

# **Working Title:** The Medium is the Message

The effects of new Web 2.0 technologies on  
Knowledge Management and Learning

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# Chapter 1

## Introduction

This document contains my thesis proposal for my Masters Thesis, the final assignment of my Master Informatiekunde at the University of Amsterdam. In this document I will outline my research proposal, using the structure defined during the course 'Research Methods, Consultancy and Reflection' (RMCR).

This document unfolds as follows: chapter 2 (p.3) introduces the main themes (namely collaborative learning in Communities of Practice (CoP's), Knowledge Management and Web 2.0) of my thesis and describes the proposed relations between these constructs. chapter 3 (p.9) contains my research objective, research questions and clarifies the relevance of my thesis. chapter 4 (p.13) describes the research strategy, which outlines my approach, needed material and a detailed planning.



## Chapter 2

# Review of the main themes

Five years after the big Internet bubble burst, a new Internet hype is emerging. New Internet start-ups which invent new and innovative services appear every day. These start-ups all have something in common: They focus on their community, rather than on the information or service they provide. This tendency is part of a broader trend called 'Web 2.0'. Web 2.0 is the reification of a rather new concept that could change the way we use the Internet. Marshall McLuhan's statement, first coined in 1964, "*The medium is the message*" fully applies to the Internet and Web 2.0. McLuhan (1964) stated that each new technology or medium introduces a new scale in our affairs which has social and personal consequences. He stated that it's not the medium, but it's what we do with it that defines the meaning or message. For instance, the machine altered our relation to one other and ourselves. This means it doesn't matter if the machine in fact produces cornflakes or Cadillacs (McLuhan, 1964). For years we've been using the Internet, despite some developments like online forums and newsgroups, as a replacement for static brochures where people merely consume information or buy products. But today we notice an alteration in the way we use the Internet, which leads to an alteration of the meaning or message that is sent over the Internet. Today, Internet is becoming a platform where people not only consume information, but also produce information, participate actively in communities and express their ideas. These new possibilities change our relation with the medium, thus influences the potential message that is sent over the Internet, which makes it interesting to study this phenomenon from an academic perspective.

In this thesis I will study the implications of this change in using the Internet on Knowledge Management and learning, more specifically by analyzing the effects on the Social Theory of Learning of Wenger (1998). Before I continue with my problem statement (chapter 3, p.9), I will outline the theoretical background on Web 2.0 and underlying terms (§2.1, p.3) and the social theory of learning and CoP's. (§2.2, p.5). I will also discuss the relation between both constructs.

### 2.1 Web 2.0

Call it a hype or not, a marketing slogan (Shaw, 2005) or not, the fact is that the way we use the Internet is rapidly changing. Although Web 2.0 lacks a clear definition which leads to some disagreement on what it really is (O'Reilly, 2005), some consensus exists of what constitutes a Web 2.0 service. We see, for instance, shifts from publisher-generated content, where one or a few publishers decide what information is published on a Website, to user-generated content, where the majority of the visitors decide on the information that is

published on a Website. We see shifts from offline, individual storing of bookmarks to online collaborative storing of bookmarks. We see shifts from category based information storage and retrieval by experts to tag (label) based information storage and retrieval by the community. We see shifts from information consumption to information consumption, creation and active participation of users. What follows are some characteristics and tools that best explain Web 2.0.

Web 2.0 is often called social. The World Wide Web evolves in a social marketplace where people can read, contribute, share and participate. This is, in essence, what Web 2.0 is all about. An example of this social aspect is the use of social bookmarking. Normally, people save bookmarks (stored references to webpages) offline, in their browsers. Services like Del.icio.us<sup>1</sup> and Blinklist<sup>2</sup> enable you to store bookmarks online. Bookmarks can be labelled so that they can be retrieved easily. The social aspect of this bookmarking is that bookmarks are stored online, are accessible everywhere and are viewable by anyone (Golder and Huberman, 2006). Users can't only see their own bookmarks, but they can also see those of other users, so they can use tools like Del.icio.us to discover new interesting sources. Social software is not new; e-mail has been around since 1971; long before the Internet emerged. Today's difference is its user contribution. Users decide on what content is to be published; they share their opinions online and aggregate this content with other applications and users.

Another important aspect is the way information is classified. With Web 2.0 users can use a technique called '*tagging*' to classify information. Tagging means assigning personally chosen keywords to pieces of information. In essence, assigning keywords to information is not new. Librarians have been using it to index and categorize their collections for over decades. It's innovation lies in the fact that tagging is transformed from an individual to a collaborative activity. A service which has implemented this concept is the online music community Last.FM<sup>3</sup>. This website lets their users decide on how to classify their favourite artists, albums and songs. This way meta-data is created that represents the opinion of an entire community. Tagging is sometimes referred to as 'folksonomy' in contrast to taxonomy. The difference between taxonomies and folksonomies is that the former is hierarchical and exclusive while the latter is non-hierarchical and inclusive (Golder and Huberman, 2006).

Weblogs are online diaries where people can share their thoughts, publish articles, discuss topics or make comments on news. In recent years, because of the ease of starting a Weblog, Weblogs have become more and more popular. Technorati<sup>4</sup>, a search engine for Weblogs, searches over 25 million 'Blogs'. The possibility to add comments to posts usually results in lively discussions within it's communities.

Another popular example that partly resembles to Weblogs is a Wiki. Wiki's are online places where people can easily add and edit content, and are therefore often used for collaborative writing. Writers constantly add and refine the content of a Wiki to improve the overall quality. The most famous Wiki is Wikipedia, which is an online encyclopaedia, written completely by volunteers<sup>5</sup>.

Another important aspect of Web 2.0 is it's openness of the services. Firstly, web 2.0 stands for openly sharing information. Examples are the openness of photo albums on Flickr, the accessibility of bookmarks on Del.icio.us or the ability to create, store and share online text documents like Microsoft Word on Writely. Secondly, Web 2.0 services often offer Application Programming Interfaces (API) which enable programmers to use and extend the services that offer these API's. Thirdly, many services and Weblogs in the Web 2.0 era are released under the 'creative commons' license<sup>6</sup>.

We can distinguish an important dichotomy in Web 2.0. On the one hand, a lot of services, or part of services offered are mainly useful for the individual, while on the other hand a lot of features offer opportunities for the community as well. For instance, the concept of social bookmarking offers the ability to store

bookmarks online and access them everywhere, of which the individual can take advantage of. These online bookmarks may also help community members to find interesting websites, of which the community can take advantage of. One might call Web 2.0 selfish (Stock, 2006), because one uses it primarily for individual purposes and contributing to the community is merely a side effect. In my opinion, this doesn't influence the potential of this new concept. I recognize this dichotomy, but I won't take it into account in my study.

This change in using the Internet may have profound implications on the way we use the Internet and even on the way we do business, the way we acquire information, the way we acquire knowledge and the way we learn. Where many people state that *Knowledge is Power*, one might say that with Web 2.0, the statement *Sharing Knowledge is Power* is more appropriate. Before I continue to explore these effects of Web 2.0, I will first discuss the Social learning Theory and Communities of Practice (Wenger, 1998).

## 2.2 Social theory of learning and CoP's

In this section, I will discuss the social learning theory of Wenger (1998). Wenger (1998) developed a learning theory that is based on four major premises (Wenger, 1998, p.4), namely:

- We are social beings;
- Knowledge is a matter of competence with respect to valued enterprises;
- Knowing is a matter of participating in the pursuit of such enterprises, that is, of active engagement in the world;
- Meaning, our ability to experience the world and our engagement with it as meaningful, is ultimately what learning is to produce.

Knowledge thus, is subjective and context dependent. Learning, according to Wenger (1998), is an ongoing process, that doesn't stop at a certain age. Learning is inherently a process of *social participation*. Participation is defined as being active participants in the practices of social communities and constructing identities in relation to these communities (Wenger, 1998, p.4).

Wenger (1998) states that learning is situated in communities, which he calls *Communities of Practice (CoP's)*. CoP's are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Wenger, McDermott, and Snyder, 2002, p.4). Within these CoP's, learning involves (Wenger, 1998, p.95):

- *evolving forms of mutual engagement*: Communities don't exist in the abstract, but exists because people are engaged in action which meaning they negotiate with each other (Wenger, 1998, p.73).
- *understanding and tuning the enterprise of the CoP*: The enterprise is the negotiated goal which the CoP strives to accomplish. It creates mutual accountability among participants (Wenger, 1998, p.78);
- *developing a (shared) repertoire, styles and discourses*: The shared repertoire is a resource for negotiating meaning. It includes routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions or concepts (Wenger, 1998, p.82-83).

A community constantly renegotiates its meaning to keep their goal, purpose and repertoire up-to-date as well as keeping the community alive. This indicates that discussion is an important aspect of a CoP (Johnson, 2001). The brief introduction on Web 2.0 and learning in Communities of Practice bring some corresponding characteristics to light. This leads to some interesting questions like: *can, and if so, how can Web 2.0 support CoP's? How does Web 2.0 relate to Wenger's social theory of learning and how can Web*

*2.0 contribute to learning in general?*. This will be further elaborated in the next section.

## 2.3 How can Web 2.0 contribute to collaborative learning and CoP's?

In this paragraph I will further refine my literature research and main constructs so I will be able to develop a research question in the next section. I will describe some proposed relations between CoP's, learning and Web 2.0.

The social aspect of Wenger's learning theory is inherently visible in Web 2.0. Just like CoP's, Web 2.0 is about social communities and participation. For instance, Web 2.0 the negotiation of meaning on Weblogs, through collaborative writing and commenting. This way, Web 2.0 can contribute to the building of a shared repertoire and help retain results of processes of negotiating meaning. Weblogs facilitate storytelling, which is considered an important aspect of CoP (Wenger et al., 2002; Wenger, 1998), by allowing participants to post freely on topics relevant to the community.

The negotiation of meaning, as a basis for learning can be defined as a social and cognitive approach to learning. The cognitive aspect focuses on characterizing relevant information, finding the required information, manipulating relationships, shifting between problem representations and making interferences, rather than on what one remembers (Faye Borthick and Jones, 2000). Web 2.0 offers tools to contribute to both the social and cognitive approach to learning. Through social bookmarking for instance, one can find and characterize relevant information, and one can draw relations between information and people. The social aspect is resembled by, for instance, the collaboration on Weblogs and Wiki's.

Tagging, as Golder and Huberman (2006) state, is essentially about making meaning. It is the process through which information is categorized and labelled and, critically, through which meaning emerges. Web 2.0 allows users to categorize and label information by offering tagging systems rather than classic, predefined taxonomies. This approach, according to Golder and Huberman (2006) is based on asking more open questions to make sense of our environment.

The ability of Web 2.0 to participate actively contributes to ones feeling of belongingness. This way, Web 2.0 creates mutual engagement in the community. Techniques like tagging can contribute to the building of a shared repertoire, for instance, by helping people classify information, offer new synonyms and offer new information. Aggregating information through Really Simple Syndication (RSS) feeds enables easy subscription to new sources of information, experts and insights, and aggregation tools help you organize these new sources. Enabling engagement means being included in and belonging to what matters within a community (Wenger, 1998, p.74). Through Web 2.0 people engage easily by signing up for a specific service or community or by commenting on others thoughts or participate in the development of a Wiki. Web 2.0 facilitates reified and social relations between communities (eg. boundary objects and brokering). For instance, Webloggers can contribute to multiple Weblogs and in a sense, contribute to multiple communities (brokering). Advanced functionalities like track backing (keeping track of links to certain posts on Weblogs) and commenting are also forms of brokering in the sense that they can introduce people to other people or communities or help people keep track of the interrelated communities.

Alavi and Leidner (2001) studied the potential of Information Technology to support Knowledge Management. In their view, knowledge management and learning are closely related (which is also supported by Wenger et al., 2002). They see learning as putting tacit knowledge into practice. Information Technology, they argue, has long been focussed around supporting explicit knowledge, and opportunities arise for Tech-

nology to support tacit knowledge. They argue that Information Technology should support four processes namely, the creation, storage / retrieval, transfer and application of knowledge. Virtual teams face four challenges that can be partly reduced from these processes namely, firstly, there are constraints on transactive memory, Secondly, there is insufficient mutual understanding, Thirdly, there is a failure in sharing and containing contextual knowledge and fourthly, there is inflexibility of organizational ties (Alavi and Tiwana, 2002). They offer various suggestions for Knowledge Management Systems to cope with these challenges, for instance, real time collaboration spaces, notification tools and sharing facilities. These suggestions comply with the Web 2.0 concept. For instance social bookmarking can be used to store and retrieve knowledge and transfer this among participants. A Wiki can be used to collaboratively create knowledge by negotiating meaning and by explicating the results of this process.

Similar results come from a longitudinal case study conducted at Buckman Labs (Pan and Leidner, 2003; Davenport and Prusak, 2000, p.130). This study showed that aspects like online collaboration, social interaction, sharing of knowledge, online storage and retrieval, the ability to discuss knowledge and the use of experts are critical to successfully apply Information Technology in order to share knowledge within CoP's. Davenport and Prusak (2000) also put the emphasis of technology in Knowledge Management initiatives on distribution, participation and contribution by the users. These characteristics are also visible in Wenger et al. (2002), for instance, according to Wenger et al. (2002), online discussion need to be facilitated. Wenger et al. (2002, p.132) suggests the usage of news feeds or e-mail subscriptions to inform community members on a regular basis. A social bookmarking tool, for instance supports these prerequisites by stimulating sharing of knowledge and interaction. The fact that these tools are useful for the individual will more likely result in active contribution, thereby reducing the risk of the community to start waning.

Wenger, White, Smith, and Rowe (2005) further elaborated this theory on the application of technology by summarizing tools that are often used in a CoP. They state that technology must overcome boundaries of time and space and imitate an experience of togetherness in order to be successful in CoP's. In this article Wenger et al. (2005) define *social software (Web 2.0)* as a label that points to the user's ownership of their software-mediated experience and to the ways that the software bridges between the individual and the group. Many tools they describe can be defined as Web 2.0, for instance Weblogs, Wiki's and RSS.

Despite this correspondence between CoP's and the Web 2.0 concept, the application of technology in CoP's also introduces some major drawbacks. For instance, one of the major problems in virtual communities is fading back or withdrawing (Johnson, 2001). One way to overcome this barrier is to offer multiple communication techniques simultaneously (Johnson, 2001 from Haythornthwaite, Kazmer, and Robins, 2000). Web 2.0 may overcome this barrier by introducing services that are beneficial to the individual, which improves the users' willingness to contribute. For instance, tagging can be of useful to the individual to classify his own information. This way a user may be more willing to contribute to the service, thus contributing to the community.

One of the main reasons of failure of CoP's is that they must use Information Technology (IT) systems that don't support them (Wenger et al., 2005). I believe that it is reasonable to state that Web 2.0 may contribute to Knowledge Management and Communities of Practice, as well as to the collaborative learning process within CoP's, making this interesting to study more closely<sup>7</sup>. I will use this idea to formulate my problem statement in the next section.



# Chapter 3

## Problem Statement

In this section I will outline my problem statement. This section unfolds as follows: firstly, I will describe my research objective (§3.1, p.9). Secondly, I will introduce my research framework (§3.2, p.9). Thirdly, I will describe my main research question and sub research questions (§3.3, p.10). Fourthly, I will explain the relevance of this Thesis (§3.4, p.11). I will conclude this chapter with a list of important definitions (§3.5, p.12).

### 3.1 Research objective

The research objective is the goal one wants to achieve with a research project. An adequate objective is useful, feasible, univocal and information rich (Verschuren and Doorewaard, 2000, p.31). As said before, Web 2.0 has the potential of contributing to collaborative learning processes within CoP's, but can only be supportive under the right conditions (Pawson and Tilley, 1997). A much more crucial question is what the conditions are that enable Web 2.0 to support collaborative learning in CoP's? This leads me to the following research objective:

**Research objective:** My research objective is to formulate a set of hypotheses that explain the effects of Web 2.0 and their underlying mechanisms on the collaborative learning process in Communities of Practice, by analyzing the effects of Social Bookmarking (which includes tagging), Weblogs and Wiki's and their underlying mechanisms on the evolving forms of mutual engagement, the understanding and tuning of the communities enterprise and the development of the communities shared repertoire.

### 3.2 Research framework

A research framework is a schematic representation of the research objective and visualizes the steps that have to be taken in order to reach this objective (Verschuren and Doorewaard, 2000, p.46).

The research model in figure 3.1 (p.10) can be explained as follows: an analysis of the social theory of learning and CoP's, the relation with virtual communities and collaborative learning, and the concepts of Web 2.0 result in theoretical insights on the possible effects and mechanisms of Web 2.0 on CoP's. These insights are enriched by analyzing (the usage of) a Weblog, a social bookmarking and -networking service and a Wiki and their contribution to CoP's, which results preliminary hypotheses on the contribution and underlying mechanisms of Web 2.0 to collaborative learning in CoP's. These insights are further enriched

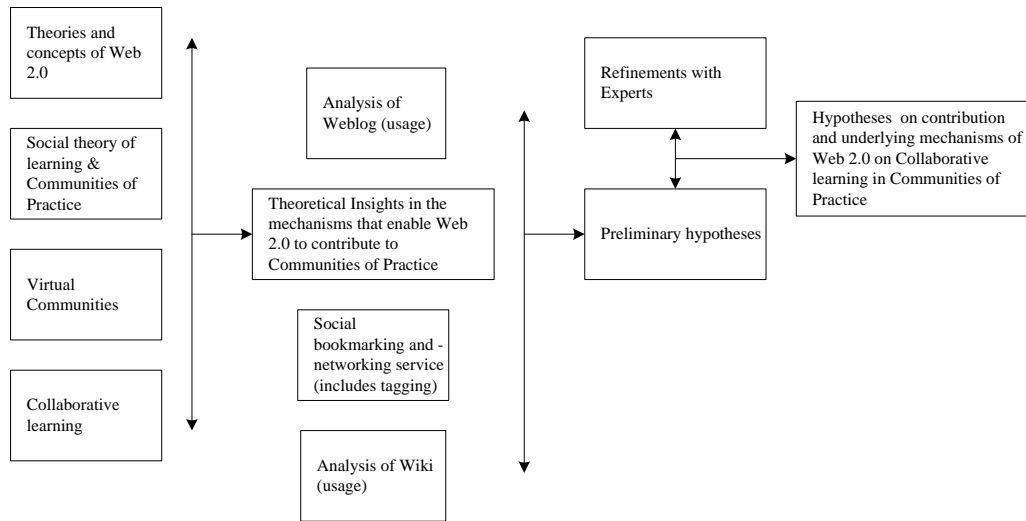


Figure 3.1: Researchmodel of thesis (Verschuren and Doorewaard, 2000)

by adding refinements from a group of experts, which ultimately results in a set of hypotheses defining the contribution and their underlying mechanisms of Web 2.0 to collaborative learning in CoP's.

### 3.3 Research questions

The research question contains a set of questions that will be answered in the thesis (Verschuren and Doorewaard, 2000, p.65). The questions are derived from the review of the main themes, the research objective and the research framework. I define the following main research question:

**Research question:** What hypotheses can be formulated which explain the effects and underlying mechanisms of Web 2.0 on collaborative learning in CoP's?

To tackle this main research question, I will define the following three sub questions:

**Sub question 1:** *What theoretical insights on the effects and mechanisms of Information Technology in general, and Web 2.0 specifically, on collaborative learning in CoP's can be derived from the literature?*

Which can be further specified in the following questions:

- How does collaborative learning within CoP's take place?
- How can the role of Technology within CoP's be defined?
- What mechanisms can be derived from the literature that explain how technology can be supportive to collaborative learning within CoP's?

**Sub question 2:** *What preliminary hypotheses can be formulated, based on an analysis of (the usage of) a Weblog, a Social bookmarking & -networking service and a Wiki, in relation to the theoretical insights, that explain the effects and underlying mechanisms of Web 2.0 on collaborative learning in Communities of Practice?*

- Based on the earlier theoretical insights, what mechanisms can be formulated that show that Web 2.0 can be successfully applied within CoP's?
- In what context does Web 2.0 best support collaborative learning within CoP's?
- How do Weblogs, Wiki's and social bookmarking and tagging comply with the mechanisms that enable the successful application of Technology within CoP's?

**Sub question 3:** *What can be learned from the reflection of a group of experts on these preliminary hypotheses?*

- What mechanisms can be extracted from the practical insights of the group of experts?
- How may these practical insights lead to further refinements of the preliminary hypotheses?
- What final set of hypotheses, that explain the effects of Web 2.0 and their underlying mechanisms on collaborative learning in CoP's, can be formulated?

## 3.4 Relevance

In this section I will describe the relevance of my thesis on three levels, namely on a social, a scientific and a personal level.

### *Social relevance*

The social relevance can be explained as follows: Firstly, this thesis may contribute to our understanding on how to successfully apply technology within CoP's. Secondly, this thesis may contribute to our understanding of the potential of Web 2.0 and might help Web 2.0 to be adopted in society. Thirdly, in current society, knowledge becomes more and more a strategic resource to achieve a sustainable competitive advantage (see for instance Grant, 1996). Considering the strong relation between Knowledge Management and CoP's (Wenger and Snyder, 2000), the findings of this study may also contribute to the application of technology in knowledge intensive organizations.

### *Scientific relevance*

The scientific relevance lies in different areas. Firstly, not much scientific research has been done on Web 2.0 in general and Web 2.0 in relation to learning and CoP's specifically, so this thesis contributes to the scientific body of literature on Web 2.0. Secondly, not much research has been done on how to apply technology to CoP's in particular<sup>8</sup>, so this research might contribute to the technological support of CoP's.

### *Personal relevance*

The personal relevance lies in different areas. Firstly, to quote a professor at the University of Amsterdam: "As long as it's fun." This definitely applies to me. I find the developments the Internet goes through at the moment very interesting and I believe that it may have far reaching consequences (despite all the hype and buzz words). Secondly, my interest also lies in the theory of Wenger on CoP's, which I can combine with the developments of Web 2.0. Thirdly, I think that there is a reason to believe that software will move to the

Web and leaves the traditional desktop behind. so when Web 2.0 breaks through in the Netherlands, I may be able to use the knowledge acquired during this trajectory in my future profession.

### 3.5 Definitions

- *Communities of Practice (CoP's)*: Groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Wenger et al., 2002).
- *Context*: The physical conditions which allow the mechanisms to come into operation (Pawson and Tilley, 1997).
- *Mechanisms*: The inner, hidden workings that causes some outcome to occur (Pawson and Tilley, 1997).
- *Social bookmarking*: The ability to create a transparent, personal collection of bookmarks online, classify these bookmarks with freely chosen keywords and share them with others (derived from Millen, Feinberg, and Kerr, 2005).
- *Tagging*: Is a process in which individuals assign descriptors to objects, in the practice of collaborative categorization known as folksonomy.
- *Web 2.0*: Web 2.0 is the reification of a broader trend, which deals with the rapid change of the Internet from one-way information consumption, to more-way information consumption, creation and participation.
- *Weblog*: A Weblog is a website in which journal entries are posted on a regular basis and displayed in reverse chronological order. A Weblog comprises hypertext, images, and links (to other webpages and to video, audio and other files). Weblogs use a conversational style of documentation.
- *Wiki*: is a type of website that allows users to easily add and edit content and is especially suited for collaborative writing.

# Chapter 4

## Research Method

This section describes in detail how my research will be carried out. Firstly, the type of research is described (§4.1, p.13). Secondly, the research approach is described (§4.2, p.13), Thirdly, the required research material is described (§4.3, p.16). Fourthly, a detailed research plan is introduced that describes the planning of the study (§4.4, p.17). Fifthly, this section describes a possible list of contents of my final thesis (§4.5, p.17) and sixthly, this section describes the relation with courses followed at the UvA (§4.6, p.19).

### 4.1 Research type

In this section, I will typify my research based on Verschuren and Doorewaard (2000). According to Verschuren and Doorewaard (2000) two types of research can be identified, namely theory-oriented studies or practical-oriented studies. A theory-oriented study can be further classified in theory developing research and theory testing research. The focus of practical-oriented research can be on problem identification, diagnose, design, change or evaluation (Verschuren and Doorewaard, 2000, p.33).

This research can primarily be defined as a theory-oriented study. The ultimate goal is to develop a set of hypotheses that explain the effects and underlying mechanisms of Web 2.0 on collaborative learning in CoP's. To achieve this goal, different strategies (see also §4.2, p.13) will be applied. This study can be classified as a theory-developing study.

### 4.2 Research Strategy

The research strategy defines how the research will be carried out. More specifically, the research strategy is the entirety of a set of coherent decisions on the way the research will be carried out (Verschuren and Doorewaard, 2000, p.147).

In general, two research strategies can be defined. Qualitative research strategies refer to the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things. Quantitative research strategies refer to the counts and measures of things (Berg, 2004, p.3). Berg (2004) describes several qualitative research strategies, like interviewing, focus group interviews, ethnographic field studies, action research and case studies. Conducting a survey is more suitable to quantitative research. Every approach has specific characteristics and suits different types of research questions. For instance, a survey is most suitable for *how*, *what*, *where*, *how many* and *how much* questions, while a case study is more appropriate in *how* and *why*

questions (Yin, 2002, p.5). In my thesis I will use both qualitative and quantitative strategies to formulate my hypotheses. Using multiple lines of sight is also referred to as triangulation (Yin, 2002; Berg, 2004).

Before I define my research approach, an important consideration has to be made. I realize that the effects of Web 2.0 on CoP's can be studied from multiple perspectives. We can define purely online CoP's and CoP's that collaborate both online and in real life. In my thesis I will focus on the latter. I realize that, in making this choice, the results of this thesis are only applicable to CoP's which use Web 2.0 services as supportive tools, not to CoP's which exist solely online.

This introduces another important issue: I will have to separate the effects of real life collaboration and virtual collaboration using the Web 2.0 services on the participant's feelings of the contribution to collaborative learning in the CoP. To accomplish this I will use the Realistic Evaluation Method of Pawson and Tilley (1997) which focuses on context, mechanisms and outcomes.

An important aspect of my thesis is a literature review on the Social Learning Theory in relation to CoP's, collaborative learning, virtual communities and the application of technology. Based on these insights I will clarify how the concept of Web 2.0, and more specifically, social bookmarking (including tagging), Weblogs and Wiki's, may contribute to collaborative learning in CoP's.

I will refine these insights by analyzing three specific tools, namely a Weblog, a social bookmarking and tagging service and a Wiki. I will interview approximately 10 frequent Wikipedia users. I will use the Weblog that is created during the course *Management van Immateriële Waarden*. During a 14 week period, 35 students wrote over 100 posts approximately 250 comments. These data will be analyzed to extract specific trends in usage, topic development etc. that may indicate that this Weblog has contributed to the group process of collaborative learning and the development of a CoP. These participants will also be interviewed to gain deeper insight in the specific contribution of the Weblog to the group process. This approach combines an archival study (analyzing data that has been created in the past) with interviews. I contacted ten students so far who all are willing to participate.

A social bookmarking and social networking tool which uses tagging, will be introduced during a 7 week Bachelor class *Kennismanagement*. During these 7 weeks, approximately 30 students will use a Web 2.0 service to acquire, store and share relevant information. I will analyze the usage from a qualitative (through interviews) as well as quantitative perspective (through physical analysis of acquired data).

I need to emphasize the importance of approaching the students here, because merely analyzing data might not be sufficient to formulate a set of hypotheses. It is possible that participants don't contribute (much) to the different tools. This doesn't mean that these people don't learn, or contribute to the community. They may learn by reading the articles posted and may contribute physically, during class. Therefore it is important to ask the students whether they feel that the usage of the tools has contributed to their experience of collaborative learning within the Community of Practice.

Based on this practical analysis, my insights on the contribution of Web 2.0 to collaborative learning in CoP's will be further refined. These refinements will form the basis for a focus group interview with approximately five experts on this topic. Focus Group Interviews can be used in theory developing research (Berg, 2004). They can be defined as either guided or unguided discussions addressing a particular topic of interest or relevance to the group and the researcher (Berg, 2004, p.123). Some advantages of focus group interviews are that it is flexible, produces speedy results and it permits observation of interactions (Berg, 2004, p.126). A disadvantage, on the other hand, is that it doesn't offer the same depth of information as for instance a long semi-structured interview (Berg, 2004, p.127). During this focus group interview, my insights will be further refined, which will ultimately lead to the formulation of my theory.

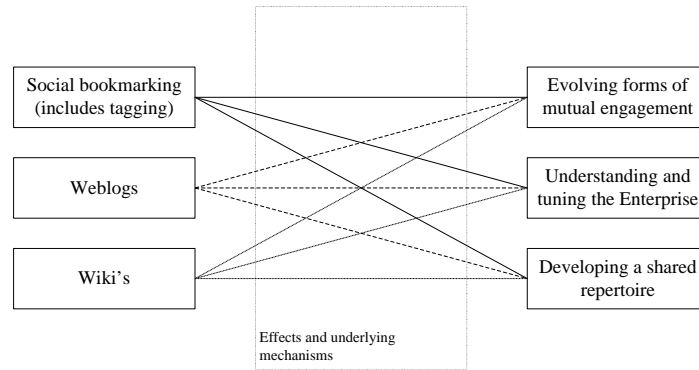


Figure 4.1: Research strategy, based on Wenger (1998)

The theory of Wenger on learning in practice will form the basis for the analysis of the tools and the focus group interview. Each analysis will be focused around the presence of (Wenger, 1998, p.95):

1. *evolving forms of mutual engagement*: which addresses issues like discovering how to engage, what helps and what hinders; developing mutual relationships; defining identities, establishing who is who, who is good at what, who knows what, who is easy or hard to get along with.
2. *understanding and tuning the enterprise*: which addresses issues like aligning engagement with it, learning to become and hold each other accountable to it; struggling to define the enterprise and reconciling conflicting interpretations of what the enterprise is about.
3. *developing their repertoire, styles and discourses*: which addresses issues like renegotiating the meaning of various elements; producing or adopting tools, artefacts, representations; recording and recalling events; inventing new terms and redefining or abandoning old ones; telling and retelling stories; creating and breaking routines.

When these processes are visible, one may assume that the tool contributes significantly to the arisal of a CoP and the learning process in that CoP.

My research approach will further be centred around the Realistic Evaluation Method (Pawson and Tilley, 1997). This method is developed in reaction to the 'failure' of classic evaluation methods. The focus in evaluation is on proving that some treatment caused some outcome (causal behaviour). Realistic Evaluation can be defined as a generative approach to evaluation, which means that there is a real connection between the events we understand to be connected causally. Generative theory not only points to an external observable cause, but also relies on some internal feature that is changed (Pawson and Tilley, 1997, p.33).

The Realistic Evaluation method assumes that a treatment may have a desired outcome, but only in the right conditions and in the right circumstances. It is these underlying levels that need to be penetrated in order for the explanation to be complete (Pawson and Tilley, 1997, p.34). It is my goal not only to show that Web 2.0 may have a positive effect on collaborative learning in CoP's, but also to show what it is about Web 2.0 (the underlying mechanisms) that makes it work for who and in what conditions (the context) (Pawson and Tilley, 1997, p.72). In other words, what mechanisms are triggered when introducing Web 2.0, that lead to a contribution to collaborative learning within CoP's (derived from Pawson and Tilley, 1997, p.94)?

Considering the *Wheel of science* (figure 4.2, p.16), my research will be focussed around the first two steps in this cycle, namely Theory and Hypotheses, because I will not test my hypotheses in an observational setting. I can only answer the question what *might* work for who in what circumstances. I cannot empirically prove what *will* work for whom in what circumstances. The formula of Pawson and Tilley (1997) that

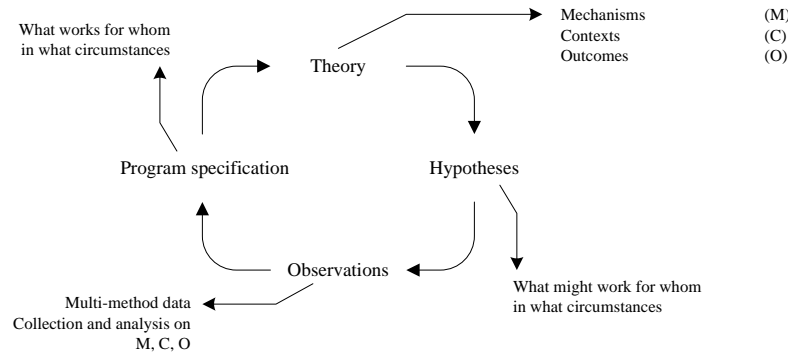


Figure 4.2: Wheel of science, derived from Pawson and Tilley (1997)

*mechanisms + context = outcome* will form the basis for my theory.

According to Pawson and Tilley (1997, p.155), data collection should be theory-driven rather than data-driven. But in my case, I formulate my hypotheses based on the results of the theoretical and practical analyses, which means I cannot fully comply with this requirement. Therefore, I divide my data construction in two parts: The first part, the interviews with the students and the Wiki users, is data-driven and is used to formulate a first set of hypotheses. The second part, the focus group interview, is theory-driven and is used to refine my hypotheses.

### 4.3 Research material

In order to carry out my research, several prerequisites have to be available

#### *physical requirements*

Firstly, a platform of the Web 2.0 service needs to be available which the students of the *Kennismanagement* course can use. This platform will be installed on the servers of the mentor. Secondly, the content has to be gathered from the Weblog. The Weblog hoster offers tools to back-up the content of the Weblog to a text file, which can be used for further analysis<sup>9</sup>.

#### *Interviews*

I will conduct a number of semi-structured (or semi-standardized: see Berg, 2004, p.78-82) interviews. I will use this method, because I need answers on a very specific topic, namely the three processes of learning in practice from Wenger (1998). But within these topics, I'll need very broad opinions of the interviewees, so they may talk freely within a specified range of topics. These processes form the basis for my interviews. Firstly, I will interview approximately 15 students of the Course '*Kennismanagement*' about their experiences with the Web 2.0 service. Secondly, I will interview approximately 15 students of the course '*Management van Immateriële Waarden*' about their experiences with the Weblog (10 students have already been approached and are willing to participate). Thirdly, I will interview approximately 10 Wiki users (probably by phone). Fourthly, I will set up a focus group interview with approximately 5 experts on Web 2.0 and knowledge management. The interview will most likely take place at the University. The interviews will be carried out during the periods that correspond to the phases in the research plan (figure 4.3, p.17).

	Start	End	jan 2006				feb 2006				mrt 2006				apr 2006				may 2006				jun 2006								
			1-1	8-1	15-1	22-1	29-1	5-2	12-2	19-2	26-2	5-3	12-3	19-3	26-3	2-4	9-4	16-4	23-4	30-4	7-5	14-5	21-5	28-5	4-6	11-6	18-6	25-6	2-7		
1	Thesis Proposal	9-1-2006	9-2-2006	[Bar]																											
2	Milestone 2 Thesis proposal 1.00	9-2-2006	9-2-2006	[Bar]																											
3	Literature research	7-2-2006	12-5-2006	[Bar]																											
4	Analysis of Social Bookmarking Service	7-2-2006	14-4-2006	[Bar]																											
5	Analysis of Weblog	10-4-2006	21-4-2006	[Bar]																											
6	Analysis of Wiki	24-4-2006	5-5-2006	[Bar]																											
7	Focus group interview Interview to be planned	8-5-2006	2-6-2006	[Bar]																											
8	Confrontation theoretical and practical insights	5-6-2006	16-6-2006	[Bar]																											
9	Finalizing thesis	19-6-2006	27-6-2006	[Bar]																											
10	Milestone 6 thesis 0.99	27-6-2006	27-6-2006	[Bar]																											
11	Milestone thesis 1.00	30-6-2006	30-6-2006	[Bar]																											
12	Continually writing on thesis	9-2-2006	30-6-2006	[Bar]																											

Figure 4.3: Planning of thesis trajectory

Participants of the focus group Interview so far:

- XXXXXXXXXXX XXXXXXXXXXX, Information Manager at XXXXXXXXXXX.
- XXXXXXXXXXX XXXXXXXXXXX, consultant and Internet publicist, known XXXXXXXXXXX
- XXXXXXXXXXX XXXXXXXXXXX, Marketeer and publicist on XXXXXXXXXXX

## 4.4 Research plan

This section describes in detail when every aspect of my thesis will be carried out (see figure 4.3, p.17). Unfortunately, the *Kennismanagement* course starts at February 7, which means that I will have to start evaluating the usage of the Web 2.0 service immediately. This evaluation will run simultaneously with my literature research.

There are four more milestones besides those mentioned in the research plan. The first milestone consisted of the first part of the research proposal and was due 17 January 2006. The third milestone consists of the first chapters of the thesis, namely the literature research and is due March 28th. Because I'm working on the analysis of the Web 2.0 service and the literature review simultaneously, I planned this phase until May 12th. My goal is to have parts of the chapter on the literature research available by March 28th. The fourth milestone ends the literature research and starts the field study, which is due April 25th. I will start my field study right from the beginning, so this due date isn't applicable to my research. The fifth milestone contains the results of the field study and is due the 25th of April. I'm planning to finish my field study one week later. The final version of the Master's thesis is due June 27th.

I didn't plan meetings with my mentor, because of the fact that, up until now, this hasn't been much of an issue. We've been able to arrange meetings on a short notice whenever we felt necessary. It is likely that this approach will be continued during my thesis.

## 4.5 Possible list of contents

This section contains a possible list of contents of my final thesis.

- 1 Abstract

- 2 List of Contents
- 3 Summary
- 4 Introduction
  - 4.1 Review of the main themes
  - 4.2 Problem Statement
  - 4.3 Research Methodology
- 5 Theoretical insights on the effects of Information Technology on collaborative learning in Communities of Practice
  - 5.1 Introduction
  - 5.2 Collaborative learning in Communities of Practice
  - 5.3 How may Information Technology affect Communities of Practice?
  - 5.4 Mechanisms, context and outcome
  - 5.5 Conclusion
- 6 Practical insights on the effects of Information Technology on collaborative learning in Communities of Practice
  - 6.1 Introduction
  - 6.2 The case of the Weblog
  - 6.3 The case of the Social bookmarking and - networking service
  - 6.4 The case of the Wiki
  - 6.5 Mechanisms, context and outcome
  - 6.6 Conclusion
- 7 Insights from a focus group: A confrontation of the theoretical and practical results
  - 7.1 Introduction
  - 7.2 The Focus Group Interview
    - 7.2.1 Insights on mechanisms affecting the effects of Information technology on learning in Communities of Practice
    - 7.2.2 Insights on the context affecting the effects of Information technology on learning in Communities of Practice
    - 7.2.3 Insights on outcomes
  - 7.3 Conclusion
- 8 Conclusion: Towards a theory on the effects and mechanisms of Information Technology on learning in Communities of Practice
  - 8.1 Introduction
  - 8.2 Hypotheses
  - 8.3 Further Research
- 9 References
- 10 Appendixes

## 4.6 Relation with courses followed at the UvA

This final section of my thesis proposal contains a description of the relation of this thesis with the courses followed at the UvA.

This thesis is strongly influenced by the modules Management van Immateriële Waarden (MIW) and Kennismanagement (KM). The theory of Wenger (1998) was one of the main subjects of the MIW course. Also knowledge management, which I have argued has a strong relation with learning, is subject of this course as well as the KM course. The Technology aspect of this thesis, or more specifically Web 2.0, was also subject of various courses, for instance MIW and ICT & Dienstverlening. Overall, I think that the general question, how can Information and Information Technology be supportive to organizations and consumers, is one of the central questions of this Master, which makes this thesis suitable and relevant.

## Notes

<sup>1</sup> see <http://del.icio.us>

<sup>2</sup> see <http://www.blinklist.com>

<sup>3</sup> see <http://www.last.fm>

<sup>4</sup> <http://www.technorati.com>

<sup>5</sup> For instance see Wikipedia's entry on Wiki's <http://en.wikipedia.org/wiki/Wiki>

<sup>6</sup> <http://creativecommons.org/licenses/>

<sup>7</sup> This believe is supported by the fact that one of the founding figures of CoP's, Etienne Wenger, contributes to a Website focussed around technology for CoP's, which recently held an online conference about how new Web 2.0 techniques can be used in CoP's. See <http://technologyforcommunities.com/?p=8> for more detail

<sup>8</sup> Wenger et al. (2005) wrote a chapter for CEFRIO about Technology for communities. Some Web 2.0 aspects, like Wiki's, Weblogs and RSS are mentioned in this chapter. There is also a website <http://www.technologyforcommunities.com>, which is centered around this topic. Etienne Wenger is one of the authors on this site.

<sup>9</sup> See <http://help.blogger.com/bin/answer.py?answer=130&query=backup&topic=0&type=f> for more information on how to back-up the content of the Weblog.

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