USING WIKI TECHNOLOGY IN THE CLASSROOM

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Abstract

How do engineering students develop norms and practices for collaborative work in a Wiki society? Students from first and second semesters participated in two experiments. In the first semester they used the Wiki as project logs and in the second semester the same students used the Wiki as a collaborative learning tool for encyclopaedia articles on learning and technology. There were several potential dilemmas in the students' collaborative work: Inspiration versus imitation of others' ideas and solutions; academic achievements versus friendships; varying work ethics and academic levels; and editing or adding text. From these dilemmas and potential conflicts emerged social norms, such as norms for structuring, editing and collaborating on Wiki pages. The emerging social norms were answers to the potential dilemmas and conflicts.

Keywords

Learning and teaching; Web 2.0; Computer Supported Collaborative Learning; Wiki; Ethics in CSCL; Digital literacy; Social Norms

Introduction

Digital literacy is basically the ability to interact by means of digital technology and Social Media evaluating, using and creating information (Prensky, 2001, pp. 1-6; Gee, 2005 p. 3; Dohn, 2010, p. 7). How do we evolve the engineering students' digital literacy competences in the classroom; how do they become active digital citizens capable of critical thinking; and how do they develop norms and practices while exploring Social Media? Specifically, we used Wiki as an educational tool for development of the students' competences in digital literacy. Digital literacy cannot be learned through theoretical readings alone, it must be developed by actual participation. Wiki becomes a digital community and the students learn through active participation in this particular community (Wenger, 1998, p. 164; Thomas, 2011, p. 42). We studied the development of norms and practices that qualified successful collaboration in a Wiki society.

We did two explorative experiments amongst first and second semester engineering students. In the first semester the students used the Wiki as a log for a programming project. In the second semester the same students used the Wiki as a Wikipedia for portfolio assignments. The first experiment had focus on the visualization of design processes, and the second experiment had focus on co-creation and collaborative learning.

The research methodology was based on Design-based Research and Action Research (Barab & Squire, 2004 p. 3; van den Akker, 2006, p. 3; Lewin, 1946, p. 38). Design-based Research is a branch of educational research that uses the iterative design of educational interventions to exemplify and develop theories of learning. Action Research focus on changes target group behaviour and allows emerging goals. Experiments and critical reflections are the core of the research method, allowing learning from and through practice. The students participated in all iterations and the interventions took place in the classroom.

In this paper we introduce the theory of social media, user generated contend, social presence and wiki's in an educational context. Secondly, we introduce the concept of digital literacy and development of norms. Then, the two experiments are presented, and the students' reflections on the experiments are summarised. Finally, the two experiments are discussed based on the students' reflections, the Wiki pages and the theory.

Social Media, User Generated Content and Social Presence

Web 1.0 sites are characterised by one-way communication from the site owner to the users such as personal homepages or corporate websites. They are complemented and replaced by blogs, wikis, and collaborative projects in Web 2.0 (Kaplan, 2009, p. 60). The web 1.0 site Encyclopaedia Britannica is written by a limited group of appointed experts. The user-based online encyclopaedia Wikipedia however is a web 2.0 site where contributions are written and rewritten by users 'bottom up' and all internet users have rights to edit the content (Dohn, 2010, p. 3):

> *Wikipedia is a collaboratively edited, multilingual, free Internet encyclopaedia supported by the non-profit Wikimedia Foundation. Wikipedia's 30 million articles in 286 languages, including over 4.2 million in the English Wikipedia, are written collaboratively by volunteers around the world. Almost all of its articles can be edited by anyone having access to the site and not being blocked. .. as of June 2013, and having an estimated 365 million readers worldwide (Wikipedia 2013)*

When Wikipedia was launched the creators hoped to create a place where volunteers would contribute. They did not imagine the overwhelming response to and they did not anticipate reaching the current high quality of articles (Bryant et al, 2005, p. 9). Wikipedia can be edited by 'almost all internet users' which make the content far from reliable. But people know that it is not reliable – however, it is still unique because it is so collaborative and socially democratic.

Web 2.0 describes the various forms of media content that are publicly available and created by end-users. Web 2.0 often have the following characteristics (Dohn, 2010, p. 3):

- ➢ Many-to-many communication
- ➢ 'bottom up' user generated content
- ➢ Collaboration and/or distributed authorship
- ➢ Ongoing adding and editing of material
- ➢ Information 'pull' rather than information 'push', referring to the users actively selecting content rather than passively receiving it

Social Media is a group of internet-based applications that build on the ideological and technological foundations of Web 2.0 and they support the creation and exchange of User Generated Content. Examples of Social Media are Facebook, MySpace, YouTube and Second Life.

''Social presence'' – can be described as the acoustic, visual, and physical contact that can be achieved virtually ((Kaplan, 2009, p. 62). The social presence emerges between communication partners and it affects the communication process. Rich media, rich stories and rich pictures evolve between the communication partners. The degree of social presence might also affect the development of social norms.

Social Media such as Facebook and YouTube have a high level of social presence and media richness. Social Media such as Wiki pages has a low self-presentation and low self-disclosure and have a lower social presence than e.g. Facebook and YouTube. This study only focuses on media operating at a low level of social presence.

Wiki's in an educational context

Frankelin defines Wiki as a simple online database that allows one or more people to build up a corpus of knowledge in a set of interlinked web pages, in an ongoing process of creating and editing the pages (Frankelin, 2007, p. 5). Wikipedia is based on this platform.

In an educational context, the use of Wiki falls into several broad categories, e.g. labbook, collaborative writing, knowledge base and development of competences that are essential for participation in future work and social life (Dohn, 2010, p. 5; Frankelin, 2007, p. 5; Tonkin, 2005, p. 1).

The characteristics of Wikis for teaching may particularly suit participatory, constructivist and collaborative learning models (Cole, 2009, pp. 141–146). Participatory media gives access to a new form of learning culture. Thomas (2011) describes it as:

> *"Information technology has become a participatory medium, giving rise to an environment that is constantly being changed and reshaped by the participants themselves, "(Thomas, 2011, p. 42).*

The Internet-connected computers have become part of a new learning culture based on participation and empowerment. As in any other communities, social norms are formed and structured as answers to potential and actual conflicts among the participants. In this way the community is developing and its boundaries coping with social and ethical issues barely predictable in the beginning.

In an educational context it is essential to prepare students for active participation in this new learning culture. They should be aware of the unwritten norms of the different Social Media. In addition, they should be able to profit from the positive potentials of these media.

Dohn describes the learning potentials for the use of Wikis and blogs in the classroom as development of abilities that are essential for participation in future work and social life. Understanding and utilisation of digital media are elements in becoming

digitally literate. The development of digital literacy can be supported by introducing web 2.0 activities in the classroom. The activities should be centred on retrieving, transforming and producing material both individually and in collaboration through e.g. logging projects and developing encyclopaedia entries. These activities will enhance the ability to navigate, create and manipulate the different types of web resources, as well as to assess the merit and usefulness of the found material. The activities will increase the communicative genres that the students can express themselves through and become more communicatively competent (Dohn, 2010, p. 7).

In this article we explore Wiki in an educational context and we explore how norms emerge while the students perform educational activities on the wiki.

Development of norms

In 2001, Franklin observed that his students had changed over the years; they had become digital natives and digital literates (Prensky, 2001, p. 1). Digital literacy is basically the ability to interact by means of digital technology and social media through evaluating, using and creating information. Furthermore, it is the ability to understand and use information in multiple formats from a wide range of digital sources. It is a person's ability to perform tasks effectively in a digital environment and it includes the ability to read and interpret media, to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments (Jones-Kavalier, 2006, p. 8). Additionally, digital literacy is human-to-human interaction mediated by technology.

Bryant et al. describes how the Wiki novices' participation on Wikipedia evolves and adapt over time (Bryant, 2010, pp. 1-10). In Bryant's study the novices contribute by reading articles out of interest, noting mistakes or omissions, and correcting them. They see themselves as consumers. For the experts, the Wikipedia as a whole becomes more important. They continue to improve individual articles, but they also start to feel responsible for further development of the Wiki community. Many experts perceive their work on Wikipedia as contributing to a greater good, offering knowledge to the world (Bryant, 2005, p. 4). Bryant et al. are inspired by Wenger's theory that describes novices as legitimate peripheral participators who are striving to become experts by participation in a meaningful community (Lave & Wenger, 1991. pp. 27-44).

Becoming an expert contributor also involves understanding the norms and rules of Social Media. This understanding might very well be tacit and unspoken. For example, norms for editing a Wiki page means to understand when to add and rewrite text without getting into trouble in the virtual Wiki-community.

In the process of developing norms the editors would have to reflect and make judgements (Schön, 2009, p. 51). The judgements are based on the community of practice (Wenger, 1998, p. 164). Communities are created and maintained by the participants who constantly are making judgements. Digital literacy is also about making the appropriate judgement in order to do a task most efficiently. In order to become a digital literate the students had to be able to make clever judgements on the Social Media. Below is a model of how norms emerge, see Figure 1:
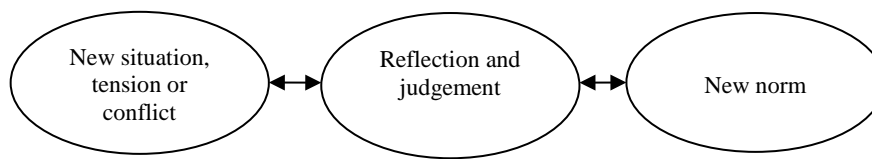
Community of practice
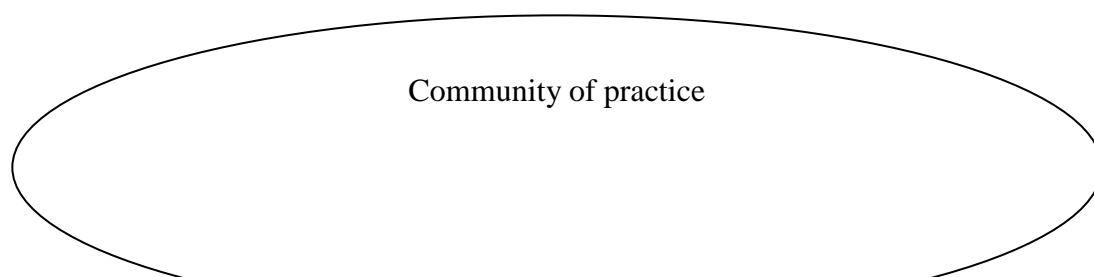
Figure 1: Emerging norms

The reflection as a part of the judgements has different aspects. It can be practical reflection as described by Schön or it can be more existential reflection a described by Gee (Schön, 2009, p. 51; Gee, 2003, p. 73).
Gee describes reflection and understanding like this:

> *"People learn skills, strategies, and ideas best when they see how they fit into an overall larger system to which they give meaning. In fact, any experience is enhanced when we understand how it fits into a larger meaningful whole" (Gee, 2005, p. 23)*

Basically we want things to make sense and to fit into a larger system. In order to perform judgements the students should be able to understand why they are participating, the educational goals and the task at hand. Schöns type of reflection is more focused on the target domain and the task at hand.

The students' reflections can be divided into two categories:
1) *Reflection on the target domain.* Reflection-in-action, where multiple knowledge, experience and intuition merge during actions. Reflection-in-action occurs in the context creating a Wiki page, when a student solves add or edit text. This type of reflection is a here-and-now reflection, of how to solve the here-and-now problems. For example, the students use their judgement while they are developing the Wiki pages. Reflection-on-action, is the subsequent reflection and evaluation on the process that has happened, and its potential consequences. It is precisely this type of reflection you want in the classroom as the evaluation of assignments and projects. For example, when the students analyse and present their Wiki pages, we want them to reflect upon what has happened in the design process, and how their experiences could be used in future designs. This type of reflection provides an overview of the design process. Furthermore, it offers an understanding of the design process and a holistic perspective. This type of reflection can be expressed in words and can be described as conceptual knowledge. It is also a way of making the norms on the emerging Wiki pages more explicit.
2) *Understanding and meaning.* The students use their common sense to fit their actions into an overall system to which they give meaning. While reflecting on the practical situation we are always implicitly making sense of it using a wide network of concepts, norms, and assumptions. However, sometimes we need to reflect more explicitly on the concepts, norms and assumptions. It happens when something 'does not fit', e.g. when the communication breaks down because the students raise conflicting demands on how to define the situation and their own positions.

The results of the reflections constitute the emerging norms and the students emerging academic understanding. Furthermore, the development of Wiki pages can be seen as users communicating using the Wiki as a digital lever.

Research method and classroom settings

Our research method was inspired by design-based research and action research – see the overview of the research process in Figure 2:
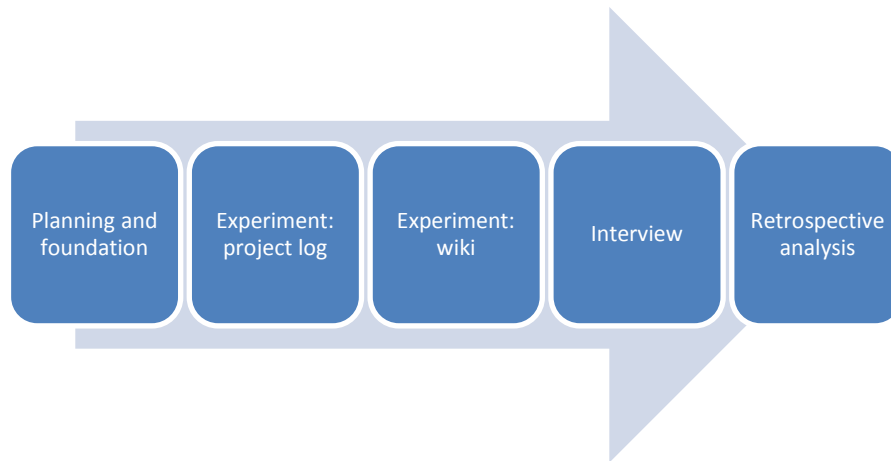

Figure 2: Overview of research process

Planning and theoretical foundation: In these phase we studied research on use of Wiki in an educational context as well as theory on norms and reflection. The results of this are described above.
We decided to conduct two experiments. In the first experiment, we did not promote collaboration on each other's texts. In the second experiment this was the core.

The target group was approximately 25 first-semester and second-semester Learning and experience technology students. The first experiment was conducted during the first semester and the second experiment was accomplished during the second semester. Each experiment executed in cycles of planning, action and evaluation. During the experimental phase the target group had normal classes once a week, where the assignments were introduced and discussed.

Experiment - project log: Over a period of 12 weeks the students developed software prototypes of 2D games and documented the games and the development process on a local Wiki (Robolabwiki, 2013). Learning goals regarding Wikis was that the students should be able to intuitively understand the nature of a Wiki and use the platform.
In fact, they should be able to present their games and development process on a Wiki page. The students had three deadlines for updating their project Wikis - one in each iterative cycle of the development process.

Experiment – Wikipedia: Over a period of three weeks in the following semester the students used the Wiki platform as a Wikipedia. The experiment was part of a course

in digitally supported learning and teaching. Learning goals regarding the Wiki was that the students should explore collaborative learning on Wiki and they should become aware of its pros and cons.

In the first week of the experiment the students initiated articles in the field of learning. In the second week they added scientific material to two other student generated Wiki-articles, and finally in the third week they conducted an e-mail interview.

Interview: The questions were open-ended referring to both experiments. The questions revolved around pros and cons of using Wiki as a log; pro and cons on collaboration on articles; potential conflicts and ethical issues. The questions were answered individually – and a summary of the result were presented in the class. Examples of the questions are given below:

- About the project log: You were able to monitor each other's project logs – did that have any benefits or problems?
- About the Wikipedia assignment: What are the advantages by building on others content? - What are the drawbacks of building on other's content?
- Ethical questions: - What can cause collaborative problems in the development of Wiki-pages? - What can cause conflicts and can you give examples? - What values are at stake in these conflicts? - What characterises a good working relationship? - Can you give examples of good working relationship related to the Wiki? - Can you give examples of competition?

Retrospective analysis: The interviews were analysed and during this interesting themes appeared. The processed interview results were presented for the students. The rest of the article is organised chronological according to the research process. In the following themes are text written in italics.

First experiment: Wiki as a game-programming project log

The students uploaded three versions of their games. It was obligatory to introduce the game idea, add a screen dump from the game and requirements for version two. The third version should include scripting language or a test of another student's game.

Figure 3 shows a fragment of one of the project-log pages. The Contents-box in the top shows how most of the log pages were structured.

Figure 3. Fragment of a Project Log in Danish

Summarised below are some of the students' reflections on using the Wiki as a game-programming-log. The reflections are based on the e-mail interview:

➢ *Inspiration and overview.* Most of the students found it motivating to see the other students' log pages. They got an overview of the variations in the games, ideas, programming level, status, and documentation level. One of the students wrote, "It was nice to see other people's ideas and become inspired. I think the way Wiki pages can be set up makes it easier to get a log to look neat."

➢ *Problem solving.* The students looked at each other's coding and this sometimes helped them to solve their own programming problems.

➢ *An open window as motivation.* The Wiki was open to the world and to the other students. Most students found it motivating. One of the students wrote: "I think it was great to show my own game to others. It was, as if I had my work validated when we presented it on the Wiki-page. It also helped us (at least me) to keep track of when things happened, and which potential errors should be corrected."

➢ *Show your ideas and way of thinking to others.* The students had the possibility to put aside their modesty and systematically show others their ideas and thoughts. For some of the students it was a bit hard to present unfinished versions of their games and they had to overcome their modesty and sense of inadequacy. Some of the students would have preferred a less open environment.

➢ *Sharing the game design process.* Both the students and the teacher were able to follow the development process during the three iterative cycles. And since it was first-semester students it was the first time most of them experienced iterative development.

➢ *The missing template.* It was a bit difficult for the students to decide how to structure their log pages. One of the students suggested a start-up-template.

➢ *Copy-paste.* The students could copy each other's code and game ideas; this was of course a disadvantage. From an educational point of view this was not a big

concern since the students were examined orally. They had to be able to explain and expand on all relevant technical and theoretical concepts in the exam room.

Second experiment: Wiki as a learning course encyclopaedia

The students' Wiki encyclopaedia was basically structured the same way as Wikipedia, see Figure 4.

Figure 4. Fragment of Wiki-encyclopaedia article on behaviourism in Danish

Below are some of the students' reflections on developing encyclopaedia articles:

➢ *Investigating the theory*. The students expressed themselves theoretically. They had to investigate other students' topics to expand upon each other's contents and reference to each other's contents. One of the students expressed that it was a great way examine what other students wrote and then add to it.

➢ *More diverse perspectives enriched the articles*. The students got more perspectives on the same theme. Oral and written dialog evolved the Wiki page and enriched the students' perspectives on the topics. Adding and editing is also a kind of constructive feedback. One student expressed it like this: "... we all learn from each other, we work on each other's Wikis, share our projects, progress, mistakes and knowledge."

➢ *Emerging Wiki structure*. The students reused or copied other's page structure; this made it easier to get an overview of the articles. One of the students commented on this: "... several page settings are reused, and in this way we jointly created a way to use the Wiki." Figure 2 exemplifies this structure, which was very similar to the structure in Wikipedia.

➢ *Interconnecting pages tied things together*. Linking the articles connected the different aspects of digitally supported learning. One of the students compared it to putting a puzzle together.

➢ *Student and teacher at the same time*. A student expressed his learning process like this: "We learn from each other and are even help to teach each other. We are student and teacher at the same time."

➢ *Collaboration at a distance*. The students emphasised the possibility of working together without being together.

➢ *Incorrect information, disorder, and not being personally acknowledged* could be demotivating. The validity of the pages could always be questioned. The students might have misunderstood part of the theory or used invalid or poor references.

Additionally, the overall structure and interconnection of Wiki pages evolved gradually during the semester, in a chaotic way. It was also complex to see who did what in the Wiki history. This was a bit demotivating for some of the students.

The students also encountered and imagined several dilemmas as part of their collaborative learning process:

➢ *Rewriting and editing each other's contents.* The students generally did not like to rewrite other students' texts. On the other hand they had no problems adding text, linking to other pages and other types of media.

➢ *Relevance and structure.* The students had different opinions on what was relevant and how to structure articles.

➢ *Different academic levels.* A large difference in academic levels could possibly make collaboration on Wiki pages difficult and this could result in situations where one or more students did not contribute to the collaboration.

➢ *Different ambitions and work ethics.* The students might have different ambitions and work ethics. One of the students mentioned that he preferred to make top quality assignments and if his team partner had a different view this could create tensions. He also stressed the importance of balancing ambitions ahead. Most students emphasised balance in work ethics as a crucial factor in group work.

➢ *Friendships versus academic achievements.* It was sometimes a difficult process for the students to express academic arguments if it potentially affected the friendships. Most students emphasised that being able to discuss and give feedback without incurring hard feelings was important for successful collaborative work. They used words as patience, confidence, empathy, responsibility, new perspectives and creative discussions when they described successful collaboration.

➢ *Ownership.* Who owned the articles, the initiating party or the editing party? For some of the students this was difficult.

Findings and Discussion

Evaluation and discussion of the first experiment
The first experiment had its focus on logging the students' development projects. In the beginning the students found it somewhat complicated to use the special Wiki codes and they had to upload the software prototypes on external hosting services such as Dropbox. We spent time during the classes for short Wiki instructions. From the technically point of view it was more complex to use Wiki than handing in deliverables by e-mails, blogs or using the course management system.

Inspiration versus imitation. The Wiki pages became windows for the students. They were inspired by each other's design ideas, thoughts and programming solutions. Their teacher encouraged them to observe how other students solved specific programming issues and use this as inspiration in their own programs. It was of course a dilemma if the students copied each other's hard work without a reasonable level of understanding. One of the students used the expression "no cuts, no buts, no coconuts" to describe this possible conflict between inspiration and copying. If a student as part of his learning process reused codes from a tutorial, it was acceptable, but if he reused codes from a fellow student, it was more problematic.
From a learning point of view the Wiki pages and the classroom formed a transparent community of practice. The practice was about learning fundamental game design and

game-programming skills. The students presented their coding and game ideas both in the classroom and on the Wiki pages. In the classroom they discussed how to solve various design and programming problems, and they explained how their programs worked. For new programmers it is important to observe how other programmers work as part of their own learning process. Wenger names this as legitimate peripheral participation, and it is the initial stage of a programmer's active membership in a community of practice, to which he has access and the opportunity to become a full participant (Lave & Wenger, 1991, pp. 27-44). The virtual aspect of the community makes it transparent and the individual student can observe the process and progress in the programming community. Wenger describes the newcomer's observer position as a legitimate and valid way of entering a community. Observation including inspiration and imitation is a part of the initial peripheral participation and way of learning.

Publishing artistic work and overcoming modesty. The students developed homemade computer games. A lot of the game graphics was developed by the students themselves despite the educational focus on the programming and game design methodology. Several students wanted their games to be on a certain level in order to publish it on the Wiki. So perhaps digital publishing can be used as a driver for the ambitious and creative students.

Co-creating or working in parallel? In a specific Wiki page the entire class participated in the development of an overview of all the games. The page was structured as a table and each game had an entry. In the entry the students put working title, student names, abstract, game type, source of inspiration, and a link to the project logs. This structure made the students express themselves in parallel, but on the other hand they were very much aware of what was going on in the other game pages.
The lack of focus in the educational didactics on co-creation in the first experiment became an important theme in the second experiment.

Evaluation and discussion of the second experiment
The co-creation and co-construction worked very well from a didactical perspective. The students had to express themselves and they had to give each other constructive feedback. The inter-connective structure of the Wiki also made most of the topics connect in new and constructive ways. This inter-connection especially evolved in the second week of the experiment where the students added to and edited each other's articles. The students included a lot of internal and external links in this phase. This type of learning fitted well to the collaborative learning idea as a coordinated synchronous activity that is the result of a continued attempt to construct and maintain a shared understanding of a concept (Stahl, 2006, pp. 409-426).
Most of the students' reflections supported the idea of collaborative work on Wiki pages enriching the learning process e.g. examining the theory, diverse perspectives, inter-connecting pages, co-construction of knowledge and collaboration at a distance.

The social and ethical norms emerged in the co-creation and interaction on the Wiki
The students developed social and ethical norms for interaction and co-creation on the Wiki.

A certain structure for setting up articles and connecting them emerged during the second semester, for example content overview and definitions of concepts at the top of the articles, and references at the end. In the first semester a norm for visualisation of the design process evolved, see Figure 3.

In the first semester it became socially and ethically accepted to get inspiration from other's evolving designs. The students discussed and explained their solutions but it was socially (and academically) unacceptable to make blind copies.

There were also a lot of potential conflicts in the dilemmas: Inspiration versus plagiarism; academic achievements versus friendships; varying work ethics; varying academic levels; editing or adding to text. These dilemmas were potential conflict areas and they might have forced the students to work out solutions that involved compromises or strategies for coping. This was also a factor in the emerging social and ethical norms.

When the students used Wiki for developing encyclopaedia pages for portfolio assignments they were forced to add or edit other students' Wiki pages. This had the potential of causing minor frictions or conflicts. In order to solve these potential conflicts the students developed norms. It was for example acceptable to add text or hyperlinks to other student's pages but they had to discuss bigger changes in person. They developed this norm as a solution to a potential conflict.

In the process of developing this norm they had to reflect and make judgements. Their judgements were based on their community of practice (Wenger, 1998, p. 164; Schön, 2009, p. 51). Their immediate community was their fellow students and their professor. Communities are created and maintained by making judgements.

Figure 5 shows an example of how norms emerge when students add and edit text.
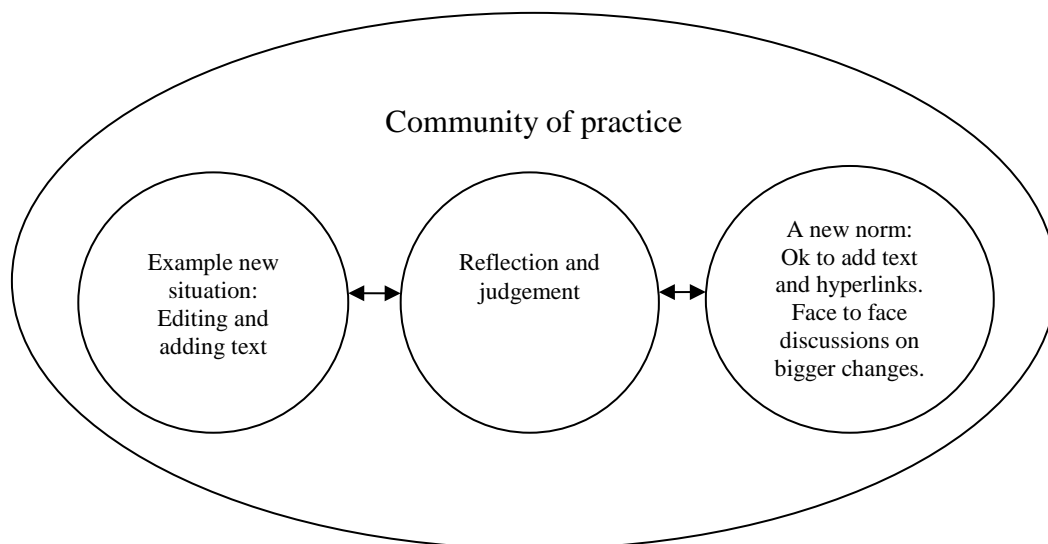
Figure 5: Example of development of a new norm

The reflection as part of the judgements had two different aspects. It can be practical reflection focused on the domain at hand (Schön, 2009, p. 51) or as an existential reflection (Gee, 2005, p. 23). First, the student in the example had to further develop an existing Wiki page. Specific academic text had to be written in order to put new

perspectives on the topic at hand. The text was about behaviourism and written by two students from the class. A third student was assigned to further develop the page and he added a link to a specific simulation on how to coach a virtual rat. The students reflections could be categorised as a reflection-in-action. Laterwe discussed and evaluated the Wiki pages and this type of reflection can be categorised as reflection-on-action (Schön, 2009, p. 51). This reflection was basically reflection on the target domain of academic portfolio assignment. Basically, the reflections helped the students to decide how to act and make the appropriate judgements which resulted the emerging of norms. In the questionnaire the students stressed that they would exceed a social boundary if they changed the text without talking to the initiating author.

Web 2.0 and Social Presence
In web 2.0 applications such as Wikis the users have to build the structure of the page. This was an obstacle for the students and in first semester they suggested a template. During the first and second semester norms for structuring Wiki pages emerged. In the first semester the project iteration cycles defined the structure and in the second semester the students imitated the traditional Wikipedia structure. It was important from a pedagogical perspective to make the students explore and understand building web pages "bottom up". Creating web pages from scratch is a web 2.0 characteristic and mastering this skill is a part of becoming a digital citizens.

The social presence on the Wiki can be described as low. In the menu "view history" you can find out who wrote what and when. In addition, you can read previous versions of the pages. On the specific Wiki page you can put your signature (pressing AltGr ~~) and some of the students did that when editing other's pages. One of the students also made a more personal page describing former education, contact information, links to assignments and date of birth. However, most students did not share any personal information. The Wiki does not appeal to social presence and self-disclosure like e.g. Facebook.

Summary and Conclusion

The first step towards mastering digital literacy is taken. We have now used Wiki as a learning tool for the first-semester and second-semester students.

In the first semester we mostly used it as a lab book, for feedback, and as a window for the students. In the first-semester course we did not discuss philosophical ideas of participatory media, digital literacy, and digital citizenship. The students used the media without any planned reflections about the media in the classroom. The Wiki log constituted a transparent community of practice in the field of programming and game design. The students developed norms for sharing and using knowledge, e.g. it was acknowledged to get inspiration but socially unacceptable to plagiarise.
In the second semester we used the Wiki as a collaborative learning platform. We got a stronger focus on co-creation and received more benefits from this digital participatory community of practice. The students developed norms for collaborative co-construction of knowledge. We reflected on some of the emergent norms and the student became aware of barriers and potentials of web 2.0. The students can use this awareness in their future work.

Furthermore, this article introduces a model for development of norms in a web 2.0 community. A new situation on the digital media courses the students to make the right judgements in order to successfully implement digital tasks. The judgement constitutes the creation of a new norm or standard for collaboration on the digital media.

All in all, Wiki as an educational tool can promote complex and co-creative working methods that require social and ethical judgments based on standards. These standards emerge through the interactive construction of the Wiki site. The students did not develop these competences through abstract reflection alone, but through actual participation and use of basic Wiki techniques.

In the next term we will use Wiki again for the second semester students for Wikipedia exercises. Furthermore, it would be fruitful to discuss the ethical aspects on digital literacy, development of new norms and the importance of mastering the unwritten norms of Social Media. For the first semester students we will use blogs based on a specific WordPress template. Students were unable to learn JAVA, GameMaker and html codes within 15 weeks. The blog will hopefully provide an easier tool and better suited tool for project logging.

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