The Role of Community in Online Learning Success

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Abstract

The purpose of this paper is to report on the findings of a study examining the relationships between community and student success in online learning. The study was conducted on undergraduate students enrolled in online courses at an accredited university on the east coast of the U.S. Results of the study indicate a strong correlation between learner interaction and engagement, sense of community, and success in online learning.

Keywords: distance education, online learning, community, learning, connectedness, classroom community scale

Introduction

All too often, distance education courses lack the sense of community that is found in face-to-face courses. This lack of community has resulted in students failing to successfully complete and meet the objectives of distance education courses. Student success has been influenced by a number of factors, which include activities within a learning environment that promote a sense of community (LaPadula, 2003; McLoughlin, 2002).

As distance education and online learning continue to see significant growth (Allen & Seaman, 2006), it is important to pursue answers to key questions that relate to how student and faculty participation, online interaction, and the sense of community affect student learning and student success in online courses. The purpose of this paper is to share the results of a research project that focused on understanding the role of community in an online learning environment and the effect that this community, and participation in it, has on student learning

Literature Survey

There has been increased interest and attention given to the study of community and its relationship to student learning and success (Hill, 2002; Rovai, 2002). From a social cultural perspective, it is important to build and sustain a sense of community in distance education (Palloff & Pratt, 1999). Students in distance education courses perceive sense of community as helpful in their learning experience (Brown, 2001; Song, Hill, Singleton, & Koh, 2004). A sense of community among learners in online learning environments also helps student retention (Rovai, 2002). Our review of the literature on community focuses on attributes of online community, community and success, and community and interaction.

Defining a Community at Distance

Community, in general, has been defined in many different ways. McMillian and Chavis (1986) for example, provide a theoretical framework for a definition of sense of community, which highlights common themes that can be applied to many types of communities. Specifically, they describe sense of

community as having four major attributes – membership, influence, integration and fulfillment of needs, and shared emotional connection. Membership is defined as "the feeling of belonging or of sharing a sense of personal relatedness".I Influence is defined as "a sense of mattering, of making a difference to a group and of the group mattering to its members." Integration and fulfillment of needs refers to the feeling that members needs will be met by the resources received through their membership in the group, and shared emotional connection which is "the commitment and belief that members have shared and will share history, common places, time together, and similar experiences" (p.9).

When defining a community at a distance, the literature reveals several perspectives. Shea, Li, Swan and Pickett (2002) reported common ideas about the attributes of online communities. They suggested that communities include "a sense of shared purpose, trust, support, and collaboration--i.e., a sense of community—[that] is an essential element in the development of quality online learning environments" (p. 70). Rovai (2002) suggested that communities included four essential "dimensions" described as "spirit, trust, interactivity, and common expectations and goals" (p. 4). According to Rovai (2002), learners have common expectations and goals in an online community where they have a sense of belonging and connectedness (spirit), rely on each other (trust), and interact with each other (interactivity).

More recently, Chapman, Radmondt and Smiley (2005) suggested that a community includes elements such as familiarity, rapport, trust, and openness. DiRamio and Wolverton (2006) focused their definition of online community on student interaction and social activity for collaborative learning. Vesely, Bloom, and Sherlock (2007) describe common attributes of learning communities as shared purpose, interaction, boundaries, behavior, and trust and respect.

While there are a variety of existing definitions for community at a distance, there are commonalities among the work presented: a group of participants in a distance-based environment with a shared purpose and the relationship among them including their sense of belonging, trust, and interaction. Based on this review of the literature, we define community as a group of participants, relationships, interactions and their social presence within a given learning environment; not the collection of technologies used to manage and communicate within the environment.

Community and Success

A review of research related to community and student learning suggests that there is a positive relationship. In most of the research, success is measured using survey instruments focused on student perceptions. Vesely, Bloom, and Sherlock (2007) surveyed students about their perception of the role of online community related to their performance in an online course. They reported that 85% of the participants indicated that being a part of the online community was helpful in their learning. Liu, Magjuka, Bonk and Lee's (2007) conducted similar research, which also focused on student perceptions about their online learning experiences. The survey instrument included items focusing on students' overall perceptions and attitudes toward online learning. The results of the study indicated that there was a significant relationship between students' sense of community, engagement, satisfaction and perceived learning.

Rovai and Barnum (2003) examined whether students' perceived learning varied by course. While students' perceived learning was found significantly related to their participation in online discussions, the results indicated no significant difference on students' perceived learning on two different courses: one education course and one leadership course. Given that the education course and the leadership course share some similarities (both are related to educational practice), Rovia argued that more research is needed to examine whether students' perceived learning success varies on courses of different subject areas.

Rovia has conducted significant research in the field of online learning and community with the development of his Classroom Community Scale (2002b). This instrument was designed to measure the sense of community in an online learning environment. The instrument is based on items focusing on four categories that, he argued, make up community: spirit, trust, interaction, and learning. Since the development of Rovai's Classroom Community Scale, some researchers have employed it in their research on online community. For example, Ouzts' (2006) and Shea (2006) utilized this instrument to survey students' sense of community in online courses. In Shea's study (2006), Rovai's (2002b) Classroom Community Index was utilized to measure student perceptions of teaching presence. Both research found a positive relationship between students' sense of community and their perceived learning success in online courses. Both recommended that further research need to be done.

Community and Interaction

Knowledge is constructed when an individual is engaging in activities and participating in interaction (Henning, 2004). Interaction influences learning and knowing, and it is especially important in distance education (Garrison & Cleveland-Innes, 2005) because it helps reduce feelings of isolation and contributes to the student success in online environments (McInnerney & Robets, 2004). The development of a community depends on the interaction among community members. Members of a community generally share something in common and it is through interaction that similarities are found and that thoughts and feelings (Brown, 2001) along with understandings are exchanged.

Different types of distance-based interaction have been studied including learner-content interaction, learner-instructor interaction, and learner-learner interaction (Moore, 1989). This review of the research has indicated a positive relationship between community and various types of interaction in distance education. For example, Conrad (2005) conducted a two year longitudinal study that focused on the perception and maintenance of online community among graduate students. The results of the study indicated that learner-instruction interaction helped create the community in online courses.

Lee, Cater-Wells, Glaeser, Ivers and Street (2006) reported the results from the first year of a three year longitudinal study, which examined how an online learning community was developed among the first cohort of students in an instructional design and technology master's degree program. Results from the study indicated that positive interactions among all community members, instructors, students, and support staff helped develop the online community, though the interactions were not correlated with students' academic achievement. Not only does online interaction impact on students' sense of community, but it is also found to be related to students' learning success in. Swan (2002), for example, conducted an empirical study on online learning success and found learner-instruction interaction and dynamic learner-learner interaction positively influenced students' learning success.

We must consider these factors as we continue to develop online learning environments and expect that our students will gain the types of learning experiences that have proved vital to success in face-to-face environments. How these experiences are correlated to improve an online learning experience is the type of research that must be done to continue to further the field.

Methods

The purpose of this study was to research the effects of community in online learning and the effects that community may have on perceived student success. Understanding the role of community will help to better design activities to improve student learning and enhance instructor-student and student-student interaction. In an effort to more specifically understand the implications of participation and presence of community in an online learning environment on students' learning, this research was guided by the following three questions:

1. Is perceived learning affected by participation in the online community?
2. How does the sense of community affect perceived learning?
3. Does the amount and type of online interaction affect the feeling of membership in the learning community?

Data were collected for this research using an online survey. The survey instrument used for this research study contained 52 items in three sections. The purpose of the first section of the survey was to collect participant demographic data. It contained eight items, including: age, gender, ethnicity, program of study, work setting, and previous experience with online courses. The second section contained 36 items are divided into three categories that impact online community and learning: 1) community building in the course; 2) the effectiveness of the course design; and 3) the role of online technologies. The first 20 items of this section were based upon Rovai's Classroom Community Scale (Rovai, 2002b). Questions in this section focused on relationships, interactions and their social presence within a given learning environment. The following six questions asked participants to respond to items regarding course organization, evaluation techniques and the instructor's role. Participants responded to items in this section using the following Likert-type scale:

-Strongly agree (I agree all or almost all of the time)

-Agree (I agree most of the time)

-Neutral (I neither agree or disagree; no opinion)

-Disagree (I disagree most of the time)

-Strongly Disagree (I disagree all or almost all of the time)

The last 10 items in this section focused on the use of online technologies. Participants were asked to respond to items regarding technology use and integration. Participants responded to these items by using the same options as listed directly above but with one additional category for representing Not Applicable (N/A) allowing participants to indicate they did not use this technology in their course. The third and final section of the instrument contained eight items, which focused on collecting data about self-reported class participation and activities including course study and participation time, and frequency of use of online technologies such as chat rooms, email, study groups and discussion boards.

After completing a pilot study in the Fall of 2007, formal collection of data for this research was conducted in the Spring of 2008. This study was conducted using a sample of convenience of over 120 students enrolled in online computer and communication related undergraduate courses at an accredited state university on the east coast of the United States. Students enrolled in over 50 sections, representing over 35 different courses, were invited to participate in this study and complete the online survey. Data collection occurred near the end of the semester, but before the last week of the class. Email reminders were sent to each student asking them to complete the survey if they had not already done so.

Results

Data collected through the survey were input into SPSS for analysis. Descriptive statistics were calculated using the demographic related questions from the survey to better characterize our student population in terms of gender, age, program of study, ethnicity, work environment and previous online experience. Central tendency measurements including mean, median and mode where calculated, as well as the dispersion calculations of standard deviation and variance.

Over 1070 participants were contacted and a total of 121 returned a completed survey, resulting in a return rate of 11.3 %. Over 68% of the students participating in the survey were males. All of the participants were enrolled in an undergraduate program with almost 75% over the age of 30. Over 70% self-declared as Caucasian with approximately 18% as African American. Over 80% of the participants were experienced online students who have previously taken three or more online courses. Almost 80% of the participants were Government or corporate employees. These statistics support the typical characteristics of adult learners pursuing a technical undergraduate degree online.

Using Rovai's approach (2002b) the connectedness and learning indexes were calculated by summing the connectedness and learning related survey questions respectively. The Classroom Community scale resulted in a reliability coefficient Cronbach's alpha of *.90*. As the widely accepted social science cut-off is that the alpha should be .70 or higher for a set of items to be considered a reliable scale (Garson, 2008; Mertler & Vannatta, 2004); this instrument can be considered reliable for measuring these variables. For this instrument, odd numbered questions ranging from question 9 through 28 in section II of the survey were used to calculate the connectedness index; where as the even numbered questions in this same range were used to calculate the learning index. The analysis of this data resulted in mean Classroom Community score of 49.07 on an 80 point scale *(S.D. = 12.30, n = 108)* and mean Learning and Connectedness scores of 27.05 and 21.59, respectively *(S.D. = 8.00, n = 114 and S.D. = 5.70, n=114 respectively)*. Having the connectedness and learning scores, correlations were calculated between several variables.

To help answer our first research question: Is perceived learning affected by students' participation in the online community, the learning index scores were correlated with survey items related to the students' self-reported participation. Items for this analysis included question 45 (I invested enough time and energy in the course to meet/exceed course requirements) and question 46 (I participated actively and contributed thoughtfully to the class conference/threaded discussion).

The initial analysis implemented a Pearson's Correlation between learning index scores and participation related questions. The results showed a significant positive correlation between self-reported time and learning $r = .324, p = <.001 (n = 114)$ and self-reported participation and learning $r = .422, p = <.001 (n = 112)$, as shown in Table 1. The positive correlation between these variables suggests perceived learning is affected by students' participation in the online community. The more time and energy and student invests in the course and the more the actively participate the more they feel they learn.

Table 1.

	Learning Index	I invested enough time and energy in the course to meet/exceed course requirements.	I participated actively and contributed thoughtfully to the class conference discussion.
Learning Index	1		
I invested enough time and energy in the course to meet/exceed course requirements.	.324[1] (n = 114)	1	
I participated actively and contributed thoughtfully to the class conference discussion.	.422[1] (n = 112)	.609[1] (n = 119)	1

[1]Results are significant at .01 level

For the second research question: How does the sense of community affect perceived student learning, a Pearson's Correlation was computed to determine if there was a significant difference between the learning and connectedness indices. Initial analysis between the learning scores and the connectedness scores resulted in a positive correlation $r = .672, p<.001(n = 108)$. These results support the argument that those participants who had higher learning scores also had higher feelings of connectedness to the community (connectedness scores).

Finally, to answer the third research question: Does the amount and type of online interaction affect students' feeling of membership in the community, Pearson's Correlation was calculated to determine if there were significant differences between connectedness scores and items focusing on self-reported frequency of use of interaction technologies. Items for this analysis included: chat room, email, content specific discussion board, non-subject-specific discussion board and study groups.

Initial data analysis showed no significant correlations at $p=.01$ between the connectedness scores and the frequency of use for any technologies. However, the correlation between email and connectedness yielded significant results $r = .251, p < .05 (n = 97)$. Overall, there was no measurable effect in using chat rooms, study groups content or non-content specific discussion boards and the feeling of connectedness. Further analysis did show correlations between non-subject specific discussion boards and connectedness for males $r = .324, p < .01(n=68)$, email and connectedness for students ages 31-40 $r = .675, p < .01 (n=26)$ and email and connectedness for students who were taking 2 courses for the semester $r = .49, p < .01 (n=34)$. The smaller number of participants in these ranges suggest additional research is needed before specific claims can be made.

Discussion

The positive correlation between the learning index and students' investment in time and energy for the requirements of a course suggests that the more each student puts into the course, the more likely they are to learn and meet the course objectives as well as their own expectations. Similarly, the strong positive correlation between the learning index and students' active participation helps to show that participation in class discussions results in higher self-reported learning and the ability to meet the course objectives. These results support Rovai's (2002) definition of learning in that community members interact with each other as they pursue the construction of understandings and share values concerning the extent to which their educational goals and expectations are being satisfied.

The strong positive correlation between the learning index and connectedness index suggests as participants feel more connected to the course, they are more likely to feel they are actually learning. This supports other researchers (Swan, 2002; Garrison & Cleveland-Innes, 2005) who argued that community increases learner engagement and activity and that students who feel part of the learning community are more likely to contribute and make the learning experience more enjoyable and fulfilling for themselves and others.

Splitting the demographic data by age and correlating with learning index suggests adult learners are more likely to realize a positive correlation between participation and study time with learning. Similarly, splitting the data by work setting revealed students from the corporate work setting did not feel as strongly their learning increased based on their contributions to participation and study time. Perhaps these students had less time to contribute to the conferences and believed their learning was negatively impacted by this.

When the data were split by number of previous online courses, significant positive correlations were found between learning and participation and study time for first time online students and experienced online students. However, students that had taken just one or two previous online course showed much higher correlations indicating these students did not feel this learning connection related to participation.

Finally, although no overall correlations were found between the connectedness index and the use of email, study groups, chat rooms or conferences the significant positive correlation between conferences and connectedness for students who have taken more than two previous online courses shows for that experienced online students use conferences to help them feel connected.

Conclusion

Students' perceived sense of community in online courses is important to students' overall learning experience in online courses (LaPadula, 2003; McLoughlin, 2002). Much of existing research has indicated the importance of community and provided guidelines for developing online communities; however, a need exists to study how sense of community is related to students' online learning success. Further analysis of the connection between these variable and the technologies that could be best used to develop this community are needed.

The results from the study proved that a positive relationship exists between students' sense of community and their learning success in online courses. However there are limitations to this work, including: the learning environment and the instructional strategies used and the demographics of these participants. Although this sample is reflective of the larger online learning population, there are populations that have seen significant growth in recent years that do not include adult learner professionals, such as traditional undergraduate and K-12 students. Additionally, the instructional experiences that the participants focused on when completing this survey were specific to the classes they were enrolled at the time and there is no data on the specific activities that were implemented to strengthen or develop community and the effects that this focus on community might have.

Further research must be conducted to refine our understanding of the effects of community on learning and the technologies that might be best used to help develop that community. Studies using experimental design between groups of participants in courses that purposefully develop community versus a course that does not will also help to draw a more direct connection between connectedness and learning. If we can further develop this connection, we can design and deliver courses that draw upon these learning opportunities and strengthen the learning environment and online learning experience for all students involved.

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