Blogs and Social Network Sites as Activity Systems: Exploring Adult Informal Learning Process through Activity Theory Framework

Gyeong Mi Heo[1*] and Romee Lee[2]

[1]Center of Innovation and Transfer by the IT in Organisations (CEFRIO), Quebec, Canada // [2]Center for Teaching and Learning at Kyung-In Women's University, Incheon, Republic of Korea // gyeongmi.heo@gmail.com // romeelee@kic.ac.kr

*Corresponding author

ABSTRACT

This paper uses an Activity Theory framework to explore adult user activities and informal learning processes as reflected in their blogs and social network sites (SNS). Using the assumption that a web-based space is an activity system in which learning occurs, typical features of the components were investigated and each activity system then characterized. Data obtained from individual users of a blog (Naver) and a SNS (Cyworld) were analyzed at the individual level and extended into the social level. Based on the findings, commonalities and differences between blog and SNS activities were discussed and different types of the division of labor between the activity systems were identified. This paper furthermore suggests three dimensions of adult informal learning activities in Web 2.0 in terms of learning as (a) an acquisition process, (b) a reflection process, and (c) a practice-based community process. Therefore, its discussion helps advance the understanding of the potential value of using Web 2.0 applications for adult informal learning.

Introduction

Web 2.0 is "a collaborative medium that allows users to communicate, work together and share and publish their ideas and thoughts" (Rollett, Lux, Strohmaier, Dösinger, & Tochtermann, 2007, p. 93). Various Web 2.0 applications exist, such as blogs, social network sites (SNS), Wiki, social bookmarking, and more.

Learning is one of main functions of Web 2.0 as 'places to learn' for formal and non-formal education as well as informal learning, either self-directed or incidental one (Schugurensky, 2000). Adult learners often benefit by optimizing these web-based spaces as alternative environments for informal learning when these adults navigate through information, network with other people, or produce wanted identities (Selwyn, 2007). There has been, however, a lack of studies that focus on the processes that occur within each web-based space and the possible informal learning outcomes, intended or unintended, while using one of these Web 2.0 applications. It is argued that understanding the processes is important in that doing can make learning more effective.

To examine the adult informal learning process linked with Web 2.0, this study explored adult user activities and the potential nature of informal learning processes and outcomes as reflected in their engagement in the two most popular web-based spaces, blogs and SNS. Under the assumption that a web-based space is an activity system (Engeström, 1987) in which learning occurs, the typical components and features of each activity system were investigated and their characteristics identified. As an expansion of the primary studies (Park, Heo, & Lee, 2008; Park, Heo, & Lee, 2011) on a blog and a SNS, the data obtained from individual users of a blog (i.e., Naver) and a SNS (i.e., Cyworld) at the individual level were analyzed first and then these individuals' activities were extended into the social level. Therefore, the purposes of this study were to identify any significant commonalities and differences between the components at the individual and the social levels in each web-based space and hence understand different dimensions of informal learning activities that could occur in Web 2.0 to offer implications for adult learners who would like to use one of the Web 2.0 applications for informal learning.

Perspectives of adult informal learning

Informal learning refers to "any activity involving the pursuit of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria" (Livingstone, 2001, p.5). It is an important and predominant form of learning in the adult stage because it highlights the learner as agency of learning and happens in the most of the scenes in everyday life, which may surpass the conventional meaning of learning (Livingstone, 2001; Marsick & Watkins, 2001).

To address various processes and outcomes that possibly yield from adult informal learning in web-based spaces, this study depends on Fenwick and Tennant's (2004) four different perspectives of adult learning on its process and outcomes: (a) learning as acquisition of knowledge and/or competencies; (b) learning as reflection and the construction of meaning; (c) learning as practice-based activities of particular communities; and (d) learning as an embodied co-emergent process.

The first perspective, *learning as acquisition process*, suggests that individuals will acquire knowledge, competencies, or strategies to deal with new situations in particular domains, such as academic, work-related and everyday activities. This activity often allows the gaining of new expertise in those domains. This learning process is similar with conventional cognitive and intelligence theories, but the context of learning and the interaction of experience are regarded more important in order to facilitate learning in the learning of adults. The second perspective, *learning as reflection process* interprets learning as a meaning-making process through reflection. Learners may reflect on their own and others' experiences in terms of *content* (i.e., what happened?) or *process* (i.e., how did it happen?), which promote learning. This kind of learning often produces individual transformation (Mezirow, 1991) and sometimes group-based social awareness and action called *praxis* (Freire, 1970). The third perspective, *learning as practice-based activities of particular communities*, brings to learning the concept of communities of practice (CoP) (Wenger, 1998). In a CoP, learners are able to share, negotiate, and create knowledge in relation to their own practice by communicating and collaborating with others with various ranges of experiences, knowledge and expertise. Thus learning is, according to Fenwick and Tennant (2004), entwined with *doing* and the objective of *doing* is to become a full participant in the CoP. Last, the lens of *learning as embodied co-emergent process* challenges the people-centered notions that tend to separate learners from the context of learning. It argues a rather ecological view and explores how cognition, identities, and environment co-emerge, interact, and change simultaneously through the learning process. This view is inherently different from the first three since it argues that individuals should not be separated from the group, learners from context, and subject from object (Fenwick & Tennant, 2004). Therefore, the first three perspectives will be considered to conceptualize adult informal learning since this study tries to capture the varied portraits that individual adult learners create by engaging in Web 2.0.

Nature of learning in Web 2.0: Blog and SNS

Web 2.0 is not technology per se but rather a more interactive technology-based environment that enables users to create, store, publish, and share data freely as the "architecture of participation" (O'Reilly, 2005). Blogs and social network sites (SNS) are the prime examples of Web 2.0 and are widely favored by people. The blog is a medium created by users. Bloggers, people who use blogs, use the medium as a personal log or as a communication tool for the purpose of creating and sharing their personal thoughts and values and interact with other bloggers by leaving comments and interlinking the related posts (Winer, 2003). These actions often form a certain cyber-based agora called a 'blogosphere' (Quick, 2001). SNS, as compared to blogs, is more for establishing and maintaining the social networks of individuals (Boyd & Ellison, 2007), for example MySpace, Facebook, and Cyworld, to name a few. People connect with others in these well-known SNSs mainly to cultivate their networks with people they may already know, but they do also enjoy having strangers connect with them by chance, based on shared interests, views, and activities.

Even though most bloggers and SNS users experience informal learning through their activities, most of the studies on learning with blogs and SNS have focused on formal and non-formal education/learning contexts, which refers to the types of learning that requires assistance of organised curricula and instructors that are different in their degree of formality. In particular, most research on blogs so far has emphasized the learning effectiveness of blogs in classrooms as: (a) a collaborative tool for raising group discussions and knowledge construction between instructors and students as well as among students (Glass & Spiegelman, 2008; Wassell & Crouch, 2008); and as (b) an

instructional tool for teachers and students to use to keep their own learning journals (Johnson, 2004). Studies on the educational application of SNS are comparatively few, but seem about to bloom. Increasingly, many higher education institutions use SNS as a motivating tool to aid learning and this use has produced a burgeoning volume of studies that focus on the function of SNS in higher education (English & Duncan-Howell, 2008; Hinkle & Hersh, 2007; Mazer, Murphy, & Simonds, 2007). Its use supports student identity production and a relationship with instructors and other learners (Bugeja, 2006; Ziegler, 2007). Yet there is a lack of evidence on the significance of blogs and SNS in the everyday digital lives of adult learners (Selwyn, 2007). More studies are needed on the specific potential of blogs and SNS to enhance adult informal learning.

The theoretical framework: Activity theory

Activity Theory (Engeström, 1987, 1999; Leont'ev, 1978) is a psychological and multidisciplinary framework useful for studying human practice by interlinking the individual and social levels (Barab, Evans, & Beak, 2004; Kuutti, 1996).

Engeström (1987) depicts a triangular structure of an activity system with six components (See Figure 1): Subject, Object, Tools, Community, Division of Labor, and Rules. Each of these six components serves a distinct function and work together to set up an activity and relate to other components: *Subject* refers to the actors, which could be individuals or sub-groups, in the analysis. *Object* refers to the objective of an activity as well as the product(s) toward which the activity is directed. The objective is then moulded and transformed into outcomes with the help of mediating artifacts, referring to *Tools*. *Community* as a sociocultural context consists of multiple individuals who share the common general objectives. *Division of Labor* refers to the organization of tasks and responsibilities within the community. Finally, *Rules* refers to the explicit and implicit regulations, norms, and conventions that constrain the actions and interactions within the activity system.
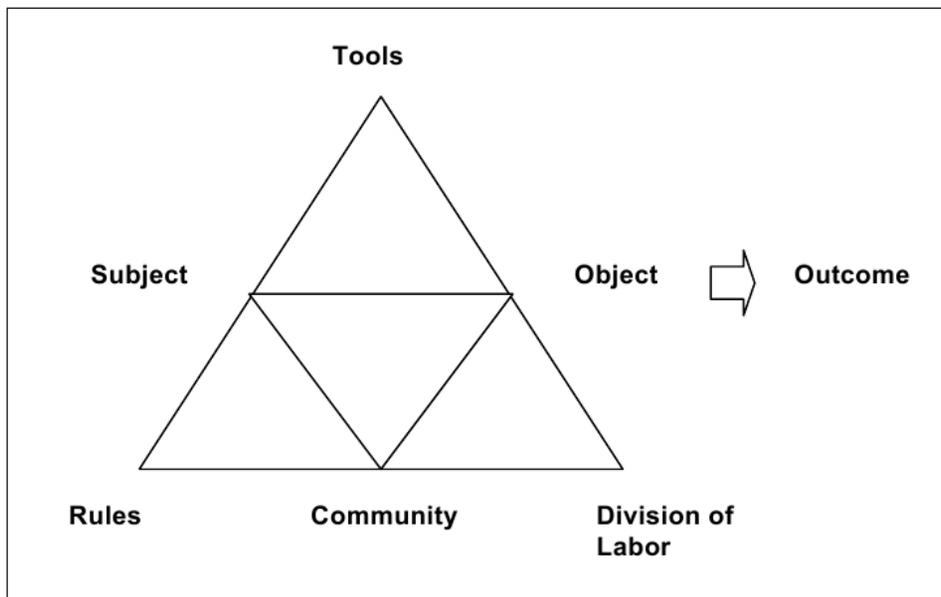

Figure 1. Activity triangle model (Engeström, 1987, p. 78)

Three key principles of Activity Theory are summarized by Kuutti (1996) as follows:
- Activities as basic units of analysis: Individual actions should be situated in a context, which constitutes the activity as a unit of analysis.
- History and development: Activities are not given or static, but instead dynamic unities. The components keep changing and developing unevenly rather than linearly or straightforwardly. Hence, each activity has its own history.
- Artifacts and mediation: An activity consists of various artifacts (see Tools in the activity triangle mode) that mediate between the components of each activity rather than direct it.

Activity theorists understand learning as phenomena generated in a complex, evolving activity system where actors (*subjects*), objectives, and tools interact iteratively (Jonassen & Rohrer-Murphy, 1999). In other words, learning emerges from activity, more specifically, the interaction of human activity within a certain context. Members (*learners*), objectives (*learning objectives*) and tools (*learning tools*) of that particular system are co-dependent and reconstitute each other continuously. That process makes the system alive and engenders learning that is meaningful to learners. Activity Theory explains the learning processes that result from particular actions of learners in a particular context, actions that eventually benefit the learners through expanded knowledge, skills, and attitudes as the final result.

Activity Theory has been applied as a theoretical and methodological framework in various technology-related contexts of learning. Most studies have focused on investigating learning activities in formal and non-formal education systems to monitor and diagnose the processes (e.g., Barab, Schatz, & Scheckler, 2004; Collis & Margaryan, 2004; Jonassen & Rhorer-Murphy. 1999; Lim & Hang, 2003; Mwanza, 2001; Zurita & Nussbaum, 2007). There is, however, no commonly agreed methodology and approach for applying the concepts and principles in the Activity Theory (Barab, Evans, & Baek, 2004; Núñez, 2009). More empirical studies, particularly on informal learning processes, are needed since Activity Theory is still an evolving framework (Engeström, 2008).

In this study, the Activity Theory framework is applied as an analytical tool to investigate adult informal learning processes by characterizing the components of activity in two web-based spaces (i.e., a blog and a SNS) and comparing them. The research questions are as follows:
- What are the characteristics of adult user activities in two activity systems (i.e., blogs and SNS) based on the components of the Activity Theory framework?
- What are the relations between the components as distinguished for blogs and SNS as activity systems?
- What are the main considerations for adults to utilize Web 2.0 applications for informal learning?

Methodology

This study employs a qualitative research approach that is both exploratory and descriptive (Denzin & Lincoln, 2000) to understand in depth the complex phenomena and issues found within natural, real-life contexts (Yin, 2006). A case study was initially conducted in each web-based space (i.e., a blog and a SNS). These two case studies (Park et al., 2008; Park, Heo, & Lee, 2011) were further investigated using the analytical framework of Activity Theory by applying a cross-case analysis "to generalize across several representations of the phenomenon" (Borman, Clarke, Cotner, & Lee, 2006, p.123).

The study data were collected through an online survey questionnaire that included multiple choice and yes/no items and open-ended questions, from each web-based space. The survey questions covered mainly (a) demographic background, (b) personal experiences with a web-based space, and (c) the meanings of activities in a web-based space in relation to their everyday lives and learning. The target participants were adult users (i.e., over 20 years of age) not enrolled in formal education programs since the focus of this study was on the informal learning processes. A snowball sampling strategy was used to recruit participants to increase the response rate and secure quality responses from diverse voices. Hence, 70 bloggers of *Naver*, a renowned portal service and a search engine in Korea that provides a blog service (Park, Heo, & Lee, 2011) and 100 users of *Cyworld*, a representative SNS for Koreans (Park et al., 2008) completed the online surveys.

While the data were analyzed to understand individual adult perceptions and patterns for using each web-based space in relation to informal learning processes in the primary case studies (Park et al., 2008; Park, Heo, & Lee, 2011), this study aimed to extend the analysis of activities in different web-based spaces from the individual level to the social level as an activity system by applying the Activity Theory framework.

First, each component of the activity systems was investigated according to its definition as follows:
1. Subjects: Who is engaging in the activity taking place in a web-based space?
2. Tools: What means are the subjects using to engage in this activity?
3. Object(ive)s: Why are the subjects engaging in the activity?
4. Outcome: What is the outcome of their activity?
5. Community: What is the environment in which the activity is taking place?

6. Rules: What are the cultural norms, rules, or regulations, if any, that govern the activity?
7. Division of Labor (Roles): Who is responsible for what task and how are the different roles organized?

Hence, each activity system was characterized and explored to examine how the combination of these components makes informal learning processes unique in blogs and SNS. The findings for the activity system components were further analyzed to find commonalities and differences between the two activity systems (i.e., Naver and Cyworld) and determine the characteristics of the relations between the components of web-based spaces as an informal learning process. Throughout the whole qualitative research process, a strategy of *investigator triangulation* (Denzin, 1970) was used to enhance the credibility and validity of the findings and the conclusions.

Findings

In this section, each activity system component is articulated according to the Activity Theory framework, and each activity system is then presented graphically using the activity triangle model.

Components of activity systems

Subjects

An agent of the activity taking place in a web-based space is a user of the Web 2.0 application. The subject is identified more specifically herein as adult users who voluntarily use the web-based spaces in their daily lives, namely, a blog (i.e., Naver) and a SNS (i.e., Cyworld).

Tools

The activity is mediated by artifacts, which are features the users can use in the web-based spaces. The Naver blog service provides the typical features of blogs of an individual blog, combining texts, images, videos, and links to other resources. Cyworld also offers features similar to those of blogs for an individual homepage, named "mini-hompi," consisting of a photo album, a bulletin board, a diary, a jukebox, and a guestbook. The individual space includes interactive functions that correspond to the characteristics of Web 2.0, for example, one can leave a comment to the post, send a message, and reply to a message. In addition, these individual spaces (i.e., the blogs and the mini-hompis) are linked to other user spaces by a connection called "*Neighbor*" in the Naver blog service and "*Ilchon" (meaning of kin in Korean)* in Cyworld. These functions enable the users to interact more easily.

Object(ive)s

The activity is directed toward an object, which implies an objective that constitutes motivation for the activity. In this survey, individual users of Naver and Cyworld responded about why they engaged in activities within these web-based spaces (Park et al., 2008; Park, Heo, & Lee, 2011). Considerable differences of these objectives were noticed for the blog and the SNS.

Of the 70 participants, on the one hand, more than half of the Naver bloggers (61.4 %) indicated they used blogs mainly for sharing information with others (see Figure 2).

On the other hand, most users (86 %) used Cyworld mainly to maintain social relationships (See Figure 3). The users perceived Cyworld more as a medium for communication to supplement the traditional communication media, such as telephone, regular mail, and e-mail. In contrast to the results for the blog users, only 19 % of these respondents indicated that they used Cyworld for sharing information (Park et al., 2008).

These results show that users' objectives clearly contrasted for the two web-based spaces. While the main objective of blogging is to share information and knowledge in relation to a user's expertise and interests, the objective for activities within SNS is to cultivate and maintain a social relationship through this new way of interpersonal communication. However, it was also noticed that both users used the spaces to express themselves and also reflect

at an individual level. This finding implies that the differences in the objectives for both web-based spaces lie in the way they interact with others at an interpersonal level.
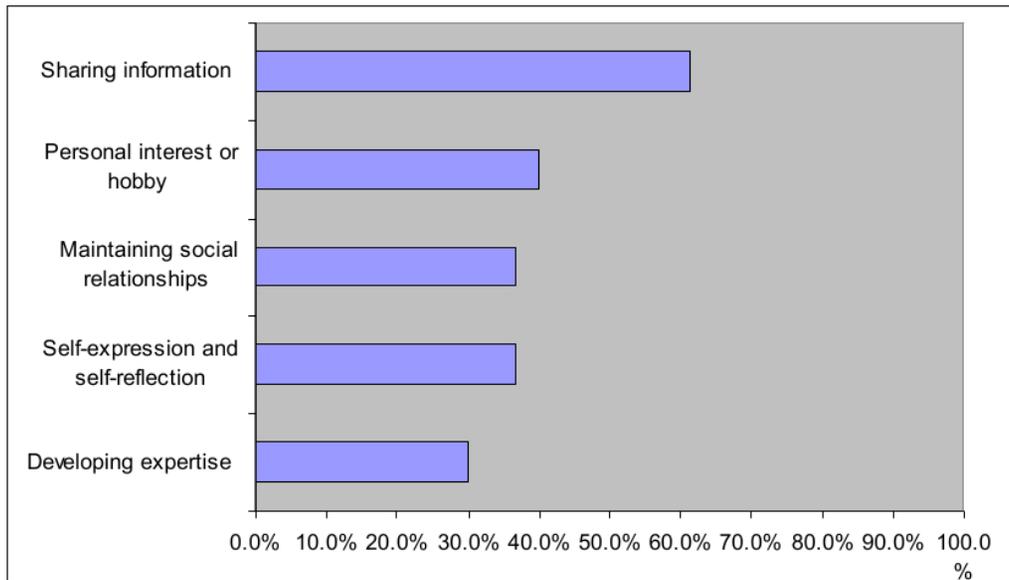

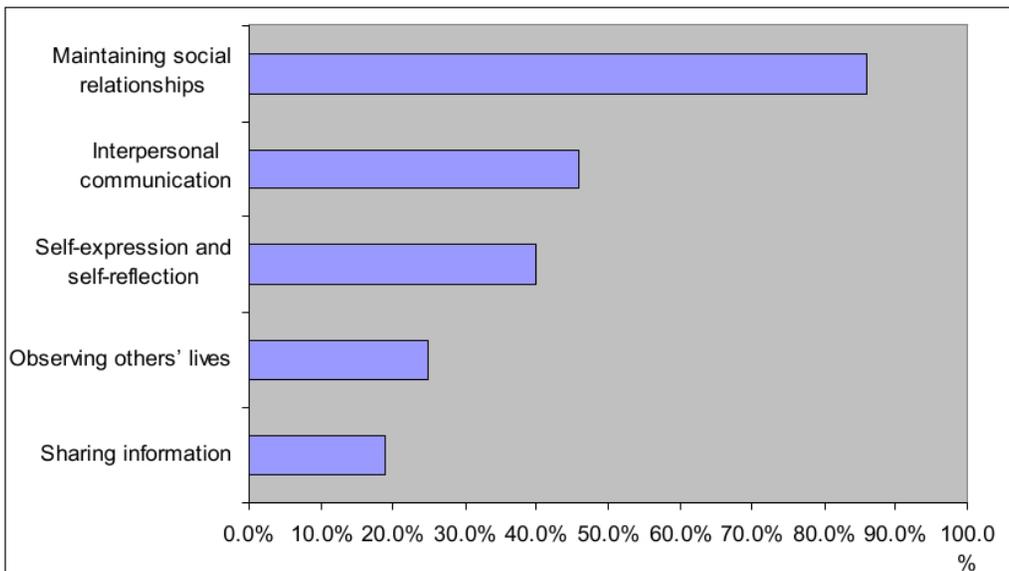*Figure 2*. Objectives for using blogs (multiple responses)

Figure 3. Objectives for using Cyworld (multiple responses)

Outcome

Outcome represents the final state that users achieved through their engagement in activities within the two web-based spaces. Along with the purposes of this study, the outcome inferred the users' perceptions of learning in relation to their individual awareness of learning (Schugurensky, 2000) through the activities they undertook in the Naver blog and Cyworld.

Most of the bloggers (90.0 %) responded that they had experienced some kind of learning through their blogging activities, implying that the bloggers experienced learning even when they did not intend to learn through blogging. One of the main outcomes of blogging that the survey respondents described was knowledge expansion by information sharing. They also interpreted those outcomes positively as *learning*. (see Park, Heo, & Lee, 2011).

On the other hand, 62 % of the Cyworld users indicated that their experiences with the SNS related to learning. They believed that engaging in Cyworld activities did lead them to positive experiences like reflecting on themselves, sustaining social bonds, and acquiring specific knowledge. (see Park et al., 2008).

Overall, the most Naver bloggers and also Cyworld users realized that learning occurred through engaging in activities in each web-based space. However, there is a difference that more bloggers acknowledged learning as an outcome of their activities, while less SNS users related their activities to learning. One of the possible interpretations of this difference could correspond to their own understanding of learning as either acquisition or reflection.

Community

Individual users of each web-based space constitute a community. That community is a sociocultural context in which the activities take place. Within the community, the subjects are related both explicitly and implicitly to one another and exchange influential contributions through the articulated interplay that takes place among the activity system components.

In the Naver blogosphere, the bloggers are connected through the relationship of "*Neighbor.*" Seventy-six percent (76%) of the survey respondents indicated that they had connected to 10 or fewer Neighbors. Regardless of the number of Neighbors, however, the number of visitors to their own blogs ranged from zero to 70,000 visitors, and the number of blogs that they regularly visit ranged between one and 100 blogs. This finding implies that the bloggers are connected by *blogs* in which they could get shared information and knowledge, rather than by *bloggers* who were friends and acquaintances.

On the other hand, SNS users connected to each other and then formed a social network that was like its name of "*Cy*world," which means literally "*relationship* world" in Korean. The relationship of *"Ilchons"* was different from what *"Neighbors"* were connected*,* this relationship was predominantly based on pre-existing social connections, such as family, friends, and acquaintances, or a relationship that expanded within the Cyworld by them as mediators. The majority of survey respondents (71%) indicated that they interacted regularly with 10 and less Ilchons. In terms of the issue of privacy, only 29% of users kept their sites completely public while the other 71% kept the sites partially open or open only to their Ilchons. Even the Ilchons were grouped according to their degree of openness, thus determining who could access specific contents. This finding implies that the Cyworld users are mainly connected by friends and acquaintances.

Rules

The web-based activities situated into an activity system are governed by various cultural norms, rules, or regulations that are either explicit or implicit.

For the explicit rules, general regulations and codes of conduct were posed by the Naver and Cyworld providers for the purpose of offering safe and respectful environments for the users and their activities in each space. The specific concerns, however, appeared to be somewhat different. On the one hand, the Naver blog service emphasizes the protection of copyrights, appreciation of differences in ideas and thoughts, use of courteous language, and so on (http://blog.naver.com/post/bloguse.htm). In contrast, the Cyworld provider places more emphasis on the privacy policy and safety issue, such as no flaming, and respecting others' privacy (http://www.nate.com/footer/legal/index.html).

Along with these explicit regulations, individual users (*subject*)' *objectives* are pursued within the shared ethical concerns, namely, the implicit rules. These are often referred to as "netiquette," a compounded word of "netizen (net + citizen)" and "etiquette." These implicit rules are often applied commonly to most web-based spaces since the main features of all these activities are oriented to facilitate social interaction.

Division of labor (roles)

The individual users are connected to others, and these complex links can represent the organization of individual roles or division of labor within the community of each web-based space. Depending on their objectives for using the web-based spaces, individual users differ in terms of their degree of engagement in activities at different levels (i.e., individual and social).

Bloggers are often categorized as either blog writers (Jung, Youn, & McClung, 2007; Nardi, Schiano, Gumbrecht, & Swartz, 2004) or blog readers (Huang, Chou, & Lin, 2008). Based on the survey results here, a third type of blogger appeared, users who spends equivalent times writing and organizing their own blogs and searching and reading others' blogs. 31 Naver bloggers (44 %) spent more time searching, visiting, and reading other blogs. These 'blog readers' use their blogs mainly to collect and gather what they want to keep in one place. Of the survey respondents, 27% indicated, on the other hand, that they spent more time writing on and organizing their own blogs. These 'blog writers' use their blogs mainly to create their own content and develop knowledge by writing their own comments, thoughts, experiences, and reflections to create a knowledge repository. Seventeen bloggers (24 %) indicated an equivalent numbers of hours for both activities, namely, as a writer and a reader.

Due to the scarcity of current research that focuses on SNS usage (Hargittai, 2008), it is difficult to find studies that categorize the types of SNS usage or SNS users. Based on the survey results, the major uses of Cyworld differentiate depending on the users' objectives, for example whether that use is for communication with others (i.e., communicator), self-expression, and/or reflection (i.e., presenter), or observing other lives (i.e., observers) . As discussed in *Object(ive)s*, some users (46 %) used Cyworld as a communication tool. They preferred using the Cyworld guestbook rather than a regular phone or e-mail to drop off a brief 'Hello' message. Forty survey respondents (40 %) indicated they spent more time creating and managing their own postings by uploading photos and writing their own thoughts and experiences. On the other hand, there were Cyworld users (25 %) who just wanted to look at others' lives within their social networks rather than actively engage in those social activities.

Activity systems on blogs & SNS

Each of the activity system components is summarized and presented graphically below using the activity triangle model (see Figure 4 and Figure 5).
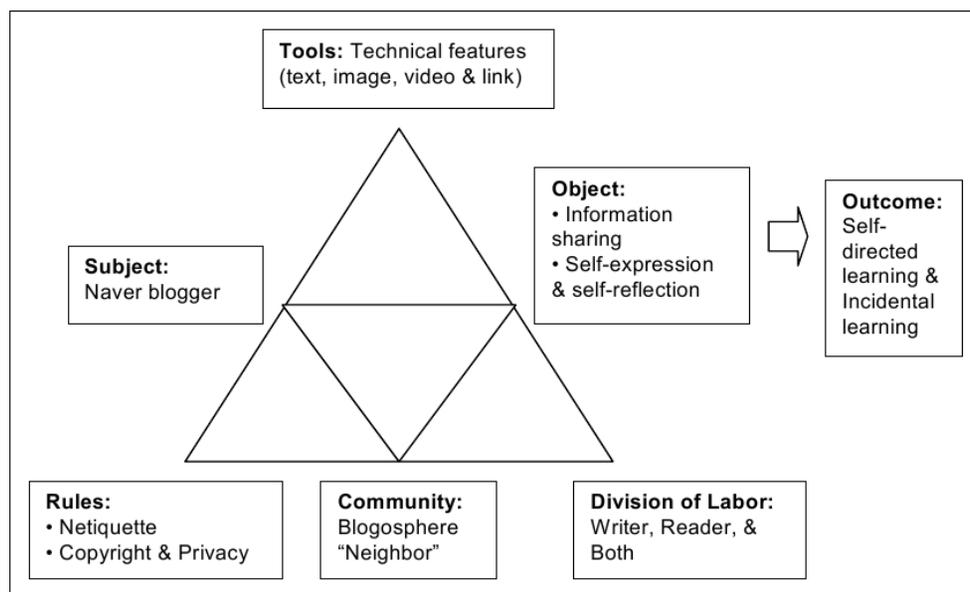

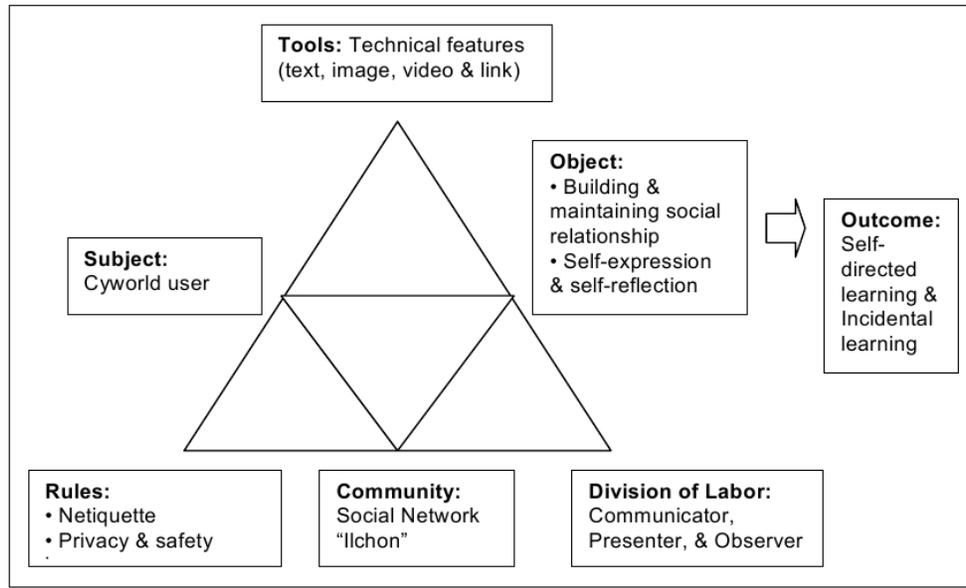*Figure 4*. An activity system for a Naver blog

Figure 5. An activity system for Cyworld

From these findings, the general features of these two activity systems can be summarized: Bloggers and SNS users (*Subject*) get into an activity system that contains diverse technical features and services (*Tool*) depending on the individuals' purposes (*Object*), namely, sharing information and/or maintaining social relationships. These individuals then communicate and interact with other bloggers and SNS users, an activity that constitutes a network of subjects (*Community*) in each activity system. Individual activities are governed by explicit regulations as well as implicit rules called as netiquette (*Rules*) and characterized by roles identified with in each community (*Division of labor*). Overall, the adult users of both web-based spaces are able to share information, develop their knowledge, and expand their social relationships by engaging in the specific activities within these activity systems.

On the other hand, specific components distinguish the two activity systems: *Object*, *Community*, and *Division of Labor*. In terms of *objectives*, bloggers mainly aim to share information and knowledge through blogging activities, while SNS users engage in their activities with the main purpose of cultivating and maintaining social relationships. Corresponding to these objectives, for *community*, in blogging practice, a community is mainly formed by *content* of blogs rather than bloggers and hence the blogosphere is considered a publicly open space, whereas a community of SNS is formed by connecting users, namely *people*, through social relationships. Hence it is instead considered to be a rather private and closed space.

Relying on the characteristics of these communities, the roles identified for each activity system are different. Bloggers are categorized into three types based on the range of their blogging activities (i.e., time spent writing and organizing their own blogs or searching and reading others' blogs): Reader, Writer, and Reader & Writer. SNS users can be grouped depending on their objectives for using Cyworld (e.g., interpersonal communication, self-expression / self-reflection, or simply observing others' lives): Communicator, Presenter, and Observer.

Overall, the differences between the two web-based spaces derive from the interpersonal interaction processes that take place between the users at the social level, whereas the common features represent their activities' focusing on personal spaces at the individual level.

Discussion

An activity system consists of multiple components, and the links between these components are complex. Since the components are intimately tied to each other, these multilateral relationships cannot be explained in simple words. Hence, sub-activity triangles between the components in both activity systems were examined closely.

The sub-triangle *Subject-Object-Community,* which is a systemic model (Kuutti, 1996), shows "the systemic relations between an individual and her/his environment in an activity" (p.27). The sub-triangles in the blogs and the SNS represented the characteristic features of each activity system. That is, while the blogs form an open community and the bloggers are linked by content as the main mediator, the SNS is a private community built through social relationships – person to person.

The differences between the sub-triangles *Subject-Object-Community* in the blogs and SNS influence the division of labor accordingly since the division of labor mediates the relationship between *Object* and *Community* (Kuutti, 1996). Based on the roles identified in our findings, in sum, three types of division of labor in each activity system were conceptualized. In the blogs, first, the bloggers' patterns of behaviors were categorized into Knowledge Creator (Writer), Information Organizer (Collector), and Information Seeker (Reader). It should be noted as well that each role does not represent a single blogger. One blogger can play all these roles to different degrees.

- Knowledge Creator: Bloggers who use blogs to post their own writings and materials (e.g., images and videos) based on their own experiences, thoughts, opinions, and knowledge in terms of their own interests and/or expertise and then interact with other bloggers by sharing comments.
- Information Organizer: Bloggers who maintain their own blogs by organizing and updating content collected from other blogs and other resources as they related to their own interests and/or expertise.
- Information Seeker: Bloggers who occasionally visit and read other blogs to seek information as they need it.

In contrast, the types of division of labor in the SNS show different patterns. The behavior patterns of the SNS users can be categorized based on their objectives for using the SNS: Self-reflector (Presenter), Interpersonal Communicator (Communicator), and Lurker (Observer). Again, a single SNS user can present these patterns to different degrees.

- Self-reflector: SNS users who upload new postings (e.g., texts and images) and manage their own space for personal self-expression and self-reflections.
- Interpersonal Communicator: SNS users who use it as a communication tool (e.g., Guestbook) to exchange news and share their feelings and thoughts with others.
- Lurker: SNS users who just look at others without any active social engagement only to get to know what they are doing.

Further, the various types of division of labor in both web-based spaces allowed us to conceptualize different dimensions of adult informal learning activities that could occur in Web 2.0 corresponding to Fenwick and Tennant (2004)'s framework (see Figure 6): Learning as (a) an acquisition process, (b) a reflection process, and (c) a practice-based community process. It should be noted as well that the meaning of these dimensions also imply the range of engagement in the informal learning processes, ranging from narrow to more extended concepts of learning.
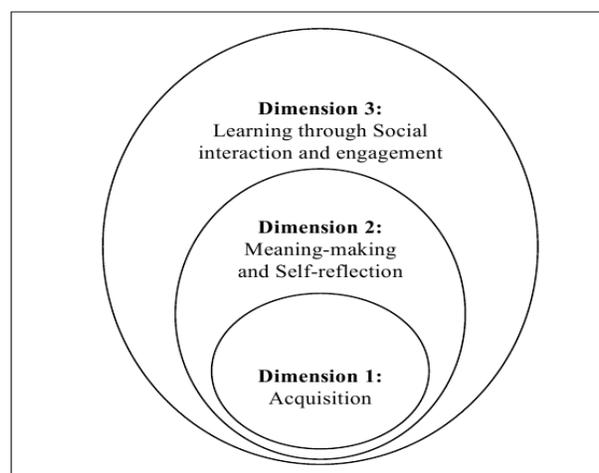

Figure 6. Three dimensions of adult informal learning activities in Web 2.0

- Dimension 1 (Learning as an acquisition process): Learners mainly seek and acquire information and knowledge from others, implying a passive role in the learning process for Web 2.0.

- Dimension 2 (Learning as a reflection process): Learners are more active dealing with and accepting knowledge by making meaning and reflecting on that meaning themselves when using Web 2.0.
- Dimension 3 (Learning as a practice-based community process): Learners create and build their knowledge through interacting with others and engaging in activities in a community, such as a blogosphere or a social network. In terms of sociocultural learning perspectives, users benefit fully from using Web 2.0, as it allows them to share, communicate, and collaborate with others.

Conclusions and educational implications

This paper discusses the processes of adult informal learning activities in blogs and SNS through investigating six components of the Activity Theory framework. The blogs and the SNS are differentiated mainly in terms of their *objectives* – sharing information and knowledge with others vs. retaining and nurturing a social relationship and interpersonal communication. Further, the types of division of labor in each activity system were identified and conceptualized (i.e., Blogs: Knowledge Creator, Information Organizer, and Information Seeker and SNS: Self-reflector, Interpersonal Communicator, and Lurker). This conceptualization allows us to identify the different dimensions of adult informal learning activities available in Web 2.0, corresponding to the different perspectives taken on the adult learning processes (Fenwick & Tennant, 2004): (a) Dimension 1: acquisition from other Web 2.0 users; (b) Dimension 2: meaning-making and self-reflection; (c) Dimension 3: learning through social interaction and engagement.

In addition, this study makes its contributions by illustrating how a methodological approach – the Activity Theory– can be applied to a specific context, web-based spaces. The analytical approach for this study also demonstrates a practical application of the Activity Theory framework and the interpretation of findings from investigating the learning activities engendered in Web 2.0. Although the approach in this study is limited to a certain degree, its conceptual discussion does advance our understanding of the universal and local features of Web 2.0 applications and the potential value of using these applications for adult informal learning. Furthermore, additional work and collection of data representing different contexts would be worthwhile to generalize the findings of this study.

Based on the overall findings of this study, it is confirmed that Web 2.0 as an informal learning environment enables adult learners to engage in different levels of interaction and participation in social activities and hence to experience diverse dimensions of learning depending on their own purposes as self-regulated and self-directed learners. There are education implications of using Web 2.0 for adult informal learning. First, an adult learner should have a clear sense of purpose when choosing Web 2.0 applications. This study shows that the individual level of activities (i.e., self-expression and self-reflection) found in these two web-based spaces can produce different interactive processes and valued outcomes. Recognizing the differences can help adult learners have purposes, in other words, learning objectives, before their engagement in the web 2.0 spaces rather than acknowledging learning happened afterward and plan their learning processes and outcomes. Second, along with the purpose, an adult learner can decide her/his roles and degrees of engagement in the activities found in these web-based spaces. This study identifies the patterns of behaviors as specific roles in both web-based spaces. It presents a spectrum of engagement, from rather passive to active and from rather individual to an interpersonal level. By increasing the level of engagement, s/he can gain more diversity in learning by relating to the different dimensions of learning activities (i.e., learning as acquisition, reflection, and community-based). Hence, more interactive ways of using Web 2.0 may guarantee not only more diverse, but also a better quality of learning.

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