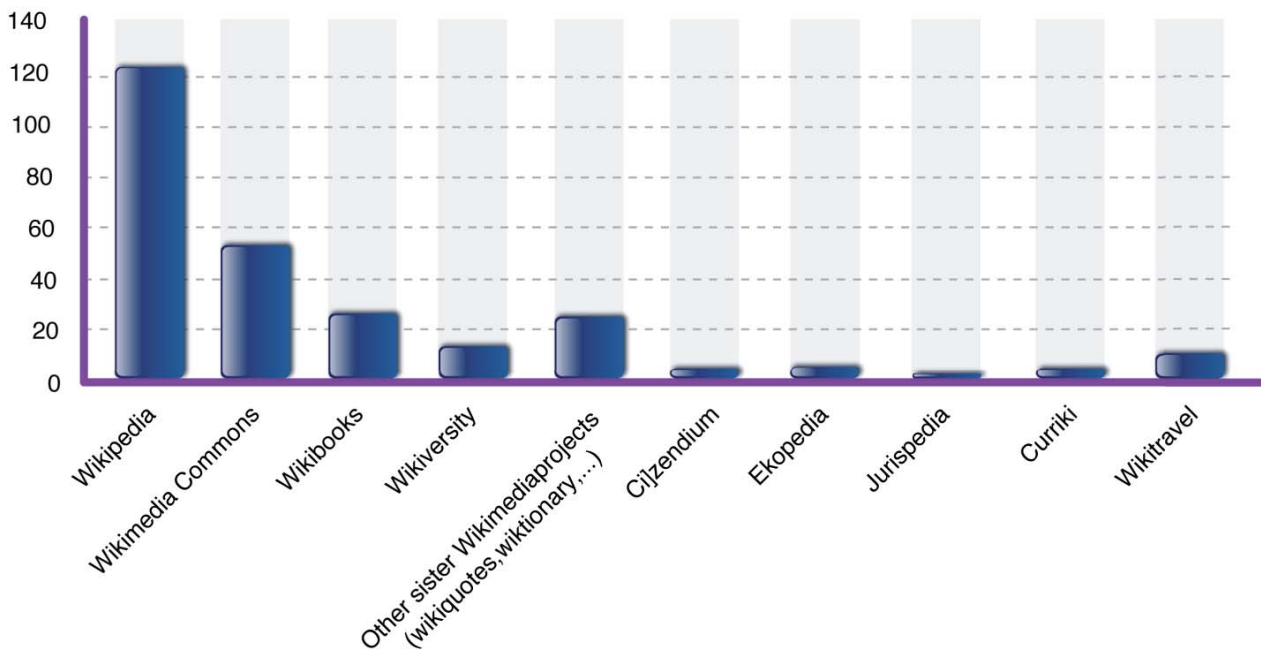


The graph below gives an overview about the number of tasks that each person has mainly been engaged with on wikis. Near 30% have no such skill at all and this is the most relevant profile. For the remaining two thirds:

- Only 3 participants are power user (with every skills)
- A few more than a half has a maximum of 3 skills
- The others are between the technical and the user level

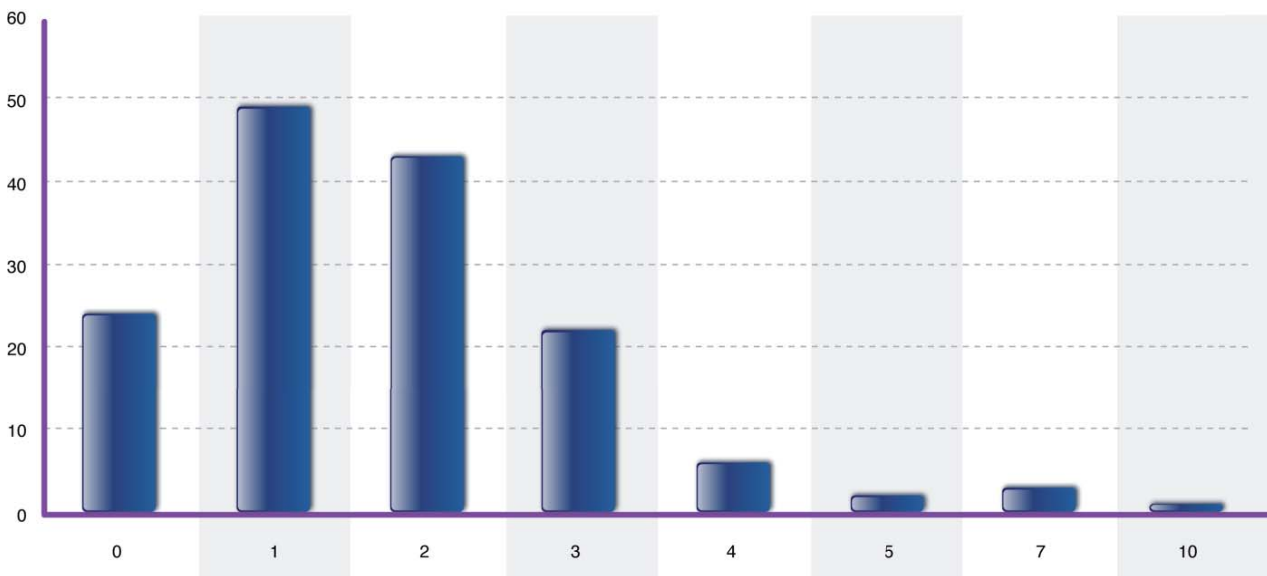


3. Which wiki based projects are you familiar with?

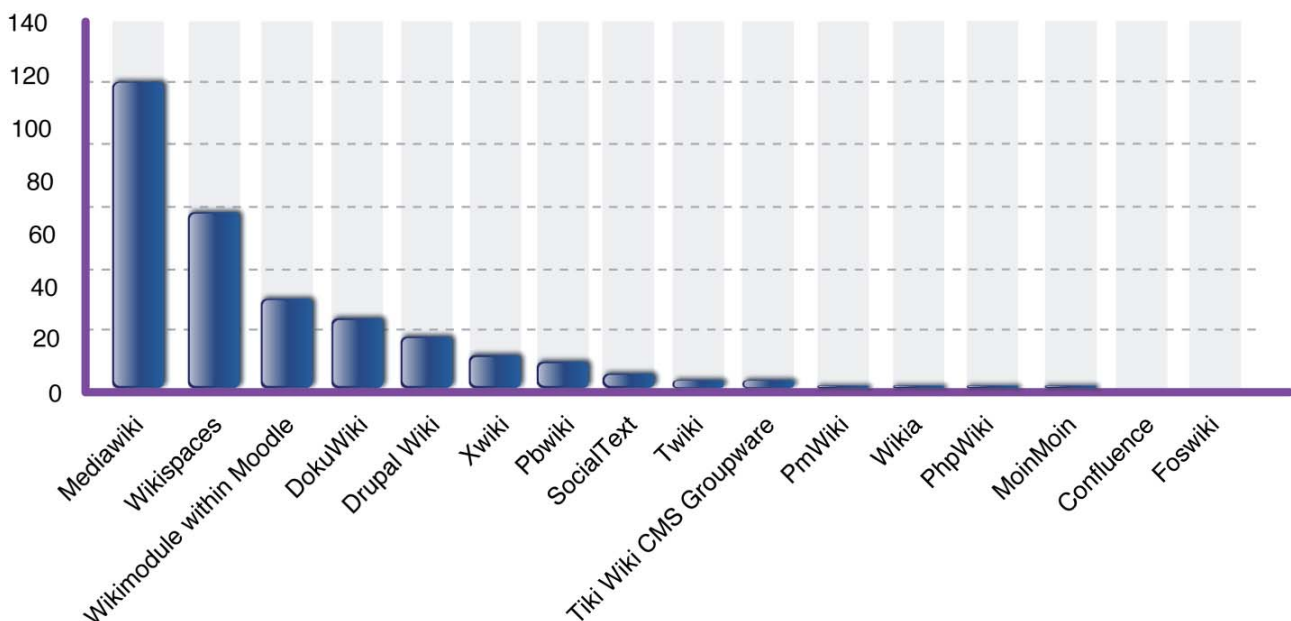


The graph below gives an overview about the number of wiki based projects that each person is familiar with.

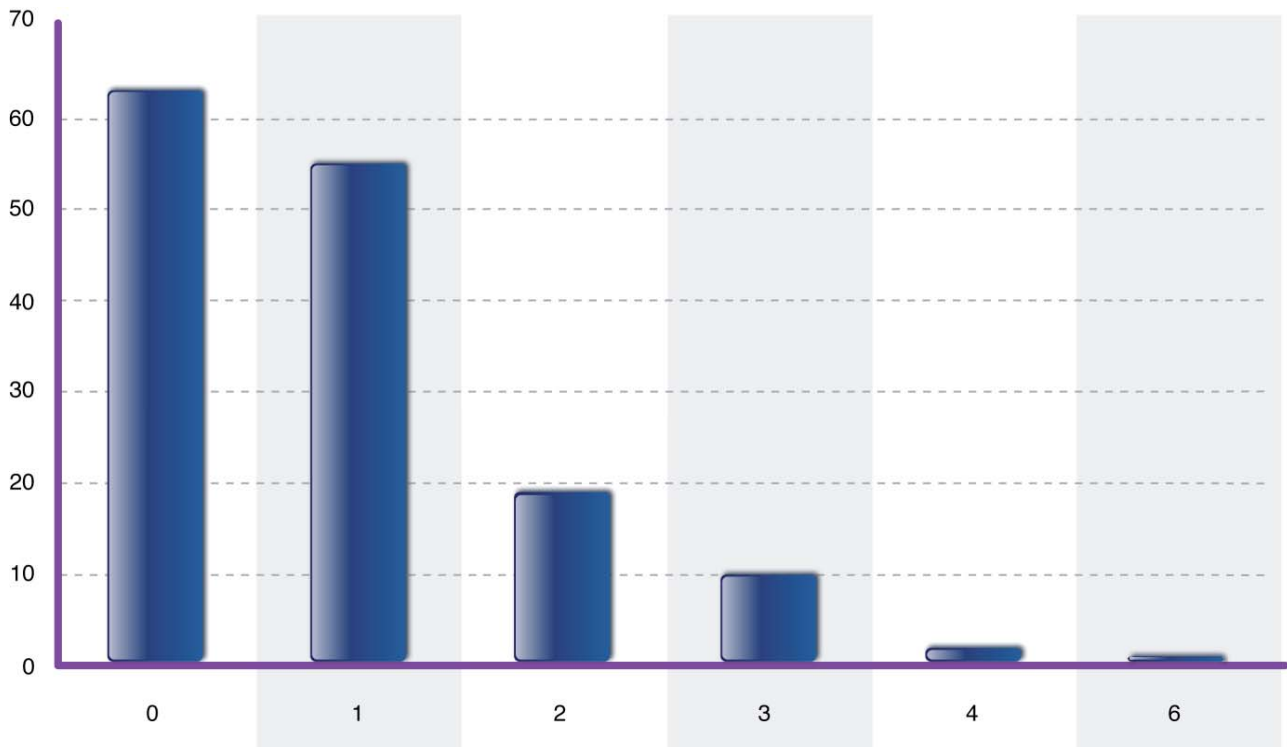
- Over 60% are not experts (0-2 kind of wiki)
- 7 persons are accustomed (between 7 and 10 wiki based projects are familiar for them)
- Others are familiar with 3, 4, 5 or 6 wikis
- 80% are familiar with wikipedia
- 30% are familiar with wikipedia only



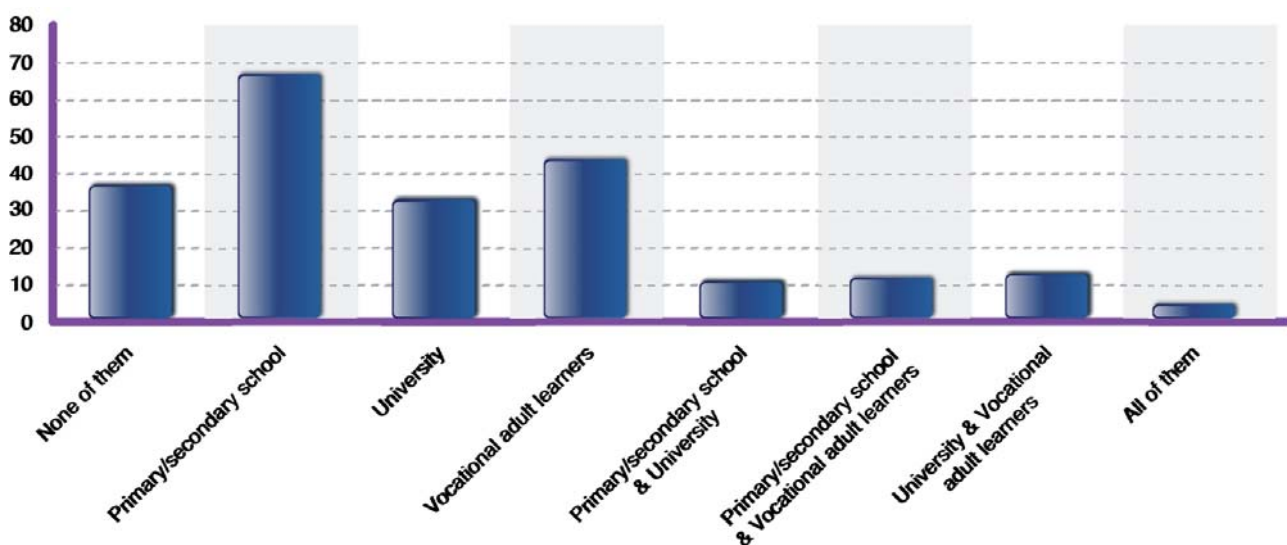
4. Which wiki engines or wiki farms do you usually use?



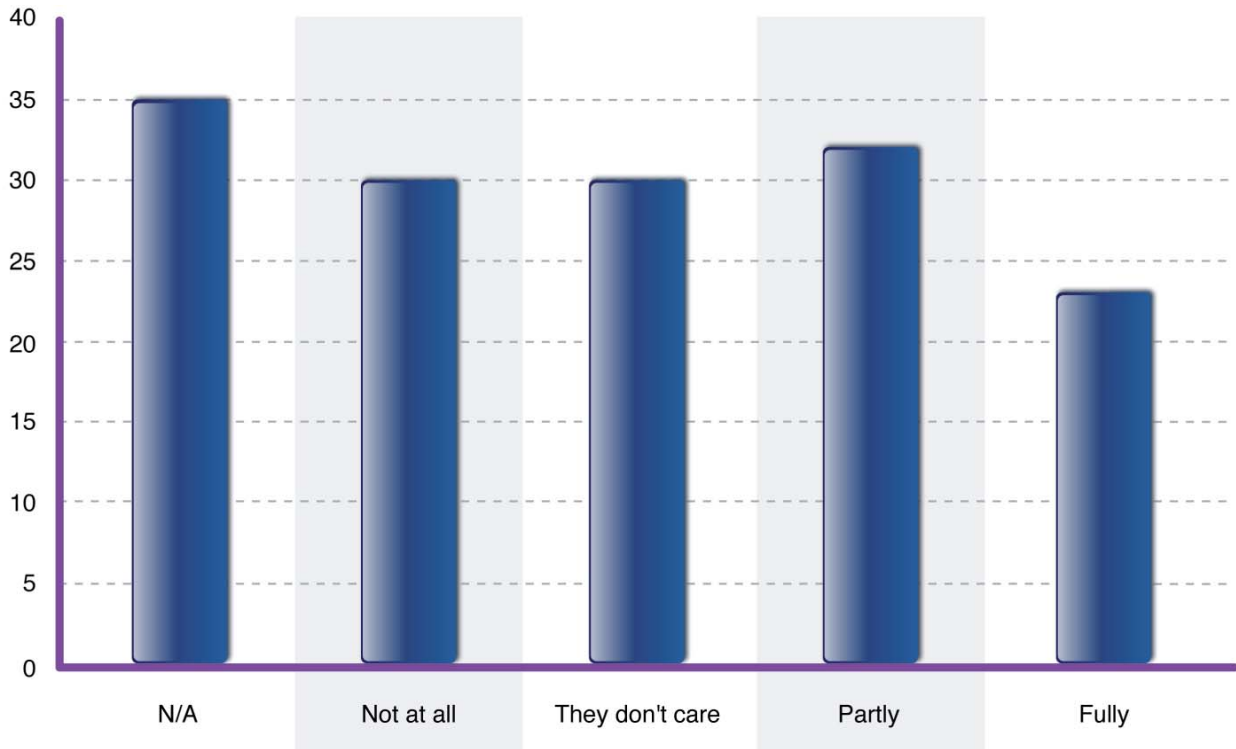
Here, we can see that for most people who usually use wiki engines or wiki farms (approximately two-thirds of them), the most used are MediaWiki (1/3) and Wikispaces (1/5). The others are rarely used.



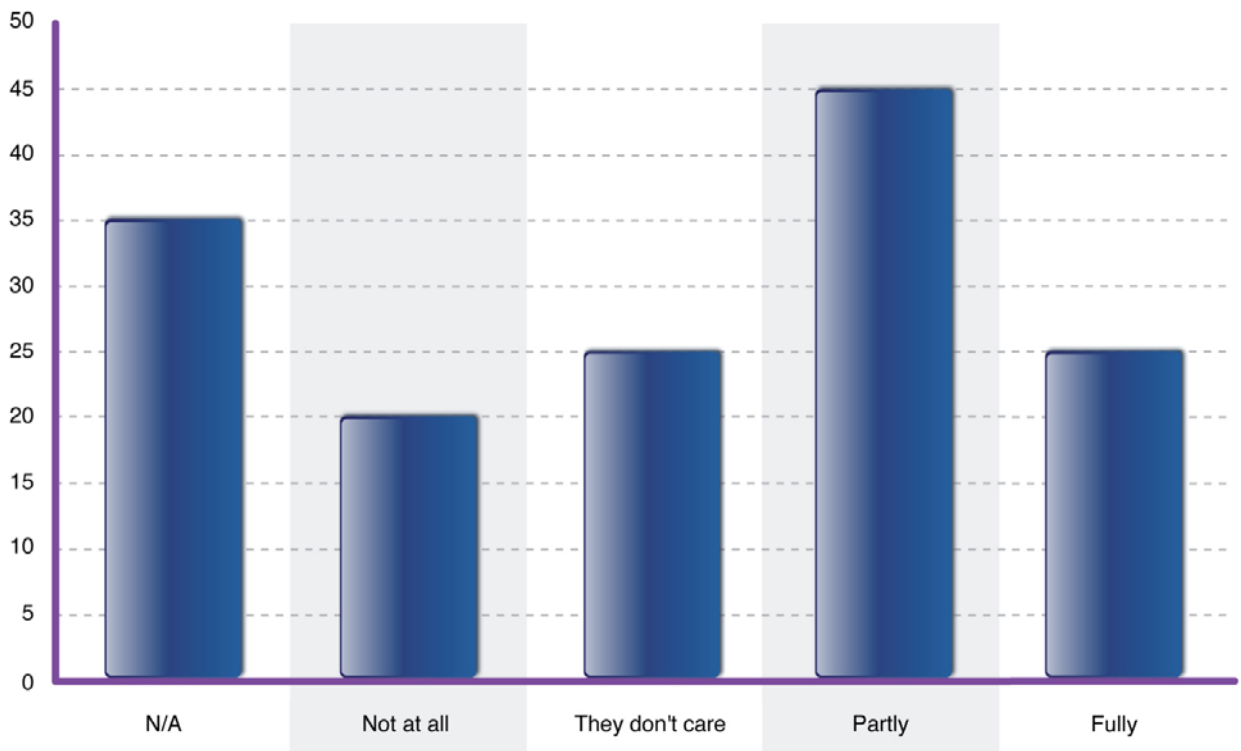
5. What is your target audience? Who would benefit if you were teaching with wikis?



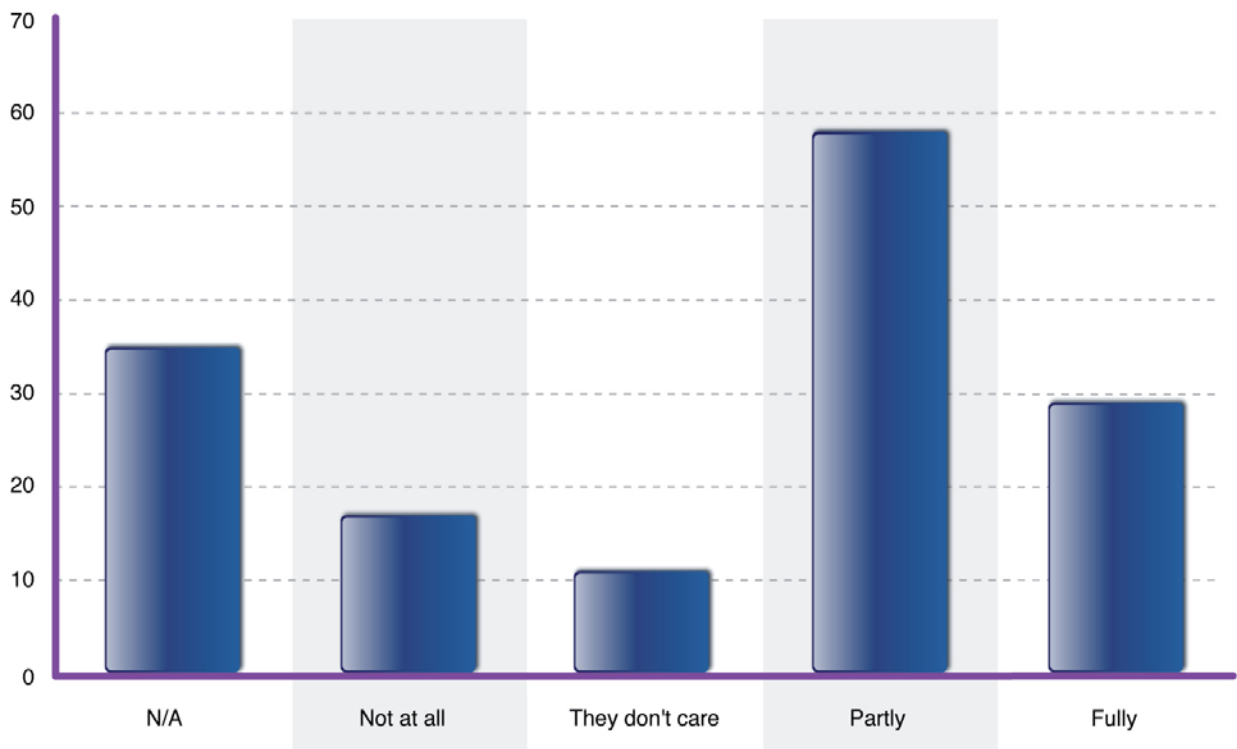
6. In teaching how to use wikis / teaching with wikis, do you have the support of your institution / hierarchy (superiors)?



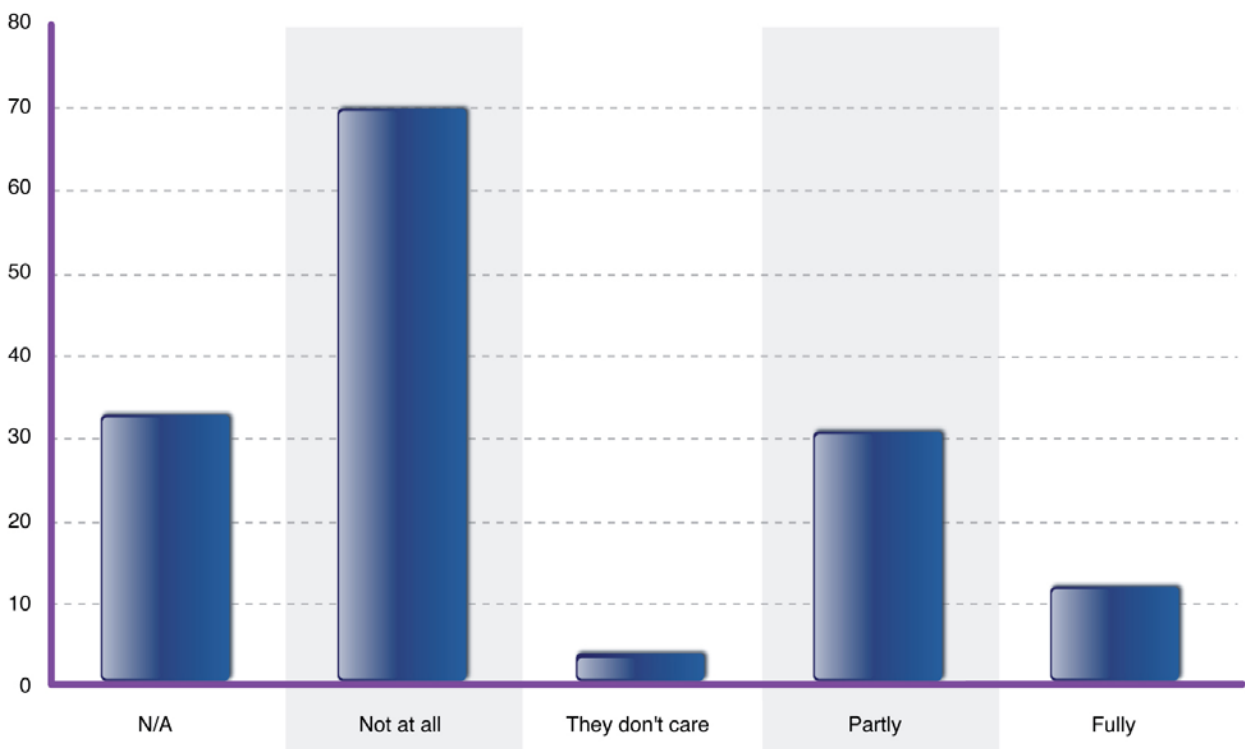
7. In teaching how to use wikis / teaching with wikis, do you have the support of your colleagues (teachers/learners)?



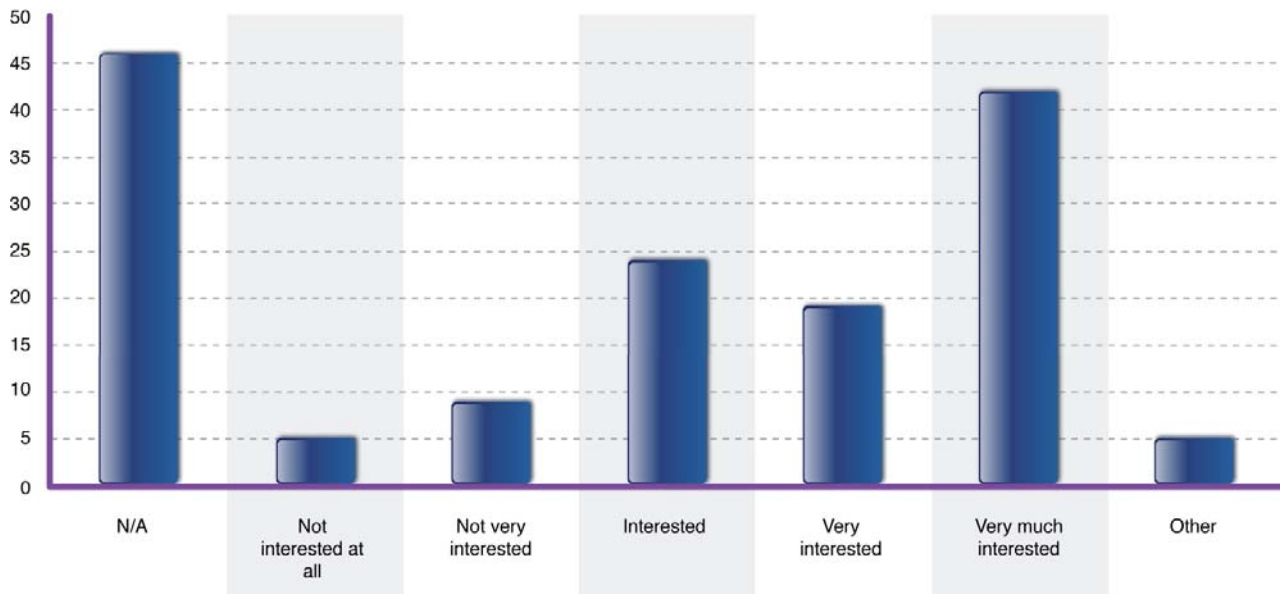
8. In teaching how to use wikis / teaching with wikis, do you have the support of your audience (students, learners)?



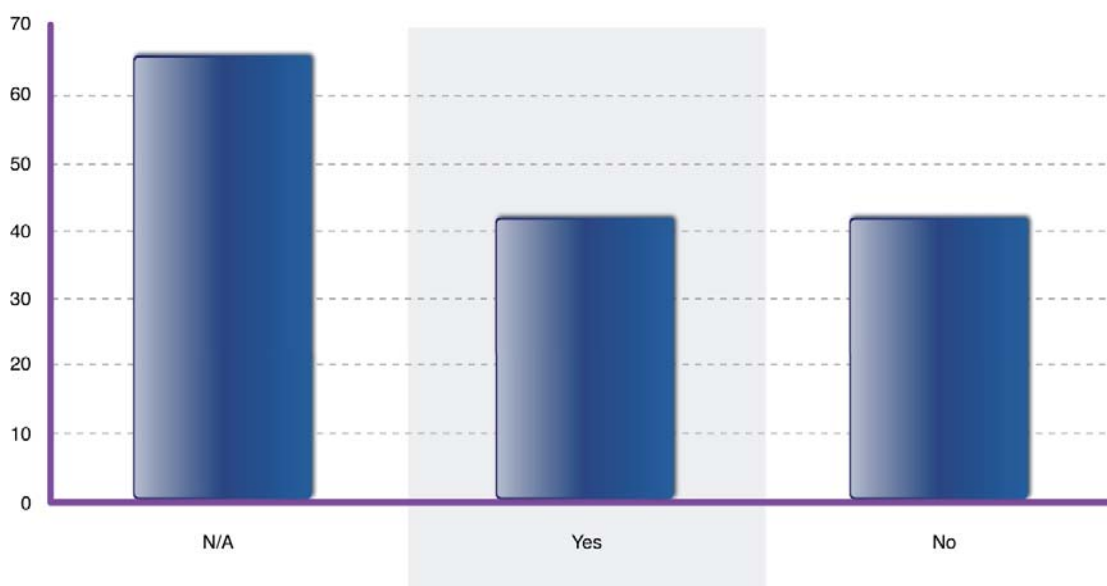
9. Are you involved in a Wiki Community for external support?



10. Would you be interested in participating in the coming pilot courses which will be arranged by Wiki Skills? They will last for 2 to 20 hours any time between November, 2012 and June, 2013?



11. Do you wish to receive WikiSkills newsletter (2x per year)



5.4 Conclusions

The results of this national survey for practitioners are very interesting in a national and a global way. First of all is that new technologies are quite democratised in Europe due to the close answers in different countries as we will see in the last point of this report. We can see that all participants know about wiki tools and almost 70% have some experience or use them, but only about 25% do it currently. On the other hand, near 30% have no such skills at all as we can see in the global graphs of the results. Talking about software, MediaWiki is the most used with more than 30%.

We detect that Almost all participants know about wikis and theirs advantages as a collaborative virtual working tool. We could see differences between northern countries who have a deep knowledge of this tools, but finally we arrive to the same general conclusions of cooperation, community, accessibility, openness and distant working advantages.

On the other hand, there is also a consensus about barriers in all countries. One of them is the difference of ICT skills between users, between practitioners and also between practitioners and users. This barrier comes from the non-formal way of learn and manage ICT nowadays and we will be an important result to be aware of it in the success factors of the project. Another barrier comes from decision makers that have not only resistance to changes but also a lack of knowledge of ICT tools.

Finally, we are glad to know that more than 60% are interested in participating in the coming pilot courses arranged by WikiSkills.

In the next point, we continue analysing the results of the national survey in order to define the success factors of the entire state of the art report.

6. SUCCESS FACTORS USING WIKIS IN EDUCATIONAL CONTEXT

6.1 Introduction

First, the recent literature provided in section 1, enabled to bring out some recommendations for the successful use of wikis as learning environments. Furthermore, the analysis of existing wiki platforms and projects (sections 2 and 3) provided an insight on the special features, advantages and limitations of tools that exist on the market and those which can be useful in educational contexts. The good practices provided by partners enabled to identify important characteristics within successful wiki-based learning scenarios. Finally, the national surveys conducted among the different project countries enabled to clear up the situation of wiki usages in different learning environments, as well as the involved opportunities and barriers.

6.2 Advantages

From the analyses of previous points, especially the results of the national survey, some of the most important advantages of wiki uses have been detected. For WikiSkills this is a key point in order to exploit and take advantage of those characteristics during the whole project life:

- **Collaborative work:** Collaboration in contemporary teaching and learning practice can be highly supported and improved via usage of information and communication technology, even when it comes to solving complex team assignments in university courses. One of the possibly best types of software tools for such purposes is wikis. They promote personal competences related to teamwork. We could finally say that wikis are epistemological tools rather than ontological tools, they help elaborate 'how we know' while documenting 'what we know'. Wikis foster a deeper style of learning that is more collaborative, reflecting and cooperative than traditional 'competitive' assessment.
- **Self direct manner:** Students become active contributors to each other's learning and develop a sense of community ownership of this content. They also require responsibility and autonomy from students during the learning path. Wikis are by nature anti-authoritarian, socially constructed, role shifting spaces that are used to create 'shared knowledge'. In particular, they can be used to build pathways to competency.
- **Flexible learning environment:** wikis enable the adaptation and structure of content. Enhancement of student work, better monitoring of activity in each group thanks to the history tracking.
- **Advantages space-time:** Elimination of space-time barriers. Enhanced the possibility to work with others cultures and nationalities.
- **Learning to learn,** in complex environments and participatory, based on the trace, the source and the small contribution to a large common building. Learn to work for the common good. Collective intelligence.
- **Acquisition of digital fluency:** Contribution to the need of manage new technologies.
- **Open source:** The most important wiki software are under free license, that gives them the possibility to be self-adapted, improved and shared without limits of intellectual propriety or copyrights. We will get deep in these issues at the end of this point of the report.

6.3 Barriers

In the same way as the advantages, it is very important to detect and understand barriers using wikis. That will bring us the possibility to adapt learning scenarios to be ahead of those barriers :

- **Lack of basic ICT skills from teachers and training:** We detect that there are an important group teachers without basic knowledges of wikis (rules of contributions, supervision, coordination and assessment of work, content licences, etc.). Teachers sometimes feel uncomfortable with a tool that students manage better than them, so they are not motivated to learn how to use ICT tools and unusual tools, saying that it represents added work, or showing resistance.
- **Time administration:** the creation, maintenance of the platform, as well as the evaluation process, involve more time than other learning activities. In a teacher words, the time spent in elaborating resources has to be compensated.
- **Lack of technical resources,** (computers, projectors, mobile phones, internet connexion, etc.) in classrooms.
- **Freedom of publication:** the supervision of content is mandatory; furthermore, teachers may be afraid of giving freedom of creating and editing to their students
- **Lack of recognition of the authorship,** as the contributions are only visible in the history.
- **Methodology:** Orientation to contents accumulation than encourage the student to do his/her own research, thinking and create collaboratively with other people, the subject knowledge, etc. It forces to a change in the teacher role, who goes from being the main character in the learning process to become just a motivator, and that is not easy.
- **Divergence of opinions** among distant groups / people.
- **Institutional politics:** IT departments wanting to control things, vendor-lock in terms of proprietary institutional systems. Resistance to change and over-protectiveness of educational resources produced by the institution's staff (institutions want to own the resources produced by staff rather than share).

6.4 Success Factors

Success factors aims at resuming what we have study through this report and describe the most relevant results concerning wiki uses in education and learning.

On this basis, this section analyses the advantages and barriers to the use of wikis in educational settings. As a result, it proposes a list of success factors for using wikis in educational contexts.

These success factors will help in next steps of the project and specifically in the definition of the WikiSkills Psycho-Pedagogical Framework (D2.3).

Pre-requisites

- *Make ICT resources available:* computers and internet access for each participant.
- *Make clear what and who you want to teach:* define your teaching objectives, learning content, and the specific characteristics of the editing community.
- *Make sure that students have sufficient ICT skills:* in order to focus in learning and not in ICT manages. Detect also ICT skills between them.

- *Consider accessibility:* possible uses by students with special educational needs, taking access issues and providing interfaces adapted according to user characteristics: font size, use of keyboard, mouse or adaptive external devices, etc..

Setting up the wiki environments

- *Define essential rules:* Keep them as limited as possible.
- *Define essential structures:* Keep them as limited as possible.
- *Define and import initial content:* To avoid fear of empty spaces or be the one to start.
- *Choice of the adapted wiki platform:* identify which wiki software is best adapted to the propose and the possible team. Decision should be made according to special features of the platform, technical environment required, software license, prior familiarity, training availability, skills level, languages available, etc.
- *Page locking system:* to avoid students editing the same page simultaneously, and help links.
- *Statistics tools:* in order to follow the progress of the site and participants and to extract useful information about project spread.

Gardening the wiki space

- *Flexibility with rules:* Encourage participants to define the rules and keep them flexible.
- *Foster collaborative working processes:* Show the potential of collaborative work not only for a specific project but for life. Collective intelligence.
- *Develop opportunities for collaboration among students from different institutions:* Inter-schools scenarios.
- *Open the wiki to a global audience:* when relevant, most students appreciate that their work could be viewed by thousands.
- *Create a supportive community of practice:* communities among teachers and / or students provide opportunities for continuous collaboration and meaningful learning.
- *Tracking portfolios of edits and updates tied to individual users:* to permit the instructor to see the amount of time spent online and provide qualitative / quantitative data on students' contribution to the wiki.

Teaching / learning aspects

- *Introduction to the wiki tool:* a technical explanation and description of the tool.
- *Introduction to the wiki culture:* an explanation and description of the social implications of working in wiki environments.
- *Find a balance between guidance and autonomy:* teachers should act as moderators rather than supervisors, by encouraging and tracking the participation of students, as well as facilitating communication among them. They should provide students with a clear organizational structure for the wiki, while giving them autonomy with regard to its scope and content.
- *Foster students' collaboration:* both online and offline. Provide collaboration opportunities rather than competition.
- *Keep rules and structure as low as possible:* teachers should let the learners create or at least participate in setting things up, encourage and engage. Foster a sense of ownership from all participants. They should keep the process as transparent as possible (so that participants know what's going on and what needs to be done).

- *Foster a BeBold attitude:* Teachers should allow students to try, fail, try again and finally succeed.
- *Assume good faith from participants:* teachers should promote an atmosphere of trust and assume good faith. Mistakes may be done non voluntarily and are reversible on a wiki
- *Encourage internal and external hyperlinks:* to get use with the culture of heavily linking contents, from inside and outside of the wikisite.
- *Introduce learners to legal issues:* teachers should remind students of copyright laws that forbid copying and pasting content from other external sources; giving credit for others' work ; copyright laws for collective works; legal responsibilities of host provider and editors.
- *Show existing success wiki projects:* to motivate the team and to show the large range of possibilities working with it.
- *Introduce students to wiki collective ownership issues:* make clear to students that they stay authors of their own contributions; that their texts may undergo revisions and are likely to be modified by others even after publication.
- *Foster multimedia formats:* images and video can, in some cases, illustrate a topic better than only text does. It can also make the environment more dynamic, and promote students' digital literacy.
- *Consider using wiki based evaluation methodologies:* use functionalities such as those which permit the instructor to obtain qualitative / quantitative data on students' contribution to the wiki.
- *Foster projects' spread:* through social network and personal digital communication tools as mailing-lists, feeds, communities...

6.5 Conclusions

Today, ICTs make up real modernity issues. Manage those new technologies is a must not only to get into the job market but also in social behaviours to get in contact with friends and family. Those who are not "connected" have the risk to be excluded, so the digital divide reinforces the social divide. That's why ICTs are increasingly integrated in learning. Today, we don't speak about their integration but about how to use and organise them.

As a first conclusion, we could say that nowadays wiki is a well known ICT tool. As we show in the report, there is a high number of wiki tools and wiki projects that state the evolution of this ICT tool. The most significant example is the free, web-based, collaborative, multilingual encyclopedia Wikipedia, the 4th most visited website of the world. An important number of forks of Wikipedia exist in more specific fields (Jurispedia, Scholarpedia, Ekopedia, Wikibooks etc) but we find also wiki projects involved in learning as wiki-educator, an international on-line community project for the collaborative development of learning materials, which educators are free to reuse, adapt and share without restriction.

We should add to this point that inside educational bodies, and mainly because of Wikipedia, the look at this tool as a non scientific validated instrument to build knowledge. We must be aware of this reputation and demonstrate that the final results is not a matter of the tools but a question of manage working processes during the project life. The list of examples of existing wiki projects and

farms, we could show a large utilisation of wikis in other to avoid this “stigmatisation” coming from Wikipedia.

Concerning learning uses, theoretically, wikis have the potential to harness the benefits of Web 2.0 to support collaborative learning. While not specifically designed as a learning environment, a previous review of the literature revealed that wikis have many features enabling collaborative learning to occur. Point 4 of this report, describes existing learning scenarios in different European countries showing that there are real application of use of wikis in learning environments. Point 5 studies the results of a national survey for practitioners that clears up the situation of wiki usages in different learning environments and that shows the advantages and nowadays barriers that we are going to develop afterwards.

However, since wikis are not designed as an educational tool, this report shows that wikis offer a large range of advantages to be exploited in learning environments.

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