RESEARCH IN ONLINE LEARNING COMMUNITY

Chih-Hsiung Tu, Ph.D.
Assistant Professor
and
Michael Corry
Assistant Professor
The George Washington University
2134 G Street, N.W.
Washington, DC 20152
Email: ctu@gwu.edu Email: mcorry@gwu.edu

Abstract

Online learning community has been considered as one of the most important learning concepts in technology-based instructions. Yet online learning community has not been well-defined or well-examined. The social learning process has been suggested as the fundamental factor to examine in an online learning community to ensure online participants and the community will grow and evolve in terms of their knowledge acquisition. Four basic elements and four theoretical constructs in online learning community suggest an ideal theoretical framework for future research. The purpose of this paper is to examine current literature and current research concerning online learning community, to discuss the impacts of online learning communities on human learning, and to propose a theoretical construct for future development of online learning communities.

Introduction

The importance of online learning communities has been emphasized by recent studies (Office of Learning Technologies, 1998; Tu & McIsaac, 2001; Hiltz, 1998). The definition of an online learning community is still evolving and remains obscure (Office of Learning Technologies, 1998). In fact, little conceptual framework has been developed regarding this new learning environment. From a social learning aspect, learning community is defined as a common place where people learn through group activity to define problems affecting them, to decide upon a solution, and to act to achieve the solution. As they progress, they gain new knowledge and skills (MacNeil, 1997). All of these activities and interactions occur in an online environment, called Online Learning Community (OLC), or online learning network (Hiltz, 1998). OLC has been applied widely in online education. People learn online, and thus are called a learning community, even in correspondence study or independent study. Therefore, people learning together in an online environment have been accepted as an online learning community. However, researchers (Tu & McIsaac, 2001; Schlager et al., 2000) are aiming toward a community that learns/evolves, in addition to being a community for learning. Sharing information has never been a big problem in human learning; however, how humans apply appropriate information to knowledge construction is more important than simply obtaining information. In other words, it is necessary to examine knowledge construction in a learning community and advance to the level of a community that learns, rather than just a community for information sharing and learning together.

Online Learning Community (OLC)

Researchers have attempted to define OLC from its four basic components: community, learning, network, and technology (Office of Learning Technologies, 1998).

Community

The broader view of "community" has been defined as a place where people conduct community activities, share common beliefs and share a means of communicating (Brooks, 1997). This suggests three components of community: location, activity, and beliefs. Wharf and Clague (1997) emphasized relationships among community

members and their common interests (beliefs): "group of people share relationships and common interests. Geographical elements seem to be less important in this situation." Galbraith (1995) researched the definition of community from among 94 proposed definitions that appear in the literature. He agreed that community should be seen as the combination of interrelationships of geographic, locational units, non-locational units, systems, and characteristics that provide relevance and growth to individuals, groups, and organizations. Based upon various definitions, community seems to take place within social interaction about common interests, while location becomes less important. Office of Learning Technologies (1998) agreed that community interests are better suited for a learning environment.

Learning

"Learning is a process of transforming experience into knowledge, skills, and attitudes through a variety of processes" (Galbraith, 1995). Many people use "learning" and "education" interchangeably. In fact, Galbriath (1995) recognized the differences and distinguished learning from education. Basically, learning may occur in a systematic social process/interaction. Learning also occurs within individuals, which may or may not be the result of "education"; however, through an interactive social process, knowledge, skills, and attitudes can be obtained.

Moreland and Lovett (1997) classified three types of learning: formal learning, non-formal learning, and informal learning. Formal learning refers to systematic processes and pre-planned activities that generally are provided by educational institutions and organizations to obtain certain desired goals. Non-formal learning occurs outside the educational system; however, learning activities can be organized too for target learners to achieve certain learning objectives. Informal learning refers to the individual gains of skills, knowledge, and attitudes from everyday experience and from one's social environment.

Based of these discussions, community learning can refer to a situation in which learning occurs as a social learning process. MacNeil (1997) argued that, in community learning, community members should work together to solve their problems and to improve their communities. Several researchers (Graham, 1997; Schlager et al., 2000; Tu & McIsaac, 2001) have distinguished the learning community from community learning. Learning community has been seen as a community for participants to learn together and learning is gained horizontally, as opposed to where the learning is gained horizontally and vertically, called community learning. In other words, community members learn and the community itself also learns. In fact, both types of learning are critical because community growth and development and the learning of community members enhance each other in the process. Lifelong learning is a good example of the relationship between learning community and community learning.

Network

Sociologically, a network is defined as a pattern of communications and relationships (Schuler, 1996). Graham (1997) argued that community networks are essentially grassroots organizations in their development. The growth of communities and learners rely on the sustainability of self-organized local initiatives; and the issue of local control and autonomy is crucial to their usefulness and relevance. The concept of "the community is the network" is also emphasized; that is, a community is first and foremost a social process. Therefore, community networks are essential tools for mobilizing community participants around local social issues. Community networks also enable community members to access and share information resources more easily, to stimulate their knowledge, and to contribute to their empowerment.

Technology

Network technology (CMC technology) systems have been used as a medium of communication rather than for their technological properties (Tu, 2000a). Examining CMC systems requires examining an interactive communication model. Technologies in an online learning community setting can be classified as synchronous (real time communication) or asynchronous (time-delayed communication) systems (Jonassen et al., 1995; McIsaac & Gunawardena, 1996; Walther, 1992). Asynchronous communication is communication that does not require participants to be communicating at the same time or in the same place; e.g., electronic mail, electronic bulletin

board, and listserv. Synchronous communication requires participants to be communicating at the same time, i.e., real-time computer conferencing. Audio and video conferencing systems are not included in this discussion. These technologies possess the potential to enhance learning in an online environment.

Learning Impact

This importance of OLC can be explained by the impact that OLC have on human learning.

Collaborative Learning

Asynchronous online learning communities with collaboration demonstrate effective instruction. Ocker and Yaverbaum (1999) found that asynchronous collaboration is as effective as face-to-face (FTF) collaboration in terms of learning, quality of solution, solution content, and satisfaction with the solution quality. However, online learners were significantly less satisfied with the asynchronous learning experience, both in terms of the group interaction process and the quality of group discussions. Additionally, Hiltz (1998) argued that an online learning community with collaborative design is more effective than working individually. The ideal collaborations can be facilitated by well-constructed software to support group activities and interactions. However it can only facilitate the desired behavior, not produce it.

Equal Access

An online learning community has the potential to equalize economic and learning opportunity. OECD (1996) has identified online learning as an effective means by which disadvantaged groups and individuals can acquire and improve their skills and knowledge. Although this argument is strong, there is little evidence to specify the impact that online technology exerts on equality (Neuman, 1990; Doctor, 1992). Graham basically agreed with the value of an online learning community; however, the construction of the ideal online community network model itself should be optimized and not focus on the impact of technologies. With appropriate design, utilization of technologies will enhance active participation in socioeconomic and political structures. In fact, Odasz (1994) remarked that with technologies, community members will be able to partner with experts in other fields or similar fields to expand and enrich their learning experiences, like e-mail mentors (Tu & McIsaac, 2001).

High Social Presence

Learning in an online learning community occurs as an active social process that is defined as: "the level of social presence depends upon social context, online communication, and interactivity (Tu & McIsaac, 2002)." Online social presence (Hiltz, 1998) is required to ensure the online interaction necessary to sustain community activity. Social presence is a critical factor that affects the online learning community. Gunawardena and Zittle (1997) found that social presence is the predictive of the satisfaction of online learners with their learning. Social presence, online learners' social relationships, tasks being engaged in (Tu & Corry, 2002b), communication styles and personal characteristics have impacts on online learning (Tu & McIsaac, 2001). Therefore, researchers concluded that to foster an ideal online learning community, one should increase and idealize the level of social presence.

Technology as Tools

Technology has been seen as a tool used by the online learning community. Office of Learning Technologies (1998) argued that networking technology has been viewed as a revolutionary tool to build online communities, strengthen relationships, and mobilize joint planning and community action. In the past two decades research has shown that no significant difference exists between technology-based instruction and traditional instruction. However, technology can be used as a tool for learning and as a means where learners can approach the learning experiences of their choosing at their own pace.

Resources

Resources available through technology provide the greatest advantage in its use. Current technology is capable of delivering many resources, particularly resources for learning. These resources are likely to enhance learning in an

online community. Technology brings participants together to generate online interaction. An ideal online learning community should be able to provide its members with multiple perspectives in their learning experiences (Tu, 2000b). These rich perspectives will be able to enhance the online interaction and to stimulate a higher level of thinking and learning. A cumulative learning and knowledge experience can result in the development of a community. Graham (1995) argued that: "community networks intensively collate community knowledge and experience, leading to a bottom-up ... sharing ... the pay-off for individual participation in a community network is more in the experiential learning that occurs."

Blurred Boundaries

Computer-mediated communication democratizes the online learning environment (DiMatteo, 1990; Rheingold, 1993; Sproull & Kiesler, 1991a). CMC has been described as a venue where participants can contribute equally in communications (DiMatteo, 1990; Hiltz & Turoff, 1981; Rheingold, 1993; Siegel et al., 1986; Sproull & Kiesler, 1991b). The democratic openness of the computer conference environment allows all learners an opportunity to contribute (Harasim, 1990). Harasim (1996) described the possibility "...for anyone to become an information provider for others, thereby both democratizing information access and enabling new roles for network users. In the most successful online courses, students assume some of the roles that traditionally belong to the instructor" (p. 208). Democratic openness, the absence of nonverbal status cues, teacher-student role reversal, and learner-to-learner interaction within a CMC environment provide an opportunity for a more equal platform for communication and more stimulus for action than does a traditional classroom (Sproull & Kiesler, 1991a) and more peer interactions were concluded (Edelson, 1998; Whitworth, 1998; Roberts, 1987; Sirc & Reynolds, 1990; Whitworth, 1998). This phenomenon obscures the boundary between learners and teachers. Odasz (1994) stated that everyone has the potential to be simultaneously a student and a teacher in a much more flexible familial context than our current punitive, rigidly-structured educational system.

Learner-Centered

Because of the blurred roles of students and teachers, more weight is placed on the learning process/experience than upon roles. In other words, both students and teachers, as learners, share their responsibilities in online learning. Morrison (1995) argued that the learning process is unbounded by *time* (when one learns), *space* (where one learns), *mode* (how one learns), *pace* (the rate at which one learns), *level* (the depth of learning) and *role* (with whom one learns). Therefore, it is not merely learner-centered; in fact, an online learning community is a learner-driven process. While the learning is in transition from teacher-centered to learner-driven, the focus which had emphasized the needs of organization, government, and institutional is moving to a focus on community-centered needs. This shift has made lifelong learning more important.

Lifelong Learning

Since the learning paradigm is shifting to community-centered learning, lifelong learning is gaining in importance. Lifelong learning is what individuals learn over the course of their lifetimes and in a multitude of contexts. Galbraith (1995) defined it more precisely as: "those changes in consciousness that take place throughout the life span which result in an active and progressive process to comprehend the intellectual, societal, and personal changes that confront each individual human being." Clearly, this definition has given weight to community-centered learning. Therefore, the online learning community becomes a new way to examine human learning.

Research

Elements of OLC

Four elements (community, network, learning and technology) are proposed by Office of Learning Technologies (1998) for examining online learning community. These basic elements should be identified when one is conducting research in Office of Learning Technologies. According to Office of Learning Technologies (1998), community considers geographical communities and communities of interest. Network is either physical or virtual, determined

by the use of technologies. Learning should be a combination of formal, informal and non-formal. Finally, technologies must consider the level of intensity, nature and focus, network-specific or learning-specific.

Grounded in Social Learning

Effective learning occurs in active approaches that present learning as a social process that takes place through communication with others (Hiltz, 1998; Mead, 1934). This concept leads the research of online learning community to social learning. Based online social presence, Tu (2000b) identified the relationship between an online learning community and Vygotsky's social learning (Vygotsky, 1978) (see Table 1).

Table 1: The relationship of social learning and online learning community

Social Learning Theory		Online Learning Community/Social Presence
Personal Factors (Tenor)	·	Social Context
Behavior (Mode)	·	Online Communication
Environment (Field)	·	Interactivity

Social interaction is a key component in social learning according to Vygotsky's theory. CMC is devoted primarily to social interaction (Reid, 1991), because its users perceive a higher degree of social presence (Walther, 1995). In OLC, participants agreed that there were many social and personal messages; because of the high degree of social presence created by the teacher/moderator, social interaction was enhanced and social learning was increased (Gunawardena & Zittle, 1997).

Freire (1994) summarized Vygotsky's social learning theory into three elements: tenor, mode, and fields. The tenor represents learners' relationships/impersonal metafunctions; mode refers to language/textual metafunctions; and fields are explained as nature of social activity and ideational metafunctions. These three elements were reinterpreted by Tu (2000b) as personal factors, behaviors, and environment, that fit in the three dimensions of social presence (Tu & McIsaac, 2002) in an online learning environment. Based on Tu and McIsaac's findings, they suggest that in building an online learning community, one must: (a) foster and gain a better understanding of online learners' social learning context (social relationship, personal characteristics, and personal perceptions on online technology); conduct appropriate use of CMC technologies (understand the characteristics of each CMC medium, use paralanguage and emoticons to compensate for the lack of non-verbal cues); and (c) engage learners in the design of interactive activities (to be responsive, to use appropriate communication style, to apply collaborative activities, and to adopt appropriate group size).

Current Research Weakness

Three current research weaknesses in online learning environment were identified through comprehensive literature review (Tu & Corry, 2002a): (a). Differences between online and traditional communities are not clearly addressed, (b). Focus is usually directed at end products, not the level of self; and (c). Most data are derived from short-term studies.

They argued that current research fails to differentiate clearly between online and traditional communities and, further, fails to address the behavior of participants in an online community. Most studies have transferred the traditional community model to an online environment (McIsaac & Gunawardena, 1996), which clouds the meaning of an online community. Traditional community models do not necessarily apply to online communities and lead to the elaboration of critical questions in the examination of online communities. To ameliorate this weakness, it is suggested that one must gain a comprehensive understanding of online communities by identifying the online definitions of situations; and, under these definitions of situations, which scripts the online participants apply.

Secondly, current studies examined messages (the end-product of community communications) and are not concerned with how and why individuals became online participants or the scripts that participants have followed to

produce these messages. In other words, most studies have ignored the development of the online self and the formation of the online community. Simple discourse analysis is not adequate to capture the social life of an online community. They suggested that the "online self" must be understood before one can begin to compile a comprehensive understanding of an online community.

Thirdly, the fundamentals of a community require more time to develop in online social environments than in FTF social environments (Tu & McIsaac, 2002; Walther, 1992) therefore, short-term observations cannot adequately describe the formation and development of a community; and, are totally inadequate to evaluate the dynamics of a community. They suggested that research must be conducted in a long-term fashion to allow community and participants to develop more mature social information processes.

Theoretical Construct

Based on previous analysis, a theoretical construct for OLC is proposed in this study (See Figure 1). OLC is necessarily grounded in the social learning process. The Office of Learning Technologies' (1998) four elements (community, network, learning, and technology) of OLC are related to Tu and Corry's (Tu & Corry, 2002a) four constructs of OLC: Community of Practice (CoP), Social Presence, Collaborative Learning, and Knowledge Construction Technology.

Figure 1: The theoretical Framework for Online Learning Community
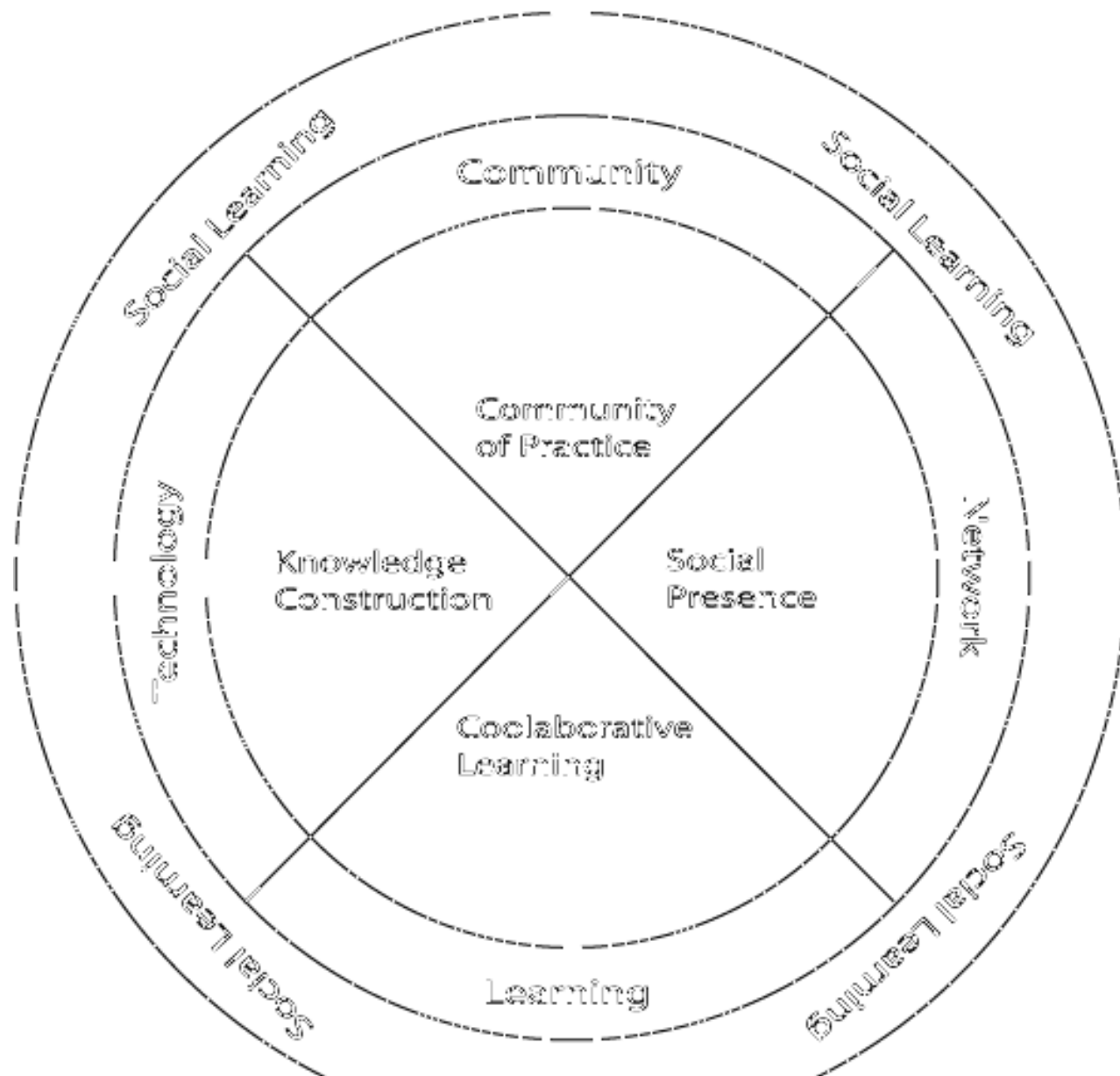
Online Learning Community

CoP (Community)

Communities of practice (CoP) (Wenger, 1998) have the potential to be conducive to mastery of new knowledge (Lieberman, 1996) in an online learning community (McMaster, 1999; Renyi, 1996). CoPs are groups who share similar goals and interests; and, in doing so, employ common practices, work with the same tools and express themselves in a common language. Through such common activity, they come to hold similar beliefs and value systems (Collaborative Visualization (CoVis) Project, 2000; Wenger, 1998). These groups of professionals are bound informally to one another through exposure to a common class of problems, a common pursuit of solutions, and embody a store of knowledge.

Tu and McIsaac (2002) suggested that several factors identified in their study should serve as a model for building a CoP for education reform: determine knowledge; build important topics/issues; gain members' background context; and design pull technology. One must determine which connections to make between learners, to understand what kind of knowledge to share; what kind of community it is inclined to be; and how tightly sharing knowledge needs to link with work. To enhance learning, one does not need to create and build them from the ground up because CoPs arise spontaneously in most organizations. However, one needs to identify and nurture them with the resources, structure, and systems they need to flourish. Developing CoPs is closer to husbandry than architecture.

When building communities on natural networks, coordinators must be generated to organize and maintain the community activities, such as building important topics, initiating simple knowledge sharing activities and arranging social activities. The coordinators also need to provide the members with the time and encouragement to reflect, share ideas with others, and think through the implications of other ideas. Because communities are organized and supported differently, community development requires a different set of tools and approaches. CoPs often require time to develop. Because they are organic, CoPs need time to find the right kind of information to share, the right level of detail, the right participants and the right forums. Individuals must support the community in making these discoveries quickly; but, since information, level of detail, participants, and right forums will be different for different communities, each community will need to discover their own appropriate forum.

Collaborative Learning (Learning)

Collaborative learning enhances the active exchange of ideas within small groups and increases interest among the participants while also promoting critical thinking (Garrison, 1999; Hiltz, 1998). The community of collaborative learning, that is,the grouping and pairing of students for the purpose of achieving an academic goal, has been widely examined and is advocated throughout the professional literature. The "collaborative learning" refers to an instruction method in which students at various performance levels work together in small groups toward a common goal. The learners are responsible for another's learning as well as their own. Thus, the success of one student helps other students to be successful.

Hiltz and Turoff (1993) and Hiltz (1998) purposed a few strategies to enhance collaborative learning. Some examples of collaborative learning activities are seminar-style presentations and discussions, debates, group projects, simulation and role-playing exercises, and collaborative composition of essays, exam questions, stories or research plans. However, more effective factors should be identified in future research.

Social Presence (Network)

Social presence is one of most critical factors in the online learning environment (McIsaac & Gunawardena, 1996; Tu & McIsaac, 2002). "The level of social presence depends upon social context, online communication, and interactivity. When the level of social presence is high, there is a potential that online learners will engage more interactively in online activities (Tu & McIsaac, 2002).

Research should focus on the relationships of online interaction and three dimensions of social presence: social context, online community, and interactivity. Issues in each dimension deserve further examinations (See Table 2).

Table 2: Critical issues in three dimensions of social presence

Issues that affect social presence	DIMENSIONS		
	I. Social Context	II. Online Communication	III. Interactivity
1	Familiarity with recipients	Keyboarding & accuracy skills	Timely response
2	Assertive/acquiescent	Use of emoticons & paralanguage	Communication styles
3	Informal/formal relationship	Characteristics of real time discussion	Length of messages
4	Trust relationships	Characteristics of discussion boards	Formal/informal
5	Social relationships (Love & Information)	Language skills: Reading, Writing	Type of tasks (Planning, creativity, social tasks)
6	Psychological attitude toward technology		Size of groups
7	Access & Location		Communication strategies
8	User's characteristics		

Knowledge Construction (Technology)

In a knowledge construction community, one should have the opportunity to make contributions that will enhance the total learning value of the community. Learners contribute and quickly find the best resources that are key to knowledge mining and knowledge construction. This type of knowledge construction community will enhance online learning positively and will lead to the development of more personalized, self-adaptive learning systems.

Managing knowledge represents the primary opportunity for achieving substantial significant improvements in learner performance and competitive advantage, because knowledge and information have become the medium in which learning occurs. A community of knowledge management is able to treat the knowledge component of learning activities as an explicit concern of learning reflected in strategy, policy, and practice at all levels of the learning environment. Tu and McIsaac (2001) argued the importance of knowledge management tools for online learning. Making a direct connection between both explicit (recorded) and tacit (personal know-how) intellectual assets. Discovering the important factors that have impact on this knowledge construction process should occur in future research. In practice, knowledge management often encompasses identifying and mapping intellectual assets within the learning environment, generating new knowledge for competitive advantage within the learning environment, making vast amounts of information accessible, sharing the best practices, and technology that enables all of the above, including groupware, database, intranets, etc.

Conclusion

Online learning community is becoming an important concept in current technology-based learning. The research and literature are still in their infancy. Identifying important concepts and factors that have impacts on online learning community is critical at the current stage. This paper examined online learning community from a social learning process aspect to discuss the important theoretical constructs that are identified in current research and literature. This step will challenge and assist researchers who are interested in online learning community to think critically regarding the issues of online learning community. With a better understanding about online learning

communities, how they work, and how they develop/evolve, online learning community, this new learning paradigm, will open other avenues to enhance human learning with the integration of technology.

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