In this issue:

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Jake Zhu
California State University, San Bernardino
San Bernardino, CA 92407 USA

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Jake Zhu

jzhu@csusb.edu

Department of Information and Decision Sciences
California State University, San Bernardino
5500 University Pkwy, San Bernardino, CA 92407 USA

ABSTRACT

This study examined what learning is and how learning was facilitated in a virtual classroom community using online discussion forums. Results demonstrated that learning in a community was the active participation by the members of the community in the process of meaning construction. The construction of meaning in such a community was supported and sustained through members' experience-sharing, peer-mediation and information-seeking. Knowledge was made available by members, who linked the community learning with their social surroundings, such as work places, families and the society. Thus learning in the virtual classroom community facilitates an environment in which learners could not only learn, but also learn to learn.

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1. INTRODUCTION

The advancement of information technologies, particularly e-learning systems, such as Blackboard™ and WebCT™, have enabled more and more organizations and educational institutions to take advantage of online learning and distance education as an effective way to acquire information and disseminate knowledge. These learning systems utilize the much increased telecommunication capacity such as fiber optic networks, social networks and powerful modern programming tools for the web to support virtual classroom communities to facilitate learning. The result of this change, or more exactly this reality, has enabled an educational environment that supports distributed learning and just-in-time information access.

Classroom as a community has been used to explore the educational characteristics of student persistence (Tinto, 1997). Rovai (2002a) and Bagley (2003) have called for classroom and learning community building. As in location-based community research (see for example, McMillan and Chavis,

1986), sense of community is identified as what sustains virtual learning communities (Rovai, 2002b, 2003). According to Rovai (2002b), connectedness and learning are the two major dimensions of sense of virtual classroom communities. Connectedness will increase the community spirit, promote trust, increase interaction, and facilitate learning. But this line of research has provided little insight as to how to evaluate the effectiveness of virtual learning rather than interaction which is a traditional distance learning factor advocated by Moore (1992), who was a pioneer American distance education theorist.

Interaction is a desired reality for distance learners when they compare virtual learning with what they can do in a traditional classroom. However, even in a face-to-face learning environment, interaction does not guarantee equal learning among students. The purpose of this study is to make use of a qualitative approach to extend the understanding of business students' learning in a virtual classroom community (VCC). This will complement Teoa et al. (2003)'s call for

evaluating system features for sustaining virtual learning communities to promote a richer understanding of what is going on in a VCC.

The purpose of this study is to answer the following questions: What is learning? How is learning facilitated in a VCC? The nature of learning can be better understood by examining modern learning theories from education while the exploration of the second question is made possible in the context of virtual discussion forums using the Blackboard learning system. But before any attempt can be made to answer these questions, an understanding of what a VCC is needs to be addressed.

2. VIRTUAL CLASSROOM COMMUNITIES

A virtual community is defined by Zhu et al. (2004) as a social system where values are observed through member participation in a virtual environment in which technology plays a vital role. Here the value, member participation and technology are the three major factors that support and sustain the community activities. A virtual classroom community should be a social system where learning is observed through learners' participation in a distributed learning environment in which communication is enabled by information technologies. There are at least two types of virtual classroom communities. One is the distance or web-based learning environment; another kind of virtual classroom community is an extension of a traditional classroom where learners meet in a place-based class regularly, but they can also meet virtually to interact with each other to ask questions, share information, seek understanding, and learn in addition to regular class meetings. The latter is extremely valuable as a supplement to the traditional classroom community where some of the learning activities can be moved outside of the regular classroom hours. No matter what type of environment it is, learning in a virtual community is directly associated with learner participation. In other words, how learners participate in a VCC determines much of the community's learning. With communication technologies that support learning management systems, instructors can encourage students to form e-communities so that they can share knowledge, collaborate on projects and learn to work together in groups (George, 2002). In order to understand the VCC phenomenon, an understanding of the meaning about learning is important. In the following section, a review of learning is presented and a framework is proposed for the purpose of evaluating learning in a VCC.

3. THE MEANING OF LEARNING AND HOW IT CAN BE EVALUATED

3.1. What Is Learning? And How Is It Evaluated?

Learning is the extent to which a learner demonstrates the understanding of a concept, a subject or a skill, and the process with which the understanding was obtained. To establish the basis for understanding, one needs to clarify two competing philosophies of learning: 1) Learning as a product; 2) Learning as a process. Jaques (2000) has framed a straightforward analysis of two basic conceptual polarities of learning: learning as reproducing and learning as sense-making (p. 50). Thus, learning, on one hand, entails acquiring facts, memorizing them and the increase of knowledge, namely in producing some kind of products, or mastery of skills; on the other hand, it means making sense of the topic to be learned so that students can have a better understanding of what is going on, or to understand reality that will enable the learner to perceive the world in a more and broader sense or view it differently. The latter can only be accomplished in a process of participation and meaning construction by the learner.

However, an argument of which learning is better over the other is not the intention of the current analysis. Rather the presentation here will be focused on how different views of learning result in different teaching practice, and on how evaluation of learning is different when diverse methodologies are used. Educators, who adopt learning as a product, emphasize that teaching is to help learners to master skills. Mastery learning (Bloom, 1976) is an example of learning-as-a-product philosophy. In a mastery learning classroom, the whole (of the content) can be broken into parts; and skills can be broken into subskills (Fosnot, 1996, p. 9). The teaching of one unit is not complete until the learners have mastered it, and then they can move to the next unit. The evaluation of

learning as a product is criteria-based or norm-dependent in which a set of standards are used to measure how learners master the subjects such as using standardized tests and other norm-based assessment forms. Learning as a process, on the other hand, emphasizes that teaching is to involve learners' participation in problem solving and active construction of meaning as in the case of constructivism (See for example, Larochelle et al, 1998). Fosnot (1996) has made a distinction of process-based learning by asserting that "(r)ather than behaviors and skills as the goal of instruction, concept development and deep understanding are the foci; rather than stages being the result of maturation, they are understood as constructions of active learner reorganization. (p. 10)" Thus, learning lies in that "no matter how one looks at it, an analysis of meaning always leads to individual experience and the social process of accommodating the links between words and chunks of that experience until the individual deems they are compatible with the usage and the linguistic and behavioral responses of others (von Glasersfeld, 1996)." Table 1 is a summary of the two competing conceptions.

3.2. Evaluating Learning in the Case of a VCC

Built upon the notion of learning as a process, modern research on cognitive development indicates that the study of individuals' learning has come to be embedded in social and cultural contexts and interactions (Salomon and Perkins, 1998). A focus on the individual learning in social and cultural solitude is increasingly being seen as conceptually unsatisfying and ecologically deficient. Thus, it takes learning to a social and group level from an individual perspective. Learning in a VCC thus becomes a social and group endeavor; therefore it is best evaluated using the principles of social learning theories. While the conceptions of learning and evaluation methodologies explained in the preceding section still hold true, social learning theories supply additional insights with regard to understanding how learning is facilitated in a VCC.

A substantial search of the professional literature on social learning yields at least three distinct factors that reflect much of the learning in a community: 1) social learning as an active participation in the learning system (Jaques, 2000, p. 57 as he quotes Rogers, 1983); 2) learning as an active construction of meaning (von Glasersfeld, 1996); 3) the social learning process as a way to help participants learn better (Salomon and Perkins, 1998). These three conceptual dimensions will be used as units of analysis for the kind of learning in a VCC environment.

The purpose of learning in a community is to promote group understanding and collective knowing. Socially constructed meaning and communally distributed learning can be best revealed, according to Cook-Gumperz (1986), "by examining the implicit and explicit theories which guide instructional activities in classrooms and the interactional analysis of actual classroom practice. (p. 15)" Therefore the principles of social learning can be used to effectively evaluate how learning is facilitated in a VCC. Following the research design in the next section, results from examining data generated by the virtual discussion transcripts will be presented. The discussion of substantial benefits of learning in a VCC and the diversified implications of this research will then be assessed before conclusions are made.

4. RESEARCH DESIGN

4.1. Method

The design of the study was qualitative in nature using a hermeneutic interpretive approach in the analysis of data. Interpretation here does not mean the views of the researcher(s); rather, it is the critical analysis of the text for the purpose of determining its single or multiple meanings (Holbrook & O'Shaughnessy, 1988). Our approach was similar to Lee (1991, 1994) who applied this particular method in organizational research and communications using an e-mail system and Srivastava et al. (2003) who used it to evaluate an expert system. Furthermore, interpretation can accommodate the understanding of a VCC in the sense that it is shaped by interpretive resources available locally (Holstein and Gubrium, 1998), and by rendering experience meaningful in a social environment. Human learning is a social phenomenon. What happens in a social learning system such as a VCC is best understood through the lens of participants' interactions and lived experience. Therefore, this approach is considered appropriate in

explaining the meaning and process of learning in a virtual classroom community.

4.2. Procedures

Subjects were 33 undergraduate students from a business school in USA. The class was based on the quarter system where students engaged themselves in a series of online discussions about a topic on the experience and benefit of using e-commerce (buying products online). The sample was not random because the intention was to use a small sample (an intact class of information management) to investigate in depth and over time about the phenomenon under study. The procedure lasted two weeks. Subjects could participate in the discussion at any time during the period designated. They were also encouraged to go back to the forums as many times as they wanted so that the responses captured would not be only snapshots of one time thought from the students, but were well thought of and progressive knowing about the course topic. During the discussion, participants could start a new thread about the topic at any time as well as making responses to others' messages. In this way, learning was not only an individual endeavor, but was socially connected and collectively constructed.

4.3. Data Collection and Validation

Data were mainly collected through the transcripts of the two-week online discussions with which interpretation was made on how learning had been facilitated through this online class activity. For validation purposes, we also required each subject to write a reflective essay on the process of and learning from the discussion forums.

4.4. Data Analysis and Interpretation

Data were sliced into three different conceptual dimensions: participation, construction of meaning and learning to learn. Data were carefully studied, coded and analyzed to understand how learning was facilitated in the context of the VCC. To ensure validity and reliability of the study, two strategies were employed: 1) the interpretation was prepared by using an interpretive and interactive approach advocated by Maxwell (1996), and Holstein and Gubrium (1998) with which learning as experienced by those participating in the VCC was made alive; 2) a half-hour face-to-face discussion of initial results of the analysis was conducted by the researcher with 31 participants (two out of the 33 were absent) to ensure to ensure that the interpretation was congruous with what they experienced.

5. RESULTS

The study was to scrutinize how learning was facilitated or how it was made possible in the VCC. We started this by examining how learning was experienced by participants with carefully analyzing the pieces of texts generated from the discussion forums. Three major areas of learning were identified as meaningful to the learners.

5.1. Active Participation as a Learning Process in the VCC Using Online Discussions

Subjects' active participation in the learning process through online discussions about an academic topic could be illustrated in the following three areas: 1) the number of messages each participant contributed; 2) the number of times a message was read on the average; 3) the length and the quality of the majority of the messages that the participants posted.

Overall, thirty-three participants posted 144 pieces of messages during the two-week period about the topic, an average of over 4.24 each. The Blackboard system has a function to track statistics for activities and participants. All the 144 messages were read 1509 times in total by the 33 participants. It means that each message was read 10.5 times on the average, and each member of the virtual classroom community read an average of 45.7 messages. Another way to put it was that either over one third of all the participants read all the messages, or each member read over 30 percent of all the messages, or a combination that would reflect the above statistics, indicating that there was an active participation among the community members.

While the number of messages posted and times each message read did not necessarily reflect quality of learning, the length and the quality of the messages would provide additional weights in asserting that members in this particular learning community were active participants. Whereas there were a few

messages with 1 or 2 sentences, the length of majority of the messages ranged from 1 to 5 paragraphs, and the average length of those had one third of a page to above two thirds. Even though some messages aimed at asking questions and soliciting information, most of them shared their personal experiences about the understanding of the topic – the benefits of e-commerce for individuals and why they had participated in online purchases. The knowledge and experience shared included, but were not limited to, the following: the positive and negative experiences both as buyers and sellers, online banking, information security, privacy dilemmas and customer relationship issues. The way in which these issues and experiences were presented had enriched the understanding of the topic by each member of the VCC and by the class as a community as well (See a more detailed discussion in the following section). The active participation of the members in the community was indeed self-supported.

5.2. The Construction of Meaning in the Community

Meaning construction took place at different levels in this learning community. At the individual level, everyone's experience about online purchasing started differently. Some had more experience than others; but most people indicated that they began to know a lot of things that they would not have known about shopping online if it had not been for the virtual class discussions. Some of them even showed a behavioral change intention as one participant put it when she replied to a message, which discussed how to save money and time by making online purchases:

> I never thought that way. I always saw it (buying online) as people just being lazy. But now it just seems smart. I went out shopping yesterday and had no luck. Maybe I will give online shopping a try for the holidays.

At the community level, students tried to help each other to clear certain confusion and to encourage behavior change as seen in the following message when one participant tried to ease the concern of a fellow student's fear of using his credit card online:

> I can understand your reluctance; however, you have far chance of hav-

ing your credit card information ripped off through the more traditional means of shopping. I, too, was hesitant about online shopping for quite some time. However, a few years ago, I worked for a company that processed credit card payments of Internet transactions. No one employed or connected with the company ever saw any credit card information. It was all processed through our credit card service provider [contracted online credit card processing agents] and we had extensive security procedures and firewalls in place to protect the card information.

She went on to explain:

> Online shopping is the same as any other kind in that you need to be careful. Hopefully, one day you will feel comfortable enough to give it a try.

The fact that this particular message was read 37 times indicates that majority of the students read this message and a few of the participants read it more than once. The reply from the student who had concerns about using his credit card online indeed indicated a change of behavior intention. At the community level, this would ease the fear of using credit cards online.

Also, the way in which meaning was constructed was a significant part of the community learning. While majority of the messages dealt with meaning presentation through personal experience, there were quite a few participants who had extended their learning beyond the classroom community to family, work and other social settings, and thereby, connecting their academic learning with social life. Here is how one explanation of saving time and money by shopping online was evolved:

> My husband also agrees with this [referring to online shopping] and here are his reasons in detail: First, he sees shipping costs as a trade off or transference of costs that would be incurred anyway if he did the driving and shopping. He believes that if he has to drive to the mall or [a] shopping center, the immediately identifiable costs would be the fuel his car would consume for the round trip,

plus wear and tear on his vehicle. My husband's belief, based on his extensive experience in auto mechanics as a youth, is that all vehicles eventually reach a certain point of wear and tear where the vehicle will begin to breakdown and will need costly repairs to continue performing in a satisfactory manner. This "breakdown" point generally comes on after a given number of miles driven and hours in operation sitting in traffic, which can be reached in as little as four years. He believes that purchasing items online and having them delivered, saves him the immediate cost of fuel and a future "breakdown" repair cost. Therefore, he believes the cost of shipping is money well spent. Either way he would incur an expense so, it is a wash.

She continued explaining the cost differences between and online and in-store prices,

Second, regarding a higher online price than a store price, my husband believes the increased cost is still worth it. Fuel and future maintenance costs aside, there is still the issue of his time spent and the frustration and anxiety of dealing with all the holiday crowds. Anyone who has done any Christmas shopping in Southern California knows about the excruciatingly frustrating experience in just getting to the parking area of the mall, then trying to find a parking place, and then dealing with the massive throngs of people inside the mall and at the cash registers. My husband told me he would gladly spend extra so that he can avoid all of that and, instead relax at home reading the paper, working on his computers, watching a good movie or sports event. Or, better yet, spending time with his best friend in the world: me! (Incidentally, in case you're wondering about my husband's detailed cost/benefit analysis on the merits of online shopping, he is a chief financial officer.)

The benefits to the class, when the above message was read by everyone, would be no less than having a guest lecture from an e-commerce expert. Collective knowing through meaning construction and different ways of connected learning increased the community knowledge significantly. The facilitation of learning in the VCC can be evidenced here.

5.3. Participants Learn to Learn in the Virtual classroom Community

Contemporary cognitive science recognizes that learning to learn is a fundamental aspect of learning (Salomon and Perkins, 1998). One indication of the collective learning to learn in this particular VCC was that it was both explicit and implicit. Explicit learning was intentional. It occurred when a member had a question about the topic, or when there was confusion about complex relations among various options. This often happened in the form of a question. For example, one student wrote after he read a message about online banking:

I have never tried it and think it will be cool to use it. Can you tell us more about the online bill paying process and the value you see from doing that besides convenience?

Again, another question was about the difference between the big brand name virtual stores and their smaller counterparts:

Are good brand-name online stores the only way to go? Did anyone find a big difference between the big name virtual stores and small online sellers in terms of security and services?

These and other similar types of questions were eventually all answered by peers. Part of the learning here was to learn how to get questions answered. Apparently, members of this learning community knew how to find resources to solve their own problems.

In other situations, members' learning to learn was somewhat less clear and not always easily recognized in the VCC that only existed for two weeks; therefore it was, to some extent, implicit. Implicit learning in this VCC was sometimes embedded in the transformation of knowledge and values. When learners understood the values of certain knowledge or a skill, and were correspondingly excited about it, learning could have taken place (Cantor, 1995). Meaning construction was illustrated when members of this VCC were engaged in the discussions of benefits and values of making online purchases. Although there were a few negative

reflections of the practice, positive experiences prevailed in the forums. These values and benefits could be easily transformed into collective knowing and motivating members to learn by becoming more involved in the learning experience, thereby linking theory to practice (Cantor, 1995).

Yet another implicit way to account for learning to learn in the VCC was when participants "taught" (advised) each other. When the learner tried to teach back the topic to peers, or explained how and why concepts and relations should be understood in ways they illustrated, it helped others' learn. While not all the messages posted in the forum were for the purpose of teaching other community members, the way in which the messages were presented with logic explanations, and the effort with which the students read them had formed a peer-teaching and collaborative learning environment where not only learning and reflection occurred, but also the need and motivation to learn became evident, further indicating that the impact of peer-mediation in the process of virtual classroom learning was vital.

Table 2 is a summary of the result. Learning in the VCC was the active participation by the members of the community in the process of meaning construction. The construction of meaning in such a community was supported and sustained through members' experience sharing, peer-mediation and information seeking where learning to learn was an on going process. Knowledge was made available by members who link the community learning with their social surroundings, such as work places, families and the society. Thus learning in the virtual classroom community facilitated an environment in which learners could not only learn, but also learn to learn.

6. DISCUSSION AND IMPLICATIONS

Traditional ways of teaching may no longer work well with learners whose characteristics are constantly changing. This calls for instructors to seek continuous improvement and constant innovations in order to engage today's students (Matulich, Papp & Haytko, 2008). When students' immediate need is to get a job after graduation, instructor-defined tests such as true or false and multiple-choice questions are of little help to those who have no work experiences, and whose knowledge structure does not fit into the demanding modern workforce at the present time. The changes in modern business, in the workforce and particularly in information technologies require universities to reconsider how business students should be educated. Education is not a one-time investment any more as people used to think; on the contrary, it is an ongoing effort. There is never a period in history when learning as a life long effort becomes so important.

Modern learning technologies together with the creation of virtual learning communities bring hopes to business education where traditional classroom, instructor-based learning can be supplemented with community activities. Moreover, learning taken place in these communities is learner-centered and self-directed like the online discussions by the students in this study. The understanding of concepts should extend knowing beyond textbooks and link to participants' personal as well as social experiences. This understanding is meaningful to the members of the learning community in that it is relevant to their individual as well as social life, and that it raises students' learning experience to a new level, and serves as a changing force, in most cases, to motivate them to explore new domains of knowledge.

The implications for this research are somewhat diversified. Besides the students, the research results presented here is able to benefit several other parties. For information system research, even though learners are those who make learning meaningful, it does prove that learning technologies can indeed facilitate learning communications. These technologies at least make it possible for learners to collaborate with each other in the VCC, removing the barriers of time and place. They are very much desired by the North American business students who come from diversified backgrounds. This may have suggested another line of research effort about how technology facilitates virtual learning. For business educators, this research serves as a call for a student-centered learning environment and consideration of a change in business school education.

This study was to gain insights into the phenomenon of learning in a VCC; therefore it was exploratory in nature. Validity in a qualitative research refers to the correctness or credibility of a description, conclusion, explanation, interpretation, or other sorts of account (Maxwell, 1996). Data collected were lived experience of the participants. The interpretation of facts and relations is based solely on the evidence from the transcript of online discussions. Moreover, during the face-to-face discussion between the researcher and the participants about the initial results, students expressed that what was interpreted reflected what they meant and experienced in the VCC, suggesting that the interpretation of data remained a high level of being systematically objective. For understanding how learning was facilitated in the virtual business classroom community, it served the purpose well.

7. CONCLUSION

In an effort to understand learning in a virtual community, this research examined what learning is and how learning was facilitated in a VCC using online discussion forums. In a two-week period, thirty-three undergraduate business students were engaged in an extensive discussion of an e-commerce topic. Results showed that in this particular VCC, learners demonstrated an enthusiastic effort in the active participation of the community learning. This was supported by the number of messages posted per individual and by the number of times each message read on an average basis. The active construction of meaning among the participants was another proof for the community learning. Meaning was shared and distributed among the learners within the community. This meaning sharing was not only limited to individuals' personal experiences, but also included those of their families as well as co-workers; thus it created a far more comprehensive understanding of the discussion topic that linked the learner's academic, individual and social life together. This kind of understanding had much more relevance to students' life, and it was more natural for them to act upon. This research also supported the notion that learning to learn is an important part of the learning process. It demonstrated that the reward was substantial in finding ways to bridge the gap of levels of knowing among different learners in order for them to simulate with the collective community knowing. Peer mediation in the community helped the less proficient learners to become accommodated, a way of learning advocated and interpreted by Waite-Stupiansky (1997, p. 16). Knowledge and learning were, therefore, distributed among the members of the community.

Also in this VCC, virtual learning technologies such as the Blackboard system could efficiently support virtual learning activities and communication. This extended the traditional classroom discussion format to a virtual level. There were substantial interactions in the VCC as in a traditional group discussion. Moreover, it increased the power for anywhere and any time access by the participants. Different, however, from in-class group discussions was that the capacity of this communication technology to keep all posted messages within the community for repeated review and comparison proved to be even more powerful. The virtual community discussions could exhaust more possible options for understanding the concepts under contemplation, thereby maximizing understanding.

The importance of this study lies in the fact that the results help research as well as online learning organizers to understand the significance and importance of virtual classroom learning communities. In turn, it will help to design strategies to create better online learning communities and promote learning to meet the needs of a modern diversified business students' population.

8. REFERENCES

Bagley, E. L. (2003). Re-building a learning community, ...or What to do when you face a library move. *Georgia Library Quarterly, 40,* 4-10.

Bloom, B. S. (1976). *Human characteristics and school learning*. New York: McGraw-Hill.

Cantor, J. A. (1995). Experiential learning in higher education: Linking classroom and community. ASHE-ERIC Higher Education Reports 7, 1-102.

Cook-Gumperz, J. (Ed.). (1986). *The social construction of literacy*. New York: Cambridge University Press.

Fosnot, C. T. (1996). Constructivism: A psychological theory of learning. In C.T.Fosnot (Ed.), *Constructivism: Theory, perspectives and practice* (pp. 8-33). New York: Teachers College, Columbia University.

George, L. (2002). E-communities in distance learning. *Library Mosaics, 13,* 14-16.

Holbrook, M. & O'Shaughnessy, J. (1988). On the Scientific Status of Consumer Research and the Need for an Interpretive Approach to Studying Consumption Behavior. *Journal of Consumer Research, 15*, 398-402

Holstein, J. A. & Gubrium, J. F. (1998). Phenomenology, ethnomethodology, and interpretive practice. In N.K.Denzin & Y. S. Lincoln (Eds.), *Strategies of qualitative inquiry* (pp. 137-157). Thousand Oaks: Sage Publications.

Jaques, D. (2000). *Learning in groups: A handbook for improving group work*. (3rd ed.) London: Kogan Page.

Larochelle, M., Bednarz, N., & Garrison, J. (1998). *Constructivism and education*. Cambridge, New York : Cambridge University Press.

Lee, A. S. (1991). Integrating positivist and interpretive approaches to organizational research. *A Journal of the Institute of Management Sciences, 2,* 342-365.

Lee, A. S. (1994). Electronic mail as a medium for rich communication: An empirical investigation using hermeneutic interpretation. *MIS Quarterly, 18,* 143-158.

Matulich, E., Papp, R. & Haytko, D. (2008). Continuous improvement through teaching innovation: A requirement for today's learners. *Marketing Education Review, 18,* 1-7.

Maxwell, J. A. (1996). *Qualitative research design: An interactive approach*. (vols. 41) Thousand Oaks, London, New Delhi: Sage Publications.

McMillan, D. W. & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology, 14,* 6-23.

Moore, M. G. (1992). Editorial: Three types of interaction. *The American Journal of Distance Education, 4,* 1-6.

Rogers, C. (1983). *Freedom to learn in the 1980s*. Merrilla, Columbus, OH.

Rovai, A. P. (2002a). Development of an instrument to measure classroom community. *Internet and Higher Education, 5,* 197-211.

Rovai, A. P. (2002b). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *Internet and Higher Education, 5,* 319-332.

Rovai, A. P. & Lucking, R. (2003). Sense of community in a higher education television-based distance education program. *Educational Technology Research and Development, 51,* 6-16.

Salomon, G. & Perkins, D. N. (1998). Individual and social aspects of learning. In P.D.Pearson & A. Iran-Nejad (Eds.), *Review of Research in Education* (pp. 1-24). Washington DC: American Educational Research Association.

Srivastava, M., Reed, R. M., & Opara, E. M. (2003). An interpretive approach for evaluating an expert system. *Communications of the IIMA, 3,* 119-131

Teo, H. H., Chan, H. C., Wei, K. K., & Zhang, Z. J. (2003). Evaluating information accessibility and community adaptivity features for sustaining virtual learning communities. *International Journal of Human-Computer Studies, 59,* 671-697.

Tinto, V. (1997). Classroom as communities: Exploring the educational character of student persistence. *The Journal of Higher Education, 68,* 599-623.

von Glasersfeld, E. (1996). Introduction: Aspects of constructivism. In C.T.Fosnot (Ed.), *Constructivism: Theory, perspectives and practice* (pp. 3-7). New York: Teachers College, Columbia University.

Waite-Stupiansky, S. (1997). *Building understanding together: A constructivist approach to early childhood education.* Albany: Delmar Publishers.

Zhu, J., Coulson, T., Baker, S., & Rohm, E. C. T. (2004). A virtual community of e-commerce: Understanding the factors

that affect and sustain development for the enterprise. *Proceedings of the 11th Annual Meeting, Las Vegas: American* *Society of Business and Behavioral Sciences.*

APPENDICES

Table 1

Types of Learning	Evaluation
Learning as a Product	• Teacher determines what to learn and what the outcome should be • Mastery of concepts and skills • Standardized tests
Learning as a Process	• Learner determines what is important in the learning process • Meaningful experience • Learning reflection • Social accommodation – collaborative learning

Table 2

Types Learning in VCC	Value	Examples
Active participation	Learning as a process in the VCC using online discussions	• 33 participants posted 144 messages • 144 messages were read 1509 time by 33 participants, each message was read 10.5 times • Message length and quality
Meaning construction	Individual learning and knowing	• Individual experience Sharing • Behavior change intention
	Community learning and knowing	• Help each other – clear confusion • Encouraging behavior change • Connecting academic learning with social life
Learning to learn	Explicit knowledge Transformation	• Question and answer • Resource seeking
	Implicit knowledge transformation	• Value seeking • Peer-mediation