

Using an Online Learning Management System as Collaborative Media to Support Adult Learning: Needs Assessment

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This article presents a study that investigates the needs of using an online learning system as collaborative media to support adult learning. Participants of the study are 168 full/part time working graduate students. Three attributes of adult learners' needs (need for studies, need for communications and support, and need for general information) are analyzed in relation to their needs for an online learning community. An online learning management system, *WebCampus*, is chosen as the collaborative media to build an online learning supporting-community. The results revealed that all three attributes of needs can be used to predict the extent to which an adult learner feels he/she needs such an online learning community.

Keywords: adult learning, adult learning community, collaborative media, needs assessment

INTRODUCTION

The research on adult education has evolved since Lindeman's publication of *The Meaning of Adult Education* in 1926 (Lindeman, 1989) that marked the beginning of the field. Knowles emphasizes that adult learners are independent and self-directed, and he later formulates an attribute of adult learning theory by developing the principle of *Andragogy* and introducing the theory to the field, with the assumptions that: (a) adult learners need to know why or what they are learning for; (b) they need to learn experientially, for instance, with task-oriented learning; (c) they approach learning as problem solving, and (d) they learn better when they see the immediate value of the learning-topic (Knowles, 1970, 1975, 1980). As self-directed learners, adults learn better if they set clear goals of learning, explore and discover the resources they need, have the opportunity to choose the learning methods they prefer to, and are able to evaluate their progresses (Brookfield, 1993; Cranton, 1992; Knowles, 1975; Lai, 2011). Specifically, seven characteristics of adult learners are summarized from the literature: (a) Adult learners are mature people and prefer to be treated as such, (b) their needs are concrete and immediate; they may be impatient unless they see what they learn can be applied to practical problems, (c) they are more impatient in pursuing learning objectives, (d) they have past experiences, (e) they enjoy having their talents used in a teaching situation, (f)

they are motivated more by internal incentives and curiosity than external rewards, and (g) they appreciate any teaching devices that add interest, a variety of methods, audiovisual aids, and anything that makes the learning process easier (Cercone, 2008; Cross, 1981; Rogers, 2002).

In recent years, the needs of collaborative learning have been increasing for adult learners (Lovell & Nunnery, 2004; Watanabe & Swain, 2007; Yorks & Kasl, 2002), and more and more collaborative media tools are becoming available, such as *Blackboard Learn*, *Wiki*, or *Blogs* (Liu & D’Andrea, 2010; Wang & Hsua, 2008; Wang, Sierra, & Folger, 2003). Considering the characteristics of adult learners, when choosing collaborative media tools or designing a collaborative learning community, we as educators may need to be aware of (a) what specific needs the adult learners have regarding a supportive learning community, and (b) what format of learning community they prefer to and feel comfortable with.

This article introduces a study that examines the needs of a group of graduate students, featured as adult learners, for an online supportive learning community. The purpose of the study is to determine whether any of the three attributes of adult learners’ needs (need for studies, need for communications and support, and need for general information) can be used to predict the extent to which an adult learner feels he/she needs such an online learning community.

BACKGROUND

The authors of this article have done a literature review of 58 articles in the field of adult learning and adult learning community, and performed a content analysis on these articles using a program called *Leximancer*. A map of main themes in this field is generated in Figure 1, and the ranked list of the themes is shown in Figure 2.

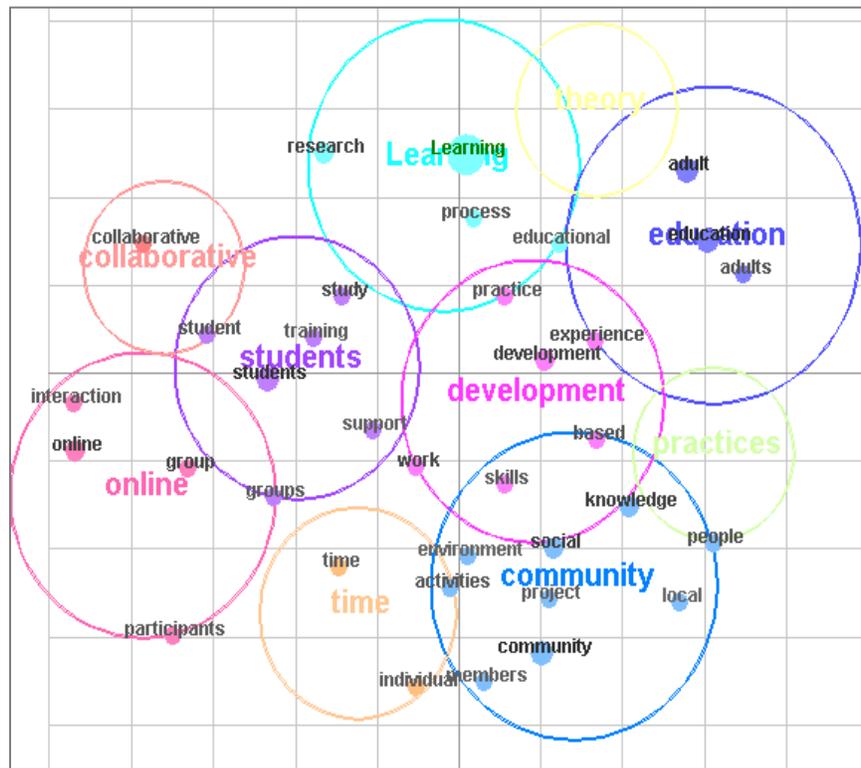


Figure 1. Theme Summary from the Literature

Ranked Concept List		
Concept	Absolute Count	Relative Count
<u>Learning</u>	2046	100%
<u>education</u>	795	38.8%
<u>adult</u>	736	35.9%
<u>community</u>	722	35.2%
<u>students</u>	677	33%
<u>online</u>	519	25.3%
<u>social</u>	516	25.2%
<u>knowledge</u>	506	24.7%
<u>research</u>	458	22.3%
<u>group</u>	456	22.2%
<u>development</u>	449	21.9%
<u>work</u>	393	19.2%
<u>study</u>	368	17.9%
<u>experience</u>	361	17.6%
<u>based</u>	306	14.9%
<u>people</u>	301	14.7%
<u>process</u>	285	13.9%
<u>collaborative</u>	284	13.8%
<u>activities</u>	281	13.7%
<u>participants</u>	275	13.4%
<u>practice</u>	270	13.1%
<u>interaction</u>	261	12.7%
<u>groups</u>	261	12.7%
<u>individual</u>	255	12.4%
<u>time</u>	251	12.2%
<u>skills</u>	243	11.8%
<u>training</u>	243	11.8%
<u>educational</u>	240	11.7%

Figure 2. Ranked Themes from the Literature

The map of main themes and ranked list of themes provide an overall framework of the literature used in this article. In the following sections, detailed review on the main themes related to the present study is presented.

ADULT LEARNERS

An *adult learner* is defined as “any person socially accepted as an adult who is in a learning process, whether it is formal education, informal learning, or corporate-sponsored learning” (Wikipedia, 2012), and adult learners are also considered distinct from child learners (Knowles, 1975). In North America, the term *adult learner* is commonly used, whereas in UK, *mature learner* is usually used to describe this group of learners. There are some other terms used in the field of adult education, such as adult student, returning adult, or adult returner (Wikipedia, 2012).

In comparative research, adult learners are often grouped homogeneously using Perry scheme (Perry, 1970, 1981). Research has suggested that (a) students of different epistemologies who are placed in one collaborative learning group report less satisfaction with their learning experiences than do those students who are grouped homogeneously by Perry epistemology (Lovell & Nunnery, 2004), and (b) in collaborative learning, homogeneous task groups are more productive and more cohesive than heterogeneous groups (Yalom, 1995). In addition, cooperative learning has also been

found to “promote more frequent insight into and use of higher-level cognitive and moral reasoning strategies” than do traditional methods of instruction (Johnson, Johnson, & Smith, 1991, p. 48).

Overall, adult learners could learn better in a collaborative learning environment with a homogeneous group. This is the underlying principle to build an efficient adult learning community.

ADULT LEARNING COMMUNITY

In the literature, three types of adult learning communities have been often studied and discussed. First, adult learning communities are often built to serve for people who are homogeneously grouped together, for example, groups of doctoral students, nurses, or retired people (Liu & D’Andrea, 2010; Reed & Marienau, 2008). This type of member-featured communities would make it easier for adult learners to share their similar experiences, interests, or expertise. Second, adult learning communities can also be established at different levels, such as within a class, a program, a college, a region or nationwide (Brandon & Charlton, 2011; Holland & Robinson, 2008), which would serve specific learning purposes for learners at a variety of education levels and fields. Finally, in the literature, adult learning communities have been created in different format, such as local community-based, face-to-face, online, or hybrid (Liu & D’Andrea, 2010; Mayfield-Johnson, 2011; Walter, 2009), which would provide convenient environments for adult learners to participate learning activities.

Adult learning communities are featured as *service learning* or *community-based learning*, which have increased learners’ knowledge of community needs and their commitment to continue being involved in the community, and helped learners have a better standing of their role as community members (D’Andrea, Liu, & Hodgen, 2010; Holland & Robinson, 2008). Besides, they could also be created to support adult learners’ self-directed learning in an online learning environment (Hiemstra, 2006; Lema & Agrusa, 2009).

Among all the needs of adult learners to a learning community, collected from data in regional or national surveys, three are often mentioned or discussed (Bringle & Hatcher, 2002; Liu & D’Andrea, 2010; D’Andrea et al., 2010; Holland, 1997; Worrill, 2007):

1. needs for their studies
2. needs for communications and support from each other, and
3. needs for obtaining or exchanging current information.

These three needs are examined in the current study in relation to the extent to which adult learners prefer an online learning community.

AN ONLINE LEARNING MANAGEMENT SYSTEM AS COLLABORATIVE MEDIA

One of the most important characteristics of an online learning community is social interaction (Preece, 2000; Russell, 1999; Stacey, Smith, & Barty, 2004). In recent years, online social interaction is often performed with some social media or collaborative media tools (Liu & D’Andrea, 2010; Wang, Sierra, & Folger, 2003). Kaplan and Haenlein have summarized six types of such social media: (a) collaborative projects, such as *Wikipedia*; (b) blogs and microblogs, such as *Twitter*; (c) content communities, such as *YouTube*; (d) social networking sites, such as *Facebook*; (e) virtual game worlds, such as *World of Warcraft*; and (f) virtual social worlds, such as *Second Life* (Kaplan & Haenlein, 2010). Each media tool tends to have its unique features, purposes of service, or certain group of users. The use of media tools does have impact on collaborative learning in

virtual settings, and the selection of the tools has always contributed to the efficiency of an online community (Chou & Min, 2009).

An efficient online community often has distinguished features to build collaborative creativity with social media tools, and serve as a dynamic learning community to meet with the diversity of adult learners' needs (Peppler & Solomou, 2011; Russell, 1999; Sierra & Folger, 2003; Stacey, Smith, & Barty, 2004). Liu and D'Andrea (2010) have reported their experiences of using an online learning management system, *WebCampus*, to build an online adult learning community. *WebCampus* is generally used to deliver online courses. It can also be used to create an online community, as it has the functions that enable users to:

1. share information in a variety of formats (e.g., text, graphics and pictures, audio and video),
2. perform synchronous and asynchronous online communications,
3. develop and organize interest-group or team activities,
4. conduct survey or assessment activities, and
5. obtain support from the online learning community.

With the rapid development of technology, a variety of social media tools are available through *WebCampus* learning system. Tools such as Discussion Board, Blogs, Wikis, Groups, Virtual Classroom, Voice Board, and Wimba Classroom all have the functions that enable adult learners to communicate, interact, and develop creative and collaborative work for their studies and career. *WebCampus* is a system that only assigned users can have access; therefore, it is a relatively safer online environment for the adult learners to perform all activities in their specific interests, comparing with other web-based tools in public domains.

NEEDS ASSESSMENT

Knowing the functions of such an online system and the available social media tools within the system, we need to determine how we should design the online learning community to better work with a particular group of adult learners. A needs assessment would provide valuable data and information for the design and future management of the online learning community.

It would be helpful to understand learners' preference of an online learning community. In addition, it is necessary to know more information such as: their specific needs, their common problems during the period of their advanced studies, their preferred format and schedule of activities, levels of technology skills they need to perform the activities, and attributes of personality types, thinking styles, and learning styles. This study also serves as a part of the needs assessment.

RESEARCH QUESTIONS OF THE STUDY

For the purpose of this study, the following two research questions were raised:

1. Can any of the three attributes of adult learners' needs (need for studies, need for communications and support, and need for general information) be used to predict the extent to which an adult learner feels he/she needs an online learning community?
2. What do adult learners specifically need from an online learning community?

METHODS

PARTICIPANTS

The setting for this study is a set of graduate level courses in *information technology in education, research and design*, and *human development* in a western state university. 168 graduate students from these classes over two semesters voluntarily participated the study. Among them, 93 were fulltime working students, and 75 were part time working at the time data were collected. All of them had experiences of taking both online and face-to-face classes.

MEASUREMENTS AND PROCEDURES

A Likert-style questionnaire consisting of 32 statements (Appendix) was used to measure the response variable (Needs for Online Community), and three predictor variables (Needs for Studies, Needs for Communication and Support, and Needs for General Information). Each variable was measured by eight statements scoring from 1 to 5 (1= strongly disagree, and 5= strongly agree), with a maximum points of 40. A higher score indicates a higher level of needs of what is described under a variable. The reliability Cronbach's Alpha for this instrument is 0.824. Data from these 32 statements served as the quantitative data for this study.

The survey ends with an open end question to obtain any specific needs, problems, or concerns a student has relating to the online learning community. Data from this open end question served as the qualitative data for this study.

Data were collected during a period of two semesters. The survey was sent to the participants at the beginning of each semester, and collected at the end of the second week of the classes. Data analysis was performed when data from both semesters were gathered.

DATA ANALYSIS AND RESULTS

DATA ANALYSIS

A multiple regression analysis was performed to answer the first research question, in which the response variable (**Y**) was Needs of Online Community (**NOC**), and the three predictor variables were:

- X1:** Needs for Studies (**NS**)
- X2:** Needs for Communication and Support (**NCS**)
- X3:** Needs for General Information (**NGI**)

The plots obtained from the data exploration showed that there were no significant outliers, and the equal variance assumption and the normality assumption were not violated.

To answer the second research question, a content analysis was performed on the comments from the open end question, using a text analysis program *Leximancer*.

QUANTITATIVE RESULTS

The results from the multiple regression analysis show that the *F* ratio for the model is significant ($F_{(3, 164)} = 53.771, p < 0.001$), and accounted for about 50% of the variation in the response variable ($R^2 = 0.496$). This indicates that a linear relationship exists between

the response variable (Needs of Online Community) and the three predictor variables (Needs for Studies, Needs for Communication and Support, and Needs for General Information).

The t statistics for the three predictor variables show that all three variables, Needs for Studies ($t = 6.625, p < 0.001$), Needs for Communication and Support ($t = 2.459, p < 0.015$), and Needs for General Information ($t = 2.917, p < 0.004$) significantly contribute to the variation of the predictor variable. The coefficients generated from the analysis are:

$$\text{NOC} = 4.971 + 0.422(\text{NS}) + 0.196(\text{NCS}) + 0.213(\text{NGI})$$

As can be seen from inspection of the equation, a one-unit increase in **NS** (Needs for Studies), for example, would increase 0.422 units on **NOC** (the response variable Needs of Online Community). In summary, all three variables significantly contribute to the response variable, that is, all three variables can be used to predict the extent that an adult learner feels about the need of an online learning community.

QUALITATIVE RESULTS

Qualitative data were answers from the open end question reflecting any specific needs or concerns that were not mentioned in the survey. All comments were entered into a word file, a total of 3712 words. A content analysis with *Leximancer* generated a map of main themes as shown in Figure 3, where larger circles indicate themes with more supportive evidence.

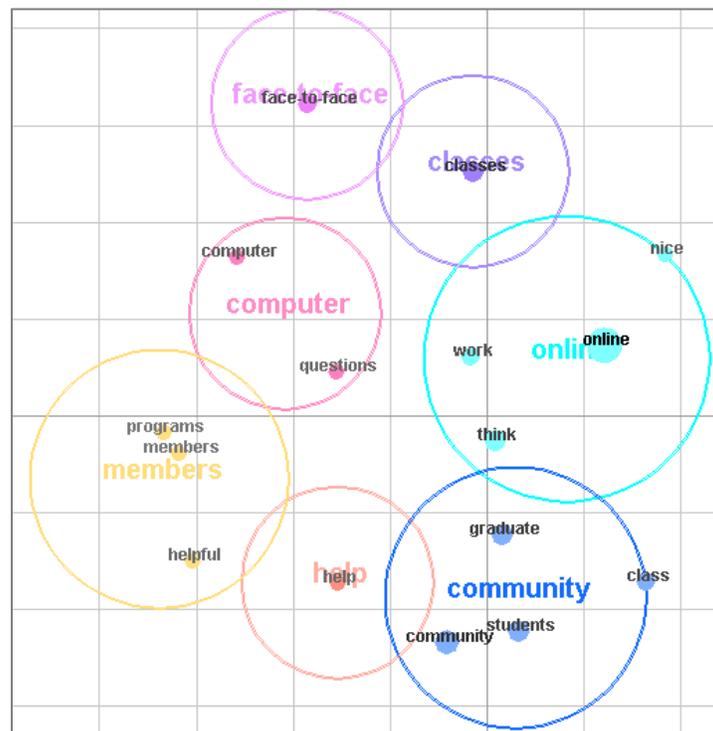


Figure 3. Summary of comments from the needs assessment

Qualitative comments reflecting the above main themes can be summarized in more details. First, they feel to need an online learning community because the flexibility it can provide, regardless they work fulltime or part time. They can participate activities or exchange information without any restriction of time or location. Second, they compared

their experience of online classes with that of face-to-face classes, and they preferred an online community with certain portion of face-to-face opportunities. That is, a hybrid environment would be a better solution. Third, they would need some training to use the media tools, especially to create applications with the media tools for their activities. Also, convenient access to technical help is desired. Finally, as the purpose of this online community is to support graduates who are working on advanced degrees, they hope professors/advisors and some administrative staff could be part of this community so more solid support are provided.

DISCUSSIONS AND CONCLUSIONS

Based on the results from the quantitative analysis and qualitative summary, we can draw the following conclusions. First, from the 24 specific needs described under the three predictor needs variables (see Appendix), we will know that if an adult learner have any of those specific needs, he/she would more likely prefer an online community. An online learning community does meet the needs and fits the characteristics of adult learners as summarized in the literature by Knowles (1970, 1975, 1980), Cranton (1992), and Lai (2011). Therefore, when conducting needs assessment, those specific needs should be included and carefully analyzed.

Second, the preference of a hybrid environment would add into the decisions of the design of instructions. When creating the online community using *WebCampus* as the collaborative media, special considerations are needed when designing the structure of the online courses, such as opportunities to communicate with all the members including students, professors and administrative staff, and feedback system that evaluate the function of the online community and generate on-going new needs.

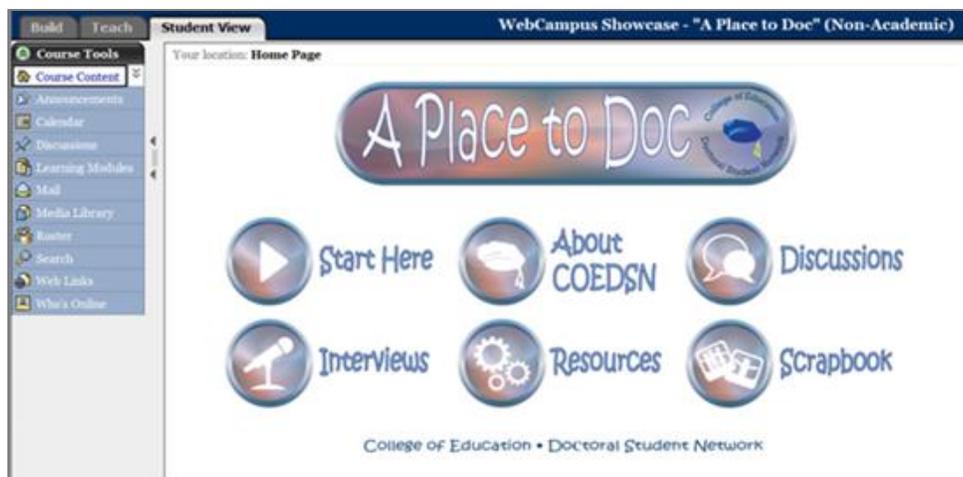


Figure 4. A Sample of Doctoral Student Online Community

Third, the needs of technical training and support also add into the design decisions of the online community. We may provide video tutorials, online training modules, online workshops to help adult learners with the functions of the online community and the use of the communication tools. A technology skill assessment may be conducted at the entrance of each new member. Figure 4 shows a sample of an online learning community for doctoral students introduced by Liu and D'Andrea (2010). Based on the findings from this study, more functions need to add into it, such as technique support, more communication tools, and a “button” for faculty members.

The present study investigated the adult students need for an online learning community and explored the use of *WebCampus* as a medium. It provide references to educators who are interested in creating or improving an online learning community for graduate students. Further studies may be done (a) to examine the effectiveness of design and function of the online community, and (b) to explore the integration of some informal social networking websites or services (such as Twitter, Google Groups, Facebook, LinkedIn, Blogs, Wordpress, etc.) into the *WebCampus* online learning community.

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APPENDEX

Needs Assessment Checklist

(Liu & D'Andrea, 2010)

Section I. Needs for Studies

I wish to have an online community to share some general course/program information
 I wish to have an online community to discuss course project ideas with other graduates
 I wish to have an online community to share research resources with other graduates
 I wish to have an online community to discuss ideas about my thesis/dissertation
 I wish to have an online community to get feedback about my research from other graduates
 I wish to have an online community to get feedback about my research from other researchers
 I wish to have an online community where I could get resources or help with statistics
 I wish to have an online resource where I can get help and support for my studies in general

Section II. Needs for Communication and Support

I wish to have an online community to share some thoughts on graduate-related common issues
 I wish to have an online community to receive support when I experience pressure from studies
 I wish to have an online community to receive support when I experience pressure from work
 I wish to have an online community to receive support when I experience pressure from family
 I wish to have an online community to discuss more trends of research in the field
 I wish to have an online community to get information on relevant grant opportunities
 I wish to have an online community to get information on job interview experiences or tips
 I wish to have an online community for peer communication and support in general

Section III. Needs for General Information

I wish to have an online community to get information on graduate activities
 I wish to have an online community to get information on finance support
 I wish to have an online community to get information on conference travel support
 I wish to have an online community to get information on related visiting scholar's speech
 I wish to have an online community to get information on international scholarly opportunities
 I wish to have an online community to get information on campus employment opportunities
 I wish to have an online community to get information on job opportunities in the field
 I wish to have an online community where I could get graduate-study related information

Section IV. Needs for Online Community

I prefer an online graduate community because it provides the flexibility for participation
 I prefer an online community with synchronous and asynchronous communication functions
 I would like to see the audio/video clips being used in the online community
 I would like to see the small group communication being used in the online community
 I prefer an online community where some ongoing academic activities are available
 I prefer an online community where some professional mentoring activities are available
 I'd appreciate an online community where some online workshops are available upon request
 I think an online community would better serve us to meet the needs in the above three sections

Section V. Other Needs and Concerns (Please type in as separate items)