

School Based Administration Model for Virtual Learning Community on Internet

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Abstract: This paper will discuss an administration model for learning communities, which are organized as the system of education just like the schools, classes or college departments. When learners join in a community of this classified structure, they will be provided with some communication tools and personal services to encourage them to interact with other schoolmates and teachers. The effective operation has been found by means of the cooperative learning activities and sharing resources with each other. In order to share the personal information among different kinds of learning software and web programs, we use the sockets and cookies mechanism, which is applied to applications and internet programs respectively, to confirm user's authentication. Finally, we introduce our prototypical site – EduCities, which is designed by applying the above concepts. We got many positive reflections and found some issues worthy to research.

Keywords: learning community, virtual community, social learning, learning activities.

1. Introduction

In recent years, the Internet has been rapidly expanded to impact our life. We explore much information without outgoing, just through the synchronous connection (chat room, videoconference, and so on) or non-synchronous connection (such as the Email, message board, and announcement board, and so on). Generally, The virtual communities will be formed by these behaviors. Thus, we may consider the problems of the possibilities for educational applications, which are the network learning and the administration for learning communities.

There are many web sites established by using the network learning strategies such as the virtual colleges or virtual classes. They usually provide the specific learning resources, discussions, and educational activities. These kinds of learning environment want to simulate the real classes as the distance learning through the synchronous and non-synchronous contact for students and teachers [1-3]. But we believe this is not the only significance for learning communities. This paper will propose the organization model, autonomous administration, and interaction strategies for learning communities on Internet, which are based on the schools structure. Also, we'll discuss the mechanisms to share and protect the personal information of the members in communities. Finally, a prototypical web site is implemented to experiment with these concepts.

2. The features of virtual learning communities

In the past few years, many researchers endeavor to focus on administrating the virtual communities for electronic commercial purpose [4], but didn't respect to the educational or learning communities. In the past of industrialized age, the objective of school education is to train the students for career. The key points on learning were concentrated on the practical knowledge and useful technologies. The schools, as the manufactories, speedily generate many human resources for enterprise's requirements. Students get into one or two professional techniques and then make good use of them on their future careers. But this policy is not compatible now, since the information technologies have been progressed rapidly, and the old skills are not able to suitable for use in many domains. If the

traditional enterprises can not be alert to these trends and reform their administration models on time, we can predict they will disappear very soon in business war.

Almost people have believed the trend of lifelong learning, but have not more time to go back to school to learn some courses after the daily works. Thus, learning on Internet will be the convenient way for them. Lots of learning web sites were established gradually, and the learners on these sites would be organized as virtual communities. The members of this kind of communities, said learning communities, generally consist of students, teachers and graduated students.

The requirements of learning communities are different from the electronic commerce. We have to observe them on educational view. The following we induced are the main features of learning communities:

- a. High interactions:** When a learner encounters some difficult problems, and no one can give him solutions immediately, he will miss the best chance to make a good impression of some important concepts on himself. So, the best learning environment is one to one interactions, such as the adaptive introduction and problem solving in real time. In learning communities, high interactions will be the necessary feature and function just like the tutor who can provide one to one discussions.
- b. High transmissions:** Computer networking is one of the fastest transmission media at the present day. Because the learners have the same objectives to interact with each other, the information will be accelerated to transmit between users in communities.
- c. Adaptive requirement (High personal service):** Many people explore the information on Internet for something to learn. But it is a difficult affair to find the useful or suitable learning resources in a greater part of information. Consequently, a smart learning service is desired to provide the adaptive, useful and personalized information for learners.

There are many learning resources on Internet scattered all over the world, and no one designated site can integrate them to support omnibus methods for learning consultation. This paper will discuss the administration of this kind of web site, and propose the school-based organization for the learning communities.

3. School based organization for learning communities

3.1 The participator

It is a natural way to organize the learning communities as the school structures, since the greater part of learners are familiar with their school environment. The members are consist of students, teachers, parents and alumni, who are identified themselves with the communities, and interested in their activities. Simultaneously, the members of school based communities may spend much more time on contacting with others, therefore can increase the their real feelings on the virtual world. This kind of virtual communities is similar to the "locality style" described in "Net Gain" written by John Hagel III and Arthur G. Armstrong. These communities have the great potential that can create long value for society. They will grow, change and evolve the very personal and original style due to the effects from social contexts and particular cultures.

The alumni have been graduated from school for many years, so that we maybe consider that they are not interested in these communities. In fact, almost people have something worth to be mentioned in their memory of school days. A lot of perceptions were constructed and some bosom friends are made at that time. If they have a chance to get together in these virtual communities, we believe that many alumni will be glad to interact with other old classmates.

Parents will be an important and positive role in this community. In real society, there are many parents can't take care of their kids. Because they are busy at work, so that they leave the educational problems to the schools. And never understand to the depths of their children's heart. Then, the children will lake for consulting with their parents and maybe affect their psychological development. If parents are willing to join the learning communities of schools, to grasp what ideas the kids are thinking, and to exchange more comment with other parents. Not only the gap between the parents and kids will be closed, but also can push their emotions and bring up their healthy personality.

3.2 Hierarchical structure

Based on the school structure, we separate a large school into some groups as the minimum unit of learning communities. For examples, the groups may be the classes in primary schools or junior high schools; the

departments in high school, colleges or universities; and the same grades of the graduated students (we denote the “same grades” as the students graduated at the same time).

A greater part of virtual communities communicate for holding sentiment, searching information of friends, and exchanging information. The administrative policies not only support efficient searching system, but also provide many management tools such as the personal information management, message board, announcement board, and chat rooms, which are the essential functions for virtual communities. Especially, the system provides the interactive interfaces constructed like a hierarchical structure. For example, figure 1 shows the school system of Taiwan.

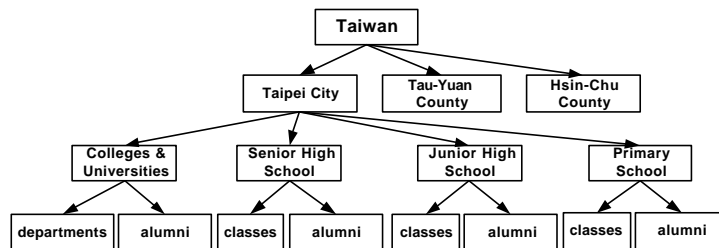


Figure 1: School based organization structure (for example in Taiwan)

The bases of the structure are the classes and alumni. They will be organized by processing an automatic procedure to form a new class or community. The members of each community can elect a manager and conclude some rules to manage their community themselves.

3.3 Administration model

The administration policies of learning communities are to let every member enjoy participating their activities continuously. We formulate five behavior indices to record member's interaction in communities, such as the credit of personal behaviors that can deposit to his bankbook. The following are illustrations of these five indices:

- a. **Knowledge index:** This index indicates the achievement that the learners learnt from some courses or tests.
- b. **Emotion index:** This index indicates that the zeal for the learners participating activities, helping other members, and joining public service in communities.
- c. **Technology index:** This index indicates the abilities of using information technology to assist or apply to his learning.
- d. **Honor index:** This index indicates the honor or award that the learners win in any activities or tests.
- e. **Vitality index:** This index indicates the learners can voluntarily join many educational activities, publish learning materials, answer questions for members actively, and so on. That is to show one's vitality in communities.

Each learning activity will be assigned to various values of the five indices. After the learners participate any one activity, the statistic system will evaluate the contribution of each participator and add appropriate value to their indices. It seems there are five kinds of various dollars of virtual money deposit to these five bankbooks. When any index is reached or exceeded than the high score we defined, we will publicly praise these learners on web site, and give the substantial reward. The prizewinner may be recommended to join the administration groups, even involve the actual operations of communities. Let the interactions of virtual world on Internet link up with the real world. And the Internet will be a really useful media for learning.

3.4 Personal services

Personal services are now the essential functions of the administration mechanism in organizing communities. The basic functions provided for learning communities are the e-mail, address book, discussion area, announcement board, chat room, and searching system. Besides, we can design a simple personal agent to provide personal information maintenance, which are the basic information, personal homepage, learning records, on-line professionals automatic searching, learning suggestion, personal secretary, learning resources searching, and so on. When a learner logs on the system, the agent system is started to record some meaningful tracks. For example, a learner participates to learn some on-line courses. The agent system will record his learning subjects, scheduled progress, assigned exercises, and the date of quiz. When he encounters difficulties in learning courses, he can

operate the searching system to find out the helpful information. Especially, the system can record the past information he had operated, to provide quick reference. The learners can also set some options of interesting domain to learn. Everyday, the agent system will search and list the new resources and professionals who are willing to share their experiences.

4. Information sharing and security problem

A virtual learning community has some learning systems and socialized mechanisms, which are constructed in many distributed servers. It is an important infrastructure to construct a centralized site for organizing and integrating the user's basic information such as the user ids, names, passwords, and so on. This center generally operates the creations, updates, deletions, security maintenance, and provides requested information to distributed systems. Thus, the researchers can concentrate on their system developments without worrying about users' identification.

In our plan, a web site of virtual learning communities has some learning systems that can be divided into two parts. One is accessed via clients' web browsers (ex. on-line certifications), the other is executed by individual learning applications (ex. CAIs). Although these two kinds of learning systems have different programming and operating methods, yet they also can identify their users via the identification center. Certainly, the protection of personal information is an important security problem on this center. In order to avoid the users' information to be incautiously betrayed we set up a uniform format to support users' identification. The cookies and sockets mechanisms are used for web servers and applications respectively.

Cookie is a short data stream delivered from web server to the web browser of clients. The web browser will refer the values in the cookies to response the dedicated information to web server just like the network domain, transmission path, and time limits. The most helpful advantages of cookies are that we can store some dedicated information to the clients and fetch them back when we need via the cookies. When users log on a learning system, they have to be identified by giving the id and password. The identification center then sends the formatted information to clients' web browsers. The browser also sends this information to each learning system. The learning system uses the socket mechanism to identify the information, and get the required information. Figure 2 is the flow chart of the above identification mechanism.

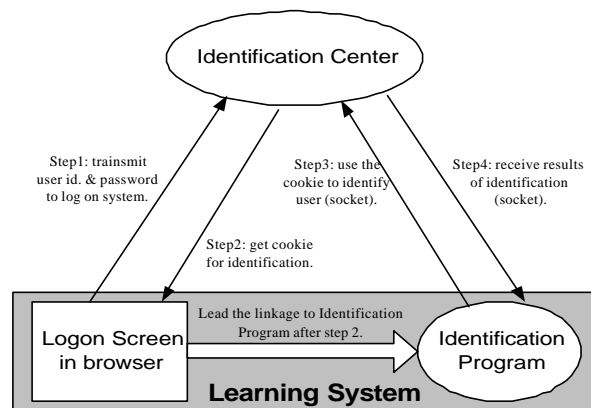


Figure 2. The flow chart of identification mechanism

5. A web site for learning communities --EduCities

We established a prototypical web site, named EduCities, for virtual learning communities. This site was performed by autonomous and social learning concepts to provide a life-long learning portal on Internet for learners. The following sub-sections will describe the practical administration model of the EduCities.

5.1 The cities metaphor

The orientation of EduCities is located on a national web site to provide educational contents, learning activities, community activities, etc. We operate this site with a metaphor of cities and residents just like the society of the real world. That is the socialized learning environment. The residents in these cities consist of students, teachers, parents and volunteers with their own right and duty. When users join to be a resident, they will be possessed of their own

homepage space (equivalent to house), e-mail address (equivalent to doorplate), and join in some community. They can publish personal content they are interested and build up their community. The city center provides learning resources, management of city government, citizen training, and hold many miscellaneous activities to promote educational contents in citizens' homepages.

5.2 Organization structure

The organization structure of EduCities is based on schools and classes. When a user registered as citizen, he has to join in a community at least, that is, to choice his enrolled or graduated school of the highest one. In Taiwan, we organized all of the schools as a tree structure. The citizens can find out their "home" via this tree, and search personal information of friends. Members in the same school or class can form a community. And city center provides some simple communication tools, just like the message boards, guest books, and member lists. Then members can interact conveniently with each other.

5.3 Personal information center

The residents in EduCities maintain their personal information in this center, which consists of id, password, real name, nickname, sex, birthday, school name, class, e-mail, address of homepage, personal introductions, photograph, and so on. These informations are never distributed without the permission of learners. We use the cookies and socket mechanism to provide the identification for other learning systems.

5.4 Learning activities as the interactive promotions

Since the Internet is one better way to construct and enhance the human's communication. We introduced the high technology and high contact to organize multiple educational groups. That is, the city center will sometimes arrange contact activities for citizens to face to face interaction, and encourage them to enjoy themselves. Then, the learning communities will be constructed gradually. So, the communities in EduCities are constructed by the structures of schools and classes. Besides, we try to carry out activities continually on Internet, and encourage the residents to participate in their learning activities.

6. Conclusion

Learning communities are the essential factor on Internet learning. But how to organize proportional communities to fit a large amount of learners, and what kind of the administration model can encourage learners to actively participate in their activities? We proposed a school based administration model to organize students, teachers, parents and life-long learners. They are distributed into their enrolled or graduated school of the highest one. The web site for learning communities provides many communication tools for their interaction. And there are many activities arranged regularly to enhance the social learning. We formulate five behavior indices to record member's interaction in communities, and build up an identification center to share and protect the personal information. We also constructed a web site, EduCities, to implement this mechanism, and discovered the members' loyalty to the communities arise. Almost of the residents expressed their positive feedback of the way of learning on Internet. Many educational researches, plans, or experiments can be implemented on this platform.

We found and carry on some issues worth to research, which are the designing models of network learning, the collection and evaluation of learning portfolios, the dynamic database management system of learning communities, and the design of personal agents for learning.

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