"Why Are They Always Dissatisfied?" The Difference between Teachers and Students in Feeling of Interaction in Online Classroom

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Abstract

The mixed research focused on the interaction in the online classroom and discovered that (1) functional crisis, psychological and motivational crisis, and technical crises affect all aspects of interaction; (2) students pay more attention to the interaction itself of online classroom, while teachers emphasize the influence of interaction on learning effectiveness, which reflects the divergences and conflicts between them. The students' sensibility and teachers' rationality may be the root cause of interaction problems. This is a novel discovery, which has not been mentioned in the past and may help to solve many long-standing problems in online classroom.

Keywords: online classroom, interaction, Covid-19, teaching and learning, motivation

1. Introduction

The interaction in online classroom is very different from that in the traditional face-to-face classroom. Many students like to keep silent throughout the online classroom. Except for "scanning the attendance QR code", they may hardly have further interaction with the teacher. What seems absurd is that students have the power not to let teachers see them in a class by turning off the camera. After the outbreak began, the scarcity of interaction in online classroom attracted almost everyone's attention. The teachers are racking their brains to make students interact with them in class.

1.1 Online Classroom: a Panacea during Covid-19

As a general term, the online classroom can be regarded as distance education, which is the education of students who may not always be physically present at a school and usually carries out distance teaching through the Internet (Kaplan & Haenlein, 2016), or virtual classroom that refers to the activities of teaching and learning mainly through the Internet (Zhao, 2021).

Since the outbreak of Covid-19 throughout a vast section of the planet at the start of 2020, "online" has reached its most active phase in history. According to China's Ministry of education (2020), as of May 8, 2020, there were 1454 colleges and universities using online classrooms in China, and the number of participating students reached 17.75 million. 88.9% of middle school students (including junior high school and senior high school) in China have more than 4 hours of online classes every day (Zhang et al., 2021). Undoubtedly, online classroom does reduce the impacts of the epidemic on teaching (Qin & Xiang, 2020). The epidemic has been going on for two years now, and online classroom has made great contributions during the epidemic, so that students can normally learn knowledge and practice skills (Li, 2021). By 2021, the overall economic scale of China's online education may reach 322 billion (WJS, e-commerce research center, 2022), surpassing many popular industries including artificial intelligence, cloud computing, internet medical, and so on. These show that online classroom is very popular in the field of education in China.

Why is online classroom so widely used and attracted people's attention after the epidemic? The most important reasons are as follows:

(1) Online classroom can save a lot of time and provide convenience. Saving time is a very important factor, making everyone more fond of the online classroom, because it means no time wasted waiting for a bus or train (Bijeesh, 2017). This convenience benefits not only students and teachers in the city, but also students in some underdeveloped

areas. It allows students in rural areas to attend schools in the city, which expanded access to education opportunities (Hassenburg, 2009). This can obviously promote educational equity.

(2) Online classroom can make teaching and learning more flexible. The place of learning can be selected according to their actual situation (Guo, 2021), which is impossible in most of the traditional face-to-face classroom. In addition to the more flexible choice of locations, the choice of courses has also become more personalized. Sadeghi (2019) thought that online classroom allows students to be more flexible in their choices. For example, they can learn without following a regular schedule of learning. Students can choose the course by themselves (Brown, 2017). In particular, students can review difficult knowledge points by playback of asynchronous courses (videos about class), which are more satisfactory to them (Zhang et al., 2021).

These advantages are particularly valuable in the current epidemic situation. It protects the safety of most students and teachers, and also allows students who are unfortunately infected to study without being able to come to school. Many people's views are similar to Dhawan (2020): Online learning is a panacea during Covid-19, and good medicine for problems in the current situation.

1.2 Cost of the Convenience

However, there is also an old saying in China: "all medicine has its toxicity to some degree."

The online classroom's effect comes at an expensive price. Many adverse phenomena in the online classroom were found after the outbreak began. Some of them were mentioned in the past but did not attract attention. According to the findings from Chen & Hu (2020), "Closing the camera and sleeping during the class time", "having class on the bed", and "doing their own things during the class time" reflects the real learning situation of many university students on the online classroom. According to Mukhtar et al. (2020), the limitations of online classroom involved inefficiency and difficulty in maintaining academic integrity. "Unable to teach skills, limited attention span, lack of attentiveness, and resource intensive" are the problems frequently complained about by many teachers and students. What's worse, the long-term online classroom has also gradually changed the students' mentality. Some students' learning purpose is not to acquire knowledge, but purely to complete learning tasks from the school (Sheng, 2021), which reflects their low motivation to learn. In general, students' effectiveness in online learning was very insufficient (Sun & Wu, 2021).

In fact, it is not just a problem in learning knowledge. The long online class has also brought many psychological problems to students and teachers. When students are excessively exposed to the illusory network world, it will increase their sense of loneliness and depression, reduce their interpersonal skills, and then have a negative impact on students' mental health (Huang et al., 2020). The same problem also bothers teachers. Li & Zhu (2020) in a study of teachers' psychological states found that online teaching exerts great psychological pressure on teachers. Many K12 school teachers have low enthusiasm for online teaching (Xu, 2021).

From all the above studies, we can see that the problem of online classroom is two-way, which affects not only teachers' "teaching", but also students' "learning".

1.3 The Lack of Interaction in Online Classroom and Its Value

Where do these problems come from? What is their root cause? Some studies in China tried to explain the reasons.

The main reason for these problems in online classroom is that, teachers and students can not really (physically) contact each other, which is a change and decrease in interaction. Du & Ding (2020) found that teachers and students are faced with "cold" cameras, which can not accurately convey their information to others in time. This incompetence has led to many absurd and strange consequences, for example, a teacher found that he forgot to turn on the microphone in the class (it means that the students didn't hear any words he said for two hours). During this process, the student sent him messages, but he didn't notice (Upstream news, 2021). Although the lack of interaction in most cases does not bring such exaggerated consequences, it is also worrying.

Li (2020) found that in the "teacher-student interaction" of online teaching during the epidemic, with the weakening of teachers' power, spatial distance reduces communication efficiency. A survey indicated that more than half of teachers agree the frequency and effect of interpersonal interaction in the online classroom are lower than those in the face-to-face classroom (Li, 2021). These studies have confirmed the change and decrease in interaction, which is the natural disadvantage of the entire online classroom compared with the traditional face-to-face classroom.

Teachers cannot interact well with students in online classroom, which has been verified before the epidemic (Zhao & Yi, 2018). And most traditional interactive ways failed in online education.

Although online classroom has a very long history, there are very few studies on the interaction in online classroom.

The researchers discovered that when they searched “online classroom” and “interaction” on the website of Google Scholar or Baidu Scholar, the articles after 2019 are not sufficient, or have little relevance to the field of online teaching and learning. More importantly, they did not explain why the problem of interaction in online classroom has not been solved for a long time. Why are students and teachers so dissatisfied with interaction in online classroom? What is the root cause?

Some studies confirmed that in the online classroom, not only the interaction between students and teachers but also the interaction between students is reduced, compared with the traditional classroom (eg. Blaine, 2019; Rovai & Downey, 2010; Wasilik & Bolliger, 2009; Dennen, Darabi, & Smith, 2007). However, these studies conducted before the epidemic have lasted for a long time, and their applicability has been weakened. Therefore, it is very necessary to investigate the current interaction between teachers and students in online classroom, and analyze the problems about interaction.

2. Methodology

2.1 Research Design

This research is an mixed research with various methods, including semi-structured interviews (N=20, teachers), open-ended questionnaires (N=56, students), and closed-ended questionnaires (N=344, students). This study began in December 2021 and finally ended in May 2022.

RQ1: In the late Covid-19 era, what are the challenges the teachers and students faced in the interaction of online classroom?

RQ2: How do teachers and students feel about the interaction in the online classroom? How do these feelings come about?

2.2 Samples

Participants in this study included 400 students and 20 teachers. All students are randomly selected from the Internet (probability sampling: simple-random-sampling). All teachers are selected through purposive sampling.

(1) 344 students participated in the closed-ended questionnaire, which came from all 31 provinces or provincial regions in China. Among them, Henan Province and Shanxi Province have the largest number of participants (N=23). Considering that the number of participants in the two largest provinces accounts for only 6.69% of all participants, and they are also China’s most populous provinces, this sampling is generally in line with the requirements.

(2) 56 students from 21 provinces in China participated in the open-ended questionnaire.

These students have a long experience of synchronous online learning. In fact, due to the epidemic in China from 2020 to 2022, almost all students at all levels have participated in the synchronous online classroom for a long time. At the same time, in the process of sample selection, all participants for both questionnaires are randomly selected (probability sampling). Thus, more consideration should be given to the need to conform to China’s population distribution characteristics and cover as many provinces as possible. Judging from the results, these goals has been achieved.

(3) The participants of the interview are teachers (N=20), and most of their students cover K12 stage and university stage. At the same time, their subjects include English, Chinese literature, mathematics and so on. However. In the actual interview process, because no specific subjects were mentioned, the subject factor was not fully taken into account, which is an limitation.

In the sample selection of interview participants, the researcher believes that the interviewees need to have enough teaching experience for China students. Therefore, those teachers with at least 5 years of synchronous online classroom teaching experience are selected in this research.

2.3 Data Collection Method

Semi-structured interview for teachers (N=20): The interviewees answered openly according to their own situation based on the given questions, which can form abundant and valuable data. The semi-structured interview is widely used in qualitative research (Edwards & Holland, 2013).

Open-ended questionnaire for students (N=56): An open-ended questionnaire included questions that cannot be answered with a static response (closed-ended questionnaire), and respondents need to use the information they knew when answering open-ended questions (Ackley, 2010).

Closed-ended questionnaire for students (N=344): Closed-ended questionnaire is a traditional and widely used questionnaire, which usually includes any question designed by the researchers and provides some options that need participants to choose one or some based on their situations.

All data collection, including questionnaire distribution and collection, and interview, are conducted through the Internet and face-to-face.

2.4 Data Analysis

2.4.1 For Qualitative Data (Interview & Open-ended Questionnaire)

NVivo-11 is the main tool for coding and thematic analysis in this study.

Thematic analysis is a method for analyzing qualitative data. Researcher scrutinize the data to verify common themes—recurring themes, ideas and patterns of meaning (Caulfield, 2022). Coding is a key step in thematic analysis, which refers to the process of labeling descriptive words or naming categories in the text (Miles & Huberman, 1994).

The researchers followed the steps: (1) The researchers converted the transcripts into text and formed "nodes". (2) The researchers categorized the nodes and formed the "sub-themes". (3) Based on the categories researchers established final "themes" and formed the final theory.

Table 1. Example of Building Nodes, Sub-themes, and Themes for Interview

Nodes	Sub-themes	Themes
Limited action in interaction	Poor effectiveness	Functional crisis
Teacher-student interaction is inefficient		
It is difficult for teachers to express meanings to students	Insufficient communication accessibility	
It is difficult for students to attract teachers' attention		

Table 2. Example of Building Nodes, Sub-themes, and Themes for Open-ended Questionnaire

Nodes	Sub-themes	Themes
Too single interaction mode	Inappropriate interaction	Functional crisis
Incorrect or inconvenient interaction		
Timeliness of interaction problem	Insufficient interaction	
Low level of interaction		

2.4.2 For Quantitative Data (closed-ended questionnaire)

The researcher imported the results into professional data analysis software or statistical analysis software (e.g. SPSS 20.0 or other more effective tools) after the questionnaires were collected and subsequently conducted a descriptive analysis, i.e., analyzing the characteristics of the data, including means, frequencies and proportions, to analyze the attitudes of most students towards some issues.

Descriptive analysis is a type of data analysis that helps to describe, display or summarize data points in a constructive way so that patterns emerge that satisfy each condition of the data (Rawat, 2021).

2.5 Reliability and Validity

2.5.1 Survey

Table 3. Cronbach's α Reliability Analysis

Items	Samples	Cronbach's α
8	344	0.896

All analysis of quantitative data was done under SPSS 26. The researchers used Cronbach's α to verify the reliability. The Cronbach's α is 0.896 (>0.8) and indicated that the reliability of the data is high.

Table 4. KMO and Bartlett's Test

KMO		0.890
Bartlett's test of sphericity	*chi-squared approximation*	1669.947
	df	28
	p-value	0.000

The researchers used KMO and Bartlett's test to verify the validity. The KMO value is 0.890 (>0.8) and the p-value is 0.000 (<0.05). The validity of the research data is very high and very suitable for research.

2.5.2 Interview & Open-Ended Questionnaire

For the validity and reliability of qualitative research, Whittemore, Chase and Mandle (2001) analyzed 13 articles on validation and proposed key validation criteria from these studies. They found four primary criteria (Miami, 2020):

1. Credibility (do the results accurately explain what the participants meant?)

2. Authenticity (were different voices heard?)

3. Criticality (were all aspects of the study critically assessed?)

4. Integrity (were the investigators self-critical?)

These four criteria above were used in this study. This validation process was conducted by a researcher and 1 external reviewers from another field, and ultimately the qualitative section of this research was confirmed to have high reliability and validity through self-validation and evaluation.

2.6 Theory Formation and Data Saturation

An important question often raised in qualitative research design is "What is an adequate sample size for a qualitative study?" Some researchers often use "data saturation", some often use "theoretical saturation", and some tend to use "thematic saturation", as the standard to judge the sample size (Xie, 2021). In this study, the researcher used the criterion of "thematic saturation", which means that when the new data does not bring in new themes, the current state of saturation has been reached and the sample has reached the appropriate sampling size (Birks & Mills, 2015). This is conducive to the use of thematic analysis to establish the theory.

3. Results and Discussion

The researchers classified the problems they reported in the interaction of online classroom into three themes: functional crisis, psychological and motivational crisis, and technical crisis.

Table 5. Three Themes and Their Problem Categories

Interaction crises				
Themes	Functional crisis		Psychological and motivational crisis	Technical Crises
Categories	Poor effectiveness	Insufficient communication accessibility	Lack of motivation	Insufficient hardware support
	Inappropriate interaction	Insufficient interaction	Disciplinary problems and other issues	Unsuitable environment
Position	Function and situation		Intrinsic impetus	Material basis

Generally, teachers and students encountered the same crises in the interaction of online classroom. However, the specific problems they reported in interaction have different manifestations and tendencies.

Table 6. Problems Reported by Teachers and Students

Problem by teachers	Problem by students
Lack of motivation	
Insufficient hardware support	
Poor effectiveness	Inappropriate interaction
Insufficient communication accessibility	Insufficient interaction
Disciplinary problems, other issues	Unsuitable environment

In terms of specific issues, "Lack of motivation" and "insufficient hardware support" are the categories of problems that are agreed by both sides and are highly mentioned. This proves that the two problems are very serious problems and affect the classroom efficiency of both teachers and students.

Significantly, there is an important discovery in this study, which has not been mentioned in previous studies: From the following different reported problems and their descriptions, we can see an obvious differences between the feelings of teachers and students. Teachers' evaluation on interaction attaches more attention to the influence of interaction on learning effectiveness. Students focus on the interaction itself, including feeling, sufficiency, and comfort brought by interaction itself. In short, teachers regard interaction as just a tool, which is a way to achieve teaching goals.

This difference reflects the rationality of teachers and the sensibility of students for interaction in online class, which is a kind of divergence. In essence, many studies in the field of education in China have explored this problem to a certain extent. All teachers' teaching is for students, and teaching activities can only be carried out after full thinking and understanding, which is the embodiment of teachers' rational thinking (Li, 2012). This is inseparable from the fact that teaching is a purposeful, planned, and organized activity, and the essence of teaching is rational (Wang, 2014). At the same time, some China researchers believe that teaching itself is a process of developing students' thinking from perceptual thinking to rational thinking (Zhou, 2021). At the beginning, students' thinking tends to be perceptual, with high sensibility (Yang, 2020). After learning, students also begin to have the rationality in thinking. This point is rarely mentioned in other countries except for China. There may be an issue of language expression here. Researchers have found that "sensibility" and "rationality" in the Chinese context are different in meaning from these two words or other related words in the English context. In the English context, sensibility means "the ability to appreciate and respond to complex emotional or aesthetic influences; sensitivity." (Google translate, n.d.) or "a person's feelings, especially when the person is easily offended or influenced by something" (Oxford learner's dictionaries, n.d.). In the Chinese context, they not only contain the meanings mentioned above in the English context, but also have the following meanings: In cognition, sensibility means that this kind of thinking or feeling is superficial, preliminarily formed, and has not been deeply analyzed (Baidu Baike, n.d.a); Rationality means a kind of thinking or feeling, which is very deep, thoughtful, logical, with a lot of evidence, and highly analyzed (Baidu Baike, n.d.b). For example, in an article by Jiao (2016) discussing "accidents" in the classroom, he described the learning process of students as "a process from superficial and shallow sensitive cognition to rational cognition of understanding and application". Zhang (2018) believes that it is necessary to develop from sensibility to rationality, and realize the "sublimation" of thought through the improvement of "rationality", which means that rationality is a higher stage of sensibility. China people say that a person or an idea is with sensitivity, which means that the person's idea is superficial, rough, and stays on the initial feeling without full consideration.

In our research, students' evaluation and expression of their feelings about interaction are in line with this description. Teachers' statements are rational. They can not only clearly explain the impact of these problems on learning, but also find the essence of these problems, not just superficial. Moreover, they clearly realize that interaction is only a tool, and the most important thing is whether it can improve the learning effect. At the same time, students' feelings are more superficial and sensitive.

Of course, although students' cognition has a high degree of sensibility and seems to be superficial, it does not mean that this sensibility is completely negative. In fact, even if rational legal education is emphasized, legal education is also a process of interweaving sensibility and rationality, which also includes the process of developing from sensibility to rationality (Zeng, 2005), which is similar to the Jiao (2016) mentioned before. Students' sensibility is also the basis for the final development into rationality. In other words, there must be sensibility before rationality.

This may be because the process of learning is considered by some scholars as a process from "like" to "understand". "Like" promotes "understand", and "like" becomes more after "understand" (Li & Liao, 2010). This "like" can be understood as sensibility, that is, if a student wants to participate in or learn something, he must at least like it first. With this sensibility, he can further produce rationality, that is, "understand". Therefore, no teacher or school should ignore or belittle the students' sensibility.

Back to this study, the researchers mentioned above found that there are differences in the feelings of teachers and students in the interaction of online classroom: teachers have higher rationality and students have more outstanding sensibility. This is a noteworthy issue, because the numerous studies mentioned above demonstrate that sensibility and rationality are equally important to teaching and should not be ignored.

The next three parts described each problem mentioned by many teachers and students, and further analyze how such teachers' rationality and students' sensibility are reflected.

3.1 Functional Crisis

Interaction, closely links teachers' teaching and students' learning, and transmits the information they need. It can be said that this is the most fundamental and important function of interaction. If this cannot be achieved, we can say that there is an obvious functional crisis here. The problems mentioned in this section all come from the interaction's function and situation in the current online classroom.

"Poor effectiveness" is a serious problem mentioned by teachers, which is actually similar to the "inappropriate interaction" and "insufficient interaction" mentioned by students, which suggested the interaction in online classroom is not ineffective and inefficient. Some teachers think that in the online classroom, there are not many activities that can be done, but can only be expressed by words, which is very difficult to achieve good results. Although software such as Google Classroom, which provides a lot of communication and cooperation tools, teachers' complaints still exist—they can't really touch students.

Limited action in interaction:

"Since it's just online, you cannot interact very well. You cannot do like activities, something like that hands-on activities together with the students. it's gonna be very difficult to explain through words. " (Teacher-11)

Teacher-student interaction is inefficient:

"It's very challenging for us online teachers to interact with them, I can only guide them through words. But we can't touch them." (Teacher-11)

Students also described in detail how bad the current online class interaction is from their own perspective. Compared with teachers, students don't use the teacher's style to evaluate the interaction effects. Instead, they used more detailed and accurate descriptions, including the mode, degree, timeliness, and correctness of interaction.

Low level of interaction:

"The lack of attraction of the content leads to the students' lack of concentration. The two sides did not answer the questions deeply enough." (Student-21)

"I feel that our interaction is not deep enough and only stays on the surface. It is just that the teacher asks questions and then we answer them." (Student-56)

Too single interaction mode:

"Too Single interaction mode." (Student-22)

"Only voice and video interaction, lack of pressure from teachers." (Student-27)

Timeliness of interaction problem:

"I can't communicate with the teacher in time to express whether I understand." (Student-1)

"The teacher can't see the students' questions in time and answers them slowly." (Student-38)

Incorrect or inconvenient interaction:

"The current online classroom interaction is inconvenient and incorrect in many places." (Student-39)

The researchers agreed that these reflect a difference between students and teachers. Students are more perceptional, emotional and detailed in their understanding of interaction, and pay attention to the interaction itself. Teachers are more rational in interaction, and they thought that interaction is only a tool for improving learning effectiveness.

Furthermore, teachers also put forward the "insufficient communication accessibility", and they think that, in terms of the interaction of online classes, it is not only difficult for teachers to express meanings to students, but also for students to attract teachers' attention. This means that the effect of tools provided by some online software at present still does not fully reach the interactive effect of face-to-face. If the transmission of meaning and thought is a problem, many activities, exchanges and cooperation cannot be carried out normally. Some new technologies have been developed to effectively improve classroom interaction. For example, a company invented an teaching and learning system based on AI, which can recognize students' expressions including boredom and fatigue (Tu et al., 2021). Other company designed a system uses pattern recognition technology to recognize the current gesture actions between students and teachers, and improve the students' participation in class (Liu, 2020). However, these technologies have not been put into large-scale use. China, like most countries, is still a developing country (Xiaoxiang Morning Post, 2022), which is difficult to use such new technologies on a large scale. Even if they are existing, it is experimental and cannot be normalized on many provinces. These are also the reasons for this dilemma

and the differences in needs and views between students and teachers.

It is difficult for teachers to express meanings to students:

"It's really hard for us to express what we want to express." (Teacher-11)

From the perspective of teachers, teachers can better compare the differences between online classroom and traditional classroom. In the interview, teachers not only pointed out the differences between online classroom and face-to-face classroom, but also the influence of the number of students on the effects of interaction. It is obvious that teachers have a more rational understanding of interaction.

Summary

Interaction, as one of the most critical means in the classroom, which combines teachers' teaching with students' learning. Because students and teachers cannot touch each other physically, which is the main characteristics of online classroom, determining that interaction will have the same situation, so the interactive function has also been greatly damaged—it can no longer help teachers and students communicate well, nor can it achieve information transmission between them. These are the essential functions of interaction, so researchers define this problem as functional crisis.

From the results of these interviews, we found that teachers and students have different feelings in the interaction of online classroom. Teachers paid more attention to the effects of interaction on learning: "What interaction can bring to learning?" Students attached more attention to the interaction itself, that is, "how the interaction itself is going", and "whether it makes us feel satisfied". This divergence in demand feelings are the key for this problem.

3.2 Psychological and Motivational Crisis

The problems mentioned in this section all fundamentally come from students' psychology and motivation. Motivation is a very important driving force in learning. The lack of learning motivation usually leads to the reduction and delay of learning behavior, including interactive behavior. In this study, the lack of learning motivation is a problem recognized by teachers and students. Thus, researchers believe that "psychological and motivational crisis" is the intrinsic impetus of "functional crisis".

It is worth noting that the interaction between teachers and students needs motivation to drive. At the same time, if the interaction is insufficient, it will affect motivation and lead to psychological problems.

The common feature of learning motivation in the problems mentioned by teachers and students is this: it is hard for students to concentrate on online class interaction. The losing concentration may be affected by many aspects. However, the most phenomenon mentioned in teachers' interviews is that students lack the willpower to focus on class subjectively.

Students have difficulty concentrating:

"Most of the students they close their camera and they pretend that they are listening to the teacher, but actually they are not listening to the teacher...we can't achieve our teaching goals very well." (Teacher-19)

"In this case (students don't pay attention to their study), we can't teach them the content." (Teacher-17)

Some students admitted that their inattention is their own choice due to other factors, such as narrow attention span (usually common in young children), which refers to that students' learning motivation is seriously insufficient. This confirmed the key concern that a modest degree of attention loss in university students' online learning at home (Chen & Long, 2020).

Students have difficulty concentrating:

"I often do other things in online classes interaction." (Student-3)

"I can't insist on listening carefully, nor can I interact effectively with my teachers." (Student-5)

Besides inattention, students also frequently mentioned that "students are more negative in interaction", which was not mentioned by teachers, but students' spontaneous reports. The corresponding report of teachers is that "students don't understand purpose and meaning of learning" (or direction), which indicates that teachers know the reasons. This is in line with that students' evaluation of interactive problems is more perceptual (sensibility) and pay more attention to the interaction itself, while teachers' evaluation of interactive problems is more rational (rationality) and pays more attention to the effects of interaction on learning.

Students are more negative in interaction:

"The interaction is only initiated by the teacher." (Student-24)

Students are more negative in interaction:

"The interaction enthusiasm is not high, and no one is willing to respond to the teacher." (Student-25)

Students don't understand the purpose and meaning of learning:

"You need to make the students read, but they don't read it...and they don't know the why they should do this." (Teacher-20)

The example above also shows a very serious problem: Students refuse to communicate. As mentioned above, students have the power to refuse to communicate with teachers, namely "turn off the camera and microphone". This behavior seriously destroys classroom interaction and makes teachers lose confidence. This phenomenon also leads to a problem, that is, no matter how good the educational and technical circles have developed tools to enhance the interaction of online classroom, if students refuse to interact with teachers, such as "turning off the camera", these tools are invalid. This problem does not exist in the traditional face-to-face classroom. As long as students are in the classroom, teachers always have a way to let students hear them and see them.

In fact, there is a dilemma here. If we want to deprive students' power for "choosing whether they interact with teachers", for example, from the software function, we can make it so that students can't turn off the camera, which will make it difficult for students' privacy to be protected. But if we need to protect the power of students, it will inevitably lead to the lack of interaction, which is difficult for any tools to solve.

Students refuse to communicate:

"Some students want to close their camera. I want to add games or activity. But I cannot see my student, how can I do it?" (Teacher-6)

Students refuse to communicate:

"Virtually learners may stay silent or put on a brave face and then leave the class, (teachers) feeling despondent and frustrated. " (Teacher-8)

Discipline is also a serious problem, which is mainly manifested as destructive or disruptive behavior. In online class interaction, some students made rude or incorrect behaviors to vent their inner dissatisfaction or weariness.

Disruptive behaviors and atmosphere problems:

"The most problem I encounter when interacting with those students is, so much rude. There are so much rude." (Teacher-8)

Summary:

There are many serious psychological and motivational crises in the current online classroom interaction, which reflects that students are difficult to concentrate on the interaction. On the other hand, they do not understand the significance of learning (direction), and the interaction becomes negative. Some students have confrontational behavior and discipline problems of refusing interaction.

It can be said that psychological and motivational problems are the intrinsic impetus of most interactive problems, and this section can be regarded as the internal driving force of the first section. It further reflects the differences between teachers and students in the need for interaction.

3.3 Technical Crisis

Network and hardware are the material basis of all online classroom interaction. If there is no stable network and hardware, just like there is no teaching place (school and classroom) in the traditional classroom, and all interaction cannot be carried out.

Most of these problems are related to the Internet. Unstable connection is a serious threat to online classroom's interaction. After analysis, the researchers proposed that the main causes of network problems are insufficient bandwidth or old equipment.

Network or hardware problems:

"The first problem is technical. Generally, it's with all your connection, video connection, or sometimes with the Internet connection." (Teacher-4)

"Technical issues and internet connection only add to frustration and interrupt your learning session. " (Teacher-12)

It is worth noting that network issues have a very high priority among all interactive issues. When researchers asked them "what questions are there at present", many teachers answered the network issues first. Many studies have urged for the creation of a more stable and high-quality Internet during the epidemic, because it is the foundation of online classroom, which is the most concerning problem (Ma et al., 2020).

Network or hardware problems:

"The first one is the internet connection. Sometimes the internet connection of the students is unstable, and we can barely hear each other. The internet connection is a really poor on both sides. " (Teacher-7)

"The problems are mostly about technical problems and the Internet." (Teacher-18)

In fact, according to the researcher's interview, some network problems are not caused by common factors, including old equipment and insufficient bandwidth, but by accidents, such as weather problems and natural disasters (typhoons).

Network or hardware problems:

"The internet connection, especially when the weather is not good, both on my part and my students." (Teacher-11)

Although both sides mentioned a lot of network problems, researchers still found a very significant difference: Students are more sensitive to network problems. Their description of network problems is more detailed, and teachers' description of network problems is more general and vague.

As shown below, teachers only mentioned the network problem (Just like "I can't hear you well"), and most students pointed out the bad consequences of the network problem more clearly and directly.

Network or hardware problems:

"Network instability leads to poor communication," (Student-36)

"The network speed problem sometimes makes the computer stuck and cannot be played back. This causes the key knowledge points to be inaudible. This also makes my enthusiasm for online classes sometimes not enough." (Student-29)

Many students reported the problems of the teaching environment, but teachers did not mention these. Some teachers ignored the design of the teaching environment in the online class, which made this problem exposed in the online class interaction. According to the results of a previous survey on the outbreak of Covid-19, the unsatisfactory learning environment is the most prominent problem faced by college students' e-learning (Hu & Liu, 2020). However, more than one year has passed, and this problem has not been solved yet.

Network interaction lacks intimacy and authenticity, The teaching environment is not conducive to interaction:

"The interactive environment lacks a sense of closeness and authenticity."

"Interaction has no sense of reality and my interest is not high."

"It is not much like real interaction."

"The interactive environment is too noisy." (Student-5, 7, 28, 39)

The reason why researchers chose to put the interactive environment problems in the part of "network and hardware crisis" is that, researchers discovered these problems are usually closely related to network and hardware. Better hardware, equipment and technology may support a better interactive environment.

Summary:

According to this study, network or hardware problems are very serious, which not only seriously destroy the interaction of online classroom, but also greatly damage the teaching effectiveness. Moreover, the network and hardware are the material basis of all online classroom interactions mentioned earlier. Similarly, this section still further described the serious divergences and crises in the interaction between teachers and students in the online classroom.

Network or hardware problems are mainly caused by insufficient network bandwidth, and aging equipment. In terms of network only, this requires schools to upgrade the relevant equipment (for the side of teacher), while the government needs to provide support for students who do not have good online learning equipment (for the side of student).

To solve the problem of the interactive environment, teachers need to take the lead in redesigning the interactive environment or teaching environment.

In addition, the government also needs to take some measures in disaster and weather forecasts, which is conducive to schools to adjust their courses accordingly.

3.4 Mixed Analysis with the Result from Questionnaires

The results of these questionnaires indicated students' attitudes towards various problems related to classroom interaction in synchronous online learning: The extent to which they feel when they experience the problem (items).

Table 7. Result Analysis of Each Problem and Proportion of Main Options

Item	Mean (1,4)	Standard deviation	"partly agree"	"completely agree"
In online learning, I feel that the degree of interaction between students and teachers is not enough, and the way of interaction is too simple.	2.855	0.936	46.22%	25.58%
In online learning, teachers do not know enough about me.	2.802	0.878	48.84%	20.64%
In online learning, teachers can't give feedback to me on time.	2.735	0.895	43.6%	20.06%
In the interaction of online learning, I am generally more negative.	2.552	1.012	32.85%	20.35%
In online learning, the environment usually affects interaction.	2.846	0.955	45.06%	26.16%
The interaction in the online classroom lacks sense of reality, and can not bring comfort and freedom to me.	2.663	0.742	53.78%	9.59%
Network problems have a negative impact on interaction for me.	2.910	0.920	40.99%	29.36%
In the interaction of online learning, I find it difficult to concentrate.	2.948	0.937	43.6%	30.81%

From a wide range of surveys, it can be seen from the that the total agreement rate of all questions ("partially agree" And "completely agree") is more than 50%, which indicated that these problems do exist on a large scale and should not be ignored.

In terms of specific problems, "network problems" and "attention concentration problems" are the most obvious problems that students focus on in synchronous online learning. As mentioned above, these problems are of common concern to teachers and students. Now, from the perspective of a large-scale investigation, they are really very serious.

In addition, the "environment", "degree" and "way" of interaction are also greatly concerned issues for students in synchronous online learning. However, according to the results of the previous qualitative part, these problems have not been described in detail by teachers, which reflects the divergence between the two sides.

4. Suggestions

(1) First of all, all sides should understand that interaction in online classroom is a complex system, instead of directly simply organizing a large number of activities between teachers and students in online classroom—students have different ideas about interaction, and there are obvious divergences with teachers in feelings.

(2) The interaction of online classroom should be systematically redesigned. Classroom interaction should not only improve the learning effects (teachers' demands), but also satisfy the students' experiences, feelings, and needs (students' demands). Most importantly, each side should consider the accessibility of interaction (network and equipment).

(3) Government should provide financial support; society (enterprises) should provide a lot of practical opportunities; the school should provide technical, psychological and other supports.

5. Limitations

This study has a series of limitations, which are in different parts. First, the researchers did not classify the students according to their age groups and discuss their respective characteristics. This makes the researchers did not fully consider the impact of age on the results of this study. Second, the researchers did not analyze the impact of different regions on the research results. There are 34 provincial administrative units in China, and their economic conditions are different. The hardware and teacher level of their schools' online classroom are also different, so the degree and situation of interaction may also be different. Third, This study does not fully discuss some urgent situations faced by the online classroom under the era of Covid-19, and the relationship between them and interaction.

6. Conclusion

The interaction crises of online classroom in current time can be classified and summarized into three crises, namely functional crisis, psychological and motivational crisis, and technical crisis. In terms of specific problems, students pay more attention to the interaction itself of online classroom (details and states), while teachers attach more attention to the influence of interaction on learning effectiveness. This indicated the differences between teachers and students in thinking and emotional patterns in the interaction of online classroom: Teachers are more rational (with high rationality) and students are more perceptual (with high sensibility). These differences eventually led to divergences in the thinking, expression, and reflection on interaction. These differences and conflicts are a potential big problem of online classroom at present, affecting the implementation and improvement of interaction. This is a novel discovery, which is worth further research and helps to reveal many long-standing problems in online classroom.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

Informed consent

Before the interview, the researcher introduced the purpose, content, methods, risks, and privacy protection of the study to all interviewers in detail, to ensure that all participants fully understand the research. Formal oral informed consent was obtained from all the participants included in this research. The researchers did not obtain any personal identity information in the data collection. All the participants had already known all the data was used just for research and no private information would be disclosed to the public and in any other ways under any conditions.

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