The Affordance Analysis of Teaching Chinese as a Second Language in an online Context

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Abstract:

Based on the theory of affordance and empirical research, this study analyzes the good affordances of online Chinese as a second language (CSL) teaching via the software of VooV Meeting and Wechat which are not restricted by time and space, rich learning resources, online recording courses, increase participation methods, real-time learning feedback, synchronization and group guidance, learning task management, and improved learning efficiency. On the other hand, online CSL teaching via the software of VooV Meeting and Wechat also has the following bad affordances, such as issues of jet lag, lack of learning evaluation tools, lack of communication with school administrators, lack of financial support, and lack of a target language learning environment. This research proposes solutions for improving online learning outcome, namely constructing a complete online management system for learners of CSL, construct a psychological counseling system for learners of CSL and create a technical support system for online CSL teaching.

Keywords: *Teaching Chinese as a second language, Online context, Affordance analysis.*

I. INTRODUCTION

With the updating and development of science and technology, information technology-assisted language learning has become an inevitable trend. In a technology-assisted language learning environment, the new teaching mode is largely driven by tools as well as new functional support and rich intelligent learning environment[1].The application of technology makes language teaching not restricted by time and space and changes the ecology of language learning. This change also extends to the field of research, where more and more scholars are using affordance as an analytical structure for online language learning.

Kordt (2016) illustrates the relationship between the theory of affordance and multilingual learning and teaching[2]. Woydack and Lockwood (2020) reveals how a multilingual call centre in London helps learners with language acquisition[3]. Xue (2020) discusses the concept model of integrating the affordance of mobile technology into task-based language teaching and makes teaching design[4]. Thus,

the affordance of technical tools in language learning is becoming a heated topic in academic research.

With the development of international Chinese language education, more and more people begin to learn Chinese. However, due to the COVID-19 outbreak, international Chinese language education is currently transitioned to online teaching, which has accelerated the development of online Chinese as a second language (CSL) teaching.

In fact, online Chinese as a second language teaching is still in its nascent stage, and there are still many problems. This study focuses on students, analyzes the affordances of online Chinese as a second language teaching from the perspective of students' needs, and proposes relevant strategies. This study attempts to answer the following research questions:

1. What are the good affordances of teaching CSL in an online context?
2. What are the bad affordances of teaching CSL in an online context?
3. How to improve learning outcome of teaching CSL in an online context?

II. MATERIALS AND METHODS

2.1 Theoretical Review

Gibson (1979) first coined the concept affordance and proposed that "the affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill"[5].This definition mainly from the perspective of ecological psychology which reveals the interactive relationship between organisms and the environment. Although Gibson put forward the concept of affordance, its definition was vague. Greeno (1994) pointed out that people were troubled by Gibson's definition of the term affordance[6]. For example, does a chair's affordance mean that the chair can provide the properties of being sat on, the characteristics of the person sitting on it, or people's perception of being able to sit on the chair? Based on this, many scholars have explained and deepened "what is affordance", and further developed and improved the theory of affordance.

Gibson's concept of affordance was intended to explain the relationship between organisms and the environment, but he also mentioned the conversion of parts of matter into artifacts in the natural environment. In other words, artifacts have the same ecological basis as nature, which provides a theoretical basis for the application of the theory of affordance in artificial intelligence, engineering design, and environmental design. In 1988, Norman, a cognitive psychologist, first introduced affordance from ecological psychology to the field of design. He defined affordance as the real attributes of things that can be perceived, especially those basic attributes that determined the preset purpose of things[7]. For example, a pen can provide the property of writing, and a cup has the property of holding water. In 2013, Norman gave a clearer definition of affordance which was the relationship between the characteristics of something and the ability of the subject to determine its intended purpose[8].

In contrast to Gibson's definition of affordance, Norman (1999) mentioned that Gibson focused on the relationship between environment and organisms, while he focused on processing mechanisms[9]. Gibson considered affordance to be the possibility of behavior itself, while Norman's affordance referred to both the possibility of behavior and the way in which the possibility of behavior was conveyed or presented to the actor. In addition, their different definitions were also related to their different focus. Gibson focused on how people perceive their environment. Both humans and animals can control the environment, but how they control it is not his concern. Affordance is independent of people's experience and culture. Norman, on the other hand, focused on the control and design environment. Affordance is related to people's past knowledge and experience, and even depends on the ability, knowledge, experience and culture of the action subject. For example, for young people, smart phones can provide a variety of functions, such as making calls, video chatting, sending emails, playing games, etc., Whereas for the elderly who do not know how to use application software, smart phones can only provide functions of making calls or sending messages. Therefore, Norman paid attention to people's perception of the environment, and different people have different perceptions of the affordance of the same thing. He especially mentioned the term "user experience", and believed that the most ideal situation of design is that the product is pleasant and desirable. This means that design should not only meet the requirements of engineering, creation and human-computer interaction, but also pay attention to the overall experience of users, whose needs and interests should run through the whole design process.

In the design world, affordance is often used to describe how an artifact delivers its performance to the user. Gaver (1991) used the concept of affordance to reveal the advantages and disadvantages of technology[10]. In his opinion, affordance is a special configuration of attributes, which means that the physical attributes of the thing being performed can be compatible with the subject of the behavior. In other words, the information of the attributes of the thing being performed can be compatible with the perceptual system, while these attributes and the possible actions are not independent. They are relevant to culture and perceiver and thus can be used to guide user-centered technological product design. This is consistent with Norman.

Affordance exists not only in the behavior of individuals, but also in social interactions. Actually, the use of technical tools can greatly increase the amount of information acquired. Gaver (1996) applied the concept of affordance to describe how technological tools affect human social interactions[11]. E-mail and video calling, for example, allow people to collaborate and interact. McGrenere & Ho (2000) pointed out that in the interaction, the more information obtained, the stronger the degree of affordance[12].
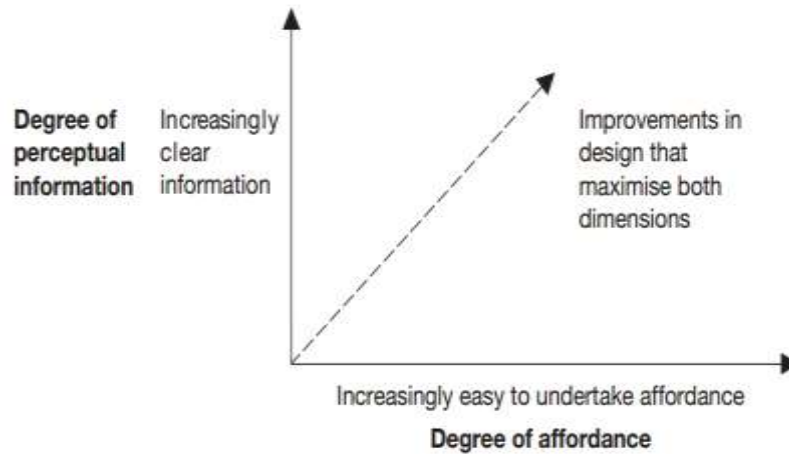
Fig 1: Representing the affordance and the information that specifies the affordance on a continuum.
(McGrenere & Ho，2000)

Hartson (2003) specified four categories of affordance: cognitive affordance, physical affordance, perceptual affordance and functional affordance[13]. Such specific refinement is conducive to the use and evaluation of human-computer interaction products. Hoven(2007) discussed the affordance of technology from the process of forming teacher education experience for students majoring in education[14]. In his research, affordance means that individual learners perceive the features and potential uses provided by software tools, while the potential applications and uses of software tools perceived by different learners are different. These studies and practices make the concept of affordance more practical and easier to be accepted. Liaw, Hatala & Huang(2010) discussed the affordance of mobile systems: support personalized learning; provide seamless interactive activities; cultivate cooperative learning reduce time consumption; and create mobile knowledge retrieval and acquisition[15].In the age of information technology, affordance is a topic worthy of being studied. By understanding the availability of a certain technology or tool, it helps to improve the effect of using the technology or tool.

The development of affordance in the field of design reflects that ecological logic not only exists in the process of human cognition and understanding of the world, but also brings real changes to human social and cultural life and becomes a tool for human to transform the world. This ecological logic is based on Gibson's discussion of the relationship between man and world activities, and is further deepened. Its biggest breakthrough lies in affirmation of the important role that knowledge, experience and ability of the subject of behavior play in the occurrence of affordance, which lays a solid foundation for the design of artifacts to be centered on the needs and interests of perceiver (user). At the same time, it also brings us a new inspiration: in addition to the real objects that can be seen, when people design a certain scheme, mode, system and other codes of conduct, also get the optimal effect.

If CSL teaching in an online context is compared to some kind of product, the individual learning experience of students becomes very important. This study will analyze the affordance of online teaching of CSL from a student-centered perspective.

2.2 Participants and study context

In order to deeply grasp the connotation of online CSL teaching, we conducted semi-structured interviews based on literature review. Semi-structured interviews can help us reveal research issues in greater depth. Through purpose sampling, we interviewed 40 online learners of CSL, including both undergraduates and postgraduates. They come from 14 different countries and they learned Chinese through the software of VooV Meeting and Wechat. The interview time for each person was about 15 minutes, and the total interview time was about 10 hours. Interview questions included: "What do you think the good affordances of online Chinese teaching are through Voov meeting and Wechat?",;"What do you think the bad affordances of online Chinese teaching are through Voov meeting and Wechat?", "What do you think should be used to improve the outcome of online Chinese teaching". Then, we transcribed the recording content, and then we sorted the transcribed text through qualitative content analysis. In the process of content analysis, we used research questions and literature reviews to summarize the topics of the interviews and build codes. Due to space limitations, we reported the basic information of 14 interviewees from different countries.

TABLE 1. Participants' profiles

Note: All the names are pseudonyms.

NO	Name	Gender	Age	Education	Nationality
1	Chen Xiao	Female	19	Undergraduate	Mongolia
2	Zhang Hong	Female	18	Undergraduate	Turkey
3	Chen Lu	Female	18	Undergraduate	Vietnam
4	Ma Jiao	Female	19	Undergraduate	Philippines
5	Zhu Ming	Female	20	Undergraduate	Laos
6	Yang Chao	Male	19	Undergraduate	Sudan
7	Chen Tian	Male	19	Undergraduate	Tajikistan
8	Cai Juan	Female	25	Postgraduate	Ukraine
9	Zeng Yue	Female	26	Postgraduate	Russia
10	Wang Wei	Male	25	Postgraduate	Nigeria
11	Yuan Ming	Female	25	Postgraduate	Madagascar
12	Zhang Fei	Male	26	Postgraduate	Kazakhstan
13	Huang Na	Female	24	Postgraduate	Myanmar
14	Zhang Chi	Male	24	Postgraduate	Thailand

III. FINDINGS

In Gibson's view, the concept of affordance has both good and bad. It means that there are both good and bad affordance in online CSL teaching. In this study we interviewed 40 students who learned Chinese via the software of VooV Meeting and Wechat from 14 different countries. Then we used NVivo software to analyze and code the text data to obtain the good and bad affordances of teaching CSL in an online context from the perspective of learners. VooV Meeting has the function of live teaching, while Wechat has the function of real-time communication and sending and receiving homework. The combination of these two softwares can meet the learning needs of CSL learners to a greater extent.

3.1 Good affordances

3.1.1 Affordance 1: Not limited by time and space

The learning method of using the software of VooV Meeting and Wechat to learn Chinese is not limited by time and space. For example, no matter which country you are in, learners of CSL can obtain learning materials at any time and any place; carry out effective interaction and cooperation; realize mobile learning and even all-weather learning; and create a seamless learning atmosphere to meet different learning needs. The subjects of this study came from different countries and different time zones, but they could all learn Chinese on the platform built by the software of VooV Meeting and Wechat regardless of time and space.

3.1.2 Affordance 2: Rich learning resources

In the process of learning CSL, learners need to obtain effective learning resources as much as possible. The more sufficient the learning resources, the better the learning effects.

The learning method of using the software of VooV Meeting and Wechat to study Chinese can greatly enrich the learning resources. Students from different countries learn through the Internet. Teachers provide a lot of learning resources on the Internet, which greatly expands the depth and breadth of learning resources. It is helpful for students to obtain learning materials. In addition, learners can also construct, integrate and transmit these information to realize the sharing and optimal configuration of learning resources.

3.1.3Affordance 3: Online recording of courses

Online CSL learning can realize the effective recording and collection of data without affecting the learning process. Through the recording function of VooV Meeting, it can help learners to capture effective learning images and audio materials in time, making it possible to record learning. In this way, learners can review the learning process and review, thus helping them achieve better learning effects.

3.1.4 Increased participation

Online learning provides a new way to participate in the learning activities of teachers and students. For example, teachers and students can post homework and recycle homework through the WeChat platform for instant communication and exchange, while real-time online courses can be conducted through the VooV Meeting platform. This greatly expands the way students participate in learning and makes learning no longer limited to a single way of participation.

3.1.5. Real-time learning feedback

Online CSL learning can help teachers obtain real-time learning feedback from students without affecting the learning process. For example, in class, introverted students tend to ask fewer questions, which makes it difficult to understand their learning effects. Online environment enables students to

upload their own questions via the software of VooV Meeting and Wechat , without interrupting normal teaching activities, and teachers can sort out and answer students' learning feedback after class.

3.1.6. Synchronization and group guidance

Online CSL learning can provide students with synchronized guidance. Compared with traditional teaching, with the help of the software of VooV Meeting and Wechat, teachers' guidance and supervision do not need to occur in the classroom, and the effect of classroom guidance can also be achieved. Teachers can provide students with synchronization and group guidance that is within close proximity to the real situation, which enhances students' learning confidence to a certain extent and helps improve learning effects.

3.1.7. Learning task management

Learning tasks need to be planned in advance and effectively organized and managed. The calendar, notepad, reminder and other management applications of the network platform can help learners of CSL to effectively manage their time, organize and plan future learning activities, and establish personalized information management. For example, there are multiple task management softwares through Wechat to facilitate the learning and life management of learners.

3.1.8. Improved learning efficiency

A major contribution of online learning to CSL learner is to improve learning efficiency and achieve a multiplier effect with half the effort. With the software of VooV Meeting and Wechat, students can obtain learning information anytime, anywhere, communicate with teachers and classmates online, quickly get effective guidance, and even get a real learning experience without leaving home. These are to a large extent improve the learning efficiency.

3.2 Bad affordances

3.2.1. The issue of jet lag

As the students come from different countries, there is a serious jet lag problem. There is no way to solve the jet lag problem in the live course. For example, some students from Africa and Asia have a time difference of five or six hours, which is not conducive to students' learning status and brings students a bad learning experience.

3.2.2. Lack of learning assessment tools

Learning assessment is an important means to test learners' learning effects. Online CSL teaching should be able to track the learning process of learners and play an auxiliary role in learning assessment. Both teachers and learners themselves can evaluate their learning effects through the relevant data collected by online learning reflecting learners' knowledge construction, emotional state, and communicative interaction, making learning evaluation methods more diversified and three-dimensional. However, the current combination of VooV Meeting and Wechat is difficult to meet the assessment requirements.

3.2.3. Lack of contact with school administrators

Because study online, students do not study in school, and lack the possibility of contacting school administrators, library managers, etc., which reduces students' learning experience, and even many schools' policies, such as scholarship policies, cannot be implemented in place. Medical insurance policies, graduation regulations, etc., need to be explained effectively with students.

3.2.4. Lack of financial support

This is an additional influence of online CSL teaching. Many students, especially graduate students, have to work in the real world and study online at the same time, which consumes a lot of students' energy, which will inevitably have a negative impact on their study.

3.2.5 Lack of a real target language learning environment

Since online learning has lasted for nearly two years, the lack of Chinese as a target language learning environment for second language learning is not conducive to Chinese learning. There are even some students who are psychologically worried and anxious, worrying that they will not be able to come to China to study, experience Chinese culture, and lack a sense of belonging and identity until graduation. As the learners in China, as the number of CSL learner in China has been declining, they also have more or less negative emotions such as anxiety.

IV. DISCUSSION

Based on the above research results, on the basis of literature review and interviews, this research suggests that the following methods can be used to increase the good affordances of online CSL teaching, avoid bad affordances, and ultimately improve students' learning outcome.

4.1 Construct a complete online management system for learners of CSL.

One way is to update the information of online Chinese learners in a timely manner. In view of the fact that students are in different countries, learners' personal electronic files should be established, and basic information such as their countries, cit, and learning situations should be comprehensively sorted and updated in a timely manner to provide important support for the teaching and management of online Chinese learners. The second method is to establish a scientific and reasonable management service system for Chinese learners. Taking students as the center, establish a management service system for learners of CSL in terms of enrollment, application for scholarships and grants, accommodation guarantee, education and teaching, library information services, employment guidance, medical insurance, etc., and conduct regular satisfaction surveys. Learning about the needs and suggestions of international students should be in a timely manner.

4.2 Construct a psychological counseling system for learners of CSL.

On the one hand, it is important to do a good job of psychological counseling for learners of CSLin China. Actively arrange extracurricular activities that are entertaining , strengthen exchanges between students, and set up a psychological assistance hotline for anti-epidemic assistance to help students overcome loneliness and anxiety, and better understand and experience Chinese society and life. On the other hand, we also give care and help to Chinese language learners who are still abroad. Especially in countries with severe epidemics, many students have even contracted the COVID-19 virus overseas. For them, colleges and universities should provide adequate care. For students with family difficulties and illnesses, certain subsidies will be given when necessary to guide them to maintain a positive, optimistic, rational and peaceful attitude, and strengthen their confidence in defeating the epidemic.

4.3 Create a technical support system for online Chinese as a second language teaching.

The first suggestion is to develop a multifunctional online Chinese teaching platform. In the context of the normalization of the new crown pneumonia epidemic, most of the teaching activities of overseas students are carried out on real-time live broadcast software. Although this can meet the basic teaching needs, it lacks a teaching platform with a unified overall group discussion, homework management, test evaluation and other functions, which severely limits the learning effect of online teaching. It is recommended to develop a multi-functional online teaching platform that integrates group interaction, resource upload, course recording and adaptive learning to meet the actual needs of teaching and learning. The second suggestion is to build a comprehensive database system for teaching. Chinese learners are complex and diverse, and students have different national and cultural backgrounds. A comprehensive teaching database is urgently needed as a basis for collecting resources, analyzing and evaluating, and providing personalized teaching services. Taking personalized teaching as an example, the key is to master the learning needs and learning behaviors of different learners, which requires a large database as support. It is recommended thata database system could allow educators to regularly investigate learners' learning needs, use big data technology to dynamically track their learning behavior trajectory, and build learning needs and learning behavior evaluation models through mathematical statistics algorithms to guide personalized teaching. The third one is to promote the co-construction and sharing of digital resources. Digital education resources such as electronic textbooks, micro-class videos, corpora, etc. are increasingly being favored by international students. The establishment of a digital resource sharing mechanism is not only conducive to cost control and avoiding resource imbalances, but also conducive to the unification of resource standards and achieving win-win and development.

V. CONCLUSION

Based on the results of our study, this research analyzes the affordances of online CSL teaching via Voov Meeting and Wechat through interviews with 40 learners of CSL.

The good affordances are not restricted by time and space, rich learning resources, online recording courses, increase participation methods, real-time learning feedback, synchronization and group guidance, learning task management, and improve learning efficiency. On the other hand, online CSL teaching also has the following bad affordances, such as the problem of jet lag, lack of learning evaluation tools, lack of communication with school administrators, lack of financial support, and lack of a target language learning environment.

Based on literature analysis and interviews, this research proposes solutions for improving online learning outcome, namely constructing1) a complete online management system for learners of CSL; 2) a psychological counseling system for learners of CSL; and 3) create a technical support system for online CSL teaching.

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