

High School Students' Online Interaction in a Less-developed Region in China

Lu YAN^a, Jingyi WANG^b & Chunping ZHENG^{c*}

^a*Changshun Senior High School of Nationalities, Guizhou Province, China*

^{bc}*Beijing University of Posts and Telecommunications, China*

*zhengchunping@bupt.edu.cn

Abstract: This study reported high school students' online interaction of learning English during the Covid-19 pandemic in a less-developed region in China. Both quantitative and qualitative data were collected through a semi-structured survey with a questionnaire and several open-ended questions. Data were analyzed based on the Exploratory Factor Analysis and content analysis. Our research findings show that high school students' online interaction in English language learning included three factors, namely Student-Teacher Interaction, Student-Student Interaction, and Student-Content Interaction. Students expected to have more interaction with teachers in online classes and use advanced technology in the future. They also believed that they could improve their learning efficiency with more online monitoring and self-regulation. This study enabled researchers to better understand high school students' online interaction when learning English online in a less-developed region in China.

Keywords: Online interaction, English language learning, High school students, Online education

1. Introduction

During the Covid-19 pandemic, students were forced to complete a series of learning activities online, which brought various challenges to both teachers and students, particularly for those in less-developed regions. In order to achieve better teaching and learning outcomes, online learning usually requires a high level of interaction among teachers, peers, and the learning contexts. Previous research has investigated the interactive teaching methods, and most of them mainly explored the interaction between teachers and students (Gao, 2020; Xia & Cui, 2013; Zhang, 2019). However, only a few studies focused on English language learners' online interaction based on the interaction among teachers, students, and the online learning environment. There were scarce research targeting at high school students in minority-populated areas. This research used both quantitative and qualitative data to explore high school students' interaction in an online English language course during the Covid-19 pandemic in a less-developed region in China, and attempted to report students' expectations for online interaction in English courses.

2. Literature Review

The quality of interaction is an important indicator for the effectiveness of online education (Sher, 2009). Moore (1993) divided the interaction in online learning into three dimensions, namely, learner-instructor interaction, learner-learner interaction, and learner-content interaction. Learner-instructor interaction refers to teachers' guidance, encouragement, or evaluation against students and the questions or feedback of the teaching content brought up by students. Learner-learner interaction is defined as group assignments and in-class discussions. Learner-content interaction is the process by which students obtain information from different online platforms or materials. Sabry and Baldwin (2003) studied the relationship between these three types of online interaction and learning styles. Sher (2009) explored the relationship between two types of online interaction (student-instructor and student-student) and learning satisfaction. Cho and his colleagues investigated the relationship between these three kinds of online interaction and self-regulated

learning (Cho & Cho, 2017; Cho & Kim, 2013). At present, the effectiveness of those three types of online interaction have been used to indicate the positive impact of online language teaching on learning (eg., Li, 2020; Yang & Wang, 2019; Zhang, 2019), but little is known about high school students' online interaction in English language learning. This study used a questionnaire to conduct qualitative and quantitative analysis on 287 high school English language learners in Qiannan Buyi and Miao Autonomous Prefecture of Guizhou province in China, aiming to explore the following two aspects:

- 1) What are the factorial structures of high school students' online interaction of their English language learning during the Covid-19 pandemic?
- 2) What is high school students' expectation for ideal online English language learning?

3. Methodology

3.1 Research Context

This research aimed at analyzing online interaction in English language learning of high school students in a less-developed region in China during the Covid-19 pandemic. It was conducted at Changshun Senior High School of Nationalities, which is an ethnic Senior High School in Changshun County, Qiannan Buyi and Miao Autonomous Prefecture of Guizhou Province in China. The majority of the students in this school are mainly from Buyi, Miao, and Han ethnicity.

Due to the lack of computers or multimedia platforms in the school, students seldom carried out online language learning and were relatively unfamiliar with online learning methods and learning environments. However, during the epidemic, online English courses were adopted, which provided high school students with a new access for studying English online.

3.2 Participants

A total of 287 senior one (first year in high school) students at Changshun Senior High School of Nationalities were invited to join the research. There were 145 males and 142 females. Their ages ranged from 17 to 20. 114 of our participants (39.72%) are from Buyi ethnicity, 97 of them (33.80%) from Han ethnicity, and 74 of them (25.78%) from Miao ethnicity. There were both one student (0.35%) from Shui ethnicity and Tujia ethnicity. Among those participants, 152 students (52.96%) used E-net to study English online, and 57 students (19.86%) and 28 students (9.76%) used Dingding and Tecent Conference to participant in real-time interactive online English courses. 245 students (85.37%) watched recorded online courses through SkyQian. 23 students (8.01%) used Wechat and QQ and 25 students (8.71%) used other online platforms for learning English online.

3.3 Instrument

This research conducted an investigation on high school students' online interaction in a less-developed region during the Covid-19 pandemic in China. A questionnaire of online interaction in English language learning was used in the research. The questionnaire was adapted from the previous questionnaire for students' interaction in Web-based online learning environment (Sher, 2009) and was compiled using Likert five-level scale, ranging from 1 as "strongly disagree" to 5 as "strongly agree". Considering the English proficiency level of our participants, all items in the questionnaire were translated into Chinese. At the same time, eight open-ended questions were designed according to students' online interaction in English language learning, aiming to collect and analyze the data qualitatively. Based on the theoretical framework of online interaction (Moore, 1993), the researchers defined three dimensions to analyze the data, namely Student-Teacher interaction, Student-Student interaction, and Student-Content interaction.

3.4 Data Analysis

Both quantitative and qualitative data were collected in the research. The quantitative data were processed with SPSS 20.0 and the qualitative data were transcribed and then summarized by researchers. Combining the two research questions, the procedure of data analysis was conducted as followed:

(1) The Exploratory Factor Analysis (EFA) and reliability analysis were used to determine the reliability and validity of the questionnaire. Then the study explored the factorial structure of high school students' online interaction in English language learning.

(2) Researchers adopted a content analysis method to analyze students' responses to open-ended questions. They summarized the current situation of online interaction among the high school English language learners in a less-developed region.

4. Results

4.1 Quantitative Results

The research investigated the factorial structures of high school students' online interaction of their English language learning during the Covid-19 pandemic in China. The findings through EFA indicated that high school students' online interaction in English language learning includes three different factors. The instrument displayed similar factor structures as revealed by previous work (e.g., Sher, 2009; Yang & Wang, 2019), and had satisfactory reliability.

Table 1 shows the results of EFA for the questionnaire of online interaction. Researchers used the principle component analysis as the extraction method, and the Varimax with Kaiser Normalization as the rotation method (Kaiser, 1958). Three factors were included in this result, namely "Student-Teacher Interaction (ST)", ($\alpha = 0.75$, Mean = 3.61, S.D. = 0.65), "Student-Student Interaction (SS)", ($\alpha = 0.67$, Mean = 3.42, S.D. = 0.69), and "Student-Content Interaction (SC)", ($\alpha = 0.65$, Mean = 3.50, S.D. = 0.65). The total variance explained was 71.47%. The overall alpha of this research was 0.77, and the alpha coefficient of this study was around 0.65-0.70 for each factor. The results clearly indicated that the internal consistency of all factors was sufficient for statistical analysis.

Table 1. *Rotated factor loadings and Cronbach's alpha values for the three factors (n=287).*

	Factor 1: ST	Factor 2: SS	Factor 3: SC
Factor 1: Student-Teacher Interaction (ST), $\alpha = 0.75$, Mean = 3.61, S.D. = 0.65			
ST34	0.73		
ST35	0.75		
ST36	0.80		
Factor 2: Student-Student Interaction (SS), $\alpha = 0.67$, Mean = 3.42, S.D. = 0.69			
SS37		0.83	
SS38		0.84	
SS39		0.74	
Factor 3: Student-Content Interaction (SC), $\alpha = 0.65$, Mean = 3.50, S.D. = 0.65			
SC42			0.79
SC43			0.77
SC44			0.81
SC45			0.80
SC46			0.75

Note. Overall alpha: 0.77; total variance explained: 71.47%.

4.2 Qualitative Results

This research designed several open-ended questions to explore high school students' expectation for interaction in online English classes. Researchers found that English learners in high school showed various expectations for online English classes from different perspectives (Table 2). First of all, most

students emphasized online in-class interaction with teachers. They expected online English courses to be more interesting and more interactive. For example:

“You can communicate with the teacher in real-time. You don’t need to ask permission one by one to raise questions like learning by Dingding.” (selected and translated from students’ response to open-ended questions)

“We can tell English stories, watch English movies together, and using online microphones to share our thoughts.” (selected and translated from students’ response to open-ended questions)

“Problems can be solved in time. It is convenient to exchange ideas and search for information online. The class atmosphere is active.” (selected and translated from students’ response to open-ended questions)

Secondly, some high school students expected to be monitored by teachers, peers, or parents when taking courses online. They also hoped that the online platform they use can be improved to help monitor their learning conditions. Some students believed that online classes could provide them with an opportunity to regulate their study.

“Compared with classroom classrooms, it (taking online courses) is more contemporary and requires more technological literacy.” (selected and translated from students’ response to open-ended questions)

“With the advancement of technology in the future, the image of the teacher can be shown directly in front of us through virtual projection.” (selected and translated from students’ response to open-ended questions)

“The teacher can enlarge her PPT as soon as possible when explaining some important and difficult points so that we can take notes.” (selected and translated from students’ response to open-ended questions)

Table 2. High school students’ expectation for ideal online English language learning.

Perspectives	Factors	Students’ expectation
Student-Teacher Interaction (ST)	Students’ expectation for teachers	Correcting homework online
		Giving timely feedback online
		Providing encouragement and giving praise
		Providing targeted instruction to specific students
		Teaching at a moderate speed
		Having clear page layout and handwriting
		Monitoring whether students are paying attention to online classes
		Giving thorough explanations of courses
		Being able to stimulate learning interest
		Using only English to teach
		Introducing more online activities in class
		Teaching students in accordance with their aptitude
	Students’ expectation for themselves	Doing homework more carefully
		Handing in homework on time
		Having enough time to think independently
		Asking questions instantly in online classes
		Paying full attention to online classes
Student-Student Interaction (SS)	Students’ expectation for peers	Discussing problems and no plagiarism
		Having multi-person interaction in online classes
		Seeking help from others
		Conducting real-time discussion in online classes
		Developing self-regulated collaborative learning
Student-Content Interaction (SC)	Students’ expectation for	Having an appropriate amount of homework
		Attaching importance to fundamental linguistic

content	knowledge (grammar, pronunciation, etc)
	Having a simple and clear structure of teaching materials
	Having an appropriate size of characters on the screen
	Improving the clarity of online materials
	Using practical teaching equipment (live-broadcasting platforms)
	Synchronizing teacher lecturing with online presentations without deferring
	Achieving face-to-face teaching virtually
	Developing a complete supervision system

5. Conclusion

The results indicated that high school students' online interaction in English language learning included three factors, namely Student-Teacher Interaction, Student-Student Interaction, and Student-Content Interaction. Students expected to promote effective online interaction with their teachers. They also hoped that new technologies can be used in the future to achieve more vivid and realistic online teaching. Besides, high school students also believed that online English language learning can enhance their ability of self-regulatory and independent learning.

This study provided researchers with more insights for further understanding high school students' online interaction when learning English online. More empirical studies are required to obtain data from students of different grades and at English language proficiency levels. The factor structure of online interaction can be applied to analyze data from a larger number of high school students. Further research will provide new perspectives for experts to design and implement online English language teaching in less-developed areas.

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