

Research On The Impact Of Communication On Learning Communities In The Context Of Industry 4.0

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Abstract

Educational institutions have been significantly impacted in the context of the Fourth Industrial Revolution, globalization trends, and the explosion of information technology. Modern communication methods, a hallmark of Industry 4.0, are increasingly influencing education in general and the activities of learning communities in particular. Appropriate application of these communication methods will enhance the quality and effectiveness of learning community activities in Vietnamese schools. This article utilizes theoretical research methods in communication, analyzes the impact of communication on learning communities, and proposes the integration of communication methods into the activities of learning communities in Vietnamese schools in the context of Industry 4.0. The research results are of significant importance in improving the quality of learning community activities and education in Vietnam in modern society.

Keywords: *Learning Community, Communication, Communication Methods*

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I. Introduction

The 21st century has witnessed a remarkable transformation of society, marked by the emergence of a knowledge-based economy, the trend of globalization, and the advent of the Fourth Industrial Revolution. In this context, the application of information technology and communication has made significant contributions to the overall development of society, including the field of education. Modern communication, enabled by advanced information technology, has brought immense benefits to the development of learning communities within educational institutions, encompassing both the communities of teachers and students.

Communication serves as a multifaceted tool, environment, and effective mode of operation for these learning communities. The achievements of communication in the Fourth Industrial Revolution have provided extensive and convenient learning opportunities for all learners, irrespective of geographical boundaries. Through platforms such as Zalo and Facebook, educational leaders can effortlessly establish limitless learning communities in terms of both size and geographic location.

The exchange and sharing of information through various communication methods have become readily accessible and instantaneous. Communication is the thread that binds learning communities into a shared home within a multicultural environment.

However, not all learning communities effectively utilize communication methods in their activities. Sometimes, the misuse or inability to control the negative influences of certain media (such as the dark side of social media platforms) can turn the advantages of communication into obstacles to positive aspects of learning communities. For example, the lack of constructive debate the emergence of conflicts on social media, individuals abusing communication and learning communities to manipulate public opinion for personal or subversive organizational purposes, and more.

On the other hand, despite the modernity of communication methods, it's crucial to recognize that they cannot replace human interaction and the emotional aspects of human communication. In this article, we address the theoretical analysis of the impact of communication methods on the development of learning communities in Vietnamese schools in the context of Industry 4.0.

The research results hold significance in highlighting the vital role of communication in the formation and development of learning communities. Consequently, we propose effective ways to integrate modern communication methods into the organization of learning community activities for Vietnamese schools in the context of Industry 4.0.

Communication is a term that refers to the ongoing process of exchanging information, knowledge, ideas, emotions, sharing skills, and experiences between two or more individuals, with the aim of enhancing

mutual understanding, changing perceptions, and progressing towards adjusting behaviors and attitudes in line with individual/group/community/societal developmental needs [2]. Communication also plays a role in propagating and disseminating messages and information about social, and political events, and issues, providing guidance for individuals/groups/communities to make appropriate decisions and take corresponding actions. Communication is carried out through various channels, including mass media, social media, and online communication [1,3], and it has transformed all aspects of social life, especially in market research, marketing, and the use of social media in communication [4].

The impact of communication on learning communities has been addressed by numerous authors in theoretical and practical studies.

Research on the role of communication in learning communities has been discussed in studies by A. Lruwaili and T. Ku, revealing that most participants have a preference for online education and interaction with others in online educational environments. This preference promotes interactive learning and cultural exchange, and during these interactions, social media have positively contributed to the educational experiences of learners [5].

In the research "*Using social media as a platform for a virtual professional learning community*" by L. Bedford, it is affirmed that social media platforms provide a non-formal but effective working environment for professional learning communities. The study takes an in-depth look at teachers' experiences when using social media to develop their professional skills and describes a structured virtual professional learning community that utilizes social media platforms to attract educators, thus fostering relationships and promoting collaborative learning within the teacher community [6].

Shephard, K., Brow, K., Guiney, T., Deaker, L., and Hesson, G. also described in their article "*Exploring the use of social media by community-engaged university people*" that they conducted 25 interviews with university professionals engaged in community work to understand the impact of social media on their career development needs. The results showed a correlation between the successful use of social media and confidence in traditional communication methods [7].

Another study revealed that through the use of social media, professional learning communities of teachers have continuously evolved. The research, involving 100 participants and 18 in-depth interviews, demonstrated that Twitter-based professional learning communities had a significant impact on their learning and practice [8].

Authors Brown, B. and Pederson, J.A. (2020) conducted a study titled "*LinkedIn to classroom community: assessing classroom community on the basis of social media usage*" to investigate the influence or hindrance of social media on classroom communities. The results indicated that the group not using social media demonstrated better classroom community awareness compared to the group using social media. This study provides a multi-faceted perspective on the effects of communication [9].

Several studies also highlight the empowering role of media in communities, as a powerful tool for connecting and sharing information, supporting community development by building trust, enhancing credibility, and creating an environment for expanded communication [10]. The impact of online spaces on community development and social education in general has also been studied [11].

Informal learning through social media has been investigated through the experiences of 41 teachers in Kazakhstan. The research results provide insights into teachers' participation in virtual professional communities in the context of informal learning. Emphasizing the need for professional connections as part of strong professional learning commitment, the study identifies contextual factors such as the professional isolation of teachers in rural schools, the need for mentoring support, and the changing educational landscape. It underscores the role of teachers' self-efficacy in sharing knowledge and linking that knowledge to informal learning opportunities for both active and passive participants in virtual professional communities. Ultimately, the findings of the research also highlight the importance of direct collaboration both inside and outside the classroom to facilitate the exchange of professional knowledge within virtual professional communities [12].

The development of social media platforms has also given rise to numerous informal online communities, and learning within these communities has led to changes in behavior, thinking, or the application of what has been learned in real-life situations [13].

Another study examined the factors influencing students' knowledge-sharing behavior in online learning communities created on social media platforms. This research analyzed the structural relationship between knowledge-sharing behavior, the need for social approval, happiness, self-determination, self-regulation, and the goal-oriented structures of students among 176 university students. The results indicated a strong relationship between knowledge-sharing behavior, the need for social approval, and the goal-oriented structures of students [14].

From the perspective of the "transactional memory system," authors Chen, Ming-Huei; Agrawal, Somya; Lin, Sung-Min; and Liang, Wei-Ling conducted research on student project groups and found that the

use of media has had positive outcomes for learning communities. The increasing use of social media has facilitated group cohesion, knowledge sharing, and the overall effectiveness of project teams [15].

There are also several studies in Thailand addressing these issues. Authors Paitoon Pimdee, Attaporn Ridhikerd, Sanguatai Moto, Surapong Siripongdee, and Suwanna Bengthong conducted a study titled "*How Social Media and peer learning influence student-teacher self-directed learning in an Online World under the 'New Normal'*" This study revealed that the self-directed learning orientation of students and teachers is highly influenced by the impact of media compared to other criteria such as learning motivation and self-management skills [16].

Srisawat, S., and P. Wannapiroon, in their research, emphasized the widespread adoption of digital tools, applications, and learning platforms, making digital literacy and skills increasingly important for teachers in Thailand. They analyzed the concept of "virtual professional learning communities," learning experiences, and digital teaching competencies, along with a three-stage research method (including the development of a virtual professional learning community platform for teachers based on design thinking; assessing the quality of teachers capacity-building courses based on design thinking; evaluating teacher competencies in using virtual professional learning communities). Through this research, they affirmed that virtual professional learning communities provide teachers with benefits and opportunities to acquire knowledge and share information related to teaching or professional development [17].

The study by Rolandson, David M, and Lanna E. Ross-Hekkel using a case study approach with four rural music teachers actively participating in an online professional learning community concluded that the virtual professional learning community provided rural music teachers with significant professional development, with specific content. It also reduced the sense of professional isolation, even though they still faced challenges affecting the community's effectiveness [18].

So, there have been numerous research works on communication's role in learning communities. However, these studies have primarily focused on the influence of communication (mainly social media platforms) on online learning communities, virtual professional learning communities, and how it affects the emotions, behaviors, competencies, and motivations of community members. They have explored how social media platforms impact learning communities, either positively or negatively, depending on how the community uses these platforms. However, there hasn't been comprehensive research on the role of communication and the application of communication methods in the activities of learning communities within Vietnamese schools. This research will contribute to filling the theoretical gap and provide specific insights into the impact of communication on building learning communities in Vietnam in the context of Industry 4.0.

II. Research Methodology

This article employs a theoretical synthesis research method, analyzing various theoretical aspects of communication and learning communities. From this analysis, a theoretical evaluation is conducted concerning the application of communication methods to the activities of learning communities within Vietnamese educational institutions, considering the backdrop of the Fourth Industrial Revolution.

III. Research Findings

The Role of Communication in Building Learning Communities in Educational Institutions Amidst Industry 4.0

In the strategy to enhance the quality of education in educational institutions, communication plays a pivotal role in building learning communities, aiming to provide teachers and students with a creative and engaging interactive environment for self-development. Particularly in modern society, as the achievements of information technology and communication have provided robust support to educational institutions in organizing teaching and educational activities, the increasingly advanced and diverse communication methods have garnered significant attention and application in fostering learning communities. Present-day communication, with the intelligent utilization of information technology products, holds a crucial role in the construction of learning communities. This is demonstrated as follows:

- Communication provides the information needed to guide the establishment of suitable learning communities in educational institutions. Throughout the history of technological development, finding information has never been as easy and convenient as it is in the 4.0 era. Searching for a keyword on Google, for instance, yields hundreds of millions of results. The explosion of the information age has brought miraculous conveniences to humanity in terms of collecting and seeking information. However, alongside these conveniences come inconveniences and challenges. Faced with an immense volume of data and information, learners must select which information is useful and reliable for their learning tasks.

In the current educational reform stages at all levels, the establishment of appropriate learning communities is always a key concern for every educational institution. In this context, school administrators and teachers must act as good guides for creating these learning communities, ensuring that the principles and

purposes of the communities align with the specific educational levels, fields of study, and the requirements of educational innovation in certain phases. For instance, for a university of Information Technology and Communication, a "Creative Technology Learning Community" could be established. Schools of pedagogy might form a "Community of Positive Teaching Methods," while primary and secondary schools could aim for communities such as "Integrated Teaching and Learning Community," "STEM Teaching and Learning Community," and "Experience-Based Activity Organization Community." Likewise, preschools could consider creating communities like the "Reggio Emilia Approach Application Community" and the "Preschool STEAM Teaching and Learning Community."

To accomplish this task, communication, with its effective means, will serve as a powerful tool for educational institutions, school administrators, teachers, and lecturers in guiding the construction of learning communities. Various forms of communication can be employed, such as social media platforms, Zalo, Facebook, forums, television broadcasts, or radio broadcasts, to disseminate information to members, including students, teachers, and colleagues within the school, to encourage participation in learning communities. The educational institution must play a leading role in establishing these communities.

- Communication motivates members to participate and sustain the development of learning communities. During the course of their activities, communication plays a vital role in fostering trust, empathy, understanding, and sharing among community members, acting as a source of motivation for active participation. Through communication, individuals come to recognize the benefits of engaging in learning communities. These benefits encompass psychological advantages, such as a supportive environment, a sense of comfort, satisfaction of communication needs, self-expression, and self-affirmation. There are also educational and developmental benefits, including access to valuable information for learning (for students) and professional development (for instructors and teachers). Moreover, there are benefits related to contributing to the community, such as providing innovative ideas in fields like science and technology, arts, and environmental conservation, or solutions to societal issues like disease outbreaks, natural disasters, social problems, or school violence.

Continual communication regarding issues and their resolution is a crucial way to motivate the development of school-based learning communities. Accurate, relevant, and timely communication maximizes the effectiveness of learning community activities and creates an ideal environment for students, learners, and teachers to participate in and organize educational activities.

- Communication utilizes effective tools for the operation of learning communities. The distinctive tools of communication, such as online social media channels, television programs, reality shows, forums, conferences, etc., in educational institutions, are also the means by which learning communities carry out various types of activities. Depending on the purpose, conditions, nature, and requirements of each activity, these communication tools will be employed differently by learning communities. For example, in the case of elementary school student learning communities, using communication tools like forums, and interactions, designing age-appropriate television programs, and organizing activities are suitable approaches. Caution should be exercised, especially when using social media platforms, as students at this age may have limited understanding, experience, and critical thinking abilities, making them vulnerable to negative influences on social media if not monitored and controlled by adults. However, for high school students, college students, instructors, and teachers, the use of personal social media platforms such as Zalo, Facebook, Instagram, etc., can be valuable and enjoyable tools to carry out learning community activities due to their ability to select information and exercise autonomy.

- Communication provides a beneficial and creative playground for members of the learning community. Through the experience of various communication tools and forms within the learning community, members have an engaging platform to express their creativity freely. There is no imposition or pressure; members participate voluntarily and enthusiastically because they recognize the benefits that learning communities bring to them. They are willing to engage in the community's communication process, contribute their personal value to the community, and, in turn, serve as communication catalysts to encourage others to join the learning community's activities. Through this collective effort, they collaboratively build and develop the image of a professional and creative learning community shaped by its own members.

- Communication serves as a vital assessment channel for the development of community members and the effectiveness of a learning community. Through feedback received via communication, members and learning communities within educational institutions can evaluate the results they have achieved in their community activities. This includes assessing whether the sharing of information was appropriate, the reliability of information sources, the level of cooperation and interaction among members, the extent to which the community's principles, objectives, and learning tasks are respected and executed, and the contribution of the learning community to society as a whole.

Application of Communication Methods to Learning Community Activities in Vietnamese Schools in the Context of Industry 4.0

Based on the analysis of research results on communication theory and identification of gaps in existing research, we propose six communication methods that can be effectively applied in the context of technological development in Vietnam's Industry 4.0.

Application of Live Streaming:

Live streaming is a form of real-time video broadcasting on social media channels such as Facebook, YouTube, Bigo Live, etc. It is a familiar and highly effective communication method in the era of Industry 4.0 due to its strong appeal and impact on participants. Leveraging the advantages of live streaming can yield surprising and positive effects. Statistics show that more than 80% of social media users have watched live streams, indicating that live streaming, with its wide reach, is a powerful communication method for both communities in general and learning communities in particular.

Typically, live streaming is used for commercial purposes such as sales or promoting products, but it has not been widely used for educational purposes. However, if used appropriately, live streaming can be effectively applied to build learning communities in educational institutions. Young people, including students, are often curious and stimulated by engaging real-life elements, making live streaming an ideal method for influencing the crowd's psychology.

Live streaming has advantages in building learning communities in the following ways:

- Live streaming offers high interactivity because it is real-time, authentic, and highly persuasive. Learning communities can use live streaming for various purposes, such as live broadcasting of meaningful educational programs and activities, making them accessible to all members and allowing for widespread sharing of these educational messages. Learning communities can learn many interesting things from livestream programs.

- Live streaming is easy to use, with simple operations and no need for extensive equipment or video editing skills. There are also various platforms that support live streaming, making it very convenient for users. Learning communities are primarily built on shared purposes, interests, and enthusiasm for a particular field, and they often have limited investments in physical infrastructure and equipment. Therefore, live streaming, with its simplicity and convenience, is an ideal method for learning communities to utilize. With just a smartphone and an internet connection, community members can livestream an educational program without the need for complex equipment or physical facilities.

- Live streaming also has the advantage of providing a high level of interaction, almost limitless, and it creates an immediate connection between the broadcaster and viewers. The continuous broadcast duration stimulates curiosity, making it very suitable for promoting events for learning communities and educational institutions. Live streaming can attract a large audience, including students, teachers, and educators from various educational institutions, thus expanding the influence of the live stream content to these audiences.

In addition to its advantages, live streaming also has some disadvantages that learning communities should consider when using it for communication. These include:

Dependency on network connectivity: Live streams can fail if there are technical issues or problems with the network connection. The platforms that support live streaming may also experience errors, causing difficulties for both the broadcaster and viewers.

Limited battery life of recording devices: The quality of a live stream can be affected by the limited battery life of recording devices, which may result in interruptions or reduced streaming time.

Lack of content moderation: Since live streams are broadcast in real time, the content is not subject to moderation. This means that broadcasters may not have full control over potential risks related to speech, security, personal information safety, or organizational aspects of the live-stream event. Ensuring authenticity and high educational value in educational content within the learning community is essential, and this can pose challenges for Livestream users.

Application of Direct Phone Communication Method

This is a traditional communication method that is widely used, especially in cases requiring personal exchange and consultation. For a learning community, not all activities take place in group settings or have a collective nature. In many cases, to have the best impact on its members, a community's strategy involves deep personal interactions on issues that both the community and individuals care about or addressing individual challenges and difficulties when participating in community activities. In such cases, direct phone communication is an ideal method of communication, offering high effectiveness and contributing to the improvement of the community's activities.

For example, a student facing bullying, a college student struggling with career development, or a teacher with uncertainties about modern teaching methods can engage in direct phone conversations with experienced individuals or experts within their learning community to seek support. This form of "communication" helps them address challenges and difficulties, maintain trust, and actively participate in community activities.

These are some considerations that learning communities should keep in mind when using live streaming as a communication method.

The advantage of this communication method is that it fosters the best understanding and sharing among participating members. For example, in an educational community, members will receive optimal support from this method when they need personal communication and in-depth exchanges regarding issues related to learning and development. However, the drawback of this approach is that it consumes a significant amount of time and incurs higher costs (due to direct phone calls), and the quantity of communication is limited because it is challenging to interact with a large number of community members within a short period.

Application of Television as a Communication Method

This is a common and effective mass media communication method capable of conveying information through both audio and visual elements and reaching a large audience. Educational institutions can utilize television as an effective tool for the activities of the learning community. Organizing community members' participation in television programs, viewing and analyzing information and issues on television, or using television channels to communicate about educational matters are all effective methods for maintaining and developing the learning community. Through television, the learning community can access valuable and reliable formal information, experience cultural values, and acquire relevant expertise to support their learning and research endeavors.

The use of television as a communication method within a learning community comes with its own set of advantages and disadvantages. One of the most significant advantages is its richness, creativity, appeal, and professionalism since it is edited and reviewed by experts. Learning communities can trust the quality of the programs. On the other hand, because television programs always have a large viewership and influence many users, it has a strong impact on the awareness, thoughts, and behaviors of participants, which can lead to significant benefits for learning communities. However, this method also has its drawbacks, such as the high cost of program development, the need for a high level of professionalism, strict participant selection, and a significant investment in terms of time and resources.

Application of the Forum Communication Method

Forums are highly effective communication methods for the activities of learning communities within educational institutions. In the era of the Fourth Industrial Revolution, forums are increasingly asserting their advantages and impact on community problem-solving. Nowadays, with the development of science and technology, forums are organized conveniently and professionally on websites or social media platforms. Through forums, learning communities can discuss, exchange, and share information within relevant categories. Forums serve as both a place for learners to find information a platform to share information and an avenue for collaborative problem-solving. Creating effective and well-structured forums adds value to a highly interactive communication method, allowing learning communities to diversify their activities.

In summary, forums offer learning communities an interactive and versatile platform for discussion, information exchange, and collaboration in addressing various issues. Properly designed forums can enhance the utility of this communication method and support diverse learning community activities effectively.

Application of the Press Communication Method

The press is one of the oldest and most widely used communication methods. Learning communities can utilize the press as an effective communication method to promote the community's mission and purpose and showcase the community's image, activities, and values, thereby disseminating messages to members and society and asserting the community's position in educational development. Similar to television communication, the advantage of press communication lies in the reliability of information, accuracy, and professionalism of the content transmitted due to editorial and vetting processes. The cost of using the press is also relatively affordable, and it has a broad reach with a large audience. This brings benefits to the learning community when using the press as a communication medium.

However, similar to television, the press also has its drawbacks, such as the time-consuming editorial process and the high demand for professionalism. Therefore, its implementation can be challenging for learning communities, especially those consisting of primary or secondary school students.

Applying the Blog Method

In the era of Industry 4.0, blogs are utilized as an effective means of communication for organizations and individuals to implement their strategies. Essentially, a "blog" is a shortened term for "weblog," signifying an online post or a website for sharing information. In a learning community, blogs are used for members to share their perspectives, issues, and thoughts on various educational and research topics. For instance, a university lecturer within a learning community can share their views on how to support students in the Industry 4.0 era, targeting their audience as their own students. This encourages interaction through visits to their blog pages, allowing them to fulfill educational purposes and share experiences within learning communities.

By using blogs as a unique means of communication, learning communities can build a large and dedicated following. This can foster interactions not only among community members but also between members of the learning community and other individuals, creating a diverse and engaging forum for the professional activities of the learning community.

IV. Conclusion

In modern society, Vietnamese educational institutions need to adapt to the requirements of education in the context of Industry 4.0. It is crucial to recognize the special importance of communication in building and developing learning communities within these institutions. The appropriate application and utilization of the advantages of various communication methods will create favorable conditions and a creative technological environment that is attractive to learning communities. This contributes to diversifying the forms of learning communities within educational institutions. This research also opens up directions for the development of effective community learning models based on communication technology, thus enhancing the quality and innovation of education in Vietnam at this present stage.

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