The Research on Informal Learning Model of College Students Based on SNS and Case Study

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Abstract. With the rapid development of network technology, informal learning based on online become the main way for college students to learn a variety of subject knowledge. The favor to the SNS community of students and the characteristics of SNS itself provide a good opportunity for the informal learning of college students. This research first analyzes the related research of the informal learning and SNS, next, discusses the characteristics of informal learning and theoretical basis. Then, it proposed an informal learning model of college students based on SNS according to the support role of SNS to the informal learning of students. Finally, according to the theoretical model and the principles proposed in this study, using the Elgg and related tools which is the open source SNS program to achieve the informal learning community. This research is trying to overcome issues such as the lack of social realism, interactivity, resource transfer mode in the current network informal learning communities, so as to provide a new way of informal learning for college students.

1. Introduction

According to the Pareto Principle, people's knowledge acquired in life about 80% comes from informal learning, only about 20% of the knowledge from formal learning of formal education institutions such as schools, while inputs and concerns to informal learning of people are less than 20% [1]. Informal learning can be intentional, conscious, or unintentional, unconscious, however, the informal learning which intentional and conscious can have a positive impact on learning efficiency and learning quality according to learning characteristics. College students have a strong desire for knowledge, strong learning and innovation ability, but also become the main force of informal learning.

Social relationships in the online learning has become an important resource in informal learning, people through the establishment of a stable social network to achieve the sharing of network resources with others. The Social Networking Services (SNS) focus on social authenticity, that breaking the

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network community of the virtual, so that interpersonal relationships with more authenticity. SNS integration of a variety of applications as a Web2.0 concept and technology, with interactive, cooperative, initiative, communication and other characteristics. Learners can acquire knowledge from established personal social networks and facilitate interaction by introducing SNS into informal learning, and form a stable and sustainable social network that promotes learners communicate and sharing of resources to achieve the positive effects of informal learning. SNS can effectively promote the formation and development of social networks among learners. By using the information push mechanism provided by SNS, it is possible to perfect the network learning information transmission mode and to create a flexible and convenient network learning interactive way, others, it is possible to construct a flexible and diverse network learning environment and to divide the groups according to the theme, to meet the learners' common learning interests and needs [2]. The characteristics and functions of SNS make it have great development potential in the informal learning of students.

2. Related research

Informal learning as the main mode of learning in people's daily life and work, was introduced by Malcolm Knowles in the 1950s, in which he defined the informal learning as a form of learning relative to formal learning[4]. Since then, more and more researchers have paid attention to the informal learning.

(1) Research on informal learning in network environment. Research focused on social software to support informal learning, informal learning models, informal learning resources and resource integration, suggestions and strategies to promote informal learning, and informal learning communities and so on. Elina Jokisalo and Antoni Riu studied informal learning in the Web 2.0 era, pointing out that people can learn through a variety of ways [5]. Bull, G., Thompson, A., et al. proposed the use of informal learning to assist students in formal school learning for the function of social software, and the use of relevant social media connection formal learning and informal learning theoretical model [6]. Ferretti, S., Mirri, S. and others attempts to Web2.0 technology used in informal learning practice and proposed a Web2.0 technology-based learning tools for users to edit educational resources, and through collaborative work analysis of multimedia content[7]. Carmen Holotescu studied the use of Cirip.eu in informal learning, which is a microblogging platform developed specifically for education. It can provide a variety of functions to facilitate the sharing and delivery of open educational resource [8].

(2) Research on informal learning based on SNS. Research focused on the advantages and problems that the social networking sites to education, the use of open-source SNS social networking platform that developed for education to establish education-based social networking sites and so on. Jones, B. & Conceicao, S. C. O. proposed that SNS provides a platform for learners to participate. Through the SNS website, learners can establish new interpersonal relationships and promote personality development[9]. M.D. Roblyer et al. investigated the use of Facebook in college education and explored how to use SNS to facilitate student learning[10]. Sacide Güzin Mazman and others argue that social networking tools have the interactive, collaborative, active participation, information and resource sharing features, and applying social networks in education and instructional contexts has great potential [11]. John D. Ophus and others discuss the SNS website in the university curriculum application, and students hope take the Facebook and other social networking systems as a communications platform [12]. Kevin P. Brady builds a personalized educational social networking site with Ning, enabling learners to communicate and collaborate on a global platform[13].

It is a good chance for college students of informal learning and how to use SNS to construct the informal learning community and get better results of informal learning is the research focus. The research mainly from the following aspects based on SNS informal learning. (1) Construct the informal learning model of students based on SNS. Analyzes the main elements of the informal learning model based on SNS, on this basis, the theoretical model of informal learning is constructed. (2) A case study of informal learning community based on SNS. According to the theoretical model proposed in this paper, the open-source SNS program Elgg are used to develop the informal learning community.

3. Related concepts and theories

3.1. SNS

SNS is an internet services for social network. It extends people's social network in real life to the virtual network, and enlarges the social scope so that the users can establish a wider network of social relations. Boyd and Ellison defined SNS as a Web-based service, (1) allow individuals to establish a public or semi-public profile within a privileged system; (2) connect with other users and share the connection with them; (3) to browse or share connections made by other users within the system, and establish contact with others[14]. Another common explanation of SNS is the social networking site, which based on the idea of social network relationship system, such as Facebook, Myspace and other social networking sites. SNS also has an interpretation refers to the social network software, which is the next generation of personal network-based software that used distributed technology[15].

In this study, SNS is defined as *social network service*, which refers to Internet application services that help people to build social networks. It also refers to *social software* or *social networking sites*. For example, Blog, microblogging, podcasts, BBS, Wiki, Podcast, RSS, social networking sites, etc. The features of SNS: 1) User-centric. Users are both information publishers and creators. It to achieve the information exchange and sharing; 2) Provides a real network environment. It has a real social function to meet the real social needs of users to achieve virtual to authenticity; 3) SNS provides an open platform. SNS integrated a variety of technical applications to achieve a variety of forms of aggregation.

3.2. Informal Learning

The concept of informal learning is proposed in relation to formal learning. Danlelle Colard and Jens Bjnavold argue that formal learning refers to learning taking place in an organized and structured context, as learner's perspective it is intended and planned[16]. However, the concept of informal learning has not been uniformly defined, some representative points of view are: Marslck and Watkins argue that informal learning is usually conscious learning, but not rigorous organizational learning activities and it is closely related to life and work situations with learners themselves. The initiative of informal learning rests in the hands of learners which can happen in public institutions [1]. Merrill argues that informal learning is often purposeful, but not tightly organized. Informal learning may take place in the learning institutions, and the learning initiative is in the hands of the learner[17]. Table 1 provides a comparison of formal and informal learning from multiple perspectives.

Table 1. Comparison of formal and informal learning

	Formal learning	**Informal learning**
Place	Educational or Training Institutions place	Work, Family or Daily activities place

Flexibility	Structured learning objectives, learning time and learning support services	Flexible learning objectives, learning time and learning support services
Certification	Certification	Normally no authentication
Mode	Intentional	Most of the time it is not intentional
Content	Content fixed, pre-arranged	Content is not fixed, diversification of resources
Knowledge	Mainly Explicit Knowledge	Mainly Tacit Knowledge
Culture	The same cultural environment	Culture environment is quite different

In this study, the informal learning is defined as learning that occurs in everyday activities related to work, family, or leisure. It is unorganized or structured in terms of goals, time, and learning support services, but the results of learning are usually not supported by some authorities' confirmation or certification. Informal learning may be unintentional learning and may be unrecognizable, and it is also possible to learn intentionally that in order to promote their own knowledge or skills, so learners actively learn. At this time, the learners have strong motivation to study and learn more flexible time, and they can also seek diversified learning services themselves.

3.3. Related theories

(1) *Six-degree separation theory*. Six-degree separation theory proposed by the Harvard University psychology professor of Stanley Milgram. This theory explains the *weak connection* which is prevalent in society and it can play a very important role in interpersonal communication. It provides a good theoretical basis for the development of many social networking sites, and SNS site also proved the powerful power of this theory. The character of SNS is that the user's interpersonal network from the reality of social life to the network. Each individual's social circle is constantly enlarged and finally become a large network.

(2) *Connectivism theory*. Connectivism theory was first proposed by Canadian scholar George Simmons. The theory is that learning is the process of forming connections and creating networks. This process takes place in a complex and chaotic environment. Learning can take place not only within the learner, but also in the community, organization and equipment. The task of internal cognition processing is offloaded to the knowledge network[18]. Learning becomes an interrelated process, and each learner constitutes a knowledge network. Learner needs to learn new knowledge constantly and integrate it into the internal network.

(3) *Social constructivism theory*. The early Soviet famous psychologist Vygotsky's social constructivist learning is defined as learning is a unique high-level psychological structure and skills of people, and this function is not generated from the internal spontaneous, but only from people's collaboration activities and interpersonal relationships[19]. Informal learning is realized through the interaction with others. Learners promote informal learning in the process of communication and construction, and make informal learning develop in the direction of meaning construction.

(4) *Long tail theory.* The Long Tail concept first proposed by Chris Anderson[20]. It has evolved from the economic field, but has a close relationship with informal learning. At present, formal learning in schools and other formal educational institutions is the *head* of the long tail curve, while the informal learning methods such as network-based autonomous learning and collaborative learning are the *long tail* of learning. Informal learning is more of the problem in the context of non-conforming real-world situations. Different from formal learning, learners can acquire more useful knowledge and transform

them into their own invisible knowledge system when they spend less effort in informal learning.

4. The Construction of Informal Learning Model for Students Based on SNS

Based on the analysis of the important supportive role of SNS on informal learning in concept and service, this paper constructs the informal learning theory model of students based on SNS by combining the needs of informal learning community.

4.1. Informal Learning Environment Model for College Students Based on SNS

Based on the theory of Six-degree Separation, Connectivism theory, Social Constructivism, Long Tail theory, this paper analyzes the constituent elements of informal learning model based on SNS and first constructs the informal learning environment model of students is shown in Figure1.

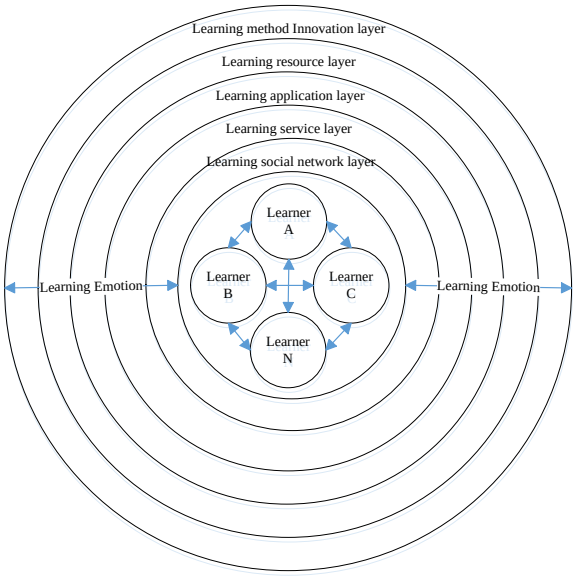

Figure 1. SNS-based informal learning environment model for college students.

The informal learning environment model of college students based on SNS is constructed on the basis of learners, learning resources, learning service, social interaction and learning emotion. The model is divided into five layers. From the inside to the outside is learning social network layer, learning service layer, learning application layer, learning resource layer, learning mode innovation layer. In addition, learning emotions throughout the environment model. Because the students in the network informal learning in the cognitive and emotional is integrated, and strengthening the emotional participation of students is cornerstone to improve the effectiveness of learning the. The following is a description of the informal learning environment model for college students at different layers.

(1) *Learning social network layer*. Learning social network layer is the core of the model, and it refers to the various links that students in the SNS-based informal learning community. Construction of social network not only facilitate the acquisition of learning resources for students, but also connected the students together who at different times and regions. Learning social network plays an important role in cultivating students' collective wisdom and enhancing their creativity.

(2) *Learning service layer*. Learning service layer is the support factor of SNS-based informal learning community. It mainly provides some auxiliary tools for informal learning of students, and provides hardware and software conditions for establishing learning community. SNS provides a variety of learning services for informal learning of students which provide methodological and technical support. The basic learning services are Blog, RSS, IM, E-mail, Wiki, Group, Podcast, etc.

(3) *Learning application layer*. Learning application layer which based on the learning service layer is to build applications that students need for learning, and students can choose and gather the necessary services to play its overall role in order to form a variety of learning applications, such as content subscriptions, search engines, personal publishing, and resource sharing, etc. These learning applications meet the diverse learning needs of students and facilitate the sharing of knowledge in informal learning communities.

(4) *Learning resource layer*. On the basis of various learning services, students could share learning resources and knowledge, and will share their own audio, video, works with others, others can also give comments and modify comments. Students not only gain knowledge in their own community, but also access the wider learning resources through the community's search engine to the Internet.

(5) *Learning method Innovation layer*. In the SNS-based informal learning community, college students are knowledge sharers, creators and publishers. It can effectively improve the effect of autonomous learning of students, and promote active cooperative learning and improve the effect of research learning. SNS is not only a service provided to informal learning, but also a learning style and atmosphere. Students in the organization of learning resources, learning services and learning applications, while also organizing their own social relations.

(6) *Learning Emotion*. The achievement of students' learning goals and the guarantee of learning effects require the maintenance of community emotion and certain motivation. The informal learning community can meet the needs of students in emotional maintenance, communication and interaction.

4.2. Informal Learning Process Model of College Students Based on SNS

According to the theory of connectivism, social constructivism, from the point of view of students' informal learning process and integrate the learning service of SNS effectively, in order to construct the process model of SNS-based informal learning, as shown in figure 2.

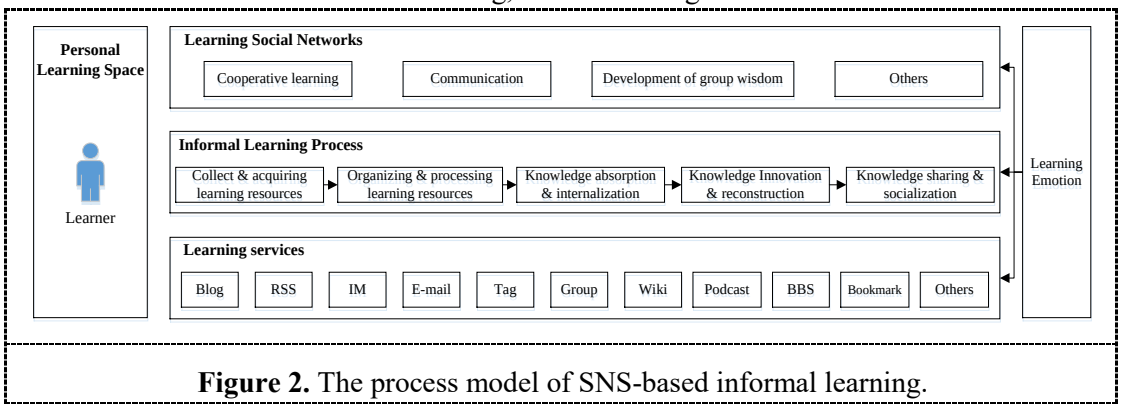

Figure 2. The process model of SNS-based informal learning.

(1) *Collect and acquiring learning resources*. Collecting and acquiring learning resources is the starting point of the informal learning process of students. Students can use the services provided by SNS to access learning resources, such as subscribe resources through RSS, as improve the efficiency

of informal learning from the learning community or group to share the resources released by others and the collaboration to obtain valuable learning resources, etc.

(2) *Organizing and processing learning resources*. Students identify learning resources to their own learning content from the network, and need to have the ability to identify information. When the students through various means to obtain learning resources, they need to organize learning resources, processing, storage and organization orderly, in order to facilitate search and update in the future.

(3) *Knowledge absorption and internalization*. The absorption and internalization of knowledge is the key process in the informal learning of students. Students will be extract and absorption knowledge from the outside to internalization of their own knowledge network. There are two ways, one is the students to the meaningful extraction and absorption of resources and internalization; the other is in the unconscious state to get the knowledge to complete the internalization of knowledge.

(4) *Knowledge Innovation and reconstruction*. The innovation and reconstruction of knowledge is the most important link in the process of students' informal learning. The goal of the students to absorb and internalize knowledge is to complete the innovation and reconstruction of knowledge. The learning service provided by SNS can effectively realize the innovation and reconstruction of knowledge and connect them to learning social network which can provide more opportunities from communication and learning for students to form their own unique knowledge system.

(5) *Knowledge sharing and socialization*. Knowledge sharing and socialization are the prerequisite for the informal learning of students. The learning resources of acquisition, collation and processing, and the internalization and innovation of knowledge are all based on the sharing and socialization of knowledge. Knowledge sharing and socialization require students to re-processing their own knowledge and through SNS can effectively achieve the preservation and dissemination and knowledge flow between students to achieve knowledge sharing and socialization.

5. Realization of College Students' Informal Learning Community Based on SNS

5.1. The Design of Informal Learning Community Based on SNS

Based on the analysis of the specific needs of the student to the informal learning community, and according to the informal learning model proposed in this study, the design of the informal learning community of functional modules as shown in Figure 3.

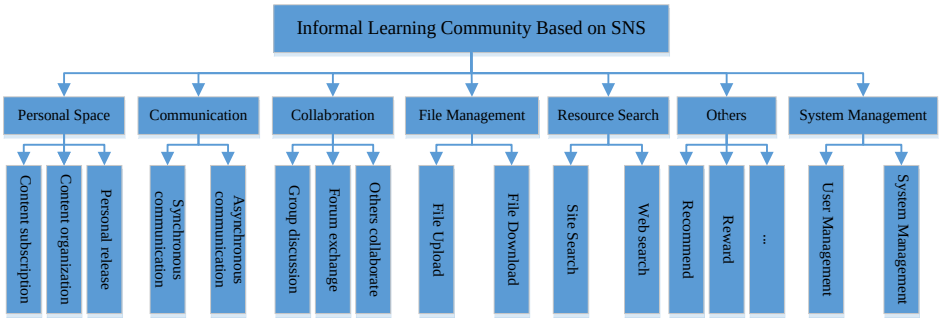

Figure 3. The Functional Structure of Informal Learning Community Based on SNS.

The informal learning community mainly includes personal space modules, include personal diary,

learning materials, network resources, etc.; Communication module, including synchronous or asynchronous communication, online discussion, etc.; Group collaboration module, such as the establishment of forums, groups, etc.; File management module, include the PPT, Word, pictures, audio/video and other learning materials to upload and download; Resource search module, for search and access to learning resources, support for internal and external search, etc.; Other modules, including some useful features, such as initiating voting, learning resource recommendation, incentive mechanism; System management module, include the user login, user rights, related settings, etc.

5.2. The Development of Informal Learning Community Based on SNS

5.2.1. Develop Technology

The informal learning community in this study uses the open-source SNS program Elgg to build and secondary development. This open approach can reduce the difficult of development and development cycle is short. In addition, developers can take full control and have a greater flexibility, such as add new features. Elgg is a free open source social networking program designed specifically for education, and it achieve social networking around the blog. From the social point of view, Elgg is a social platform to interests as the core. It integrates a variety of applications and have a good scalability is very strong and also can install a lot of plug-ins.

5.2.2. Main function of the community

(1) system management module. This module is management and maintenance to the site, pages, activities, other users, plug-ins of the administrator, and can also track learners. As shown in Figure 4.



Figure 4. System Management.

(2) Communication module. If there are problems between the members can send site message. You can receive the message sent by others as long as online, as shown in Figure 5.

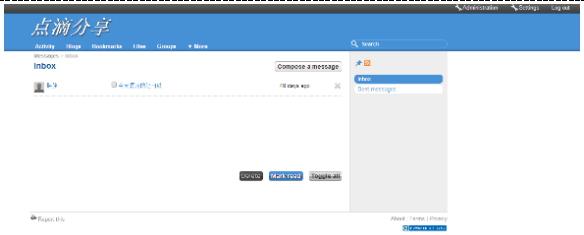

Figure 5. Site Information Management.

(3) Group collaboration module. Learners can create their own groups, and also can join other groups interested. Learners who enter a group initiate a topic and invite others to join the group forums and present different opinions. In the group, any participating learner can clearly see the state of other learners in the platform, as shown in Figure 6.

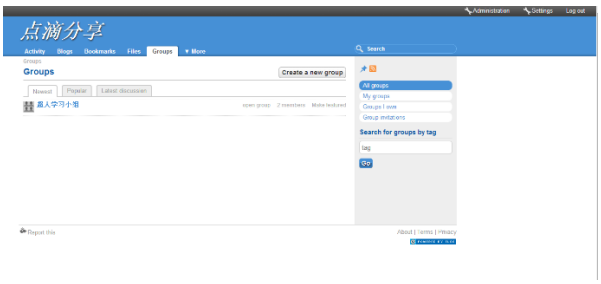

Figure 6. Group collaboration.

6. Conclusion

This study summarizes the related research of SNS and informal learning, and the concept of informal learning is defined and proposes an informal learning model for college students based on SNS. On this basis, the use of Elgg tools which is an open source SNS program for empirical research and established the informal learning community of students. Mainly include the following aspects in detail: (1) It discusses the supportive role of SNS in informal learning from concept and service. (2) In-depth study of the main elements of constructing the informal learning model based on SNS, including learners, resources, emotion, service and social interaction. On this basis, the theoretical model of informal learning is constructed and elaborated in detail. (3) Implementation of the practice according to the theoretical model and construction principle Proposed in this paper, and use open-source SNS program Elgg and related tools for development the informal learning community. There are some shortcomings in the study, in the follow-up study will expand the scope of the informal learning community and will continue to improve in the future study, such as expand the scope of the informal learning community and constantly improve the model, and hope to provide reference for further research.

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