

Co-creator Imagination: Construction of Teacher-Student Subject Relationship Based on Virtual Community Interaction

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ABSTRACT

The development of the Internet has provided a new space and form for teaching interaction, thereby producing new changes in the teacher-student subjective relationship. This research adopts the network ethnography method. Through crawling and analysis of all the virtual community discussion data since the construction of a course, the research summarizes the formation of teacher and student's subject role and subject relationship model from the perspective of relationship construction. The study found that based on the effective interaction of the virtual community of the curriculum, teachers and students have formed a variety of main roles, including three types of role relationship models: instructors and learners under the extension of teaching, emotionally interactive listeners and narrators, and co-creators of meaning communication. Therefore, the community interaction mainly has the communication function based on the interaction mechanism, the identification function of the subject's identity and the cohesive function of maintaining the teacher-student relationship. The teacher-student relationship requires multi-dimensional and multi-level possibilities. The significance of technology for teaching interaction is more abundant in practice, but it also requires more active participation of teachers and students as co-creators.

Keywords: virtual community interaction, subject role, teaching interaction, relationship construction

I. INTRODUCTION

"People are the synthesis of all social relations." Social relations restrict the main social activities such as human cognition, actions, and communication. In educational activities, the relationship between teachers and students is not only a guarantee for creating a good teaching atmosphere, but also a condition for achieving teaching goals and completing teaching plans. In the 1980s, China's educational theorists successively put forward the theories of "teacher-led, student-centered, and "teacher-student-subjective", etc., which reflects the orientation of cognition of teacher-student subjective status in the relationship between teacher and student. From the perspective of the development of teacher-student relationship, the dominant position of teachers and students has gradually changed from the relationship between teaching and learning to being student-centered. In this process, in addition to the transformation of educational ideas, with the development of modern education, technological changes have affected the form of communication between teachers and students, the time and space of communication, the discourse of communication, etc.,

and the role of teacher-student relations has become increasingly prominent.

Education informatization and digitization have always been important aspects of the development of China's education modernization. The Central Committee of the Communist Party of China and the State Council issued the "China Education Modernization 2035", which pointed out that it is necessary to accelerate education reform in the information age. The State Council pointed out in the "New Generation Artificial Intelligence Development Plan": "It is a must to build a new education system that includes intelligent learning and interactive learning, and promote the application of artificial intelligence in the entire process of teaching, management, and resource construction." Artificial intelligence, face recognition, 5G, blockchain and other technologies have gradually exerted influence in schools. In 2019, Xi'an Jiaotong University has realized the integration of the four networks and become the first "5G campus of smart school" in Chinese universities, and released the "Xi'an Proposal on 5G Smart Campus". The significance of technology to the field of education is not only reflected in the level of instrumental rationality, but also in the level of social relations between the main

bodies of technology users. Under the influence of technical logic, the relationship between teachers and students has gradually developed to a new trend.

II. LITERATURE REVIEW AND RESEARCH QUESTIONS

A. Subjectivity research under the construction of teacher-student relationship

The teacher-student relationship is a pair of main relationships in education and teaching activities. The discussion of this issue has always been the focus of educational research. The subjective cognition of the teacher-student relationship has also undergone several key changes, and its discussions are mostly based on philosophical cognition to establish the teacher-student subjective relationship. Throughout the development of the educational theory of the relationship between teachers and students, there are mainly the following stages:

First, it is the subject-object opposite phase of "teacher-centered" and "student-centered" based on Descartes' dualism. In the traditional teacher-student relationship, teachers have absolute authority and take the initiative. British educationist Herbart advocates that "authority and love can guarantee management more than any strict means." [1] The natural nature of man is like a big ship. "If we can withstand the impact of all changes in wind and waves, we can only rely on the helmsman to guide its voyage according to the environment and direct it to its destination." [2] The teacher is the helmsman, relying on teaching methods, stages, methods, etc. to achieve this goal. Because the traditional teacher-student relationship cannot better meet the attention of students in the teaching process, there has emerged a "student-centered" teacher-student relationship model based on pragmatism. In this teacher-student relationship, teachers transform into facilitators, mentors, and people who create learning situations for students. "Teacher's guidance should be centered on student learning and development, and should be guided around student learning development. The guidance method should be adjusted according to the student's learning foundation, needs, characteristics, methods and laws." [3] No matter whether the teacher is the main body or the student is the main body, they cannot get rid of the philosophical foundation of binary opposition. Although some scholars later believe that teachers and students should be the subject and object of each other, the balance of the status of the subject in the relationship between teachers and students has been endlessly debated.

Second, it is the teacher-student dual-subject stage based on Husserl's phenomenology, that is, the inter-subjectivity or interactive subjectivity stage. As the main body of action, teachers and students are

ideological and conscious individuals of life. Examining the interaction between teachers and students from the perspective of intersubjectivity helps teachers and students work together as "creators of mutual relations between each other, and they take the initiative and autonomy of other interrelated persons as the prerequisite for mutual dialogue, understanding and communication, and follow the activities of communication, dialogue, communication and understanding in a common commitment of certain norms, customs and cultural traditions." [4] Under the educational theory of intersubjectivity, the value orientation of the relationship between teachers and students includes the establishment of an equal dialogue between the subjects, mutual respect and appreciation between teachers and students, and common development in mutual understanding between teachers and students. [5] Inter-subjectivity breaks through the traditional subject-object relationship between teachers and students, and incorporates interactivity, development, and spiritual communication into the construction of the relationship between teachers and students, so sharing has become an important way of communication between teachers and students.

Third, it is the symbiotic stage of teacher-student subject based on Levinas' "the other" theory. Although inter-subjectivity recognizes the subjective status of teachers and students, it ignores the differences in cognition, attitude, and behavior between the two. In the course of teaching practice, teachers and students will always clarify their purpose of communication as a subject in advance. Even though the "dual-subject model" of teachers and students bridges the gap between knowledge and morals in the process of relationship construction to a certain extent, it is difficult to reach a consensus on value and emotion. [6] The teaching interaction of the other provides a belief in listening to the voice of the other. From this perspective, the subjectivity of teachers and students is based on the ethical relationship between each other and forms an ethical subject. The teacher-student relationship has broken the rigid relationship maintained by the system and social structure, but is full of warmth and ethical relationship, [7] so that the teacher-student community emerged. "Education is the common experience of teachers and students in life, requiring the active investment of teachers and students in their lives, while their own emotional value pursuit is integrated into the education and teaching process." [8]

B. Research on technical factors in teaching communication

Whether it is teacher-student subject cognition or teaching communication activities, it is often affected by the current historical situation and philosophical paradigm. The subjective thinking of teachers and students reflects people's attention to teaching activities

and education. With the awakening of the subjective consciousness of teachers and students, education is no longer a unilateral indoctrination education mainly based on objective rationality, and it has begun to shift to a communication mode based on communicative rationality.[9] At the same time, as a medium for communication between subjects, it is also affected by technology. Technology not only changes the communication space between teachers and students, but also affects the communication activities between teachers and students.

In the process of integrating technology into teaching, teachers and students use technology to gain more learning resources and choices of learning methods on the one hand, and on the other hand, help teachers and students integrate, participate in discussions, solve problems together, and share exchanges experience. This not only changed the role of the teachers, making them designers, executors, researchers, and multi-evaluators in the educational process.[10] It also makes them course organizers, emotional supporters, learning participants, information consultants, etc.[11] Students have also changed from passive recipients to life-long learners, and good teaching interactions have positive significance for mobilizing students' active learning. In the process of teacher-student interaction, teachers and students have also constantly constructed new teacher-student relationships with the diversification of teaching and communication scenarios.

The emergence of new technologies will always arouse the attention of education, with a view to bringing about changes to the development of education and teaching. "Artificial Intelligence + Education", the change of teacher-student interaction mainly lies in the introduction of multiple forms of interaction, teacher-student interaction, student-student interaction, teacher-student-knowledge interaction, human-machine interaction, etc.[12] The teaching environment becomes an intelligent style, which puts forward new requirements for the interaction between teachers and students. The educational application of virtual reality technology brings learners an immersive, interactive, and conceived learning experience. What teachers and students need to complete is the construction of a learning space based on virtual reality technology. [13]

In the process of technology integration into the teaching scene, teachers and students are able to enter the space of teaching activities that are different from reality and reality, and integrate the "online" and "offline" teaching into a unified whole, further expanding the learning space. From reality to virtuality, the space for communication between teachers and students has become larger, the forms of interactions carrying interactions are more diverse, and they are constantly adapting to the social interaction habits

formed by the extension of technology. Therefore, both teachers and students become active participants in the course teaching activities during the teaching process, and the way of communication between teachers and students is also a two-way communication of equal subjects. [14]

The development of technology provides more possibilities for teaching interactions, and constantly interacts with educational practice, but there are also some drawbacks. The perception of technology affects the ideas and actions of educational subjects. Teaching may become a stylized transfer with the help of technology or tools. The standardization of technology makes education lose its humanity and spirituality. Excessive pursuit of technology application often leads to the neglect of human development and personality. In this process, teachers and students will gradually lose their creativity, and technology will also become a barrier between teachers and students. At the same time, the rigid use of technical means may also cause the psychological distance between teachers and students to be farther, which is not conducive to the benign communication between teachers and students.

This article puts the influence of technology on the construction of teacher-student subjectivity into specific teaching interactions. Through the exploration of the construction process and characteristics of teacher-student subjectivity and the law of teacher-student interaction, this paper analyzes the transformation and the role of teacher-student subjectivity under the influence of technology mode. And this article further analyzes the function of teacher-student relationship construction under this role, summarizes the educational significance of teacher-student subjective construction, and thus overcomes the negative impact of technology on teaching interaction.

III. RESEARCH METHOD

After the emergence of the Internet, a large number of virtual community forms have emerged, and ethnographic research methods have been applied to online communities to form "online ethnography". This method is mainly aimed at the research of online communities and their culture, and the objects of their observation are mainly It is written symbols, emoticons, language habits, etc. At the same time, it needs to combine offline observation and interviews in order to better understand the situation composed of virtual and reality. Therefore, this study intends to use the online ethnography method to explore the process of teacher-student subjectivity construction and role shaping through observation of online virtual communities, including text review, media use, and offline interaction.

Tranclass is an online education and learning platform that integrates students, teachers, and academic affairs. It includes a variety of learning

application scenarios and sets multiple functions for the learning management of each course. The platform can timely monitor the basic situation of student learning, comprehensive evaluation of the course, the popularity of course discussion, etc., and perform statistics on related data. The "discussion" function forms a virtual community for online communication between students and teachers. Therefore, the research object of this article is the online discussion of the "New Media Reporting and Analysis" course of a college of media on the Tranclass platform. This course is a school-level key course designed to help students integrate data journalism operation cases and concepts, and teach students how to use data, data charts, information charts and other visual carriers to complete news reports in the context of new media. In the course construction process, the use of online discussion areas is more prominent throughout the school, and teachers and students have always maintained good online interaction. Especially in the second year of curriculum construction, good results have been achieved from the number of discussions in the virtual community, the discussion topics, and the frequency of teacher-student interaction, etc., forming a complement and improvement to the implementation of online and offline courses, which has received high course evaluation from students. Therefore, based on the platform's data capture function, the researchers collect all online discussion data from the two semesters of course construction from March 12, 2018 to December 30, 2018, and record, analyze, classify, etc., and participate in offline courses to observe. A total of 11 virtual discussion areas were formed, with a total of 3355 discussion posts. The text was about 53,000 words, with 226 teachers and students participated in.

IV. DISCOVERY OF THE RESEARCH

"Online community can be regarded as a kind of social network, that is, the integration of social actors and their relationships in the network." [15] Teaching interaction cannot be achieved without the joint participation of teachers and students. The online community formed based on the digital curriculum platform enables teachers and students to create new communication content and forms, which is different from the modes of knowledge teaching, case analysis, and learning while practicing in the real classroom. The virtual community has created new communication space for teachers and students. Community interaction builds a diversified subject role for teachers and students, forming a new communicative community, and different subjects gain more initiative and creativity.

A. Diversified subject role construction

1) Instructor and learner: the teaching extension model between teachers and students: As an extension

of the course teaching, online discussion is one of the functions undertaken to answer questions. This course is highly practical, and the core skills students need to master include data crawling, screening, sorting, and visual presentation, which involve data collection, web design, and H5 production and other related software. Therefore, in the course community, most of the discussion content related to professional learning focuses on course work requirements, software operation, etc.

This kind of course classroom teaching can not reach the course teaching goal, which involves many detailed software operation learning, which requires students to continuously accumulate through a large amount of operation practice after class. When students are doing data collection work, when they need to crawl the products and prices of a website, they find that the data field only has units, and there is no specific number, so they choose the online inquiry method to seek for teachers' guidance. Teachers, on the other hand, supplement the knowledge blind spots in course learning by solving practical problems in student assignments online. The questions in the process of completing the later data visualization are as follows:

"Student 1: I copied the code to make the second picture, but the first picture was changed, why?"

Student 2: The webpage I made with frames can be centered in the Firefox browser, but what should I do when other browsers cannot?"

Student 3: How to make echarts3.0 dynamic on the webpage?"

In such discussions and exchanges, teachers and students form the interactive role of mentors and learners, which not only improves the enthusiasm of students to submit homework and complete learning tasks, so that they can get timely guidance after encountering learning difficulties and extend offline teaching activities to online. In this process, the help function of the teacher's role is strengthened, and real-time guidance is given to the students' confusion. In such roles of teachers and students, the subjectivity of teachers and students is constructed based on the equal relationship at the teaching level. Although the student is a questioner, the language is more direct and concise, and there is no power language due to the role difference in the real situation. At the same time, in the virtual space, teachers and students transform the original serious learning problems into easy questions, especially the use of multiple tone words, so that the connection between teachers and students is closer.

2) The listener and the speaker: the emotional interaction mode between teachers and students: In addition to the discussion of the professional knowledge of the course, online interaction also

includes the interaction of teachers and students in their daily learning and life, sharing the daily situations arising from the courses. The academic pressure of this course is greater than that of the general course. Students often complain in the community that they have too much homework and high homework requirements. The following are a few paragraphs on the daily situation on the question of too much homework:

"Student: I still feel exhausted from my homework.

Teacher: If you have no homework to do, your heart will be more tired.

Student: Just like last year's web design, there are more and more problems with unfinished homework, and it is even more difficult to apply it in practice after learning. Source of pressure — Uncle Zhai!

Teacher: The more you learn, the more questions you don't understand, which proves that you have learned. Once you master the application, you will master this course."

In the teaching activities, the completion of the learning task lies in the joint participation of both teachers and students. For teachers, there is also a corresponding daily situation — correcting student work, so teachers also exert their initiative and post through the online community. In response to the topic formed by the students, the following is an interactive dialogue:

"Teacher: After correcting your "Data Sorting — Elementary" homework, the whole person is in a bad mood. Give me a reason to be calm!

Student 1: Life is like a drama. We are together because of fate, so Uncle Zhai don't be angry.

Student 2: I am not angry when others are, cause noone can replace me when I am too angry to have a headache.

Student 3: Lose your temper for trivial matters, you will find it not worth when think back. I am not angry when others are angry. If I am too angry to be sick, there would be noone to replace me.

Student 4: If I'm too angry to die, who would be happy, and it's sad and laborious

Student 5: There is everything in the world, and not everything can be satisfied.

Teacher: Unified reply: My heart was going toward the moon, but the moon did not understand my heart. "

In such community discussions, teachers and students will actively post, open up new topics, and respond to each other actively, enriching the communication between teachers and students on daily

learning and life. The sociologist Horton Cooley believes that "communication is the foundation on which the relationship between people is established. It includes all spiritual symbols, as well as the means to be transmitted in space and preserved in practice." [16] In the interaction, teachers and students are listeners and narrators of each other, and they also continue to deepen the emotional communication between teachers and students. The subjectivity of teachers and students is based on the relationship of communication, the use of language is more lively and interesting, and the communication between teachers and students is more inclined to the mutual emotion. The teacher understands the student's learning emotion from the student's post, so as to make adjustments in the teaching process, so that the student can withstand the academic pressure into learning motivation. Students recognize the problems of their own learning from teachers' active expression and experience the pressure of teachers. In the mutual confession, teachers and students have a deeper understanding of the learning process, and the relationship between teachers and students can be further enhanced at the emotional level.

3) Co-creator: a communication model of significance between the subjective of teachers and students: Teaching interaction is the process of sharing meaning between teachers and students. The mutual construction and construction of teaching meaning is completed on the basis of mutual understanding and communication through language media. For students, the meaning of learning is not only to obtain credits for a course, to learn a skill, but also to understand the generation of knowledge in learning, develop the habit of independent thinking, and can internalize the teaching activities under the professional training goal into the consciousness of independent learning. In the community discussion of this course, it can be found that students have initially established a sense of reflection on the whole process before the course learning and the relationship between teachers and students. For teachers, the significance of teaching is not only to teach students the existing knowledge and skills, but also to cultivate students' thinking habits, value orientation, personality qualities, etc. on the basis of respecting individual students, so that they can gradually gain confidence in their interactions with others. After the course, some of the discussions are as follows:

"Student 1: One day as a teacher and a father for life, Uncle Zhai has given us painstaking efforts to educate us. We are so honored.

Teacher: The demand is not high. Just graduate and don't scold me.

Student 2: I hope when Uncle Zhai encountered sad things in his work and life, you can think of us, and you will feel that life is still hopeful.

Teacher: Thinking of you makes me more depressed.

Student 3: Thank the teacher for the three semesters, and wish Uncle Zhai a happy new year in advance.

Teacher: I wish you a happy winter solstice! "

In this process, teachers and students become co-creators of teaching significance, and the communication between teachers and students is further sublimated to complete the meaning construction for the entire teaching process. After participating in the learning process, students gradually clarify their relationship with teachers. Through interactive communication, it reflects their own thinking about the relationship between teachers and students. The teachers strengthen the teacher-student interaction consciousness in the communication with the students, and practice through actions in the teaching activities. The subjectivity of teachers and students in the role of co-creator is based on the construction of a cooperative relationship. In the real space, teachers and students complete the construction of the teaching course, and in the virtual space, teachers and students complete the construction of the teaching community. During the course, teachers and students gradually complete the construction of teaching activities, teaching situations, and teaching significance.

B. The construction function of community interaction on the subject relationship between teachers and students

The online interaction of the course is considered to be a virtual learning space composed of teachers and students. As a community participant, the interaction between teachers and students extends to the process of daily life situation sharing and teaching meaning co-creation due to the course. While sharing language symbols, community norms, and teaching value, teachers and students complete education and teaching activities based on an interactive model of mutual understanding. Virtual community interaction mainly has the functions of communication, identity recognition and relationship cohesion for teacher-student communication and the construction of teacher-student subject relationship.

1) Communication: interaction mechanism between subjects: In community discussions, teachers and students, students and students communicate on certain topics to form an interactive mechanism between different subjects. Misunderstandings, misinterpretations, and miscommunications often occur in teacher-student interactions. Through online community discussions, it helps to exchange

information and opinions with each other; community interaction is easier than offline, which helps emotional communication between subjects and eliminates cognitive deviation between subjects because of the inability to reach consensus. Based on the social attributes of the community, it provides teachers and students with unlimited possibilities for socializing, changes the subject relationship between teachers and students, and constantly defines new relationships. Online interaction between teachers and students can solve the potential conflicts in the teaching process on the one hand, providing a guarantee for the smooth progress of teaching activities; on the other hand, it can build a harmonious and friendly teacher-student relationship and create a more suitable teaching atmosphere.

2) Identity: the formation process of the subject's identity: Social identity is composed of self and social environment. The course community creates a virtual social identity environment for teachers and students. The subject's identification with the community determines the identity of teachers and students. As teachers, in the interaction with students, it is necessary to clarify the teacher's professional identity, professional significance, and professional value, and thus internalize it into professional ideas, cognition and actions; as students, in the communication with the subordinate groups and teachers, they share each other's language and culture, values, learning habits, etc., and gradually form imagination and recognition of group behavior. It can be found in the communication and interaction in the community that good learning atmosphere can affect each other, and students will also supervise each other. Under the pressure and encouragement of the group, the enthusiasm of students is mobilized. At the same time, community discussions can help maintain group vitality and enhance group image, so that teachers and students can gain a sense of pride and belonging as group members.

3) Cohesion: effective maintenance of subjective relationship: After the relationship between teachers and students is established because of the common course goals, the relationship between teachers and students belongs to the basic stage. At this time, the intimacy of the relationship and the degree of subjective input are not great. With the advancement of the teaching process, it is a must to deepen the acquaintance and understanding of each other, and community discussion is the key to the cohesion of the teacher-student subjective relationship. Based on community interaction, emotional factors play an increasingly important role in the relationship between subjects. Through the self-disclosure of teachers and

students, the relationship between teachers and students is strengthened. The teacher-student relationship is closer in the process of subject imagination, subject interaction, subject identification, etc., so that they are more willing to participate in teaching activities and more actively construct the teaching process. After the course, community discussions often recall and evaluate the teacher-student relationship, and also support and maintain the future teacher-student relationship.

V. CONCLUSION

The process of constructing the teacher-student subjective relationship is staged, variable, and developing. The construction of the teacher-student subjective relationship affects the teaching effect and quality. As a supporting force, technology not only provides tools, platforms, and environments for teaching, but also becomes a driving force to change the relationship between teachers and students. After the advent of the Internet, the virtual community became a more frequent communication platform for the public. The interaction between teachers and students in the virtual community has shaped a variety of subjective roles. As an extension of the teaching process, teachers and students form an interactive relationship between the mentor and the learner; with the deepening of emotional communication, the teacher becomes the listener and the speaker of each other; with the joint participation of the whole teaching process, teachers and students become co-creators of teaching significance. Under the effective communication in the virtual community, the teacher-student subject relationship forms a normalized interaction mechanism between the subjects. The identity of the teacher-student subject also becomes clearer according to the group. At the same time, the cohesion of the teacher-student relationship becomes the maintenance and continuity basis of the teacher-student subject relationship.

Based on the Tranclass community interaction, the teaching process as a whole not only respects the differentiation of teacher and student subject identity, but also naturally forms an organic group. In this group, it is no longer a process of rational identification based on course learning, but more of an emotional identification based on psychological level. But the interaction of the virtual community is inseparable from the joint construction of the participants. This construction is not based on instrumental rationality, but on the basis of normative identification of education and society. Therefore, the application of technology needs to overcome the passive acceptance and correctly and actively combine social interaction with technology to provide more future imagination for teaching.

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