

A Case Study of English as Foreign Language Chinese Teachers' Use of Computer-Based Technology

Lingao Li

George Fox University, Meridian Street, Newberg, Oregon, 97132, USA

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Abstract: The purpose of this research was to explore the experiences of four Chinese university teachers of English as a Foreign Language (EFL) on the effectiveness of implementing computer-based technologies in their classes. Specifically, this case study sought to document the participants' views on 1) the types of computer-based technology used in their classes; 2) the role of computer-based educational technology in teaching EFL pedagogy; 3) the potential benefits in using computer-based instructional technologies in EFL; 4) the challenges and/or barriers to the effective use of computer-based instructional technologies in EFL instruction. Using both within case and cross-case analyses, the findings reveal a complex interwoven set of perceptions and experiences computer-based technologies and English language teaching. Seven important themes emerged: 1) the school strongly encourages the use of auxiliary educational platforms; 2) the school supports teachers with many resources; 3) computer-based technologies have impacted student learning; 4) computer-based technologies have impacted the way teachers instruct; 5) computer-based technology enhance teaching effectiveness and efficiency; 6) technical difficulties associated with computer-based technologies are challenging; and 7) the COVID- 19 pandemic forced more rapid adoption of computer-based technologies. This research is especially significant as it includes a unique set of educators in a unique educational setting, implementing emerging educational technologies.

1. Introduction

With the urgency of supporting Chinese students in obtaining English proficiency, and the need for research that explores the nature of computer-based technology use in language-learning, this qualitative study is an attempt to explore the current application of modern information technologies in English teaching and learning in Chinese higher education. The findings of this qualitative study may provide insights that will support an on-the-ground understanding of what teachers know and understand about computer-based technology use and the technologies they see as most useful [1].

It is highly possible that blending traditional learning environments with modern educational technology provide a better environment to train students' English listening and speaking abilities than a sole reliance on traditional, non-technological language learning. My intention for this

research was to achieve a deeper understanding of the current strengths, challenges and opportunities associated with computer-based technology with the hope that I might someday integrate multiple teaching methods to help Chinese students improve their English skills. Thus, four fundamental research questions guided this study:

Research Question #1

What types of computer-based technology do the participants report using in their classes?

Research Question #2

Do the participants describe the role and impact of computer-based technology in teaching EFL pedagogy?

Research Question #3

What potential benefits in using computer-based instructional technologies in EFL do the participants identify?

Research Question #4

What challenges and/or barriers to the effective use of computer-based instructional technologies in EFL instruction do the participants identify?

Due to the recent increase in the frequency of international communication in China, there is a higher standard for English, especially in speaking and listening than in the past (Johnson, 2009). Therefore, Chinese students need to improve their English communication skills by becoming familiar with the English-speaking environment more rapidly than ever. This study examined the role of computer-based technology in that endeavor [2].

Computer-based technology infuses new educational modes into traditional education and offers improvement to what can be a monotonous teaching mode, increasing student interest in the teaching process (Anderson & May, 2010). The study is important because there is a significant increase of computer-based technology in English language teaching in China. What this portends for the future remains to be discovered. This study is a step toward that discovery.

2. Literature Review

The advent of digital technologies, as Davidson and Tomic (1994) assert, have inspired innovation and rethinking of the old ways of language teaching and learning. Interestingly, some scholars even go as far to argue that the new technologies may serve as a kind of panacea for EFL teaching problems, among which are lack of relevance and motivation (Nunan, 1989; Cohen, 1993). Irrelevance and lack of motivation found in learners are indeed problems evident in most traditional EFL classes in China. However, the realization of computer-based technology's potential does not come as inevitable – instead it largely depends on in what ways and under what social-culture situations people use technology (Cabanatan, 2003).

Technology-supported teaching originated in the 1960s. The United States is the first country in the world to carry out the research and practices in Computer-Aided Instruction (CAI). Stanford University started the CAI research as early as 1963 and successfully developed the IBM1500 teaching system through cooperative work with the IBM Company in 1996. The IBM1500 teaching system has been used as the auxiliary teaching method for many courses, including the foreign language courses [3].

Since that time numerous countries have been working on educational technology over the past years. There is also a great deal of research about the effectiveness of technology-supported teaching. Chun and Plass (1996) found that students master unfamiliar words with graphic and acoustic image better and faster than words without the help of multimedia. Mathews (1997) studied the effects of interactive disk-aided teaching in reading skills. She pointed out that those students who were guided by CD-ROM tended to repeat the whole content of the text more

completely than those guided by text alone.

Given the complex context framing this study, this literature review will examine the general use of computer-based technology in Chinese education followed by a discussion on the potentialities and challenges of technology in Chinese classrooms. Finally, the review will examine the literature specifically focused on the use of computer-based technology in English language instruction and learning in Chinese schools [4].

There are numerous studies focusing on the application of technology in teaching in domestic China. Through implementing multimedia in teaching about English nations' cultures, Shi huifeng (1999) found the application of multimedia improves students' learning achievements and cultivates their interests in foreign cultures and even breaks down fear towards the English language. The findings suggest using multimedia to teach English is actually necessary since almost all the senior students related that their interest in English was made greater when multimedia was included in instruction.

The review of the literature on computer-based technology and English language learning among Chinese college students reveals a prominent theme. Namely, scholars report the reoccurring theme of autonomy. This theme is so clear that Gao (2011) reported specifically on this issue in an article entitled, "College Students' English Autonomous Learning Under Network Background." In this effort Gao states that with the development of the internet and other computer-based technology, Chinese college students are becoming more active and their academic learning more effective. In fact, Gao argues that as a result of living in an information age, autonomous learning has become the most important goal in Chinese education reform. Nevertheless, Gao argues that Chinese college students still lack autonomous learning abilities. With the popularization of various computer-based technologies, more and more students choose to take advantage of internet resources and methods to learn English. However, an ethic of autonomous learning is still in its infancy. This represents a challenge for both teachers and students.

Given the nature of the literature review, this exploratory research will need to be sensitive to the challenges and opportunities presented by autonomous learning reported by the participants. This may or may not emerge as an important aspect in their experiences. Likely the data that will serve to answer research questions #3 and #4 will provide insight on the issue of autonomous learning. Whatever the findings reveal, the literature suggests that autonomous learning and computer-based technology is important to both teachers and students[5].

3. Methods

This study involves a case study of four Chinese teachers of English as a Foreign Language in a university in Beijing, China. In order to collect the appropriate data to answer the four research questions, this study employed three data sources: personal interviews with the four participants, direct observations of their English instruction classes, and analysis of relevant site documents. However, data taken from the personal interviews contributed the largest and richest share of data. While the findings result in part from all three data sources, they particularly reflect the data from the personal interviews[6].

I used purposive sampling to recruit four Chinese EFL college teachers who have experience in using computer-based educational technology. While I conducted personal interviews with four individuals, the number of participants is not normally considered as a priority in interpretivist studies. Indeed, interpretivism is mainly concerned with "interpretation, meaning and illumination" rather than generalization and prediction (Usher, 1996, p. 18). Thus, a key aspect of the interpretive approach in education research is the centrality of the researcher and his/her own interpretation of the data as opposed to the specific instruments of data collection (Sparkes, 1992). To borrow

Sparkes's words, the researcher is herself the instrument[7].

3.1. Within-Case Findings

The within-case analysis produced extremely rich findings. These findings are organized and presented as themes unique to each participant. While some of the themes are shared across participants, many others are distinct to the specific participant and represent the unique experience of the individual. Additionally, there is no attempt here to report every type of computer-assisted technology used by each participant. The findings revealed that many of them use an extremely wide range of resources. Rather, I focus on the types of computer-assisted technologies most prominently described in their narratives[9].

3.2. Within-Case Analysis Emergent Themes

Table 1: Within-Case Analysis Emergent Themes

	May	June	July	August
Research Question #1 What types of computer-based technology do the participants report using in their classes?	The School Encourages the Use of Auxiliary Educational Platforms	The Wide Availability of Computer-Based Technologies	The School Encourages the use of an Auxiliary Educational Platform	Academic Division Fully Supports Teachers with Numerous Resources
Research Question #2 How do the participants describe the role and impact of computer-based technology in teaching EFL pedagogy?	Generally, Students Prefer Some Type of Computer-Based Technology Offers Unique Advantages Over Traditional Teaching Methods	Computer-Based Technologies Have a Great Impact on Students	Students Need to Adjust to a Variety of Instructional Modalities Need to Adopt New Teaching Methods	Computer-Based Technologies Have Made Heavy Workloads More Manageable
Research Question #3 What potential benefits in using computer-based instructional technologies in EFL do the participants identify?	The Inclusion of Computer-Based Technology is Effective for Enhancing Instruction	Computer-Based Technologies can Facilitate Writing Instruction	The Computer-Based Technology Resources and Rich and Accessible	Computer-Based Technologies Allow Greater Flexibility in Instruction
Research Question #4 What challenges and/or barriers to the effective use of computer-based instructional technologies in EFL instruction do the participants identify?	Embarrassment When Mishaps Occur with Computer-Based Technology There are Inherent Problems with Computer-Based Technologies	Challenges Associated with Students Proficiency Limitations Pose a Barrier to More Efficient Use of Computer-Based Instructional Technologies The COVID- 19 Pandemic has Created Many Challenges	Adjusting to New Instructional Methods and their Technical Difficulties Challenges Arising from the COVID- 19 Pandemic	Computer-Based Technologies Need to be Improved to Achieve Greater Effectiveness and Alleviate Student Anxiety

The study explored four research questions. The results of this study reflect data from interviews and class observations with four Chinese teachers who use computer-based technology in teaching English [10]. I engaged in a within case analysis in order to identify emergent themes for each of the four participants. That analysis revealed a total of 22 emergent themes (Table 1). I located these emergent themes as generally associated with each of the four research questions. However, I made no attempt to provide answers to those questions from the within-case analysis[11].

This within-case analysis documented the central place computer-based technologies play in the teaching methods of the participants. The participants described a wide range of different types of computer-based technologies they use, the process by which they came to use those technologies, and the opportunities and challenges they perceive [12]. Working from the within-case analysis, I have conducted a cross-case analysis to identify the prevailing themes articulated by the participants. The cross-case analysis provides answers to the four research questions.

3.3. Cross-Case Analysis and Research Questions

The cross-case analysis involved considering each of the 22 emergent themes and examining for similarities in perceptions and experiences. This analysis did not require a perfect match in the experiences and views expressed by the participants. Rather, it is sufficient that the participants described experiences or perceptions close enough that they can be reasonable considered as consisting of a general common theme (Yin, 2017). Thus, the general theme must be comprehensive enough to capture the specific nuances of the similar emergent themes. For example, only one participant, May, described feeling embarrassed when she could not readily correct technical difficulties. However, this experience is close enough to experiences described by other participants to be included in a general theme “Adjusting to New Instructional Methods and their Technical Difficulties.”

Using a cross-case analytical approach, I identified seven themes (Table 2). Two themes relate to research question one; two themes connect to research question two; only one theme is associated with research question three, and finally, two themes link to research question four.

Table 2: Cross-Case Analysis Themes

Research Question	Theme
<p>Research Question #1 What types of computer-based technology do the participants report using in their classes?</p>	<p>Theme 1: The School Encourages the Use of Auxiliary Educational Platform Theme 2: The School Supports Teachers with Lots of Resources</p>
<p>Research Question #2 How do the participants describe the role and impact of computer-based technology in teaching EFL pedagogy?</p>	<p>Theme 3: Computer-Based Technologies have Impacted Student Learning Theme 4: Computer-Based Technologies have Impacted the Way Teachers Instruct</p>
<p>Research Question #3 What potential benefits in using computer-based instructional technologies in EFL do the participants identify?</p>	<p>Theme 5: Computer-Based Technology Enhance Teaching Effectiveness and Efficiency</p>
<p>Research Question #4 What challenges and/or barriers to the effective use of computer-based instructional technologies in EFL instruction do the participants identify?</p>	<p>Theme 6: Technical Difficulties Associated with Computer- Based Technologies are Challenging Theme 7: The COVID- 19 Pandemic Forced More Rapid Adoption of Computer- Based Technologies</p>

4. Implications for Scholarship

Computer-based technology can assist students to gain the ability to carry out effective learning

activities in the acquisition of a language. Advances in computer networks have expanded computer-mediated communication, enabling students to be exposed a new language in ways that were never possible in previous years (Kern et al., 2008). Moreover, interaction is an essential requirement to acquire a new language. Most educational technology scholars believe that computer technology helps to create an environment that promotes student participation and creates a real environment for interaction and meaningful negotiation when learning English[13]. The results of this research, at least in the estimation of the four participants, support this assertion. The participants focused on the way the various computer-assisted technologies that they and their colleagues use assist in just the way scholars suggest[14].

Computer-based technology makes it easy for EFL teachers to offer personalized instruction. Computer-based technologies have been used to provide standalone programming applications, such as tutorials, exercises, simulations, educational games, test exercises, and more. In the current context, Web-based language learning has also received great attention.

(Abunowara, 2016). Web-based language learning refers to the use of interconnected computers on a network. The participants in this study described either employing these types of methods or recognizing the need to move in that direction[15].

Recent scholarship has focused on the value of using computer-mediated communication as a tool to facilitate language learning. For instance, Kalanzadeh et al. (2014) reported on the relationship between attention and text-based motivational discussion among students. It has also been demonstrated that computer-based technologies can facilitate dialogue and interaction for language learning. Kim and Rissel (2008) report that the educational process is greatly influenced by teachers' role in language teaching as well as the interaction between teacher and students in computer-based language teaching. The participants in this study recognized this dynamic too and worked to create positive learning experiences for their students when using computer-based technologies.

5. Implications for Educational Practice

There has been a major shift in the use of computer-based technology in EFL classroom settings. While students are responsible for their own learning, educators play an important role by guiding their educational process. The greater use of computer-based technologies has many potential benefits including greater independence among students. In such scenarios, where students play an important role in their own educational growth, students can develop a "learn-to-learn" approach that emphasizes specific abilities to face real-world learning situations[16]. As a result, students must be prepared to use, expand and process information in a variety of environments that respond to their interests and needs. In this active knowledge-building process, students will need to be supported by computer skills which provide the opportunity to develop the capacity to ask questions, rather than merely seeking answers. This helps stimulate exploration and discovery.

Students also become the organizers of their own courses, as they have to make more instructional decisions when using computer-based technology. Advances in computer-based technologies offer the potential to gain specific language skills[17]. Combining more traditional teaching methods with computer-based technologies in particular improve the learning environment (Sadeghi & Dousti, 2014).

A promising development for education is the combination of several technical mediums to serve language teachers. This has led to the development of multimedia applications through computer programming. Current computer-based technologies combine all or some of these elements into a single application. Focusing on students' active participation not only increases their opportunities to build knowledge but also to reflect on their learning processes.

6. Suggestions for Future Research

This study examined four college EFL teachers in a university in Beijing, China. In future research, other EFL teachers from different universities and cities are recommended to be involved, which may help to delve deeper into the research questions. In addition, since the participants in this study were all female, the participation of male teachers and interns in language training institutions will improve the quality of future research. It would also be interesting to incorporate the opinions and experiences of supervisors into the study. Future research may consider integrating different perspectives and voices to explore how computer-based technology affects the outcomes and effectiveness of EFL education.

Teachers clearly play important role in effectively using computer-based technologies into their classes (Manfra & Hammond, 2008). Mishra and Koehler (2006) argue that if teachers are to maximize the opportunities presented by computer-based technologies in English learning, teachers need proper professional development to become aware of the option available to them and the ways these resources may be used. According to Mishra and Koehler (2006), although students may have a preference for online learning or blended learning, such approaches can result in some negative outcomes. For example, students may miss educational opportunities, and even experience disengagement. The reasons include the shortage of time for preparation and insufficient technical infrastructure. Greater research is needed on the potential difficulties in using computer-assisted technology in language education in order to avoid some of these difficulties.

An important limitation to using the technology-supported English learning is simply the lack or absence of technical support. The participants in this study identified technical difficulties and their limitations in dealing with those problems as an important barrier in using computer-based technology. More research on how university provide technical support to teachers would be very helpful. The future researcher can make a more in-depth study of the relationship between teachers and students under the condition with computer-base technology aids.

7. Conclusion

Using a case study approach, this study has examined the situation, the benefits and challenges of computer-based technology in a university in Beijing of China. Computer-based technologies, if used appropriately, can provide EFL students with a highly stimulating educational environment and an enhanced learning experience. Computer-based technology allows learners to interact with various multimedia elements and actively participate in their learning process (Gilakjani, 2014).

In recent years, the application of multimedia in education has become more and more popular. The development of computer-based technology has redefined the roles of teachers and students, enhanced teacher training in computer-assisted education, and promoted analysis of the advantages and limitations of using new technology as an educational medium. Computer-based technology has become very important in EFL language learning. As computer technology facilitates person-to-person connections, information, and data, it can be used as a tool for communications and provides access to real-world situations (Haswani, 2014). Computer interaction can also be used to improve communication skills and language through interaction with computer support groups.

It is hoped that this research will help teachers and students think more purposefully about technology usage for language learning. It might also promote the professional development of teachers who desire to make greater use of computer-based technologies in their teaching practice. In today's rapid development of information technology, the further integration of technology is likely to benefit many English learners. This study sought to better understand how the use of computer-based technology supports language learners. It may generate more questions about the

most effective use of technology to support language learners. It might also challenge readers to consider how teachers might enhance emotional communication with students with support of computer-based technology.

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