Investigating the Factors Contributing to Professional Learning Community in E- Learning Environment; Using Content Analysis Method

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Abstract

A professional learning community contains communication and interaction. Interaction does not simply mean the one-way transfer of information from teacher to learner, but the discovery of ideas through others, the search for answers to questions and problem solving with others. In this research, conducted in order to discover the factors affecting the formation of professional learning communities and present a model for them, a compound, successive and exploratory method was employed in an attempt to identify these factors. In the qualitative section of the research, articles, books, and extracted texts that had been purposefully chosen, were analyzed; and as a result, the 7 categories of teachers, participation, instruments, time, evaluation, trust, and learning were identified. In the quantitative section of the research, in order to investigate the internal and external validity of the model, the made questionnaire was used. Also, in studying the research hypotheses, Pearson's correlation test was used. The findings of the test showed that between the two variables of participation and the grade the students had received in the professional learning community, there existed a positive and high correlation, meaning that the higher went the participation in the system of learning management or the electronic environment in general, the higher was the communal feeling experienced by learners.

Key words*: professional learning community, constructivism, model, participation*

Introduction

With the introduction of computers into human lives and analogously, the progress of the internet network, numerous social definitions and services have changed or moved in the direction of drastic transformation, and each day, the effects of these transformations are made more obvious in our daily lives. To this day, and while it is still in its elementary stages, this virtual world, which is the phenomenon of the third millennium of human civilization, has blessed contemporary societies with many achievements: majestic information network, grand markets and financial establishments, powerful information search tools, virtual institutions and societies etc. (Ouzts,

2003). It can be said with assurance that one of its biggest accomplishments is electronic teaching.

In electronic teaching, what is responsible for the learning quality is the interactions that take place between the learners, the electronic teaching system, and the teacher. In this respect, knowledge is built in the learning community and through the interactions of learners with each other. During the last decade, the concept of learning community was seen as a fantastical phenomenon, and just a dimension to which teachers had to pay attention in electronic teaching. However, today most researches generally acknowledge the importance of learning community formation in online courses (Garrison & Anderson 2010; Wanger 2012).

The great chasm between traditional and modern learnings in the educational process has increasingly attracted the attention of researchers. It is not only

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important to use virtual media in the teaching of virtual education quality and the formation of school professional learning communities (especially in private educational institutions), but in fact they should be seriously pursued in order to help the country's educational development process.

The reason that the learning community environment is the object of focus is that the experts who write and research about social constructivism believe social constructivism is an important factor in improving the connections between individuals and raising the learning quality in these environments (Ouzts, 2003). Davie (1916, 1983, quoted in Sugarman 2011) supported the active role of learners, and favors active learning. The advocates of social constructivism believe that high-level learning happens with participation: knowledge is built when individuals socially engage in dialogue and activity about the shared tasks and issues (Driver, Asuku, Beach, Mord Timer, & Scott 1994). The designing of participatory learning environments in electronic learning is generally discussed under the title of learning communities. A learning community is a group of learners or a virtual environment in which learners share their concerns, knowledge, and perspectives about the topic they pursue (Langel, 2011). Some research have been conducted on the importance of the formation of a community for learning: Right and Bickford (2006) stated that learning communities induce deep learning acceleration, and should be taken into account in planning for virtual and physical learning environments. The research on learning theories and how the brain operates show that participatory learning and the engagement of learners in communities lead to individual's higher learning.

In this research, professional learning communities were taken to signify the presence of learners in formal electronic teaching environments with a teacher's presence. From the beginning, this environment is formed according to a certain objective, and is evaluated in line with a special aim.

Method

In this research, qualitative content analysis with inductive approach was used. Content analysis is the use of a repeated and authoritative method for obtaining inference from the content in relation to its source or its features.

Qualitative Content Analysis is the empirical, methodological, and controlled approach to content is based on content analysis rules and the steps of its patterns without hasty quantization (Ferguson, 2012). In order to analyze the content in this research, both written sources (book and article) and content obtained after interviewing e-learning experts were examined.

For this purpose, according to Tables (1-3), the keywords related to content analysis were first identified. Then those keywords were searched in the databases specified. The criterion for selecting a paper was the existence of one of these keywords in the title of the article. Due to the large number of articles, the priority was to analyze the articles with those that were indexed from 1998 onwards. Because some articles are not indexed in popular databases or free access to them is not possible. Google Scalar also searched. In the Persian databases such as Jihad University, Megh Iran, Normgs and Associate, there was no article in this field.

Table1.

Key words and search databases for content analysis

Word of research	Data Base	Number of articles		Number of Selected articles
		Basic Research	Applied Research	
Professional Learning Community **Online learning community** **Community of learning** **Virtual learning community** **Professional Learning Community** **Professional Learning** **Community** **Community Online** **Community of inquiry** **Professional Learning Community**	Proquest Springer Science Direct Emerald Ebsco Sage Eric Google Scholar	54	23	15

However, 15 papers were not identified for analysis from the start. Therefore, achieving theoretical saturation in some categories has led to the selection of the next article. It should be noted that since the selection and analysis of the articles was made after the analysis of the books, theoretical saturation was carried out in paper No. 15. Although articles have been repeated from article 10 below, for the sake of certainty, three other articles were also examined.

There was also a search for high-key keywords in the databases that can be used to create e-books. 12 books were obtained. The criterion for selecting books was their special focus on the 'learning community'. For this purpose, the list of books was carefully examined. With this limitation, three books were selected. A book was also prepared from the Rutjig Publications in the paper form, and finally, four books were analyzed. Below is a list of downloadable databases from each of the following topics (Table 2).

Table 2.

Downloadable book download databases

Database	Frequency of downloads from each one
Libgen	3
Bookfi	2
Library genesis	1
gigapedia	1

In this study, software version maxqda 10 was used to analyze inductive content. It should be noted that this software performs the classification and sorting of codes and identifies the following categories, and, finally, develops the model based on the data obtained from the qualitative content analysis by the researcher.

To do this, at first, the texts of the books, articles or interviews were read for a general reading of it once. Then, in the context of content analysis, text readings began and continued. In this way, the registration unit was considered as the subject in lieu of the word, sentence, paragraph or the whole text. From the beginning of the text, the book was read and wherever it refers to a theme, it was chosen as the key sentences, and it was referred to as a code or tag (Miles & Huberman, 1994).

After encoding the semantic units, the codes were categorized based on similarity, and finally six categories and 17 subcategories of qualitative data emerged as a result of the content analysis of the texts. Table 3 lists the categories and subcategories for them.

Table 3.

The categories and subcategories are subject to qualitative content analysis

Row	Categories	Subcategories
1	Teacher	Case-based argument
		Situational learning
		Create a sense of community
2	Taking part	Intersection of community and culture
		Interaction
		People are coming from each other
3	Online environment	Knowledge Networks
		Flexibility
		Distribution
		Mass media tools
4	Time	Dating length
		Time Management
5	Tools	Technology
		Accessibility
		Interface
6	Evaluation	Learners
		Instructors

Subsequently, each of these categories and sub-clauses related to them were described, along with a series of qualitative content analysis in relation to them. Semantic sentences written in parentheses are from books and articles analyzed in this regard.

Furthermore, distance learning courses held on a large scale can be designed by a small team of faculty members and run by a large number of trainers. The time required to plan a course online requires the following questions about teachers' responsibilities:
- What skills do the teachers need?
- How much time commitment is required by the teachers?

Teachers must have certain skills and experience for teaching that is necessary for the success of an online course. Transition from the online course is not a simple and easy transition. Although online tutoring teachers believe that the skills required to teach in this space do not differ much from the skills required in face-to-face classes, in the transfer of techniques that are in place Online classrooms should be used in classrooms to be carefully considered. To illustrate this in more details, we present two examples in this regard:
- Group project
- Seminar

For groups that worked face-to-face, the teacher had an eye on the progress and dynamics of each group. The teacher will even pay attention to the level of each learner, not a person to be left behind, nor a specific person to master the activities of the group. Teachers interfere with each other when the learner

encounters problems, conflicts, or group activities. The transfer of these functions and tasks from online to online is roughly the same. However, in the online course, the teacher should look at the activities of the group on-line, for example, to view student participation in discussion boards. By examining these posts, the teacher can develop ideas and programming and make sure that each learner sends a reasonable number of posts - not very much or very slowly. The teacher also tries to monitor the track of the group's moves and organize them to avoid any problems. Garison (2008) explored the relationship between three social attendance, teaching presence, and cognitive presence referred to in the research community model of Grayson, Anderson and Eloumi (2003). They sought to investigate which of these factors are more important. Finally, it has been concluded that if the teaching presence is well established in the learning environment, it can excite two other ones and create a research community. So they emphasize the role of the teacher. The results of this research in the teacher category are based on studies by Riegelman and Ruben (2012), Gerono (2005), Bradley (1999), Wenger (2012), Wang (2010), Ellison (2006), and Matzat (2013). It's all. In other words, these scholars have emphasized the role of the teacher in shaping the learning community. However, She and Bidjerano (2010) argued that the teacher's presence in the learning community is negatively correlated with the teacher's contribution. This means that as teachers become more crowded in these communities, learners experience less participation and sense of community. Concerning this conclusion, as previously stated, the teacher should not dominate the learning community, but indirectly observe the partnerships and, if necessary, direct management.The most important goal of this activity is to engage students in an online discussion while practicing networking practices in these types of activities.

There are some benefits and challenges for measuring this type of work. Measurement encourages activists to work, but at the same time it can lead to artificial discussions that stimulate it rather than interact. There is a danger that students' posts are more functional in this direction than a pure partnership on the topic under discussion. In order to reduce this problem, considerations should be made regarding how to measure online discussions.

Is the measurement based onstudent participation rate in online discussions?
- What is the quality of these contributions?
- What is the contribution of partners to others?

If collaborative activity is attractive and practical, students should have an active participation during the activity. In order to reach this level of participation, some teachers require students to send a certain number of posts. However, as noted above, this would prevent these activities from becoming authentic.

The value of a discussion depends on the quality of student participation. Ideally, students should carefully consider the issues under discussion and study relevant resources in that context. So they can be in a position to have valuable discussions. In order to encourage quality activities, coaches sometimes set scores for quality discussions. However, teachers and students should have a common understanding about the term "quality partnership" (Gosling et al, 2004; Salmon, 2004). This makes the nature of an interactive discussion contingent on how learners interact with each other. When an online discussion is carried out asynchronously in a long period of time, it can cause a loss of dynamism and interaction. If students are busy posting, they focus more on the content of their messages than focusing on other people's messages.

In a study by Gereno (2012) aimed at identifying the benefits of learning communities from the perspective of teachers, all participants considered learning participation to be relatively significant. Because they change their position from an isolated person in the traditional education system to an influential person in learning communities. However, as participating in many factors contributes to the lack of participation of learners and can sometimes be useful. Hobson (2001) argued that being isolated in these environments sometimes acts as a means of supporting individuals from their own. He believed that traditional training systems sometimes do not support interactions because of the lack of formation of these interactions as a means to avoid turmoil or potential frictions that exists in dynamic interactions. Findings in the research Fisher (2004), Chavez and Romero (2012), Carpenter (2006), Mohsenin (2010), Gray (2002), Atkinson (2007), Jonassen (2004), Wimbish (2001), Leland (2005), Simard (2004). In other words, the researchers emphasized the importance of participating in the learning community. Wimbish (2001) found in his research that there is a significant correlation between the sense of community and participation. This means that as the participation rate goes up, the sense of community increases. This claim was also examined and confirmed in the present study. This can be cited by Shaw (2013), Casey (2011) and Chavez and Robson (2011). However, Lo and others (2003) found in their research that learners had equal learning regardless of the level and levels of participation in the e-learning system. The results of Davis and Graph (2005) also support this view.

The time category in this research was considered from the point of view of the length of familiarity and time management perspective. In analyzing the content used to identify the factors influencing the learning community, the time factor was referred to as the context in which the learning community occurs. The purpose of the time factor is that the formation of a space is not a community of learning to develop, but rather continuously and continuously, the participation of learners in the context of time. Time management has been proposed as a key factor in success in the field of traditional education (Briton, 1991). In other words, people who have high productivity in their academic performance usually earn a higher score in time management, and those who score lower in time management are usually not well placed in terms of academic achievement. Failure in e-learning sometimes occurs for the same reason, which is the reason why this kind of training has been chosen. For example, learners who are not in a good time, or when they need to attend on-the-job training, choose an e-learning system because of its greater flexibility in terms of time. However, the lack of time management in this type of education can sometimes lead to the formation of a series of cases that lead to academic failure and sometimes drop out of education. For example, failure to carry out assignments will result in lower individual efficiency in that class, low score, academic failure, and ultimately decide who to drop this kind of education.

However, as mentioned, e-learning is more flexible in comparison with e-learning, especially for adult learners, however, sometimes due to the high diversity of assignments and activities that a person has in this type of training. It should be noted that Chier, Rinererson, and Kerr (2011) also pointed to the need for more time allocation than in-person training. To form a learning community, continuity in activities and the allocation of specific time is required. Failure to do so could discourage other contributors to this space. Therefore, both the teacher and other learners should, as far as possible, devote some time to refer to the activities of others and comment on them. However, as Steele (2007) stated, learners have different characteristics and capabilities in terms of time management. Therefore, in relation to learners who are not well-positioned in this field, the teacher should interfere with the methods of working in an e-learning environment or doing homework. However, as a student stated, automated reminders from the system sent to the learners' personal email can also work:

Early, I was enrolled in e-learning. If I sent a message, I would visit the site almost every hour to get the answer or tell others what they said. But I was gradually discouraged by this. Because it seemed like the time I was doing for this lesson, it was not important for others to do this, and when it was not dedicated to it. Sometimes I received an email from a professor a week later. It's well known that he gets discouraged.

The the effect of time factor in this regard was studied by Rostami-Nejad (1392); Glawa and Glawa (2012); Steele (2007); Michino and Mitchino (2008); Ferrari (2001); as well as Gaffney and Gray (2010). In their research, the researchers also emphasized the importance of time in shaping partnerships and ultimately creating a learning community.

The online learning community can be supported through different tools. For example, a simple email list allows a group of learners to communicate easily with each other, and a community provides a more structured environmental discussion for group communications. For real-time communications, conversation rooms, instant messengers, or conferences can be used. Wikipedia can be used to help a group of learners share work on a document and track their progress. To support reflection learning, students can use the blog and other students to write their own opinions about the articles written. In providing tools for learners in the e-learning environment to form a learning community, one must also consider the coincidence or non-asymptotic nature of these tools, as well as the symmetry or asymmetry of these tools. The use of synchronous tools generates communication-based It's about real time and increases social presence. Using symmetric tools also involves at least two people. Therefore, in the curriculum that is expected for the subject, the use of all four types of tools should be included in the program.

The results of this study are similar to those of Chang and Su (2012), Kiar (2011), Werner (2009), Palof and Prat (2007) and Verbin (1998). All of these scholars have acknowledged the impact of appropriate use of tools and the use of appropriate tools in shaping the learning community. Verbin (1998), in his research, presented a conceptual framework for designing a community of online learning. He divides the e-learning community into three categories of electronics, community, and learning, and places the tools into three electronics categories. Werner (2009) also emphasized the importance of tools for building a learning community. In his research, he believed that the learning community is formed through interactions among people around assignments that can be facilitated by electronic devices that the trainer has. The individual capabilities of each of these tools can

guide the instructor in choosing tools for assignments and creating special relationships.

Well-designed measurements have a key role in encouraging and supporting people's learning. In fact, it focuses on aspects of the importance of a course and provides opportunities for feedback and help students evaluate their activities and progress. Measurement is not the only way to measure what the learner can achievebut also it significantly affects what they perceive. Most learners will be successful in the evaluation process and will make significant efforts in this regard. They reasonably think that the subjects they are examining are important aspects of the curriculum, from the point of view of our students, the measure is usually the defining of the actual curriculum. If the measure is consistent with the returns defined for the course, learners will focus their time and attention on key aspects. This idea is called constructive alignment. Constructive alignment means that goals, learning activities, and periodic measurements are all used in the right direction for the correct orientation of the learner.

An important category that is extracted from the analysis of qualitative content is trust. Whistle (2006) defined trust as "Trust means that members of the community have confidence in others and they tend to rely on other members of the community." On the other hand, Ravi (2002) argues that the trust of the members of the community of learning is underpinned by the trust of the members of the community, and is said to be in a state where members of the community are willing to help each other.

Kling and Wright's Card (2003) pointed to two major problems in learning communities in their research. One is the activities of people without regard to the contributions of others, and the lack of trust that prevents the serious participation of learners. On the other hand, Jennifer (2007) called for responsiveness and transparency among the two factors that make trust among learners. However, the concept of trust gradually develops between learners and members of the learning community. The creation of self-confidence is a precondition for the formation of a safe environment for commenting the respondents on the lessons and the content of each other and criticizing each other. In other words, it can be an intermediary to support the formation of a learning community. Since the formation of the confidence building process for e-learning is slow because of the lack of face-to-face meetings and the hesitation in responding to comments or questions, at the very beginning of the course or e-learning course, it should be noted that participation The interactions and resources can, in spite of the lack of face-to-face meetings, lead to trust. Therefore, as

quickly as possible, students should interact with each other in a variety of ways and participate in the e-learning system in order to build trust between learners. On the other hand, learners need to be honored at the very beginning of the course and have faster feedback, or else these delays in responding can discourage them in the early stages and become institutionalized.

However, Matzat (2013) found in his study that the level of trust that individuals who collectively form together with each other is lower than that of individuals, however, if communication between individuals in the virtual learning community Continue and have enough time to get to know each other. There is the possibility of building a high degree of trust between them.

In his research, Conrad explored how the learners understand themselves as contributing to online learning activities. The results showed that online learners are actively trying to form a community of conversations when they engage in online learning courses. Their need for equality and coordination requires a certain level of interactive activities from them. The three categories that emerged from this study were: (a) the role of learner engagement in online learning activities; (b) the relationship of respect and learning to learning; and (c) being online as a social presence. Simonau (2007) also believed that online learning communities are about organizations that are collaboratively solved and in an environment that respects and protects risk. When the educational system, in a honest dialogue about student work, measuring the needs of teachers and learners, changes the data and research into the value of individual and group work, that organization and the educational system of the environment are learning to foster the intellectual and social .

Discussion and Conclusion

A professional learning community contains communication and interaction. Interaction does not simply mean the one-way transfer of information from teacher to learner, but the discovery of ideas through others, the search for answers to questions and problem solving with others. When a learner is in the presence of the teacher and other learners, many learning opportunities occur through connections and interactions. In spite of this, face-to-face connection is not always possible, and its replacement (in the form of online interaction) can be used. In long-distance education, what is responsible for the learning quality is the interactions that take place between the learners, the electronic teaching system, and the teacher. In this

respect, knowledge in learning communities was seen as a fantastical phenomenon, and merely a dimension to which teachers had to pay attention in electronic teaching. However, today most researches generally state the importance of the formation of learning communities in online courses (Grieson & Anderson 2003; Ravi 2002; Wanger 1999). In order to identify the factors that influence the formation of learning communities, an inductive perspective was adopted in the analysis of qualitative data. In order to achieve this goal, the theoretical texts available on the context of the research objective were analyzed and scrutinized by using a purposeful method and through library research on electronic-learning factors. Based on its epistemological principles and learning perspective, the model put forth in this research can be categorize under the heading of constructivism and the subheading of social constructivism. In constructivism, knowledge is built by the learners, and the teacher's role is the facilitation of the learner's knowledge-building process. Additionally, in social constructivism, learning is visualized as a social construct, for the formation of which social interactions between learners is necessary. In electronic teaching, because of the dearth of social interactions, it seems necessary to form learning communities in order to elicit rich and enduring participation from the learners that would minimize their solitude and create dynamic interactions between them. The objective of a learning community is to develop collective knowledge in a way that would also support the development of individual knowledge. High-quality Professional community learning occurs when a learning culture reigns in which each person engages in a collective effort to achieve knowledge. A learning community forms in an environment where trust reigns supreme, learners share their concerns, outlooks, and values, and exchange sources and experiences with each other. The model presented in this research, which is proposed for formal electronic learning education with teachers, contains the 9 elements of instruments, trust, time, support, groups, teachers, participation, social presence, and resources. This model can be used alongside instructional design models of constructivism in order to raise participation in electronic teaching environments.

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