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The effects of online education on the relationship between students and teachers in Chinese higher education institutions

KEYWORDS

online education, student–teacher relationship, teaching models, course design

ABSTRACT

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The advent of the internet has made online education more widely available and may have led to a creation of a new teaching model (Harasim, 2000). Online education's convenience and multimedia options have also broadened the range of skills and courses that can be taught remotely. Online education continued to develop and grow throughout the 1980s and 1990s (Harasim, 2000) and with the ongoing evolution of technology, online education has become a distinct form of teaching and learning. In this context, China's government initiated the 'Online Education and Research Network Demonstration Project' in 1994 (Jiang et al., 2023). In 2012, the trend of online education spread to the global higher education field, and internationally renowned MOOC platforms such as Udacity, Coursera, and EdX were gradually established (Pappano, 2012). It can be argued that the rapid expansion of online education empowers both students and teachers by breaking free

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from geographical and environmental constraints. However, anecdotal evidence suggests that many students and teachers are still uncertain about the quality and effectiveness of online courses and that it may negatively impact the teacher–student relationship. Also, online education may challenge traditional teacher–learner identities and relationships (Dai & Matthews, 2023). There are also concerns that factors such as limited interaction, time, location and participation may affect the teacher–student dynamic and relationship (Kang et al., 2006). Therefore, this article examines the impact of online education on the relationship between teachers and students in higher education institutions in China, using both quantitative and qualitative research methods. The quantitative research findings indicate that factors such as the communication platform used, student personality, and expectations surrounding the teacher–student relationship have different effects on the relationship. Additionally, qualitative research shows that factors such as course types and major choices have both positive and negative effects on the relationship between teachers and students in Chinese higher education institutions. This article also offers recommendations to help improve the relationship between teachers and students in the context of online education in China.

Introduction

The relationship between teachers and students is a fundamental aspect of the educational process and plays a crucial role in the success of both learning and teaching. Research has shown that a positive and supportive relationship between teachers and students can lead to improved student behaviour, moral development, physical and mental well-being, and overall personal growth (Hagenauer & Volet, 2014). This has led educators to focus on the development of strong teacher–student relationships for many years. However, in the past, different educational theorists proposed different views on the nature of the teacher–student relationship. Early 19th-century theorist Herbart advocated for a “teacher-centred” approach, in which educators were in a dominant position and students were in a subordinate position (Herbart, 1806, cited in Chai, 2015). This approach placed the focus on the teacher imparting knowledge to the students. However, at the end of the 19th century and the beginning of the 20th century, progressive educators proposed more “child-centred” approaches, which placed the emphasis on the students’ needs and interests. Theorists such as Hagenauer & Volet (2014) proposed

a more moderate approach, which focuses on a balance between the teacher leading and the student being oriented. Also, more recently, in 2021, Godbold et al. (2021) stated that understanding how teaching-related personnel view and structure their teaching relationship with students is one of the key factors affecting the teacher–student relationship. As scholars have pointed out, the teacher–student relationship is initially cultivated by the teacher, and the behaviour of the teacher lays the foundation for a good teacher–student relationship.

In such a context, the teacher–student relationship can be defined as an interpersonal relationship between educators and students and is considered to be of vital importance (Xie & Derakhshan, 2021). It is not only a basic condition of education, but also an important variable in the teaching process, and can have a profound impact on the educational experience (Hagenauer & Volet, 2014). According to Zeng and Huang (2018), this relationship can be divided into three types: harmonious, alienated, and confrontational. A harmonious relationship is the desired outcome for both teachers and students. However, research has shown that in some education models, alienated and confrontational relationships are relatively common (Wang, 2010). These types of relationships can place significant pressure on students, with as much as 20% of students reporting that their relationship with their teacher can be tense (Zhang, 2003). These problems can also negatively impact students' ability to adapt to the school environment and form other interpersonal relationships (Arens & Morin, 2016).

What is more, anecdotal evidence suggests that the advent of online education has impacted the teacher–student relationship even further and a harmonious type of relationship is more difficult to achieve in this model. It has influenced the way educators and administrators think about education, teaching methods, and the relationship between teachers and students (Korkmaz & Toraman, 2020). The traditional teacher–student relationship is being re-evaluated and there is a growing emphasis on creating a more refined and personalized approach to online learning. The relationship between teachers and students is a vital part of this process and plays a crucial role in the success of both learning and teaching. It has been the focus of attention of educators for many years, and various educational theorists have proposed different views on the nature of this relationship. The arrival of online education has led to new discussions about the relationship, and the need for a more balanced approach that considers each student's unique needs and interests. Past research showed that when this relationship is strained, it can be detrimental to students' performance and well-being. Therefore, teachers and students need to establish a positive and supportive relationship.

Literature review

Modern online education environments

Modern online education utilizes the Internet and new technologies to create platforms for educational activities (Szymkowiak et al., 2021). These platforms provide a space for students to collaborate and work towards learning objectives through the use of tools and resources (Li, 2006). The online environment also includes elements such as learning atmospheres, motivational moods, interpersonal relationships, and teaching methodologies (Maican & Cocoradă, 2021). As online education continues to develop, educators are focusing more on the relationship between teachers, students, learning resources, and support systems rather than the physical characteristics of the network environment (Falloon, 2020).

Online education is more interactive and flexible than traditional methods (Xie et al., 2020). It allows for anytime and anywhere learning, and teachers can communicate with students in a flexible manner (Szymkowiak et al., 2021). Furthermore, teachers can encourage problem-solving and autonomous learning (Aslan, 2021) and prompt students to employ different enquiry methods to engage in autonomous learning, thereby developing their problem-solving skills whilst acquiring knowledge and other expertise (Shahzad et al., 2021). What is more, in this model, teachers are not the only source of information, and they no longer convey knowledge to students only through face-to-face pedagogy (Gao & Wu, 2016). Online education enables teachers and students to communicate one-on-one and teachers can teach and tutor multiple students at once. This allows teachers to make full use of all the resources that modern online education platforms can provide (Gao & Wu, 2016).

Students' development includes the development of cognition, emotion, attitude, and behaviour (Ahmed et al., 2020). Contemporary online teaching renders the development of student personalities indissoluble from the democratic nature of the teacher–student relationship (Gao & Wu, 2016). However, establishing this textbook personality and a model of teacher–student relationship, does not only require teachers to have experience in interacting with students, but also means that teachers must possess a series of skills, including the ability to understand people, the ability to react emotionally, and the ability to judge behaviour (Wang, 2010). If the teacher–student relationship is one of equality, trust, and understanding in the educational process, the peaceful and friendly educational climate that results, is more likely to deliver the desired educational outcomes (Gong, 2011). From the perspective of student development, the possession of communication skills and a sense of democracy are some of the most important preconditions for

success (García-Pérez et al., 2021). Therefore, optimising the relationship between teachers and students can lay the foundation for the formation of student's good character, to a certain degree.

The teacher–student relationship is a crucial aspect of online education as it affects the educational process, the achievement of goals, and the development of students. A positive and democratic relationship between teachers and students can lead to better educational outcomes and the formation of students' good character.

Teacher–student relationship

The teacher–student relationship is a special interpersonal relationship formed and established through mutual interaction and influence during the educational process (Hagenauer et al., 2022). According to Wang (2009), this relationship refers to the behaviour of teachers and students in a common educational process, which is influenced by their respective statuses, tasks, and normative behaviours. However, as education in China continues to evolve, researchers in the field of education theory have observed that the teacher–student relationship can sometimes impede school education activities and teaching quality (Kang et al., 2006). Additionally, the educational theory community has also been researching the cognitive connotations of teacher–student relationships.

There are several dimensions to consider when examining the teacher–student relationship in China. Firstly, the teacher–students connection is the mutual interaction that develops between teachers and students during the educational process, including their status, roles, and attitudes towards one another (Zheng, 2004). Secondly, from a micro perspective, the teacher–student relationship primarily refers to the direct communication and contact between teachers and students in the education process (Pan, 2003). This includes working relationships that result in the completion of educational tasks, interpersonal relationships that are formed to satisfy interactions, organisational relationships that are expressed in the form of organisational structure, and psychological relationships that are expressed in the form of emotions and cognition (Zheng, 2004). Finally, the teacher–student relationship is a multi-faceted, multi-level relationship system formed by direct exchange activities between teaching and learning (Hagenauer et al., 2022). These relationships possess unique qualities and statuses, their intention being to achieve educational goals, including promotion and development. Hence, they can shape management relationships, interpersonal relationships, and ethical relationships between teachers and students (Xie & Derakhshan, 2021). Zhong and Cui (2004) argue that the development of China's new curriculum for standard education

has led to a shift in how Chinese researchers understand the relationship between teachers and students. Instead of a single understanding, there is now a multifaceted understanding that includes education, psychology and society. Examining the teacher–student relationship from cultural and philosophical perspectives can provide a multi-dimensional understanding of the relationship, which can help to facilitate research.

The literature on the concept of the teacher–student relationship can be divided into several categories. The first is that the teacher–student relationship is an interpersonal relationship. Huang et al. (2006) believe that the teacher–student relationship is a type of interpersonal relationship formed through mutual influence and interaction between teachers and students in the education system, defined by their respective statuses, tasks, and normative behaviour. Evans et al. (2019) explain the difference in teacher–student relationships in terms of differences between student characteristics and teacher behaviour, dividing the teacher–student relationship into four types: attachment, indifference, concern, and rejection. The second perspective defines the teacher–student relationship as a psychological relationship. Spilt et al. (2011) argue that the student–teacher connection is an essential interpersonal interaction and that the psychological relationship between teachers and students encompasses emotion, cognition, and behaviour. The third perspective defines the teacher–student relationship as a social relationship, formed to complete certain educational tasks during the educational process, with teaching and learning being the intermediaries (Pan, 2002). The fourth view defines the teacher–student relationship as a multi-level relationship system. Guo (2019) defines the micro-teacher–student relationship as the direct communication and connection between teachers and students during the entire educational activity, including the working relationship. The teacher–student relationship is a multi-character and multi-level relationship system formed by direct communication between teachers and students to complete the educational goals in accordance with special identities and statuses. The essential relationship of education, according to Cheng (2011) in his *Modern Pedagogy Course*, is the interaction between individuals.

The relationship between teachers and students is unique and multifaceted, comprising multiple levels, including the working relationship, psychological relationship, interpersonal relationship, and moral relationship. This relationship plays a central role in the school environment, as outlined by Yang and Gao (2005) in their discussion of the Taoist teacher–student relationship. They highlight that it includes the teaching relationship, which is formed through the process of teaching and learning, the social-ethical relationship, which is based on moral obligations

and social ethics, and the interpersonal relationship, which is built on emotional exchanges and shared interests (Evans et al., 2019). Overall, the teacher–student relationship is complex and multifaceted, with a focus on the working relationship, interpersonal relationship, and psychological relationship, but also including the teaching relationship.

Online education and teacher–student relationship

The advent of modern education technology, particularly the development of network technology, has greatly impacted the way teaching is conducted. This has led to the reform of teaching models, methods, and content (Wang, 2010). Simultaneously, the growth of educational technology has also resulted in significant changes in the relationship between teachers and students (Song, 2002). This relationship is considered to be the foundation of the teaching process (Hagenauer et al., 2022), and its nature and level play a critical role in the effectiveness of education and teaching activities. Furthermore, it has a deep impact on students' physical and mental development.

One of the most notable examples of modern education technology is online education, which has emerged as a result of advancements in contemporary information technology. Online education is considered one of the primary ways of establishing a lifelong learning system in the knowledge economy (Xie et al., 2020). It utilises computer network technology, contemporary communication technology, and multimedia technology to provide education and incorporates face-to-face experiences (Singh et al., 2021). This has transformed online education from a single correspondence education and audio-visual education to a new, dynamic and open education model of computer media communication. Online education overcomes the limitations of traditional education in terms of time, space, and age and is accessible to everyone, allowing anyone to access any type of education at any time and place.

In China, online education made significant progress in the past decade (Shahzad et al., 2021). Conversely, traditional forms of education have become increasingly incompatible with contemporary society and knowledge acquisition methods. Additionally, the shortcomings of traditional education are becoming increasingly apparent. Therefore, the modern education field must engage in profound and extensive reform. As a new form of education, online education has gained the attention of educators and learners around the world (Aslan, 2021). Scholars have begun to investigate online education from the perspective of education and teaching, with a focus on providing relevant theoretical guidance for education and teaching to benefit educators (Gu, 2007). As a result, research into

the teacher–student relationship has become a central focus of online education and most scholars analyse the changes in online education from the perspective of teachers and students.

The shortcomings of the existing literature

Research has shown that the quality of the relationship between a teacher and a student has a significant impact on the development and education of both the teacher and the student. A positive relationship, characterised by active participation and collaboration in both academic and extracurricular activities, can promote the achievement of educational goals and foster mutual growth. This is supported by studies such as Shen (2004), Sun (2007), and Tian (2002), who all recognize the importance of good teacher–student relationships in the education field.

However, the traditional education concepts, online education environment, and individual personalities of teachers and students can create challenges in building and maintaining positive relationships. This is acknowledged in studies such as Wang (2009), who discusses the potential for contradictions in the teacher–student relationship. With the rise of online education, there is a need to understand how this new mode of learning affects the relationship between teachers and students. While previous research focused on the role transformations of teachers and students in an online setting, there is a lack of analysis on the underlying reasons for these changes. As Li (2019) notes, online education is becoming an increasingly important model in modern education, making it crucial to understand its impact on the teacher–student relationship.

Studying the relationship between teachers and students in online courses can provide valuable insights for both educators and education administrators. By understanding the dynamics of the teacher–student relationship in an online setting, it is possible to optimize course design and improve participation for both teachers and students. In conclusion, the teacher–student relationship plays a crucial role in the education process, and it is important to consider how it is impacted by new technologies such as online education.

Research

In this research, a mixed methodology approach is employed, which involves utilising both quantitative and qualitative methods. The quantitative research component involves the use of questionnaires to collect data, and the analysis of the data is conducted through the use of descriptive statistics and multiple

regression analysis. The qualitative research component, on the other hand, includes the use of video interviews or telephone interviews as the method of data collection, and the data is analysed using inductive thematic analysis to draw conclusions. Additionally, this research is innovative in its approach as it includes teacher interviews, which is not a common practice in previous studies in this field. It is worth noting that the qualitative research serves as a supplement to the quantitative research.

Research question: How does online education influence the relationship between teachers and students in higher education institutions in China?

Ethics

Both questionnaires and interviews involved human participants and research ethics were always adhered to. For quantitative analysis research related to questionnaires, the survey was generated using the WENJUANXING platform and transmitted through WeChat platform. The participants were required to complete a questionnaire and participation was voluntary. Before completing the questionnaire, all participants were required to provide their informed consent, which was confirmed by signing relevant documentation.

For qualitative analysis, all participation was also voluntary. The interviewees could request to end the interview at any time and all relevant data was deleted within three working days. Before the interview, interviewees were sent an information sheet and a consent form.

The study did not include sensitive questions related to gender, income or family status. This was intended to reduce the discomfort of the participants as much as possible. If the participants felt uncomfortable, they were given the option to withdraw their informed consent at any point without providing a reason.

Quantitative data

In this research project, a sample of 200 valid online questionnaires was collected through the Chinese platform WENJUANXING. The questionnaires were distributed randomly and set to close after 200 valid responses were received, ensuring that there was no artificial selection of questionnaires or data. The data was exported within three days and, since the platform is in Mandarin, the questions and answers were translated into English. Out of the 223 questionnaires distributed, 200 were completed by 105 students and 95 teachers. Through grouping the responses by student and teacher, data conclusions were drawn about the impact of online courses on teacher–student relationships.

In the data analysis phase of quantitative research, the methods of descriptive statistics and multiple regression analysis were used. Descriptive statistics allows researchers to summarise and organise observational data, providing a basic understanding of the integrity of the data and its internal connections. This type of analysis is also the foundation for further statistical inference and analysis. In our analysis, we referenced the mean and variance of all variables, using SPSS (Statistical Product and Service Solutions) software as an efficient tool for descriptive statistical analysis. Also, the multiple linear regression model was used as a generalised univariate linear regression model that uses two or more explanatory variables to explain what is observed. In our analysis, multiple predictors were available, with independent variables such as online course mode, feedback, satisfaction, interruption, and type of teacher–student relationship, and the dependent variable being the relationship between students and teachers.

Qualitative data

The study utilised a qualitative approach and selected a sample of four participants – two teachers and two students, from Chinese higher education institutions. The individuals chosen had significant experience with teaching and taking online courses. The research team conducted semi-structured interviews and obtained consent to record the interview content. The data was transcribed and translated into English for analysis. The team then used inductive thematic analysis to organise and categorise the interviews. Through this method, researchers can uncover hidden content within the data. During the interviews, we approached each interviewee independently and used different techniques based on their unique situations. By comparing the responses of the participants, similarities and differences were identified. The interviews focused on four main questions related to the advantages and disadvantages of online courses compared to traditional face-to-face instruction, the impact of online classes on communication between teachers and students, and how online classes affect the relationship.

The results

Quantitative Analysis of Questionnaire Data Results. The questionnaire set out to gather information about the experiences of Chinese teachers and students with online education and to understand the impact of online education on the relationship between teachers and students. To achieve this, several different types of questions were used. The questionnaire began with filtering questions to ensure that only valid responses were included in the analysis. This was achieved by ask-

ing if the respondent had ever taken an online course in China. In the data analysis stage, integers were used to make the analysis more efficient.

The questionnaire included a follow-up analysis, which involved comparing teachers' and students' views on the impact of online education on the relationship between teachers and students. One question specifically asked about the platforms used for communication during online courses, to understand the experiences of Chinese teachers and students on different platforms.

Questions 4 to 8 used a five-point Likert scale, where participants could select a response based on their experiences, ranging from very dissatisfied to very satisfied. Questions 9 to 13 were multiple-choice questions, where options were not mutually exclusive, and were designed to delve deeper into issues related to online teacher–student relationships. The last question included a Ritter Scale, which not only reviewed the entire questionnaire but also addressed one of the most important issues in this research. The last question allowed participants to recall and expand on their feelings about online education and provide accurate responses.

In the multiple-choice question (What platforms do you use to communicate with your teachers (or students) during the online course?), 136 people chose WeChat, accounting for 68% of the total, whilst 101 and 88 participants chose QQ and DingTalk, respectively (50.5% and 44%). Other communication channels for teachers and students include email, telephone and Zoom, representing 23.5%, 21.5%, and 22.5% of the total number respectively. The fewest people chose Skype, which was used by only two participants.

In terms of the question “Do you think online courses will impact your relationship with your teachers (or students)?”, 80 participants selected level 3 (general), which accounts for 40% of the total. The proportions of participants who chose level 4 (*agree*) and level 5 (*strongly agree*) were 27% and 23%, respectively. Participants who chose level 1 (*strongly disagree*) accounted for only 6% of the total.

In the sixth question (Do you think online courses have made the relationship between students and teachers closer, more distant, or the same?), 67 (33.5%) participants reported that online courses will alienate the relationship between students and teachers. In addition, 72 people suggested that online classes will not alter the teacher–student relationship, accounting for 36% of the total. Only 34 (17%) respondents proposed that online classes will make the teacher–student relationship closer.

In the next question about the impact of online courses on relationships with teachers or students, the majority of participants (40%) selected level 3 (general) indicating that they believed that online courses would have some impact on their relationships. A smaller proportion (27%) chose level 4 (*agree*), and an even small-

er proportion (23%) chose level 5 (*strongly agree*). Only a small percentage (6%) of participants disagreed with the statement.

In the question about the effect of online courses on the relationship between students and teachers, a majority of participants (36%) reported that they thought online courses would alienate the relationship. A slightly smaller group (33%) felt that the relationship would remain the same, and only 17% of respondents thought that online classes would bring the relationship closer.

In the question about preferences for online courses versus face-to-face courses, most participants (46.5%) preferred traditional face-to-face classes. A smaller group (31.5%) preferred a combination of both online and in-person instruction. Only 22% of participants preferred solely online classes, with 9% of those expressing a strong preference for online courses.

When asked about overall satisfaction with online courses, most participants (41%) reported being satisfied with their experience. Out of those, 11% chose the highest level of satisfaction (level 5, *very satisfied*). The largest group of participants (40%) chose level 3 (general). However, a notable number of participants (17%) reported being unsatisfied with their online course experience (level 2), and a small number (2%) chose level 1 (*very unsatisfied*).

In the question about the advantages of online courses, the majority of participants (87%) cited the avoidance of commuting as an advantage, and 76.5% mentioned that online classes are not affected by the weather. Additionally, 72% of participants felt that online courses eliminate limitations on physical space and enhance the class experience. Other advantages cited by participants included the ability to record and review class content (65%), a variety of learning modes (61%), and more convenient teacher–student communication (29%). One participant also noted that online classes are safer during a pandemic such as COVID-19.

When asked about the disadvantages of online learning, the majority of participants (82%) felt that online courses require high levels of self-discipline and that poor self-discipline can negatively impact the quality of teaching. Additionally, 65% of participants believed that online classes may make it harder for teachers to understand students well, and 63% and 52% felt that online courses reduce interaction between teachers and students, and between students, respectively. Other disadvantages cited by participants included being easily distracted (62%), issues with lagging or recording (46% and 29.5% respectively), and an increase in homework (1 participant).

In the question about the ideal type of teacher–student relationship, the majority of participants (75.5%) reported that they prefer an interactive and democratic

relationship with their teachers. A similar proportion (66%) felt that the ideal relationship should be akin to a friendship. A smaller group of participants (28.5%) believed that it is best to treat teachers as elders. Only a small percentage of students thought that the ideal relationship should be like a stranger, unconstrained, or authoritative (3%, 3.5%, and 8.5% respectively).

Regarding the factors that impact the relationship between teachers and students, a matrix volume heading was used to collect data on the responses:

According to Table 1, 75 participants believe that online education precludes face-to-face communication, which can negatively impact the teacher–student relationship. This view was held by 37.5% of participants. The highest proportion of participants (46.5%) believed that the student’s personality and hobbies can impact the relationship. A significant number of participants (39.5%) chose “learning attitude” as a factor, and 38.5% believed that “whether students respect teachers” can shape the relationship. 32% of participants thought that being greeted by a teacher can impact the relationship, and 39.5% believed that “communication and communication efficiency between students and teachers” is a factor. The table shows that the proportion of participants who chose various factors varies, with the highest being 39.5% and the lowest being 3.33%.

Table 1
Descriptive Statistics

Influencing factors/options	Very little impact	Relatively unaffected	Generally	Relatively affect	Very affect	Average score
Cannot be face to face with the teacher	3 (1.5%)	15 (7.5%)	75 (37.5%)	75 (37.5%)	32 (16%)	3.59
Student’s personality and hobbies	4 (2%)	15 (7.5%)	61 (30.5%)	93 (46.5%)	27 (13.5%)	3.62
Learning attitude	2 (1%)	10 (5%)	45 (22.5%)	79 (39.5%)	64 (32%)	3.97
Whether students have respect for their teachers	12 (6%)	15 (7.5%)	54 (27%)	77 (38.5%)	42 (21%)	3.61
Say hello when you see a teacher	15 (7.5%)	25 (12.5%)	74 (37%)	64 (32%)	22 (11%)	3.27
Communication efficiency between students and teachers	4 (2%)	15 (7.5%)	43 (21.5%)	86 (43%)	52 (26%)	3.84
Subtotal	40 (3.33%)	95 (7.92%)	352 (29.33%)	474 (39.5%)	239 (19.92%)	3.65

The majority of respondents reported that the primary content of their communication with teachers or students was related to course material. Specifically, 88.5% of participants selected this option as their most common type of communication. Other common types of communication included employment-related issues and school and classwork, with 60.5% and 55% of participants selecting these options respectively. A significant number of participants also reported communicating about life experiences, with 50.5% selecting this option. On the other hand, only 28% of participants reported communicating about entertainment and leisure, and a small minority of 2% reported never communicating with their teachers or students at all. The data suggests that the majority of communication between teachers and students is centred around academic and educational topics.

When asked if they believed that communicating with teachers or students would improve their relationship, the majority of participants (43%) selected level 4, indicating that they believed it would have a positive impact. 37% of participants selected level 5, which indicated that they believed communication would lead to a very good teacher–student exchange. 15% of participants chose a general response. On the other hand, only 2.5% of participants selected level 1 or 2, indicating that they believed communication would have little to no impact on their relationship with teachers or students.

Also, by using regression data analysis in SPSS software with 200 points of valid data, the following statistical analysis data was obtained:

The data collected from grouping students and teachers together and analysing the impact of online courses on teacher–student relationships led to several conclusions at a 5% significance level (Table 2). For students, the results showed that using a variety of communication channels during online classes can strengthen the relationship between teachers and students. However, if communication is limited to only one channel, the relationship between teachers and students is weakened. Additionally, online education is seen as a good opportunity for students who want to be friends with their teachers, and it can enhance the teacher–student relationship. For students who want a democratic relationship with their teachers, online courses also proved to be beneficial. Students who prefer a more distant relationship with their teachers also found that online courses were beneficial. However, for students who desired a free and open relationship with their teachers, online courses can weaken the teacher–student relationship.

Table 2
Regression Results

VARIABLES	(1) N	(2) mean	(3) SD	(4) min.	(5) max.
identity	200	1.475	0.501	1	2
ways_ding_talk	200	0.440	0.498	0	1
ways_wechat	200	0.680	0.468	0	1
ways_qq	200	0.505	0.501	0	1
ways_email	200	0.235	0.425	0	1
ways_phone	200	0.215	0.412	0	1
ways_face_to_face	200	0.100	0.301	0	1
ways_zoom	200	0.225	0.419	0	1
ways_team	200	0.135	0.343	0	1
ways_skype	200	0.0100	0.0997	0	1
ways_others	200	0.105	0.307	0	1
interaction_satisfaction	200	3.315	1.040	1	5
relation_feeling	200	2.885	1.018	1	5
online_preference	200	2.575	1.262	1	5
online_satisfaction	200	3.310	0.948	1	5
disturbed	200	1.170	0.377	1	2
expectation_friend	200	0.660	0.475	0	1
expectation_father	200	0.285	0.453	0	1
expectation_democracy	200	0.755	0.431	0	1
expectation_stranger	200	0.0300	0.171	0	1
expectation_authority	200	0.0850	0.280	0	1
expectation_freedom	200	0.0350	0.184	0	1
communication_importance	200	4.095	0.917	1	5

For teachers, the data found that the teaching style of online education does not have an impact on teacher–student relationships.

Qualitative analysis of interview results

Core question 1: What are the advantages and disadvantages of online courses?

Student A stated that online classes allow for more flexibility in terms of appearance, as students do not need to spend time organising themselves. Additionally,

Student A observed that the control of the teacher over the class is not as strict as in offline classes, which can lead to a lack of self-control and reduced initiative in students' work.

Student B mentioned that online classes can save the journey time of class, thereby increasing the time available for studying and homework. Online classes can be taken anytime and anywhere, provided the teacher can coordinate this. Student B also suggested that the content of online courses can be very useful, as it enables participation in e.g. a double degree program without the necessity to leave home. However, there were also a few shortcomings of online classes for Student B; many things would distract her, such as family members or other unrelated software. Secondly, it might be difficult for teachers to present practical content, like acting or medicine. Finally, Student B also said that the most critical point is that the information presented online is not the same. If the teacher wants to express a more emotional thing, the feeling in the online class is not real as it would be with face-to-face instruction, as demonstrated in dance and drama classes.

Teacher A, who is a full-time Chinese university online platform course teacher, shared that she prefers to teach online lessons. Teacher A commented that she likes the online teaching format, as it allows for a clear demonstration of steps, and students can see her operations more clearly and intuitively. Additionally, the online lesson platform renders the progress of students more visible, which is more conducive to the teacher's supervision of the students and the design of the next stage of teaching content. However, Teacher A also acknowledged that it can be difficult to control the students' attention in an online setting.

Teacher B, who is a teacher of politics at a university in China, stated that, due to COVID-19, they had to start teaching students online from the beginning of 2020 and later switched to offline courses. Teacher B's online course experience lasted only 4 months and they reported that they did not have enough experience with online classes and did not know whether the students were listening carefully. Although teachers will ask students to turn on the camera, they cannot be sure whether the students are browsing content that is not relevant to the class.

Both students and teachers highlighted the benefits and drawbacks of online teaching. The benefits include flexibility, saving commuting time, and the ability to take classes at any time. Drawbacks include potential distractions, difficulty in presenting practical content, and difficulty in gauging student engagement. Additionally, both students and teachers acknowledged that the format of online classes is relatively new and that there is still room for improvement in terms of engagement and control.

Core question 2: Will online classes obstruct or promote communication between teachers and students?

Student A, who is a class leader, stated that they do not believe that the mode of instruction (online or in-person) will have an impact on their communication with the teacher. They mentioned that as a class leader, they are able to collect homework or send assignments and notifications through WeChat, which they believe is just as effective as doing it in person. However, they do hope that the teacher can make the online class atmosphere more engaging by using interactive topics and they are willing to actively participate in teacher–student interactions.

On the other hand, Student B believes that online classes hinder communication between teachers and students. They commented that in the past when classes were conducted in-person, they were able to have long and deep conversations with professional teachers out of class time. But with online classes, the open platform nature of the class makes it harder to have such conversations and students may only exchange a few short words or ask questions on a public screen. For students like Student B, who need professional guidance, online classes may hinder the frequency and depth of communication between teachers and students.

Teacher A has a specific WeChat account for work and stated that they do not communicate with students out of class hours. They emphasised that they pay great attention to maintaining a balance between work and personal life and only deal with student problems during working hours or between classes. Their WeChat account is not logged in during their personal time.

On the other hand, Teacher B believes that online classes can promote communication between them and their students. They mentioned that they usually have a harsher image in front of students and there are some things or questions that students may be embarrassed to ask in person. They found that students are more comfortable asking questions in an online text format. During the four-month online teaching period, students often asked Teacher B questions about homework, entertainment, and future career development. There were many introverted students among those who asked questions or students who simply wanted to chat with their teachers. Therefore, Teacher B feels that online courses provide a different teaching experience and plans to integrate some of the experiences from online teaching into their future activities.

Core question 3: In what ways will online classes impact the teacher–student relationship?

Student A holds the view that online classes will not have a significant effect on the relationship between teachers and students as they prefer a more distant re-

lationship with their teachers. On the other hand, Student B has a more nuanced perspective, stating that while online classes can bring teachers and students closer through increased accessibility, the lack of in-person interaction can also lead to negative emotions towards the teacher, particularly when it comes to practical content that cannot be fully presented online.

Teacher A believes that the impact of online classes on the teacher–student relationship is dependent on the personalities of the teacher and the students. They have found that the online classroom atmosphere can be better and that students are more active when the teacher is cheerful and experienced in online teaching. However, Teacher B views the impact of online classes from both short-term and long-term perspectives. In the short term, online classes can promote the relationship between teachers and students through increased communication, but in the long term, the absence of in-person interaction can lead to alienation between teachers and students and a decrease in classroom efficiency. Teacher B also mentions that if students gradually lose their enthusiasm for online lessons, the efficiency of the classroom will be greatly reduced, and if teachers cannot observe students personally, it is not conducive to the long-term maintenance of the relationship between the teacher and the student.

Current literature on the impact of network education on the teacher–student relationship does not fully consider the new changes and impacts brought by the application of network technology to traditional teaching methods. Through our analysis, we have identified several factors that can affect the relationship between teachers and students in online education. Firstly, the type of courses offered in online education can have a significant impact on the teacher–student relationship. Our qualitative analysis found that teaching media practice-type courses in the form of online courses can improve teacher–student relationships. However, teaching traditional or practical courses in an online format can negatively impact the relationship. Therefore, educators should carefully consider the type of courses when setting up online education modules.

Secondly, existing literature does not consider students' personalities and the type of teacher–student relationship that they desire. Our analysis found that the online education model can improve teacher–student relationships for students who desire friend-type, democratic-type, and stranger-type relationships. Additionally, online classes can also improve the teacher–student relationship for shy students. However, for students who want a more open and unrestricted teacher–student relationship, online education can limit the development of that relationship. Therefore, students' personalities and the desired type of teacher–student

relationship can have either a positive or negative impact on the teacher–student relationship in online teaching. This presents a challenge to the existing literature on the subject.

Discussion

The results of the qualitative and quantitative analysis suggest that online education generally has a positive impact on teacher–student relations in Chinese higher education institutions. However, it is not a one-size-fits-all solution, as certain factors such as major, student personality, and expected teacher–student relationship model can lead to a negative impact. The use of multiple platforms, such as WeChat, Zoom, and DingTalk can improve the experience and efficiency of online courses. However, communication through QQ may weaken the teacher–student relationship. Additionally, for majors with a strong practical application, such as medicine or acting, online education may have a negative impact on the teacher–student relationship. On the other hand, majors with high computer operation requirements, such as media or graphic design, may see an improvement in the relationship between teachers and students.

Quantitative analysis revealed that 11 out of 200 participants believed that online education would alienate teacher–student relationships. Factors such as the platform of online education and the type of expected teacher–student relationship may have a negative impact on the teacher–student relationship. Qualitative analysis also found that teachers’ and students’ personalities and habitual teaching patterns can affect teacher–student relationships differently. Existing literature supports the idea that the teacher–student relationship is constructed through communication and that unhealthy teacher–student relationships can be caused by factors such as outdated educational concepts, emotional exhaustion, and poor classroom management skills (Gong, 2011; Hicks, 2012).

The shift towards online education in China has resulted in changes to the traditional teacher–student relationship, which previously emphasized the authority and dignity of the teacher. However, some teachers have been slow to adapt to these changes and still hold onto past models of the teacher–student relationship. Additionally, modern teachers are now expected to act as student advisers and participate in exchanges of opinions, but some teachers have not fully embraced these new responsibilities. Furthermore, effective classroom management is crucial for maintaining a positive teacher–student relationship, but some teachers lack the understanding and skills necessary to establish appropriate rules and manage

student behaviour online. The teacher–student relationship involves both parties occupying opposite ends of the information transmission channel, with the efficiency of this exchange depending on their positions and interactions (Tsai, 2001). In traditional Chinese education, teachers often hold a dominant role as information holders and monopolists, while students are in a weaker position. As a result, most information flows from teachers to students (Jiang, 2006). The lack of flow from students to teachers due to this inequality leads to low efficiency in information circulation and reduced feedback from students, which prevents teachers from adjusting their methods. This negatively impacts the quality of instruction and students’ satisfaction and success.

The online education environment also possesses characteristics of fluidity and non-correspondence, which has led to changes in traditional concepts of teachers and students. This requires educators and administrators to examine the teacher–student relationship from a dynamic and developmental perspective. However, it is important to note that this shift does not signify the end of the teacher–student relationship or the demise of teachers or students. Instead, teachers’ role has evolved and now focuses on leading students towards the acquisition of experience, intelligence, and creativity. This change in the concept of teachers and students also brings into question the teachers’ role in online education. The use of online technology has eliminated the role of teachers as knowledge spokespersons, but teachers still have an advantage over students in terms of their ability to guide the acquisition of problem-solving logic and strategic solution knowledge. According to Jiang (2006), it is essential for teachers to prioritize creative activities and interactions with their students to foster positive relationships and effective classroom management. This sentiment is echoed by Evertson and Weinstein (2006), who argue that a teacher’s ability to effectively manage their classroom is directly related to the quality of their relationships with students. Zhang (2005) also emphasizes the importance of maintaining order in the classroom, while Korkmaz and Toraman (2020) suggest that the incorporation of online technology in the classroom can lead to significant conceptual changes and that teachers should utilize digital methods to transcend traditional knowledge composition and classification methods. Additionally, Song (2002) and Gu (2007) also note that the relationship between teachers and students in an online setting is characterized by fluidity and non-correspondence, respectively. And According to Banner and Cannon (2008), educators should use digital methods to analyse and break down human strategic solution knowledge as their primary focus to move beyond traditional methods of knowledge composition and classification. Therefore, teachers have an advantage in this shift in consciousness and it is important for them and

administrators to be aware of this change and as previously stated guide students in acquiring experience, intelligence, and creativity.

Online education has the potential to address some of the challenges associated with traditional education, such as the dependency relationship between teachers and students. According to Gu (2007), the equalized relationship between teachers and students in an online setting can break down artificial barriers and improve communication between teachers and students. Additionally, online learning can support instantaneous communication, ensuring that feedback is received promptly. These advantages can support an effective exchange of information between teachers and students, allowing for the development of more positive relationships. Furthermore, according to the results of quantitative analysis, multiple channels of communication between students and teachers can enhance the relationship even further. However, educators need to actively face the transition from traditional education to online education. Therefore, it is essential for educators to adapt to this change and face the challenge with a positive attitude. Shen (2004) argues that educators should change their roles timely and consciously, with a sober awareness of the fact that the responsibilities of modern teachers are less concerned with the transmission of knowledge and more concerned with the stimulation of cognitive processes.

In summary, online education has the potential to improve the relationship between teachers and students by breaking down artificial barriers and improving communication. Educators must adapt to this shift and change their roles to prioritize cognitive development over knowledge transmission. By embracing a democratic, equal, and harmonious approach, the quality and effectiveness of teaching and learning can be improved.

Conclusion

Only recently online courses have been used as an emergency teaching method for many higher education institutions in China. However, the COVID-19 outbreak not only significantly tested strategic crisis management in those institutions but also provided researchers with a vital testing ground for small research projects like this one. The results suggest that as a short-term emergency tool, online courses can promote positive relationships between teachers and students. However, in the long term, as students and teachers do not meet in person for prolonged periods, the enthusiasm for online classes might decline, weakening interpersonal relationships. On the other hand, for online-only long-

term courses, the results of this research indicate that the teacher–student relationship can be improved, provided that the content of the course is suitable for delivery via an online platform. Additionally, online-only course providers often construct effective platforms and provide sufficient learning resources which enhance the learning experience even further. However, it is important to note that the premise of choosing a purely online course is that students accept and voluntarily choose such a mode of delivery. Also, to enhance the relationships between students and teachers, establishing open and abundant learning resources and virtual online education environments are a pre-requisite (Li, 2014). And as online education offerings in China are becoming more abundant, Chinese higher education institutions should respond by constructing and creating material conditions for efficient online interaction. At present, most Chinese colleges and universities regard online education as an emergency teaching mode, resulting in the weak interactive function and low efficiency of the current online teaching. Therefore, if educators and administrators want to improve the relationship between teachers and students in online education, they should give their full attention to online learning and teaching environments.

Finally, educators and administrators should also choose an appropriate online education teaching mode according to students' professional characteristics and interactive content. For students with certain learning abilities and self-control, online education can improve the teacher–student relationship. However, for some students, it may have a negative impact. The choice of the interactive mode of online education should consider the students' professional characteristics and learning content. Only in this way can the positive impact of online education on the teacher–student relationship be utilized, thereby improving the quality of teaching and the efficiency of learning.

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