EXPLORING THE ATTITUDES AND PATTERNS OF ADOPTION OF DIGITAL INSTRUCTION AMONG TEACHERS OF CHINESE AS A SECOND LANGUAGE IN TAIWAN

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Abstract

Technology advancements and growing international attention on learning Chinese as a second language (CSL) suggest that using digital technology to teach CSL is important. Moreover, it reveals important research topics that have not yet been explored: Chinese language teachers’ attitudes regarding the use of various common e-teaching modes, such as blended learning (face-to-face teaching integrated with information technology), asynchronous online teaching, synchronous online teaching, and blended teaching of CSL learning activities such as listening, speaking, reading, and writing skills. The results of this study are based on a three-year CSL Teacher e-Teaching Training Course in Taiwan; the Delphi technique was used to develop a questionnaire that explores teachers’ attitudes toward e-teaching modes. From 2009 to 2011, 312 trained teachers completed the questionnaire. This study uses two-stage cluster analysis to explore the trends of teachers’ potential cluster patterns and examine their applicability assessments in various cluster patterns regarding the use of e-teaching modes. This study also discusses the trends and limitations of teachers’ use of digital teaching and provides suggestions based on the results. These suggestions can serve as important references for future CSL teaching studies and for the planning of training courses.

Keywords: Chinese as Second Language; Chinese language; e-learning; Teacher training

1 Introduction

Learning Chinese as a second language (CSL) has become a trend, with the Chinese language gaining increasing importance across the globe. Moreover, development of educational information technology has flourished and many scholars have begun research in this field. Previous studies also note that use of digital technology for teaching Chinese improves the learning effectiveness (Xie, 2007; Yilmaz, 2011). Therefore, establishing a course to equip CSL teachers with digital teaching skills can contribute to high-quality digital Chinese language education (Lee, Shen, & Tsai, 2008).

To meet the demand for such a training course, Taiwan established a project called the e-Teaching Capability Training Program for CSL Teachers as a component of the Taiwan e-Learning and Digital Archives Program (Ministry of Education, 2007). In this project, our research team developed a CSL Teacher e-Teaching Capability Index (Chang, Hou,
Lai, Chang, Sung, & Wu, 2012) divided into Basic Capabilities and Core Capabilities, with a total of 64 indexes. Because there are no relevant major, large-scale, and in-depth studies on the attitudes and teaching modes of CSL teachers, this study conducted a three-year CSL Teacher e-Teaching Capability Training Course and investigated the topic on the basis of teachers’ attitudes toward digital teaching and the applicability of various teaching modes. For this study, the CSL Teacher e-Teaching Capability Training Course was based on the CSL Teacher e-Teaching Capability Index. After the end of this course, we scanned the relevant literature, invited five experts to participate, and designed the CSL Teacher e-Teaching Training Course Training Effectiveness Questionnaire, which has expert validity via the Delphi technique. Our investigation and assessments were based on 631 participants who fully participated in the course and fulfilled all completion requirements. This study explored the following important research questions through the questionnaire.

The first question addressed the numerous e-teaching modes. Face-to-face teaching integrated with information technology widely refers to suitably integrating information technology resources and media into different aspects of the teaching process. Teachers make slides and present them during lectures, which is a commonly used method of this e-teaching mode (Chang, Sung, & Chen, 2001). Asynchronous online teaching can refer to the use of various non-synchronized platform system functions, such as having students join group discussions in forums online and read announcements on bulletin boards (Skylar, 2009). Synchronous online teaching involves the use of synchronizing systems, such as white boards, desktop sharing, and scheduled online conferences (Skylar, 2009). Blended teaching combines face-to-face and asynchronous/synchronous online courses, among other methods. (Delialioglu & Yildirim, 2007). The existing large-scale empirical research on CSL teachers’ attitudes regarding these commonly used e-teaching modes is insufficient and hence requires further discussion. For example, how do CSL teachers use these teaching modes? Which teaching modes are most suitable for CSL teaching? What are the teachers’ instructional suggestions for these teaching modes? Based on the aforementioned questions, the first research question addressed in this study is as follows:

Q1. What are CSL teachers’ attitudes toward and current applications of e-teaching modes such as face-to-face teaching integrated with information technology, asynchronous online teaching, synchronous online teaching and blended teaching in the context of practical CSL teaching?

Scholars have identified four key skills in language teaching—listening, speaking, reading, and writing—each of which can be taught using various teaching modes. Teachers should learn more teaching modes to help students acquire these skills (e.g., McKeown, Beck, & Blake, 2009; Gore, 2010). The applicability of digital teaching modes in teaching these skills requires further exploration. For example, which modes do CSL teachers choose for teaching CSL listening skills? What rationale do they give for their choices? This study uses the information provided by teachers on our questionnaires and uses the cluster analysis method to explore cluster patterns of teachers’ opinions on the applicability of each teaching mode in teaching each of the four skills. Thus, by analyzing teachers’ attitudes, we can evaluate the applicability characteristics, limitations, and reasons for the use of each teaching mode and provide suggestions for course design. Therefore, the second research question is as follows:

Q2. What are the potential cluster patterns for CSL teachers’ attitudes regarding the applicability of different types of teaching modes in teaching the four key skills (i.e., listening, speaking, reading, and writing), and what is the rationale underlying these patterns?

By exploring these two questions, we can learn more about Taiwan CSL teachers and the characteristics of e-teaching, as well as provide relevant practical suggestions that can serve as a reference for future CSL teaching research and for institutions that intend to establish training courses.

2 Research Methods

2.1 Participants

This study included 631 participants who fully participated in the CSL Teacher e-Teaching Capability Training Course (Introductory) and the CSL Teacher e-Teaching Capability Training Course (Advanced) conducted by the e-Teaching Capability Training Program for CSL Teachers from 2009–2011. Of the training participants, 312 completed the questionnaire in this study.
Among the 312 questionnaires received, 277 respondents were female and 35 were male. Sixty-nine respondents (22%) were 21-25 years of age, followed by 65 respondents (20%) from 26-30 years of age, and 46 respondents (14%) from 31-35 years of age. The highest level of education reached by 92 respondents (29%) was a bachelor’s degree, followed by 86 respondents (27%) with a master’s degree.

### 2.2 Instruments and Procedures

This study relied upon experts in the field to compile a list of possible key factors and indices of training effectiveness, considering the lack of relevant research on questionnaires designed to assess CSL teacher training effectiveness. The first draft of the CSL Teacher e-Teaching Training Course Training Effectiveness Questionnaire (Chang, Hou, Chang, Sung, & Chen, 2012) included five dimensions: personal background, teaching experience and environment, Chinese e-teaching experience, Chinese e-teaching applications used, and suggestions for the course, with a total of 98 questions. Most questions were answered using a five-point Likert scale, supplemented by open-ended questions for participants to further detail their experiences or provide additional information. In this study, expert validity was established through three rounds of the Delphi technique. To arrive at a consensus, experts evaluated questionnaire items for appropriateness, using descriptive statistics, including the experts’ comments on and scores for each question’s appropriateness (mean, mode), the consistency of the scores (standard deviation, interquartile range), and the distribution frequency and percentage. The principle of the Delphi method was adopted as the standard for the selection of appropriate items (Helmer, 1994). Appropriateness standards were defined as follows:

1. High Consensus: interquartile range $< 0.6$ or standard deviation $\leq 0.5$.
2. Mid Consensus: $0.6 \leq$ interquartile range $< 1$ or standard deviation $\leq 1$.
3. Low Consensus: interquartile range $\geq 1$ or standard deviation $> 1$.

For overall research validity, any additions, deletions, or other changes made to the questionnaire in this research were performed in accordance with the aforementioned standards. Experts’ open-ended comments were also considered for the final version of the questionnaire.

### 2.3 Data Processing

To answer the two research questions in this study, we used two analysis methods. First, for question one, we performed a descriptive statistical analysis for two parameters—CSL e-Teaching Experience and CSL e-Teaching Application (17 questions)—related to research question one. Researchers then analyzed the responses to the open-ended questions for those two aspects, using qualitative content analysis to determine CSL teachers’ attitudes toward e-teaching modes and their current teaching practices.

Second, to answer research question two, we used the dendrogram of the Ward’s method to determine the appropriate number of clusters and the K-mean cluster analysis to reveal cluster patterns. In the cluster analysis, we analyzed answers regarding the applicability of the four e-teaching modes when CSL teachers teach listening, speaking, reading, and writing skills (4 questions per skill, for a total of 16 questions). Question example: Do you think face-to-face teaching integrated with information technology is applicable when you teach students Chinese listening skills? The teachers evaluated the level of applicability of each e-teaching mode to each skill (1 for inapplicable, 5 for very applicable). We then grouped skills with similar characteristics into clusters. The results show the number of members and the average scores of applicability of e-teaching modes for each group.

### 3 Results and Discussion

#### 3.1 Attitudes and Current Teaching Practice Analysis
Results. The results of the quantitative descriptive information and the qualitative content analysis of the open-ended questions show that a total of 186 teachers (59%) used e-teaching in their own classes. Teachers who had previously used e-teaching could choose among four e-teaching modes (multiple items could be selected). The items included face-to-face teaching integrated with information technology, asynchronous online teaching, synchronous online teaching, and blended teaching.

A total of 118 teachers (63%) had previously used face-to-face teaching integrated with information technology to teach CSL, and 114 (61%) agreed that this is a good teaching mode for teaching CSL. This result corresponds to Alessi’s and Trollip’s (2005) research, which demonstrated that the use of information technology could express abstract concepts and enhance the effectiveness of learning a language. However, 75 teachers (40%) noted difficulties in using this teaching mode. The major difficulties cited were the lack of suitable teaching materials and tools, students’ insufficient capacity for independent learning, and an unsuitable environment in which to use this teaching mode. Therefore, implementing face-to-face teaching integrated with information technology requires that teachers redesign their teaching materials and incorporate information technology into their courses (Inan & Lowther, 2010).

Only 11 teachers (6%) had delivered classes using asynchronous-only online teaching. These teachers used mostly free online asynchronous learning tools, such as blogs, Facebook, and Google websites. They used these resources primarily to provide learning materials and as a forum for class discussions and communication. The respondents indicated that asynchronous online teaching meets learners’ needs for flexible learning schedules. Respondents who had used this teaching mode stated that the predominant difficulties or obstacles they experienced were the students’ inability to adapt to this type of learning practice and the instability of the e-teaching environment. Therefore, teachers should provide students with detailed instructions regarding the use of e-learning tools to enable students inexperienced with online learning to efficiently join e-learning classes (Wagner, Hassanein, & Head, 2008).

Only 22 teachers (12%) had used synchronous-only online teaching to deliver classes. Teachers used this mode largely for audio/oral practices. These teachers stated that the synchronous online teaching environment enables learners to directly communicate and interact with other learners during classes. Learners can also instantly raise questions and obtain answers from their teachers when they encounter difficulties (Wang & Chen, 2007). However, teachers who had used synchronous online teaching also noted that synchronous online teaching environments are not sufficiently stable and that both teachers and students were unfamiliar with this type of teaching mode. This result implies that teachers and students need to learn how to use the functions of their online learning system before beginning classes to enable effective learning (Offir, Lev, & Bezalel, 2008).

Last, only 18 teachers (10%) had used the blended teaching mode. Their classes utilized various learning scopes and resources, including CSL listening, speaking, reading and reading skills training, textbooks, grammar, and cultural themes. The largest number of these teachers (9 teachers) used blended learning involving face-to-face teaching integrated with information technology and asynchronous online teaching, followed by face-to-face teaching combined with synchronous online teaching (5 teachers). These teachers stated that they wished to offer learners more learning channels, and hence they combined the advantages of face-to-face and online teaching techniques (Brennan, 2003).

Discussion. We find that face-to-face teaching integrated with information technology has the highest usage for the four e-teaching modes. This finding is logical, given that most language courses are taught face-to-face. Asynchronous online teaching is used the least among the four digital online teaching modes in this study, but it can be used in online courses or can serve as an aid to supplement face-to-face learning. Therefore, we suggest that future course designs introduce examples of using asynchronous online teaching as an aid to face-to-face CSL teaching, so that both teachers and students can become familiar with the online learning system functions.

3.2 Cluster Analysis of Attitudes Regarding Applicability

This section reports the results of cluster analysis to explore the applicability of, and possible rationale underlying, teachers’ choice of using face-to-face teaching integrated with information technology, asynchronous online teaching, synchronous online teaching, and blended teaching modes in teaching
activities related to the four key skills (listening, speaking, reading, and writing). We found that there are three clusters of attitudes toward e-teaching modes’ applicability in each of the four key skills. The results are as follows.

Results. Table 1 reports the clusters of teachers’ attitudes regarding the use of e-teaching to teach listening skills. Group A (69.6%) had the same attitude toward the applicability of the four e-teaching modes, with an average score of 2, leaning toward inapplicable. There were only two people (0.6%) in group B, which considered only asynchronous online modes inapplicable. This result reveals that few teachers tend to use diverse e-teaching modes, and among those who do, synchronous and blended teaching modes are considered more applicable. Group C (29.8%) was similar to group A: their attitude regarded all four e-teaching modes as having low applicability.

On further investigation of the group members’ background information by cluster, we found that the two members of group B, who are more favorably inclined toward using e-teaching methods, belong to the 21–25 (including 25) and 51–55 (including 55) age groups and have, respectively, less than one year and between 1–5 years of experience in teaching CSL. This result implies that the inclination of these two teachers to use e-teaching to teach listening is not affected by their large age difference or by their relative lack of teaching experience. However, in group A, which comprised nearly 70% of the teachers, most members (N = 53) are 26–30 (including 30) years of age. Most teachers have 1–5 years (N = 40) of CSL teaching experience and tend not to use the four teaching modes. This result indicates that younger teachers and teachers with less teaching experience do not necessarily have more positive attitudes toward the use of e-teaching in teaching listening despite their familiarity with new technology. This finding differs from the research findings of scholars such as Atkin and Vasu (2000) and Reiser (2002). Many studies have indicated that younger teachers are more likely to accept and use e-teaching modes. Here, however, we observed that although younger teachers more readily acknowledge e-teaching as an aid to teaching CSL listening, their attitude toward applying e-teaching for listening skills is not particularly positive. Therefore, we further investigated the reasons behind teachers’ reluctance to apply e-teaching for listening skills. We reviewed and analyzed respondents’ answers to open-ended questions. Although CSL teachers commonly acknowledge that e-teaching is helpful in teaching CSL listening, they have to spend more time to prepare e-teaching materials (e.g., recordings need to be made beforehand). Either they lack sufficient time to prepare relevant teaching materials, or their faculty has insufficient hardware, and those barriers (time and equipment) cause CSL teachers’ attitude that using e-teaching modes to support the teaching of listening skills has low applicability.

Table 2 reports teachers’ attitudes toward applicability of e-teaching modes in teaching CSL speaking skills. In Group A (57.1%), the attitudes toward all four e-teaching modes were the same, with an average score of 2, leaning toward the inapplicability of e-teaching. Group B (18.2%) tended to use asynchronous online teaching. Group C (24.7%) had the same attitude toward all four e-teaching modes, giving each mode an average score for applicability. Overall, in comparison to using e-technology to teach listening, more teachers thought that e-teaching is applicable to teach speaking. A majority of the teachers chose asynchronous online teaching for speaking skills, but more than half of the teachers rated e-teaching as having a low degree of applicability.

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We referred to and analyzed respondents’ answers to open-ended questions. Teachers who completed the questionnaire stated that they had difficulty in obtaining the materials needed to teach CSL reading skills, and because many younger, newer teachers cannot accurately determine students’ language abilities and have low confidence in preparing reading materials, they choose to use textbooks and are less likely to use e-teaching as an aid.

Table 4 reports teachers’ attitudes toward using e-teaching modes to teach CSL writing. Group A (29.5%), group B (7.7%), and group C (62.8%) gave low average applicability scores, predominantly between 2 or 3. However, group B approves of using synchronous online teaching in teaching writing skills much more than other modes. Analysis of teachers’ open-ended answers reveals that certain respondents always use free synchronous communication software, such as Facebook, MSN, and Skype, to practice online discussions or writing with students. They also noted that if synchronous systems have correction and peer review functions, they are more willing to use synchronous online teaching to support their teaching of writing skills.

Many scholars have recently been developing asynchronous and synchronous online writing systems. For example, Shei and Pain (2010) developed an asynchronous English writing system. There are also English writing systems that combine synchronous and asynchronous system functions. Relevant research discusses synchronous writing systems (Guichon, Betrancourt, & Prie, 2012) and how to use e-teaching environments to support the teaching of writing skills (Meltem, Aysegul, & Soner, 2010; Zhu, Zhou, Zhang, & Gao, 2011; Hwang, Rustam, & Huang, 2011). These language writing systems and models of the digital teaching of language writing skills are largely based on English writing. Further studies of the use of such systems in the teaching of CSL writing skills are needed. Future in-depth research in this area will be invaluable.

Discussion. Most respondents’ attitudes regarding the overall applicability of e-teaching modes were negative. Among the four e-teaching modes, some teachers think that face-to-face teaching integrated with information technology, synchronous online teaching, and blended teaching are more applicable for teaching listening skills. For teaching speaking and reading skills, teachers think that asynchronous online teaching is more applicable. For teaching writing, teachers think that synchronous online teaching is more applicable. From these results, we observe that no single e-teaching mode is considered useful for the teaching of all four key skills. That is, teachers often choose suitable e-teaching modes on the basis of the characteristics of the skills they are teaching and the teaching resources they can acquire. Our questionnaire analysis also explains the rationale underlying the low applicability of these e-teaching modes; this information will be useful for the development of future CSL e-teaching tools and resources.

4 Conclusion and Suggestions

This is a long-term study that collected information on Taiwan CSL teachers’ usage of different modes of e-teaching. The objective was to explore the attitudes of CSL teachers who use e-teaching toward the use of the four e-teaching modes in practical CSL teaching and in their own teaching situations, as well as to investigate the potential cluster patterns and the reasons underlying the applicability assessments of CSL teachers regarding the use of different teaching modes in teaching the four key skills.

4.1 Conclusions

Our results demonstrate that based on the current usage of the four e-teaching modes, blended learning (face-to-face teaching integrated with information technology) has the highest usage, and asynchronous online teaching has the lowest usage. In the teaching of listening, speaking, reading, and writing skills, most respondents rated all modes as having low applicability. This study also found that although younger teachers are more likely to acknowledge e-teaching as an aid in CSL teaching, their desire to use these modes in practice are not significantly higher than that of experienced teachers. In addition, teachers express different attitudes toward different e-teaching modes for teaching each of the four skills. They choose suitable e-teaching modes according to the characteristics and needs of teaching the four skills. This study found that most respondents agreed that e-teaching modes are helpful in teaching CSL. However, an analysis of their responses showed that even after participating in the training course, the respondents still stated that they need improvement in information technology, are unfamiliar with the teaching modes, or have unsuitable teaching

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environments and lack appropriate teaching materials or tools, among other obstacles. These factors render them less likely to use e-teaching modes when they teach CSL. These results are similar to those of Hughes (2005) and Koehler, Mishra, and Yahya (2007). That is, the respondents learned to use many tools and skills but could not integrate them into their own CSL classes (Inan & Lowther, 2010). CSL researchers, educators, trainers, and decision-makers should apply this finding to their future projects.

4.2 Suggestions for CSL Education

This study suggests several types of improvements in CSL education. First, the planning of future training courses should focus on CSL instead of the operation and introduction of technology that is often not available at teaching sites. As language emphasizes the function phase, it emphasizes the meaningful use of language in actual situations. Therefore, the reasons and modes that teachers think are most and least applicable in teaching different language skills should be carefully considered to provide or develop e-teaching software and teaching strategies that are more suitable to serve as the core training content for practical CSL teaching. Moreover, teachers should not only focus on how many media or technology tools are used in teaching but, instead, should consider whether these tools are used at the appropriate time. Second, if training resources are abundant, educators can consider providing training courses based on teachers’ information technology skills. Educators should also address teachers’ concerns over insufficient time to prepare technology-based materials and insufficient hardware resources. Third, training courses should teach successful cases and essentials of using digital tools to facilitate CSL listening, speaking, reading, and writing skills. Training courses should also provide more successful or special models and examples for reference and should enable teachers to understand how to appropriately use these teaching modes in their course designs to enhance the effectiveness of CSL teaching and learning. Last, teachers wish to have more CSL teachers share their experiences in a community of practice and build an instructors’ and learners’ communication platform to improve learning. These suggestions are made on the basis of this study’s results and will be useful to help CSL teachers to fully utilize e-teaching modes.

4.2 Suggestions for Future Research

The present study revealed topics for future research.

References

high school students. ReCALL, 23(2), 160–180.

Legends

Table 1. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Listening

Table 2. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Speaking

Table 3. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Reading

Table 4. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Writing
### Table 1. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Listening

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### Table 2. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Speaking

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### Table 3. Cluster Analysis of Digital Teaching Modes Applicability Scores for Teaching CSL Reading

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