

High School Students' Online Engagement During the Covid-19 Pandemic in China

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Abstract: In order to prevent and control the negative effect of Covid-19 pandemic on education in China, schools at different levels were encouraged to adopt online teaching to ensure school education in good orders. This study aims to investigate high school students' online engagement during the Covid-19 pandemic in an online English course offered to Changshun Senior High School of Nationalities in China. The participants were 287 senior high school students from this school who took online English courses during the pandemic. Both quantitative and qualitative data were collected based on the online engagement of learning English (OELE) survey. An exploratory factor analysis was conducted to establish the factor structure of the high school students' online engagement and the qualitative data were further analyzed. The quantitative results indicated that learners' engagement of learning English in the online environment included four factors, namely cognitive engagement, behavioral engagement, emotional engagement, and social engagement. The qualitative results showed that teachers' supervision and online management during online courses are important factors affecting high school students' online engagement. Most of the students expected more supervision and interaction when learning online. Particularly, more question-and-answer sessions and group discussions could be designed for online courses. This study also showed the significance of reinterpreting students' online engagement in ethnic minority regions, which can be a significant prerequisite for online language learning.

Keywords: online engagement; high school students; ethnic minority regions

1. Introduction

In order to prevent and control the negative effect of Covid-19 pandemic on education in China, the Ministry of Education issued the policy of "suspension of school and no suspension of learning" to the whole country. Following the policy, schools at different levels actively carried out online courses and the online learning ensured students' learning progress during the prevention and control period of the pandemic. Students' engagement in online courses and whether these courses meet their expectations are important prerequisite for the quality of online programs. This study aims to investigate high school students' online engagement during the Covid-19 pandemic in the setting of online English courses offered to Changshun Senior High School of Nationalities in China.

2. Literature Review

2.1 Student engagement

The concept of "student engagement" appeared around 70 years ago. In the 1930s, educational psychologist Ralph Tyler conducted a study at the University of Ohio and the University of Chicago to investigate the amount of time and effort students spent on school work (Wang, 2013). In 2004, Jennifer Fredricks and his fellows proposed that the meta-structure of student engagement includes behavioral, emotional and

cognitive engagement. The research construct of student engagement was investigated in different contexts (such as in the classrooms, during after-class activities or out-of-school situations) and under different theoretical frameworks. Extensive research has been conducted on the measurement of student engagement in earlier literature (e.g., Betts et al, 2010; Carle et al, 2009; Carter et al, 2012; Fredricks, 2004, 2016; Hazel et al, 2014; Henrie et al, 2015; Whitney et al, 2019). How engagement predicts outcomes in terms of psychological states, ability or academic achievement (e.g., Lei et al. 2018; Gunuc, 2014; Villiers & Werner, 2018; Wu & Wu, 2020), and how internal or external factors influences student engagement (e.g., Huang et al., 2019; Maguire et al., 2017; Virtanen et al., 2015; Wang & Eccles, 2012, 2013) were the mainstream topics during the past decade. In addition, the structural relations among behavioral, cognitive and emotional engagement also drew researchers' attention in recent years (e.g., Hong, 2020; Gunuc, 2015).

2.2 Online engagement

With the rapid development of a variety of scientific technologies, researchers started to focus on students' online engagement (Ding et al, 2017; Gupta & Pandey, 2018; Wang et al, 2016). Students' online engagement refers to behavioral engagement, cognitive engagement and emotional engagement when learning online (Hu et al, 2016). During these years, many studies focused on students' online engagement or engagement in distance education (e.g., Gupta & Pandey, 2018; Rienties et al., 2018; Sun & Rueda, 2012; Wang, 2016). Several studies also paid attention to how social medias such as Facebook or Twitters influence student engagement (e.g., Faizi, 2019; Junco et al, 2010; Junco, 2012).

In general, existing studies rarely paid attention to high school English language learners' online engagement. In order to explore the above issues, this study focuses on high school students' online engagement during the Covid-19 pandemic. The research aims at answering the following two questions:

- (1) What are the factorial structures of high school students' online engagement of English language learning during the Covid-19 pandemic?
- (2) How do high school students perceive their online engagement of English language learning during the Covid-19 pandemic?

3. Methodology

3.1 Research Context

The present study was conducted during the Covid-19 pandemic in China among the students in Changshun Senior High School of Nationalities of Guizhou Province in China. Students took the online English course regularly four times every week on the designated online platforms such as Tencent Conference (9.76%), Dingding (20.21%), E-Net (53.66%), SkyQian (87.11%), Wechat/QQ (8.01%) and other online platforms (8.71%). Nearly all students took online courses using cellphones (73.17%) and televisions (20.91%). They also took online courses through tablets (3.48%), computers (0.35%) and other equipment (2.09%).

3.2 Participants

A total of 287 English language learners of this course participated in the study, including 145 males and 142 females, with an average age of 17 years old. 190 of them were ethnic minority students and 97 were Han students. The 287 EFL learners were invited to complete the survey. 79.44% of them took their first online course in 2020 and only 20.56% of them took their first online courses in 2019 or earlier.

3.3 Instrument

This research employed a questionnaire to explore the high school students' online engagement of learning English (OELE) during the Covid-19 pandemic in China. This questionnaire was adapted from a

questionnaire developed by Wang et al. (2016), which was designed to measure students' math and science engagement. It is a valid and reliable instrument and the questionnaire items were measured with a five-point Likert scale, from 1 "do not agree at all" to 5 "strongly agree". Since English is a foreign language for the participants, all the items in the questionnaire were translated into Chinese. The questionnaire items were modified by changing the statements to more specifically target at online English language learners. This questionnaire was developed to investigate students' four dimensions of online engagement including cognitive engagement (CE), behavioral engagement (BE), emotional engagement (EE) and social engagement (SE). Under each dimension there are five items. In order to better understand learners' perceptions of their online engagement, the survey also included two open-ended questions.

3.4 Data Collection and Analysis

Both quantitative and qualitative data were collected through the survey. A total of 287 participants in the study volunteered to respond to the questionnaires online. The students' responses to the questionnaire were further analyzed. The quantitative data were processed with SPSS 25.0 and an exploratory factor analysis (EFA) was conducted to establish the factor structure of high school students' online engagement. The qualitative data were collected based on students' answers to the open-ended question: "During this Covid-19 pandemic, what is your most satisfied and dissatisfied experience by learning English online?" And the qualitative data were transcribed into English in this paper.

4. Results

4.1 Quantitative Results

The exploratory factor analysis (EFA) was used to analyze the quantitative data. The principle component analysis was used as the extraction method, and Varimax with Kaiser Normalization as the rotation method (Kaiser, 1958). And the rotation was convergent after 7 iterations. Table 1 shows the results of the exploratory factor analysis for the instrument. As a result, a total of 19 items and four factors were retained in the final version of it. Factor loading of each factor is over 0.50 and the reliability coefficient of each dimension is over 0.80. The total variance explained is 68.54%. as Table 1 shows, the four factors were "Cognitive engagement (CE)" ($\alpha = 0.85$, Mean = 3.42, S.D. = 0.60), "Emotional engagement (EE)" ($\alpha = 0.86$, Mean = 3.40, S.D. = 0.70), "Social engagement (SE)" ($\alpha = 0.84$, Mean = 3.42, S.D. = 0.63) and "Behavior engagement (BE)" ($\alpha = 0.89$, Mean = 3.50, S.D. = 0.65). The alpha coefficient of this study was around 0.60-0.70 for each factor (overall $\alpha = 0.90$), indicating that the internal consistency was sufficient for statistical analysis.

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

	Factor 1: CE	Factor 2: EE	Factor 3: SE	Factor 4: BE
Factor 1: Cognitive engagement (CE), $\alpha = 0.86$, Mean = 3.42, S.D. = 0.60				
CE1	0.55			
CE2	0.54			
CE3	0.80			
CE4	0.64			
Factor 2: Emotional engagement (EE), $\alpha = 0.88$, Mean = 3.40, S.D. = 0.70				
EE5		0.70		
EE6		0.76		
EE7		0.78		
EE8		0.70		
EE9		0.74		
Factor 3: Social engagement (SE), $\alpha = 0.87$, Mean = 3.42, S.D. = 0.63				

SE10	0.56
SE11	0.66
SE12	0.76
SE13	0.58
SE14	0.71
SE15	0.69
Factor 4: Behavior engagement (BE), $\alpha = 0.89$, Mean = 3.50, S.D. = 0.65	
BE16	0.56
BE17	0.76
BE18	0.65
BE19	0.66

Note. Overall alpha: 0.90; total variance explained: 68.54%.

4.2 Qualitative Results

4.2.1 High School Students' Positive Perceptions of Online Learning Engagement

Students were invited to report their most satisfied and dissatisfied experience when learning online. Then, we explored their online engagement based on their descriptions. As indicated by their answers, most students had little web-based learning experience before the epidemic. It is obvious that a majority of the students perceived learning English online quite novel and rather relaxed. By conducting in-depth analysis on their response to open-ended question, several categories of their online engagement were revealed.

R(researcher): *What is your most satisfied English learning engagement experience during the Covid-19 pandemic?*

For the cognitive engagement, students who took their first online courses in 2020 considered it a good way for self-regulated English language learning. It's more convenient for them to get information and useful knowledge that they needed. Smart phones and the high-speed Internet connection in Guizhou also ensured their English learning online. Students can study independently at any time and any places. Students also claimed that instructors from pioneering high schools with better qualifications provided high quality online English courses.

S1: It's rather new and novel for me to have online courses. I had dreamed of studying at home or on my bed. And it had come true.

S2: It's convenient for me to take notes and review what the teacher had taught, since I can replay as many courses as I like.

S3: Web-based learning offered me more learning channels and made it faster to get knowledge and information that I needed.

S4: I can communicate with teachers directly at home online.

S5: I acquired more learning strategies through online learning.

S6: It provided me with more chances to experience other outstanding teachers' courses, and get more new knowledge.

S7: It was a way worth promoting in the future.

S8: More useful learning content were provided.

S9: I think it's better than offline courses, mainly because of the improvement of quality, quantity, teaching methods and the learning environment.

S10: Teachers prepared the courses carefully and the courses covered more relative language knowledge.

For the emotional engagement, students can enjoy a more comfortable environment without the pressure from teachers and peer students. And students found it easier and more confident to answer

questions during online courses as they would not be embarrassed or feel shameful if they didn't get the right answer.

S1: I felt less stressed than I did in offline courses. I was more relaxed and confident.

S2: I felt free.

S3: I was much happier and more interested in online learning.

For the behavioral engagement, online courses required students to accomplish all the learning tasks independently. As a result, students should be more careful and self-regulated when studying at home.

S1: It was a good chance to improve my self-regulated language learning.

S2: Studying online facilitated my self-discipline in English language learning.

S3: I can study independently without time and place constrain. Learning online was quieter and more private compared to offline courses.

S4: I listened more attentively during learning English online.

Table 2. Students' Positive Perceptions of Online Learning Engagement Experience

Categories	Sub-categories	Sample Response
Cognitive	Novelty	<i>It's rather new and novel for me to have online courses.</i>
	Convenience	<i>It's convenient for me to take notes and review what the teacher had taught.</i>
	Effectiveness	<i>More useful learning content were provided.</i>
	High-quality for knowledge acquiring	<i>I think it's better than offline courses, mainly because of the improvement of quality.</i>
	Variety for using cognitive strategies	<i>I acquired more learning strategies through online learning.</i>
Emotional	Comfort and confidence	<i>I felt less stressed than I did in offline courses. I was more relaxed and confident.</i>
	Happiness and interest	<i>I was much happier and more interested in online learning.</i>
	Freedom	<i>I felt free.</i>
Behavioral	Self-regulation	<i>It's a good chance to improve my self-regulated language learning.</i>
	Independence	<i>I can study independently without time and place constrain.</i>
	Concentration	<i>I listened more attentively during learning English online.</i>

In a word, students generally had positive perceptions towards their online learning engagement in cognitive, emotional and behavioral aspects. Most students enjoyed the online learning courses and felt free in terms of time and place. The flexibility of online learning and the less stressful atmosphere made them feel more comfortable and relaxed. Moreover, online learning also improved their self-regulation, independence, and concentration.

4.2.2 High School Students' Negative Perceptions of Online Learning engagement

Students expected to improve their language learning in online courses, but they also had some negative perceptions of their learning engagement. More unexpectedly, some students who studied online were more likely to choose offline courses if permitted. They claimed that there were more interaction and peer co-operations in offline courses.

R(researcher): What is your most dissatisfied English learning experience during the Covid-19 pandemic?

For the cognitive engagement in online courses, some students with poor English language level found that it was not easy for them to be fully involved in the courses, on account of the relatively more difficult contents of online courses. In addition, students found it was a big challenge for them to apply what the teacher had taught, although students thought they had understood the learning contents. They

considered it inconvenient to hand in assignments and hard to get timely feedback from the teachers. Moreover, poor Internet connections or network jams also added to the negative perceptions of students.

S1: The content was difficult for me.

S2: I can understand what I had learned in class, but it seemed rather difficult for application.

S3: It's not convenient for us to hand in assignments through the Internet.

S4: In the online courses, there's no time for students to think deeply and independently.

S5: I can't follow the teachers as they spoke English during the whole class.

S6: The network was not always smooth and the software sometimes cannot be connected.

S7: I wished to watch online courses with high resolution.

S8: I needed to do a lot of note. As a result, I missed some important points.

For the emotional engagement, students whose English proficiency was relatively low felt less enjoyable to be involved in online courses.

S1: I felt happy, but anxious at the same time.

S2: I felt bored.

For the behavioral engagement, students failed to self-regulate their English language leaning well enough as the they had expected.

S1: I can't conduct self-regulated learning well.

S2: I can't concentrate on the course all the time. I always wanted to play games or do other things on my cellphone.

For the social engagement in online courses, students claimed that they had great demand of active discussions and interaction with teachers and classmates. Students highlighted the negative influence of being lack of teachers' supervision. Less self-regulated students expected to be supervised by teachers in online courses.

S1: The course lacking interaction failed to offer an authentic English language learning environment.

S2: I can't communicate with others and my teacher at any time when I had problems.

S3: Teachers didn't have a good observation of students' learning.

S4: Without the teacher's supervision, the learning outcome was not as good as I expected.

S5: I can't discuss with classmates. Learning was less active than offline courses at school.

Table 3. *Students' Negative Perceptions of Online Learning Engagement Experience*

Categories	Sub-categories	Sample Response
Cognitive	Difficulty in content	<i>The content was difficult for me.</i>
	Difficulty in application	<i>I can understand what I had learned in class, but it seemed rather difficult for application.</i>
	Inconvenience	<i>It's not convenient for us to hand in assignments through the Internet.</i>
	Fast pace of teaching	<i>I can't follow the teachers as they spoke English during the whole class.</i>
Emotional	Anxiety	<i>I felt happy, but anxious at the same time.</i>
	Boredom	<i>I felt bored.</i>
Behavioral	Poor self-regulation	<i>I can't conduct self-regulated learning well.</i>
Social	Poor interaction	<i>The course lacking interaction failed to offer an authentic English language learning environment.</i>
	Poor supervision	<i>Without the teacher's supervision, the learning outcome was not as good as I expected.</i>

Inactiveness	<i>I can't discuss with classmates. Learning was less active than at school.</i>
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Students claimed their great demand for interaction and supervision from instructors in online courses. And online courses lacking interaction and supervision can't meet students' expectations. It seemed difficult to organize synchronous and immediate interaction as the online courses were recorded ahead of time. In addition, students tended to be poor self-regulated during online learning, thus, better management and instructions from schools and teachers during online courses seemed to be of great significance to improve students' learning.

5. Discussion

5.1 High school students' online engagement

In this inquiry, the OELE survey was developed to investigate the factorial structures of high school students' online engagement of their English language learning during the Covid-19 pandemic. The findings through exploratory factor analysis indicated that learners' engagement of learning English in the online environment included four factors, namely cognitive engagement, behavioral engagement, emotional engagement, and social engagement. The instrument displayed similar factor structures as revealed by former studies which supported learner engagement as a multidimensional construct (Reschly & Christenson, 2012; Wang & Degol, 2014), and it showed satisfactory alpha reliability. The instrument validated in this research could assist instructors and researchers to gain an overall understanding of learners' online engagement of learning English.

The results of this study demonstrated that learner engagement consisted of four theoretically distinct dimensions, and did not support recent research to regard learner engagement as a continuum (Sinatra et al, 2015). The multidimensional perspective of learner engagement provided a richer characterization of how learners behave, think, feel, and socialize with others during online learning, rather than exploring each of the dimensions separately (Wang et al., 2016). In this study, learners generally had positive engagement in learning English in the online environment.

5.2 High school students' perceptions of online engagement

Both quantitative and qualitative results indicated that online course during the Covid-19 pandemic generally met students' expectations. A majority of the students enjoyed online courses as it provided them with independent learning experience without time and place constrain. The flexibility and the less stressful atmosphere can be considered as the positive aspects of online courses. However, students from less developed areas with poor Internet connections and low information literacy, or those who have a poor command of English generally showed negative perceptions of online English language learning. This may be due to their lack of appropriate training for online learning.

Therefore, more personalized and well-planned online courses, including more interaction and specific instructions were expected by most of the students. Accordingly, to engage students in online learning and improve the quality of online programs, we suggest that schools should continue to improve the curriculum content, quality, as well as construction of online teaching platforms. The instructors should make use of various strategies to facilitate learning and actively engage students in online courses. High school students should improve their adaptability to new media learning, develop good learning habits, and improve their independent learning ability.

6. Conclusion

This study investigated students' online engagement during the Covid-19 pandemic. Quantitative results indicated that learners' engagement of learning English in the online environment included four factors, namely cognitive engagement, behavioral engagement, emotional engagement, and social engagement. Findings through qualitative research suggested that most learners generally had positive engagement in learning in the online environment. Students had positive perceptions of online learning engagement in cognitive, behavioral and emotional aspects. And the flexibility and the less stressful atmosphere made them feel more comfortable and relaxed. Moreover, online learning also improved their self-regulation, independence, and concentration. Negative perceptions were described in cognitive, emotional, behavioral and social aspects. Students mostly claimed their great demand of interaction and supervision from instructors in online courses. And the lack of interaction and supervision led to the reduced positive effect of online courses on English language teaching. In addition, online management was also an important factor affecting high school students' online engagement. This study also showed the significance of reinterpreting students' online engagement in less developed areas, which can be a significant prerequisite for online language learning. A further study can be conducted to explore the structural relations among the different dimensions of students' online engagement to facilitate students' online learning in ethnic minority regions in the future.

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