

# **Challenges and Improvements for Online Teaching and Learning by Covid-19: An Observation Case Study**

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**Abstract:**

Currently, the pandemic Covid-19 has spread all over the world, and affected various sectors including education. Based on the information processing theory and the constructive learning theory, the online class conditions have been observed and discussed. Challenges related to the online education by Covid-19 have been discussed. Four strategies of improving the online teaching and learning have been raised based on the challenges encountered by teachers and students. Firstly, participants of the English course should make the regulations together. Secondly, less professional knowledge should be involved in the basic language courses. Thirdly, more opportunities should be provided to learners in the task-oriented projects. Lastly, examples in daily life should also be provided in the teaching process. Those effective strategies put teachers, students and class assistants in the integrity, which facilitates the the online teaching and learning by Covid-19.

**Keywords:** Covid-19, online education, challenges, strategies

The pandemic Covid-19 has stricked the world since 2019, and many people have been seriously affected, which has brought piles of obstacles to various sectors including education. Many measures have been taken by governments to overcome the challenges caused by Covid-19, such as the lock-downs of cities and the closure of institutes. According to the reports of the United Nations Educational, Scientific and Cultural Organization (2021), People from approximately 80% regions around the world have been influenced by the policies of the closure of schools. The education closure has caused many problems including “interrupted learning”, “nutrition”, “unequal access to digital learning portals”, “increased pressure on schools and school system that remain open”, and “social isolation” (Onyema et al., 2020). Due to the guarantee of child’s education, it is quite necessary for people to design effective pedagogical strategies. Meanwhile, many e-equipments have been applied to the field of education with the requirements of educational evolution, and the online teaching has become one of the characteristics of the modern education (Wu Juan, 2020). The online education requires students and teachers to own the skills of using the equipment and apps.

The needs of the distance education and the development of information technology contribute to the online education. However, many challenges caused by the distance education have been revealed. For example, the maintaining of internet and the design of pedagogical plans can affect the results of online teaching.

This paper tries to illustrate the challenges of the online education under the influence of the epidemic with the methods of observing the online course *English Language Skills*, and to further raise effective pedagogical strategies of teaching English in China. There are significances for this research. Firstly, it generalizes the results and challenges of online

teaching practices, which provides experiences for the participants of the online education. What is more, it further contributes to the adjustments and improvements of the methods of teaching and learning. Participants can know clearly about the characteristics of the online education and the key stages of online teaching, which makes them choose proper strategies to achieve better results.

## **1. Literature Review**

Based on the discussion of the background information, this section mainly focuses on the three following aspects including “the perception and mode of online education”, “information processing theory” and “constructive learning theory”.

### **1.1. Online Education**

“online education” functions magnificently during the period of pandemic, and it is necessary to define the online education that includes the online teaching and online learning. The concepts of the “online education” have been discussed in many researches. Online learning is described by most authors as access to learning experiences via the use of some technology (Moor et al., 2010). what is more, In the higher education context, the phrase online learning is often interpreted as referencing courses that are offered completely online (Graham et al., 2006; Grawford et al., 2014; Ryan et al., 2016).

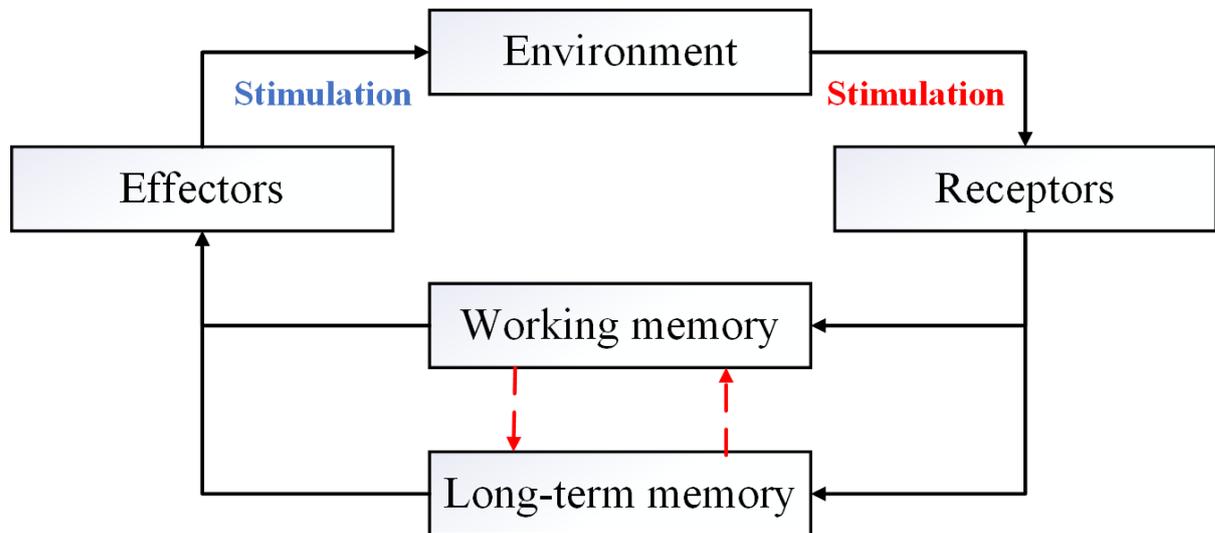
According to the definitions in previous researches, the elements of online education can be identified, and it includes three aspects of “use of technology”, “synchronous or asynchronous time elements”, and “synchronous terms and overlapping concepts” (Singh & Thurman, 2019). As for the specific teaching conditions of the English classes in the observed case, the “online education” can be defined as a new form of education which uses the information technologies to make students, class assistants, and teachers communicate synchronously.

Based on the definition of the “online education”, the “information processing theory” and “constructive learning theory” can be used to describe the process and the mode of synchronous communication between teachers, class assistants and students.

### **1.2. Information Processing Theory**

The information processing theory was raised by Robert Gagné in 1970s, and it describes the inner processing structure when the receivers get the stimulation from the hearers, which was modified from the encoding and decoding process of computer system. People receive the stimulation from the environment and the receptors begin to do the registration for the simulation, which can gradually form the working memory or even the long-term memory through the repetition and reacting. The stimulation generated from not only the working memory but also the long-term memory can go further into the effector which leads to taking

behaviors according to the received stimulation. The whole process of information processing system has also been presented in figure 1.



**Figure 1. Information processing theory adapted from Gagné (1999)**

Based on the information processing theory, Gagné (1970) further proposed four phases of a learning sequence based on the stimulus-response mode. The learning process consists of four phrases of “the apprehending phase”, “the acquisition phase”, “the storage phase”, and “the retrieval phase”. “The apprehending phase is concerned with the events that register the stimulus situation for the learner and includes attending, perceiving, and coding” (Gagné, 1970: 73). “the acquisition phase” have discussed the different stages of acquisition, and it can be described as: “The next phase, which is learning in its narrowest sense, is acquisition. Before this specific event occurs, it can be demonstrated that the individual cannot do some particular performance. After the event, even very immediately after it, one can observe that the same individual can execute the performance. This is the first indication that a new capability has been acquired” (Gagné, 1970: 73-74). “the storage phase” is the period of learning after acquisition. When people have perceived the information or acquired the capability, this ability should be retained. “the change that has been brought about by the event of acquisition now becomes retained, over a period that might be a few minutes or a lifetime” (Gagné, 1970: 74)..

Therefore, according to the time period of learning and retraining, the results of acquisition can be further developed into two aspects including “the short-term memory” and “the long-term memory”. “the retrieval phase” describes the retrieving process when the individuals prefer to present what they have learned, and the retrieval information is mostly in a disorganized way. “it reminds the readers of a variety of events originally learned in

different contexts. Deliberate retrieval may be undertaken by the individual when he needs the learned items in solving some current problem, or when he is asked some question related to objective information” (Gagné, 1970: 76).

Therefore, the information processing theory illustrates the stimulation-response structure and four phases of acquisition, and it requires people to consider about the effective strategies of improving the results of acquisition.

### **1.3. Constructive Learning Theory**

The constructive learning theory believes that students should be the center of the teaching process, and the subject of cognition. Learners should form their own comprehension and knowledge based on their private experience with the guide of teachers’ instructions. The knowledge is used to construct the meanings and explanations of the facts (Xu & Shi, 2018; He, 2020). According to the explanation of the constructive learning theory, four key elements in the constructive learning including the context, the communication, the cooperation and the constructive learning are mentioned above (He, 2020).

The learning process of new knowledge is regarded as the constructive process of meanings. The constructive learning theory exactly distinguishes the different roles of learner and instructors, and it has been adopted various fields including education, Therefore, teachers should give effective instructions to their students for helping them to form the context and meanings. During the process of learning, students should also focus on the construction of meanings based on the instructions given by their teachers, which helps them to analyze and solve the problems effectively in the learning process.

With the development of new technology and the negative influence of the pandemic on the traditional education, the online education should be mentioned and emphasized in the modern education system. However, those two theories have mainly concentrated on the traditional education system. It is necessary for people to analyze the challenges of the online education by the Covid-19 based on the learning and teaching process raised by the information processing theory and constructive learning theory. Therefore, this paper focuses on the conditions and situation of the online education influenced by the Covid-19, and tries to propose effective strategies of learning and teaching according to the challenges discussed through the observation of the college English class.

## **2. Methodology**

The background information and research bases have been discussed in the previous sections. In the methodology section, teaching conditions participants, observer, research design and methods will be mentioned.

## 2.1. Teaching Conditions

After the breakout of pandemic and the lockdown of Xi'an city, a famous university in China (anonymous as required, and replacing its name as "N") has launched the plan of the online teaching. Many apps such as *Tencent Meeting* and *Rain Classroom* have been adopted to the online teaching. Tencent Meeting is an application that makes students and teachers see each other and communicate simultaneously, and it is regarded as the main teaching platform for *English Language Skills*. There are three foreign English teachers in the teaching team, and they have designed the teaching plans before each semester. In the teaching environment, class assistants and students are in the classroom, and the foreign English teachers attend the class online. Teachers and class assistants should log in the meeting before the class, and test the equipments. During the course, students attend the class offline with the class assistant. Teachers can share their screen and voice with students, and the work sheets can also be shared via We-com. This technique is to ensure the smooth and effective communication between the senders and receivers, and to achieve the teaching goals. After the class, students should finish homework and the pre-class tasks for the next lecture.

## 2.2. Observer

The author is the postgraduate at the second year for Applied Linguistics, and one of the class assistants for N. The observer for this research is the author. The author has observed the English class for approximately 380 hours. The lectures' schedule and materials have been shared before the class. Therefore, the observers know clearly about the arrangements for each lectures. Meanwhile, the observer is in the classroom with students, and monitors the learning process of the English class. The experiences of observing and monitoring the English class ensure that the generalized information of the online learning can represent the general situation of the online courses.

## 2.3. Participants

The participants in this research are 121 freshmen who have been observed in the classroom within three semesters. The author observes two classes each semester, and each class has on average 20 students. Students have been successfully admitted into N, and their English proficiency is at B1 to B2 level according to the European language standard after the Chinese College Entrance Examination, which ensures that the students in these classes have enough capability of attending the English courses with Chinese class assistants.

## 2.4. Research Design

The author of this research tries to investigate the results and challenges encountered in the proceeding of the online learning, and to provide effective strategies of teaching and learning. Therefore, the author has observed three semesters' English classes as the class

assistants. The responsibilities of class assistants consist of the register before the class, the internet connection during the class, the testing of the class platform, the necessary consecutive interpretation and the monitoring in the classroom. For one thing, the results of the online learning are analyzed through the observation and description. The challenges of the distance teaching can also be generalized from the results of teaching. For another thing, effective strategies of teaching and learning can be proposed according to the challenges.

### **2.5. Research Methods**

There are mainly three research methods in the research process. First, literature review have been adopted. This research consists of a key concept “the online learning and teaching”, and two research bases “information processing theory” and “constructive learning theory”. Second, the observation-oriented method was used. The English courses need to be observed by the author, which contributes to generalizing the situation of the online education. Besides, the observer also invites one of the participants to do the interview about the outcomes of the online English teaching, which proves the challenges and strategies of online teaching and learning.

### **3. Findings and Discussion**

According to four phrases in the information processing theory and two main subjects of instructors and learners in the constructive learning theory, the challenges of online education are discussed in this section.

Firstly, students can hardly focus on the contents of teaching. Because they can use the electronic devices and discuss with others, it is difficult for them to concentrate on their class. When monitoring students, they talked about the contents that are not related to the contents of teaching, and played e-games. The foreign teachers did not know what student were doing, and just continued to start new contents. Therefore, the students in the classroom cannot receive enough stimulation, and they are hardly to generate the working memory during the class.

Secondly, the contents are too professional for students to fully understand sometimes. Students in N are non-native speakers and they can hardly understand the professional vocabularies in the teaching process. They need to check the English dictionary for ensuring the meanings of the topic, which also makes their encoding system disordered in the learning process.

Thirdly, Students cannot transform the working memory into the long-term memory effectively. The courses are task-oriented, and each semester focuses on single language skill such as public speaking, academic writing, and presentation delivery. However, students just have practices the language skills at the end of semester, which makes students have less chances to practice and retrain more. It is difficult for them to move from the stage of just

memorizing the knowledge to the stage of the long-term memory if they lack enough opportunities to practice these skills.

Fourthly, Students cannot to adopt skills what they have learned in the English class. The teaching contents are mostly designed according to their majors including the polymer science and material science which students are quite unfamiliar with, and students cannot get touch with those knowledge in their daily life. The contents may cause misunderstandings about the students' perceiving about the practiced skills in the class.

The internet connection also causes some problems including misunderstanding and losing key information. The challenges mentioned above have also been proved by the interview with the students. Therefore, strategies are also required to improve the results of the online English teaching.

Based on the discussion of the challenges mentioned above, four effective strategies can be proposed in this section. Firstly, foreign teachers and class assistants can make rules with students at the beginning of each semester, so different roles in the classroom can know clearly about their responsibilities and students become the center of the teaching process. For example, teachers can tell students directly that they cannot use the cell phone unless they are required, and class assistants should remind students of concentrating on the contents. Those regulations are made by different roles, which ensures that all people in the classroom can obey the rules by themselves. The regulations helps people in the classroom to form the awareness of respecting others and follow the course arrangements, which increases the stimulation in the environment.

What is more, teachers can design the class contents with less professional materials but more focus on the English language skills. The participants are freshmen, and they lack enough capability of perceiving the professional knowledge, which also makes students hardly catch the stimulation shared by foreign teachers in the classroom. If the teaching materials are designed for perceiving the English language skills, it is easier for students to handle the abilities, which facilitates the learning of professional knowledge. Students can also receive more stimulation through the teachers' description of professional knowledge.

Teachers can also propose more task-oriented project, which helps students to practice and present more. Through observation, A final project is provided to students at the beginning of each semester, and students will spend the whole semester to finish the project. Students lack enough opportunities to practice the language skills publicly. In the future, more tasks related to the language skills training should be designed during the semester, which can contribute to their final project presentation. The language capability can be transformed from the working memory into the long-term memory through practicing.

The last but not least, more examples in students' daily life should be adopted, which helps students to bridge the language and the real life. The examples from students' daily life can make the language skills and experiences connected, and the language skills from the

long-term memory can be smoothly adopted and used to reorganize the disordered stimulation and form the exact meanings.

As for the objective problems such as the internet connection, class assistants should contact teachers before the class. When teachers cannot log in the platform, teachers can tell the class assistants to organize the class according to the teaching plan instead of wasting time for just waiting. Those strategies can be applied to overcome the challenges mentioned above. Strategies help learners to maintain and transform the stimulation in the environment by Covid-19, and generate the meanings.

#### **4. Conclusions and Recommendations**

Online education influenced by Covid-19 has been discussed for several years, and it has been constrained by many conditions including the technical problems and the transforming of stimulation between students, teachers, and even the class assistants in this observation research. From the perspectives of the information processing theory and constructive learning theory, four effective strategies including the regulations, teaching planing, more chances of practicing, and examples from daily life are raised for improving the online education by Covid-19. This research regards teachers, students, and class assistants as the integrity of online education, which provides new perspective to analyze and design the teaching and learning schedule.

Although the challenges and strategies for online education by the Covid-19 have been mentioned above, there are still two aspects to get improved. Firstly, the author is not only the class assistant but also the class participants, which can cause missing information sometimes. Secondly, the results and strategies should be further proved by more interviews and communications with teachers and students. For future study, the observers can observe other class assistants' courses, and more teachers and students should be interviewed to prove the effectiveness of results and strategies in the research.

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