

Primary School Teachers' Perceptions of the Outcomes of Teacher-student Interaction in an Online In-Service Teacher Training Course in China

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Abstract

This study aimed to explore primary school teachers' perceptions of the outcomes of teacher-student interaction (TSI) in an online in-service teacher training course at Nanning Normal University in China. A qualitative case study approach was employed, gathering data from 12 participants through semi-structured interviews and focus group discussions.

The analysis revealed four main perspectives of teachers on the outcomes of TSI: team cohesion, individual emotional energy, symbols of social relationships, and moral standards. Additionally, a new outcome was identified: the enhancement of technological skills and innovation. The findings provide valuable insights for teacher training programs, particularly in online learning environments, emphasizing the importance of not only traditional TSI outcomes but also the enhancement of technological abilities and innovative thinking.

Keywords: Teachers' Perceptions, Teacher-student Interaction, Online In-Service Teacher Training Course

Introduction

Teachers' lifelong learning has become a worldwide necessity (Choi, 2013; Finsterwald et al., 2013; Robinson, 2016). Because teacher professional development (PD) is a matter of personal knowledge and competence, which determines the success of educational change, the quality, and effectiveness of student learning, and the progress of the education system as a whole (Chou, 2021; S. Zhang et al., 2017; X. Zhang & Hung, 2007). Also, teachers' knowledge and teaching competencies must be constantly updated and strengthened as education develops. In addition, the quality of education and training received by teachers is central to high-quality education, from pre-school onwards, to lay the foundations for children's learning and subsequent success in their education (Almutairi, 2018). Significantly,

primary school years are considered one of the most important phases of students Development. Due to this period is particularly is a fundamental stage in which students develop good learning habits and creative thinking. Therefore, it is important to increase and focus on the professional development of primary school teachers. What's more, the first World Conference on Lifelong Learning in 1994 made lifelong learning the cornerstone of professional-level improvement of educator (Demirel, 2009). Also, it is certain the rapid development of information education in recent years requires teachers to change the traditional teaching methods and modes as well as educational ideas. At the same time, with the advent of the Internet + education era, students' demands for knowledge are more diversified. As a result, it is necessary to carry out teacher training programs to improve teachers' teaching skills and promote the renewal of teachers' original knowledge framework and ideas.

Teacher training is an important form of implementation for lifelong learning and professional development of teachers (J. Liu, 2002). Teacher training is divided into online and offline in terms of the space in which it is delivered. Offline training, or traditional training, is characterized by its physical nature, requiring participating teachers to attend training at a specific location at a specific time. In terms of the implementation of training, there are more common problems with offline training, such as winter and summer holidays being taken up by training aimed at ensuring that school teaching is not disrupted (Wolfe, 2013). This has resulted in a smaller proportion of teachers voluntarily and actively enrolling in training, with most attending mainly through education department selection Another problem in providing effective teacher training is cost (Fred et al., 2021; Kenneth et al., 2021). The budget of poor areas, rural areas, and private schools are limited, which makes it difficult to provide effective professional development (Y. Li & Wu, 2020).

However, online courses for in-service teachers have obvious advantages in regions that have to train large numbers of teachers and have an uneven distribution of economic development and training resources (N. Li et al., 2021; D. Wu, 2017). For example, with online training, teachers are able to attend and complete training at any time and in any place, with a large coverage area and a full range of services. In addition, the network can be used to share and extend quality teaching resources to reduce the imbalance in educational development between districts (W. Wang & Ma, 2014). Also, online training emphasizes the need for learning as an endogenous motivation for teachers and inspires them to participate spontaneously in the training program. At the same time, they interact with other participating teachers and training instructors in order to achieve their own professional growth. To conclusion, many scholars hold the view that that compared to traditional training, online training can give participating teachers more autonomy to choose the training content, the training cost is relatively low, and there is a higher demand for teachers' learning ability and autonomy (N. Li et al., 2021; H. Liu et al., 2016; Zan, 2021; M. Zhang, 2017).

In 2004, Randall Collins, a leading American sociologist, developed the theory of the interactional ritual chain (Figure 1.1). Collins argues that "the society in which we live can be viewed as a chain of interactional rituals in which people move from one encounter to another, with different levels of encounter reflecting different programmed activities that express meaning" (Collins, 2004). He emphasizes that "the chain of interactional rituals is a theory of momentary encounters in human groups that are emotionally and consciously charged. Collins argues that interactive situations in interaction rituals are established and change along two dimensions - mutual attention and emotional connection. When mutual attention and emotional connection become strong, self-reinforcing feedback processes lead

to more intense emotional experiences. The extent to which people pay attention to symbols is related to the cyclical repetition of "interaction rituals", which are not isolated rituals, but rather "chains of interaction rituals". According to contemporary pedagogy, the teaching process is a two-way interactive developmental process in which teachers and students effectively transfer knowledge, communicate ideas, and collide with each other. Teaching activities are a two-way interactive process between teachers and students (Dang, 2005), where teachers and students jointly focus on the content and feel the rhythm and emotions incorporated in teaching.

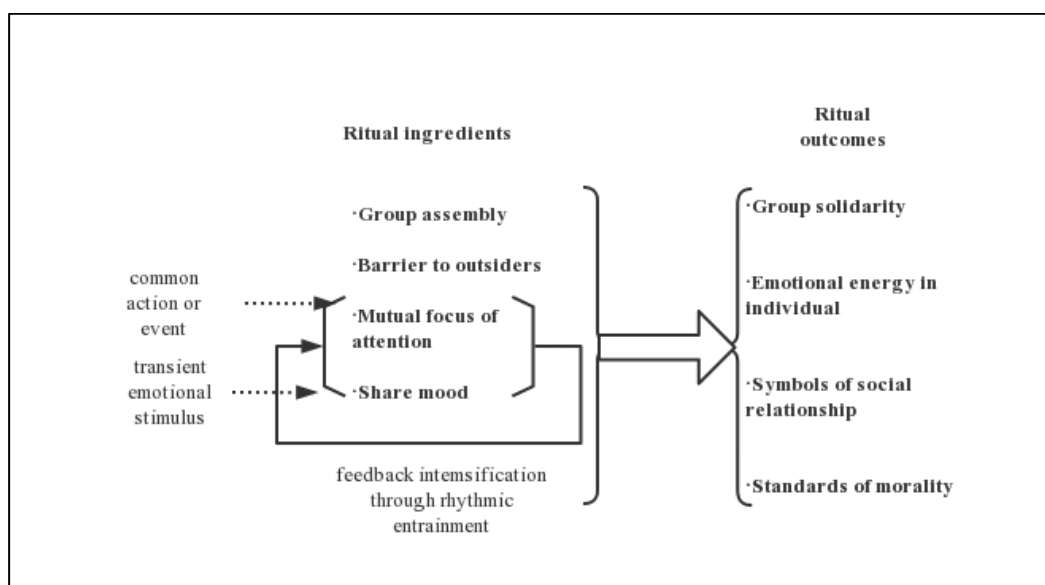


Figure 1.1 Interaction Ritual Chains (Collins, 2004)

With the trend of integrating online and offline teaching, how to improve the effectiveness of online teaching classroom interaction in teacher training, how to achieve the goal of transferring knowledge and emotion, and how to make teachers and students have a sense of group belonging and gain in the virtual scene? In response to the current situation, this study aimed to explore the effective interaction in online teaching classrooms based on the perspective of interactive ritual chain theory and combined with the practice of online teacher training in Guangxi, China.

The essence of interaction is the process of knowledge creation (M. Zhang & Qu, 2011), and research shows the significance of teacher-student interaction in online learning (Akyol et al., 2011; Wlodkowski, 2003). In recent years, some studies have been conducted to design learning platforms to facilitate better interaction between teacher learning communities (Gu, 2003; Shen, 2020; B. Wu, 2020; Zhou, 2007). However, there was little research giving voice to primary school teachers' perceptions of teacher-student interaction in an online training course. With the growth of online teaching training programs and their increasing impacts on teachers' professional development, it is critical to understand primary school teacher experiences interacting with teacher-educator in teacher training programs. Therefore, the researcher raises the question, how do primary school teachers describe the outcome of teacher-student interaction in an online in-service teacher training course.

Method

Due to the research questions and the objectives of the study, the method of inquiry of this research is qualitative research. This study used a qualitative case study to explore online

learners' experiences of teacher-student interaction in an online in-service teacher training course. According to Creswell and Poth (2016), a case study is a qualitative method in which researchers "through detailed and in-depth data collection involving various information sources" study current and real cases in a long time (p. 97). A case study is used to present "an in-depth understanding of the case" by understanding participants' perspectives and close observation (p. 98). A case study is the best manner to answer "how" and "why" questions (Yin, 2009): the research questions seek to understand "how" teachers perceive the outcome of teacher-student interaction in online training course.

Description of the Course in this study

The design of the course is a determining factor in its applicability to this study. Firstly, the course chosen for this study is from the national teacher training program. Secondly, the topic of the course is "Integration of information technology and teaching." This course introduces learners to Web-based communication and its application in today's training and education. The description indicated that the structure of assignments, the design of the course, and the instructor's presence could encourage the flow of interaction and cooperation among learners. The course is focused on "the application of networking technologies and resources that support high-quality, interactive instruction in online learning environments. Thirdly, this training course includes one week of synchronous courses and eight weeks of asynchronous courses. In addition, online teacher courses in the National teacher training program use an online learning platform as the core technology for delivering teacher training (N. Li et al., 2021). In this study, I focus on investigating training with "Nanning Normal University Teacher Development Centre System (<https://ssjx.nnnu.edu.cn/>)" online platforms. Finally, there are 500 members participating in this training course. They are excellent primary school teachers from Wuming District, Nanning, Guangxi Zhuang Autonomous Region (GZAR). Learners are randomly divided into 25 groups. Each learning group needs to cooperate to complete learning tasks in the asynchronous course learning stage.

Another important factor in the selection of this training course is that teacher-educator encourage different types of interactions. For instance, the course's professors encouraged learners to complete tasks through group discussions as required by each group and explicitly encouraged trained teachers to interact with each other during weekly assignments. As the training program states, primary school teachers are encouraged to "participate in small groups, share their work, and report on their learning to other members." The trainer also writes, "Some learners have extensive experience with the topics discussed, while others are just learning. The forum provides a place for learners to share and learn from each other." In addition, trained teachers were required to "post one post for each assignment and thoughtfully respond to three posts from other learners for a total of points for discussion." All in all, the structure of assignments, the design of courses, and the presence of teachers can encourage interaction and cooperation between learners.

Based on the research questions that guide this study, an emphasis on teacher-student interaction in an online in-service course is an important factor in choosing the research setting. Course components such as the topic of the course, the variety of learners within the course (various degree programs, different subjects, different titles, different schools), the emphasis on teacher-student interaction, and the course duration influenced my choice to use the online course as the setting of the study. In addition, one of the important features of this study is that interviews occur with people who have directly experienced the

phenomenon. Therefore, those enrolled in the course served as the population for this study because they are online learners who engaged in teacher-student interaction.

Participants in the Study

Participants included 12 full-time Primary School Teachers who currently participate in online NTTP organized by Nanning Normal University. At the same time, participants also have participated in 3 or more times online teacher training courses. I utilized purposeful sampling because it lends itself to qualitative research designs. Purposeful sampling seeks to select cases that are usually "information-rich" to the study (Creswell & Miller, 2000). Purposeful sampling was useful because all participants have experienced or are currently experiencing the common phenomenon of interaction in an online teacher training course. The primary goal of purposeful sampling is to achieve a deep understanding of the participants. I sent out a letter to notify the participants of the study. I also sent out a letter to seek permission for their participation. The sampling size was 13 teachers. I used pseudonyms to protect the participant's identity.

I used two data collection tools to provide a better understanding of the perceptions of teacher-student interaction among primary school teachers in an online Teacher Training Course: interviews and focus groups.

Interviews

An interview is a conversation with a purpose (Lincoln & Guba, 1985). The interview will begin with the researcher discussing a summary of the purpose and direction of the research. Next, we will conduct the interview according to an interview protocol that contains a specific sequence of questions related to the research questions. All items will be drawn from the research questions and will be open-ended, clear, and broad enough to elicit in-depth dialogue. The interviews will be semi-structured. A semi-structured interview means fewer formal conversations scheduled, which is directed by the researcher (Lincoln & Guba, 1985). Qualitative research interviews are typically referred to as in-depth interviews (Lincoln & Guba, 1985). During the outbreak of the COVID-19 pandemic, one-to-one meetings will have been conducted via WeChat phone. I conducted interviews after (a) receiving approval from the teacher training center in Nanning Normal university, (b) explaining the purpose of the study to participants and administration and how to use the results, and (c) distributing and receiving signed confidentiality and consent forms from participants. Interviews were scheduled, conducted, and transcribed. Creswell (2013) encourages the use of field notes and interview protocols to guide the process, and Yin (2010) describes the interview process as "the most valuable component of qualitative research." The interviews were semi-structured with open-ended questions designed to elucidate the specific models and systems of collaboration used and their impact. Inductive models were used to assess different themes in the conversations that emerged from the meaningful relationships in order to construct interpretations that made sense of what was being reported.

Focus Groups

The second data collection method I will use is focus groups discussion (FGD). FGD is a form of a group interview in which several people participate in a discussion. The researcher will book a time and place in advance and will then conduct group discussions at a predetermined time and place. There are approximately three to four participants in each focus group. Prior to each group discussion, I will inform the participants of the topic of the

group discussion. I will disclose the protocol procedures and format prior to any meetings. Discussions will last no more than 30 minutes and will utilize an open-ended question guide. The researcher will guide the discussion. Participants will be able to talk to other primary school teachers about the recommendations of developing a successful online teacher training course. Compared to individual interviews, group discussion means talking to other primary school teachers, and it may allow the participants to be more likely to express feelings or opinions. And that's the reason why I will choose FGD to collect the data for research question three, "What do the teachers recommend for the development of online in-service teacher training courses?".

Data Analysis

According to Hatchet (2002), "data analysis is the process of making sense out of the mass of data and present the results in a way that communicates the important features." In order to analyze all the data and procedures professionally, I need to establish protocols to organize the data collected through interviews and focus the discussion. Coding is the practice where data are labeled with a code (Creswell, 2000; Hatch, 2002). I used coding to organize and analyze data collected throughout the study. I will use thematic coding, where the themes emerge because of the inductive analysis of the data. The coding process consists of two steps. First of all, I created initial codes. As revealed by Creswell (2000), the first step is to find common themes and concepts that are frequently mentioned in interviews and focus group discussions. In the second step, I will use a more focused code to create the themes and concepts that will be analyzed during the initial coding phase. Data from the interviews were organized, categorized, interpreted, synthesized, and coded into patterns (Yin, 2010).

Using the different data-collection methods such as the interviews and focus group discussion, an inductive and interpretive method was applied to provide the understanding of teacher-student interaction in an online in-service teacher training course.

Results

Combining the outcome elements of the interactive ritual chain theory, we deconstructed the synchronous interaction in the framework of the theory by taking the in-service teachers who participated in the online training conducted by Nanning Normal University as a sample, and conducted a research analysis and functional deconstruction through the phenomenon of synchronous interaction in online teaching. According to Collins' interactive ritual theory, when the components of the interactive ritual chain operate effectively and the focus of attention and emotional energy generated accumulate to a certain level, the interactive ritual will produce four outcomes: group solidarity, individual emotional energy, social relationship symbols, and moral standards.

Promoting group solidarity

In his hierarchy of needs theory, the American psychologist Maslow mentioned that belonging is the most basic social need of human beings, mainly referring to the degree to which an individual or a group identifies with something and relates to it closely (C. Wang, 2021). When group members have a common focus, they will be active participants rather than passive observers, and a sense of identity, emotional and spiritual belonging will emerge, and group solidarity will gradually develop.

In the online training conducted at Nanning Normal University, the trainers and learners focused on the knowledge points and participated in the deconstruction of the knowledge

points. Members also resonate with each other by joining the discussion, increasing their communication, and gaining attention and comments by uploading their work, thus increasing their sense of self-identity. In a shared learning experience, the results of a good interaction ritual can lead to a sense of collective subconsciousness and belonging among the group members, as well as a sense of common relevance to other members. During each interaction, the teacher-student-student relationship network is established, which enhances the sense of self-acquisition, solidifies class solidarity, and provides an endogenous motivation to move on to the next interactive activity. In the online classroom and the WeChat group, students expressed their love for the course schedule, their recognition of the teachers' teaching, their gratitude for the students' support, and their satisfaction with the harmonious atmosphere through words, language, and music, and echoed each other to form a group consensus and unity.

Release emotional energy

Emotional energy is the most critical factor in the interactive ritual chain and is the core of the chain. He argues that "emotional energy is not only characterized by a large amount of intense emotion such as excitement, agitation, sadness, hysteria, etc., but more importantly, it is a stable, continuous emotion that lasts for a period of time and is not interrupted for a short period of time as the situation changes. sustained, without short-term interruptions with changes in the situation" (Collins, 2004). During teaching and learning, emotional energy can be generated during a single interactive ritual and accumulates as the number of interactions increases. There are levels of emotional energy, which are associated with the degree of the interactive ritual. At the same time, the group continues to generate emotional energy during the interaction ritual.

As the online training progresses, the frequency and depth of interaction increases, and the enthusiasm, strength, and motivation of the group members are further revealed. The good bilateral relationship between teachers and students is also increasingly showing a high cohesion and coupling atmosphere as they promote and facilitate each other. This is because teachers and learners fully feel mutual respect, and teaching activities become interactive processes of mutual consultation and cooperation, giving rise to a core sense of participation and stimulating participants' high intensity of emotional energy. For example, in a class on how to create micro-lessons using cell phones, learners encountered different problems with different micro-lesson lengths, background music, subtitle sizes, and other issues. In the learning group, questions were raised every day and teachers would give detailed answers, while enthusiastic learners would actively participate and suggest solutions. Both the questions and the solutions are the potential needs of the learners, and the knowledge and emotions are driven and echoed in the interaction, so the atmosphere in the group is very active. The trainers often receive heartfelt thanks and praise from the participants, not only for the instructor, but also for the course and online teaching, and the emotional energy accumulates. Most of the participants are interested in the interaction, and the level of enjoyment is high.

Of course, in this context, those who interact actively tend to have high emotional energy and can lead other members to build emotional connections; those who interact less actively or are basically non-participants are more emotionally detached and less likely to generate or accumulate emotional energy.

Symbols of Social Relationship

Symbols serve as the external manifestation of information, playing a crucial role in communication and expression. They embody specific values and meanings, shaping the members' understanding and interpretation within a group. In the context of online IT training courses, such as those at Nanning Normal University, symbols become vital in facilitating and representing the interactions among participants.

During the course, phrases like "share" and "work" emerged as prominent symbols within the teacher-student dialogue, gaining social significance through their repeated use in interactive scenarios. Unlike traditional settings where participation might be mandated through assignments, this course witnessed voluntary engagement. Students actively shared their learning experiences within the community, transforming these interactions into shared symbols that resonated with the entire group.

This spontaneous sharing, observed and appreciated by peers, transcended traditional boundaries of classroom symbols. It fostered a sense of community, encouraging more participants to engage, discuss, and share their learning outcomes. The dynamics of this interaction were further enriched by the use of words, texts, and emoticons, which allowed for the expression of thoughts and emotions, especially positive ones like affirmation and appreciation. Such expressions not only reinforced the group's cohesion but also facilitated the smooth progression of interactive rituals.

Remarkably, the impact of these symbols extended beyond the duration of the course. Participants continued to share their work and exchange feedback and praise, sustaining the sense of community and the positive atmosphere created during the course. This ongoing interaction highlights the enduring influence of the symbols formed and shared in this unique educational setting.

Upholding Ethical Standards

It maintains a sense of justice in the group, respects group symbols, and keeps the group together. The Nanning Normal University training program has issued group rules to group members since the establishment of the online learning group. The rules not only clarify the attributes of the learning group, but also maintain the order and environment of the learning group and create a positive atmosphere. The group rules are supported by the majority of the members, and they are voluntarily followed by the administrators who actively guide and manage the group. At the same time, more students took an active stand to maintain the group rules. For example, one of the group rules says, "Please do not brush the screen or forward all kinds of advertisements." When a participant posted an advertisement, other members of the group immediately reminded the participant. The members are aware of the rules and moral consciousness, and maintain the study group with collective moral standards. For example, when a student in the group asks for help with a problem, many students volunteer to answer and help. At the same time, the prominence of a positive moral sense makes the group more united, generating more powerful energy and the most vivid symbols.

Enhancing Technological Skills and Innovation

The online educational environment serves not only as a platform for knowledge transmission but also offers a space for teachers and students to explore and apply new technologies. In the online training conducted at Nanning Normal University, participants learned not only the course content but also how to effectively utilize digital tools and

resources for teaching and learning. This mastery of technology not only enhanced their teaching abilities but also sparked innovative thinking.

As the course progressed, teachers and students became more proficient in using various online teaching tools, such as virtual whiteboards, interactive polls, and online discussion boards. This not only improved the quality of classroom interaction but also made learning more engaging and participatory. For instance, in a course design activity, students used multimedia tools to create their own micro-lessons, demonstrating their understanding of the course content as well as their innovation in technology application.

Moreover, this mastery of technology provided teachers with new perspectives, enabling them to more effectively assess and improve their teaching methods. Through online interactions and the application of technology, teachers could better understand students' needs and feedback, thereby adjusting their teaching strategies to better suit students' learning styles.

In summary, through the online training at Nanning Normal University, teachers and students enhanced not only their group cohesion and emotional energy but also their technological skills and capacity for innovation. These improved skills will have a lasting positive impact on their future teaching and learning practices.

Discussion

Based on Collins' interactive ritual chain theory, this study analyzed the results of online teaching interaction based on the teacher training course conducted by Nanning Normal University. This may also be due to objective factors such as the ease of effective interaction in the online courses, the love of interaction among the sample participants, etc.

Interaction ritual chain theory is one of the theories in the study of social interaction emotions. According to Collins, individuals invest time, energy, material and other costs in interactive rituals with the ultimate goal of obtaining the highest return of emotional energy, and the satisfaction of emotional energy is an important criterion for individuals to choose interactive rituals (Collins, 2004). This inspires online teaching to fully consider and respect the emotional needs of members, build interactive ritual contexts, create a comprehensive emotional release environment, and construct a psychological field of mutual attention and emotional connection. This inspires that online teaching should take into account and respect the emotional needs of the members, build an interactive ritual context, create a comprehensive emotional release environment, and build a psychological field of mutual attention and emotional connection to transform the focused interaction between members into a comprehensive symbolic encounter and emotional infection (C. Wang, 2021).

Effective creation of teaching contexts. Context is the basis for focus, and interactive teaching rituals need to emphasize context as the focus of analysis. Online teaching contexts can be divided into two aspects: emotion and context. The emotion focuses on the interactive emotional atmosphere created by teachers in the teaching process, and teachers can purposefully introduce or create interactive scenes with certain emotions, themes, vivid and specific, to build a platform for students' expression and enhance their desire to express themselves; the context generally refers to the teaching environment. The teaching environment generally refers to the teaching environment, for online students, what they feel is the screen of the live classroom, the shared desktop window of the computer and other equipment when teaching online, etc. The teacher can arrange the background wall with the school logo in the live classroom, and can realize the virtual reality scene with the software to create the atmosphere of live teaching.

Setting the focus of attention. The focus is the basis of interaction, to advocate the effectiveness of the ritual symbols, that is, focus on the rationality of the focus. Online teaching is usually less than offline teaching, so within the limited time, teaching organizers should reasonably set the focus of attention, optimize the online teaching content, and focus on the high level of interactive content. Of course, while emphasizing the context and focus of attention, the process of cognitive construction of participants in real teaching should not be neglected.

Creating an emotional release environment. In his book *Human Emotions: A Sociological Theory*, Jonathan Turner mentions that positive emotional arousal leads to pleasurable emotional responses as rewards, and when people experience rewards, they will continue to interact face-to-face in situations and show positive emotions to them as positive rewards. Teaching organizers should be able to make full use of rich symbolic carriers such as text and audio/video to mobilize participants' senses in all aspects. In addition, they should learn to express their emotions, be good at controlling their emotions, and create a democratic, equal, free, and harmonious interactive learning atmosphere, so that teachers and students can interact online in a pleasant atmosphere and enhance their common emotions.

Theoretical and Contextual Contribution

In examining the outcomes of teacher-student interaction within an online in-service teacher training course at Nanning Normal University, our research aligns with the Interactive Ritual Chain Theory proposed by Collins. By deconstructing synchronous interactions, we unearthed significant theoretical and contextual contributions. Grounded in Collins' theory, our findings shed light on four essential outcomes: group solidarity, individual emotional energy, symbols of social relationships, and the upholding of ethical standards.

The study extends Maslow's hierarchy of needs theory, emphasizing the primal human need for belonging. Through the lens of Collins' theory, we observed that effective interactive rituals fostered group solidarity among participants, creating a shared identity and sense of belonging. The synchronous interactions in the online training sessions became instrumental in establishing a network of teacher-student-student relationships, reinforcing class solidarity and motivating participants for subsequent interactive activities.

Furthermore, our exploration of emotional energy as a core element of the interactive ritual chain contributes to the nuanced understanding of sustained, continuous emotion in online teaching. We found that active participation and engagement in interactions generated emotional energy, fostering a dynamic and enthusiastic atmosphere. The study recognizes the importance of emotional energy not only in individual interactions but also as a cumulative force that evolves as the frequency and depth of interactions increase.

Symbols emerged as a focal point in our research, serving as external manifestations of information in online teacher-student interactions. We observed that symbols such as "share" and "work" played a crucial role in communication, fostering a sense of community among participants. This finding expands our understanding of symbols' role in shaping social relationships within the unique context of online in-service teacher training courses.

The research also highlights the ethical dimension of online interactions, emphasizing the role of established group rules in maintaining a positive and respectful learning environment. Upholding ethical standards became a collective effort, demonstrating the significance of moral consciousness in preserving the cohesion and positive energy within the group.

Finally, our study illuminates the impact of online training on enhancing technological skills and fostering innovation. The participants not only absorbed course content but also acquired proficiency in utilizing digital tools, thereby transforming their teaching and learning practices. This dimension of the research contributes to the broader discourse on the integration of technology in education, emphasizing its role in empowering both teachers and students.

In summary, our research provides a comprehensive theoretical and contextual contribution by applying the Interactive Ritual Chain Theory to the analysis of online in-service teacher training. The insights gained from this study contribute to a deeper understanding of the outcomes of teacher-student interactions in the online educational landscape, offering valuable implications for future research and educational practices.

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