



A study of pre-service EFL teachers' acceptance of online teaching and the influencing factors

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Abstract

It is expected that the field of language education will see an increased need for teachers to accept online teaching. Based on the Technology Acceptance Model, this study examined pre-service EFL teachers' acceptance of online teaching and the factors influencing them. The participants were TESOL majors at three universities in China. The data were collected from a questionnaire survey with 204 participants and semi-structured individual interviews with 12 participants. The study reveals that pre-service English teachers generally accept online teaching after completing one-semester of purely online learning during the COVID-19 pandemic. The results also suggest that participants' enjoyable experiences in using online technologies, perceived usefulness of online teaching, social influences, and technological pedagogical content knowledge influence their acceptance of online teaching.

Keywords: Technology Acceptance Model (TAM), EFL, Online Teaching, Pre-service Teachers

Language(s) Learned in This Study: English

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Introduction

Teaching through online applications has gradually spread worldwide and has become a new trend of 21st-century education (Hampel, 2006), especially during the COVID-19 pandemic. Online teaching can scaffold students' language learning and expand professional development opportunities for teachers (Germain, 2015; Pan & Gan, 2020; Pineda et al., 2021; Zou & Huang et al., 2021). Despite the advantages of online teaching, it is not uncommon for English as a foreign language (EFL) teachers to have reservations about online teaching or underuse online technology tools available to them. Therefore, it is important to examine EFL teachers' acceptance level of online teaching and explore the influencing factors so as to help teachers adapt to the new teaching environment.

Due to the outbreak of COVID-19, online teaching was delivered using technology platforms such as Zoom, MOOCs, and Dingtalk at most schools/universities in China between 2020 and 2021. However, teachers' lack of online teaching experience posed a challenge to the quality of online language education. Previous studies (e.g., Gao & Zhang, 2020; Zou & Li et al., 2021) revealed many challenges for EFL teaching and learning during the pandemic outbreak, including the use of technology-supported pedagogy. Teachers' acceptance and perceptions of online teaching play a critical role in realizing the benefits afforded by online teaching (Hubbard, 2008). For pre-service EFL teachers who have experienced purely online learning and teaching during the pandemic, their perception of online teaching and technology use might be shaped by the new learning experience. Few studies to date have explored pre-service EFL teachers' level of acceptance of online teaching and the influencing factors. Thus, this study was guided by the following two research questions:

1. To what extent do pre-service EFL teachers accept online teaching after experiencing online

learning during the pandemic?

2. What factors influence the degree of pre-service EFL teachers' acceptance of online teaching?

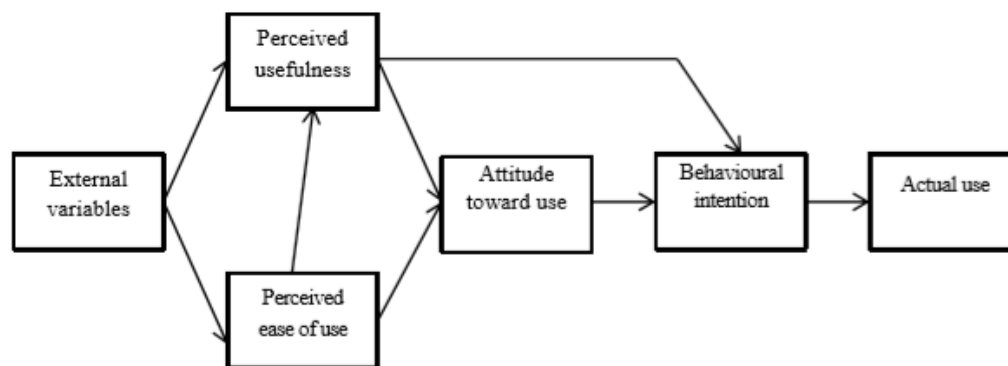
Literature Review

Online teaching refers to the practice of adopting digital technologies to create, promote, deliver, and facilitate learning and teaching—anytime, anywhere (Liaw et al., 2007). The prerequisite for online teaching is teachers' acceptance of the new roles of technology and their willingness to use online technologies to design and implement instructional tasks (Davis, 1989; Teo, 2010). Technology acceptance (TA), therefore, seems essential for teachers' actual employment of online teaching.

TA research has become increasingly popular in language education due to the fact that users' perceptions of technologies could influence technology integration (Davis, 1989; You et al., 2014). Previous researchers have investigated teachers' acceptance of CALL (computer-assisted language learning) and MALL (mobile-assisted language learning) based on the concept of TA (Leem & Sung, 2018; Mei et al., 2018). The Technology Acceptance Model (TAM) is the most influential model of TA (Davis, 1989; Teo, 2010). [Figure 1](#) shows the generic TAM model. Four primary constructs are included in TAM: (a) PU (perceived usefulness), (b) PEU (perceived ease of use), (c) attitude towards the use of technology, and (d) intention to use (IU) technology (Davis, 1989). PU refers to how individuals believe that using a particular technology will improve their efficiency and effectiveness in TAM. PEU refers to the extent to which users find using information technology effortless (Davis, 1989). This model supposes PU and PEU as the key predicting factors of technology acceptance, supporting Hubbard's (2019) view that teachers will actively use technology if they find it could positively impact the effectiveness and efficiency of teaching.

Figure 1

Technology Acceptance Model (Davis, 1989, p. 319)



Apart from PU and PEU, TA is closely related to TPACK (technological pedagogical content knowledge), which is a complex and situated form of knowledge required for thoughtful pedagogical uses of technology (Mishra & Koehler, 2006). You et al. (2014) conducted a questionnaire that investigated the relationship between Chinese primary-school English teachers' TPACK and their acceptance of eBooks—reporting a significant correlation. The English teachers equipped with a higher level of TPACK are more likely to perceive the efficiency and effectiveness of online technology and resources; therefore, teachers are more likely to utilize them. Another factor, PEN (perceived enjoyment), defined as “the extent to which the activity of using technology is perceived to be enjoyable for its own sake,” has been theorized and verified as a predictor of users' technology acceptance (Teo & Noyes, 2011, p. 1064). Previous studies have validated PEN's role in explaining users' acceptance of computers (Davis et al., 1992) and blogs (Sun,

2009). SN (subjective norms), defined as the users' perception that they should perform the behavior in question, has been emphasized as an important predictor of technology acceptance by the researchers who studied the acceptance of online language education (Mei, 2019).

Drawing from prior research on TAM (Davis, 1989; Mishra & Koehler, 2006; Teo & Noyes, 2011), five salient factors were selected as predictor variables in this study: (a) PU, (b) PEU, (c) PEN, (d) SN, and (e) TPACK. Since the purpose of this study is to investigate pre-service English teachers' intention to teach English online with the scaffolding of online platforms and resources, we examined the relationship among PU, PEU, TPACK, PE, SN, demographic factors, and IU (intention to use online teaching), drawing on the TAM model. We assume that the inter-related variables, PU and PEU, directly influence IU. Moreover, external factors such as age and gender can influence PU and PEU and, ultimately, influence IU (Davis, 1989). Drawing on the constructs mentioned above, we aimed to investigate pre-service English teachers' acceptance of online teaching during the COVID-19 outbreak in the hopes of guiding their online instruction during the pandemic and in the post-pandemic era.

Methodology

Participants

This study was conducted with pre-service English teachers in the English department at three Chinese universities, including undergraduate and graduate students. Two of the universities are located in eastern China, while the other is in central China. It is worthy to note that these are three different types of universities: a comprehensive university, a teachers' university, and a Sino-foreign university. Studying these three universities with diverse features can help the researchers get a broader view of Chinese pre-service English teachers' acceptance of online teaching. All the participants were Chinese student-teachers, of whom 20 were male and over 180 were female. The age of pre-service English teachers ranged from 21 to 24. The participants had learned English teaching approaches and pedagogies, and were to start their English teaching career in the next one or two years. Furthermore, due to the outbreak of COVID-19, the participants experienced online language education for at least one semester and, thus, may have a new understanding of online teaching.

Data Collection

A Likert scale questionnaire was developed and distributed via a website. The questionnaire was developed from six constructs drawn from prior studies and has been widely tested and verified in different contexts. Specifically, the PU and PEU items were adopted from Lay et al. (2013); the TPACK items were adopted from Schmidt et al. (2009); the SN items were adopted from Terzis and Economides (2011); the PEN items were adopted Teo and Noyes (2011), and the IU items were adopted from Lee and Lehto (2013). Overall, the 22-item questionnaire consisted of six constructs (see the [Appendix](#)), including IU (4 items), PU (3 items), PEU (3 items), TPACK (5 items), PEN (4 items), and SN (3 items). In order to focus on online language education, the order, expressions, and the scale of the original questionnaire were adjusted to be suitable for the research context. In addition, three postgraduate students of the TESOL program, who had online learning experiences, were invited to review the quality of the questionnaire. After a listwise deletion to ensure the effectiveness and validity of the data, a total of 204 questionnaires were collected through an online survey in October 2020.

Before proceeding with the statistical analysis, a reliability test was conducted on the questionnaire using Cronbach's Alpha Coefficient (Dornyei, 2010), resulting in a Cronbach's α for each construct reaching above 0.8. The overall reliability of the online teaching acceptance questionnaire was above 0.8 as well ($\alpha = 0.934$). Additionally, KMO (Kaiser-Meyer-Olkin) tests and Bartlett's Spherical Test were conducted to test the validity of the questionnaire. As Kaiser (1974) suggested, the closer the KMO value is to 1, the higher correlation coefficient between the variables. Moreover, if the significance possibility p in Bartlett's Spherical Test is less than 0.05, it is assumed that the sample data is suitable for factor analysis. The KMO value was found to be 0.919 and the significance of Bartlett's Spherical Test was 0.00.

To have a more comprehensive view of the factors influencing the pre-service teachers' acceptance of online teaching, 12 participants were chosen for the semi-structured individual interviews. The interview subjects were selected based on the following three criteria: (a) voluntary basis; (b) different universities, ages, and hometowns; and (c) different intentions to implement online teaching based on the diversity principle. The interview protocol, consisting of 12 specific questions, addressed several themes explicitly related to potential factors influencing individuals' acceptance of technology: PEU, PU, PEN, SN, and TPACK. Questions included: "What motivates or hinders you from using online tools in English teaching?," "Who motivates you to teach online?," and "How you think online tools have helped you teach or learn English?". Each interview was conducted in Chinese and lasted between 20 minutes to one hour. The interview participants were coded as P1, P2, P3, and so forth.

Data Analysis

The questionnaire data were analyzed via *SPSS* 22.0. Descriptive statistics reflected pre-service English teachers' acceptance level of online teaching. SEM (structural equation modeling), a multivariate statistical methodology that allows researchers to accommodate multiple interconnected dependency relationships in a single model, was conducted through *AMOS* 23.0 to identify the effects of PU, PEU, PEN, SN, and TPACK for predicting participants' acceptance of online teaching. Interview data were first translated into English, and then the content analysis was conducted to uncover factors likely to influence pre-service English teachers' intentions regarding online teaching. The authors coded the data according to the two research questions including acceptance of online teaching and factors influencing online teaching acceptance.

Results and Discussion

Acceptance of Online Teaching

Regarding the questionnaire results, the overall mean of PU (question items 1 to 3) indicates that pre-service English teachers agree with the usefulness of online teaching at moderate to high levels ($M = 3.73$). It shows that the participants identify the effectiveness of online teaching. The mean of PEU (items 3 to 6) is relatively low ($M = 3.14$), suggesting participants believe that online teaching is a bit difficult. It may be related to the lack of experience in teaching with online tools, even though the participants used those tools to learn languages quite often. The descriptive statistics also show that the participants moderately agree that using online teaching applications in English classes is enjoyable (items 12 to 15; $M = 3.74$) and they are generally confident in their TPACK (items 7 to 11; $M = 3.67$). Similarly, a moderate agreement is found for SN (items 16 to 18; $M = 3.73$), suggesting that important people such as their leaders, college classmates, and tutors encouraged them to use online applications. In terms of IU (items 19 to 22), the results suggest that the participants accept online teaching ($M = 3.72$), but they show a slight difference in the degree of agreement on the four IU statements. Compared with their theoretical willingness for online teaching ($M_{IU1} = 3.98$), the participants' response to whether they plan to teaching online is less positive ($M_{IU3} = 3.60$), indicating that the participants are primarily willing to teach online, but the majority of them show reservations about the actual plan and implementation of online teaching.

In the interviews, the pre-service English teachers were asked to comment on their willingness to teach online. From level 1 to level 10, the participants all rate higher than 5, where level 1 represents the lowest level of willingness and level 10 is the highest, meaning they generally accept online teaching, as shown in [Table 1](#). Moreover, the participants discussed the acceptance level for the perceived usefulness, enjoyment of online tools, ease of online tools, influences of others, and TPACK. All the descriptors shown in [Table 1](#) are derived from the participants' own words. For example, the codes addressing the perceived enjoyment of online tools come directly from phrases in the interview data, such as "stimulate students' interest," "not so boring," "interesting," "feel new," "joy," and "fresh".

Table 1*Participants' Overall Acceptance of Online Teaching*

Participants	Acceptance Level	Descriptor Codes
P1	9	Usefulness of online tools Enjoyment of online tools Influences of experienced teachers
P2	6	Usefulness of online tools Difficulty of using online tools
P3	6	Usefulness of online tools Ease of using online tools Enjoyment of online tools Unimportance of outside influences Importance of TPACK
P4	7	Usefulness of online tools Ease of using online tools Influences of the whole society and students
P5	8	Usefulness of online tools Enjoyment of online tools Importance of TPACK Influences of school leaders' and students' parents
P6	6	Usefulness of online tools
P7	8	Usefulness of online tools Enjoyment of online tools
P8	8	Usefulness of online tools Difficulty of using online tools
P9	6	Usefulness of online tools Difficulty of using online tools Enjoyment of online tools
P10	7	Usefulness of online tools Enjoyment of online tools Importance of TPACK Influences of school leaders' and students' parents
P11	8	Usefulness of online tools Influences of school leaders' and students' parents
P12	7	Usefulness of online tools

Note. The data and descriptor codes were sourced from the qualitative interview.

The results show that most pre-service English teachers express positive perceptions towards online

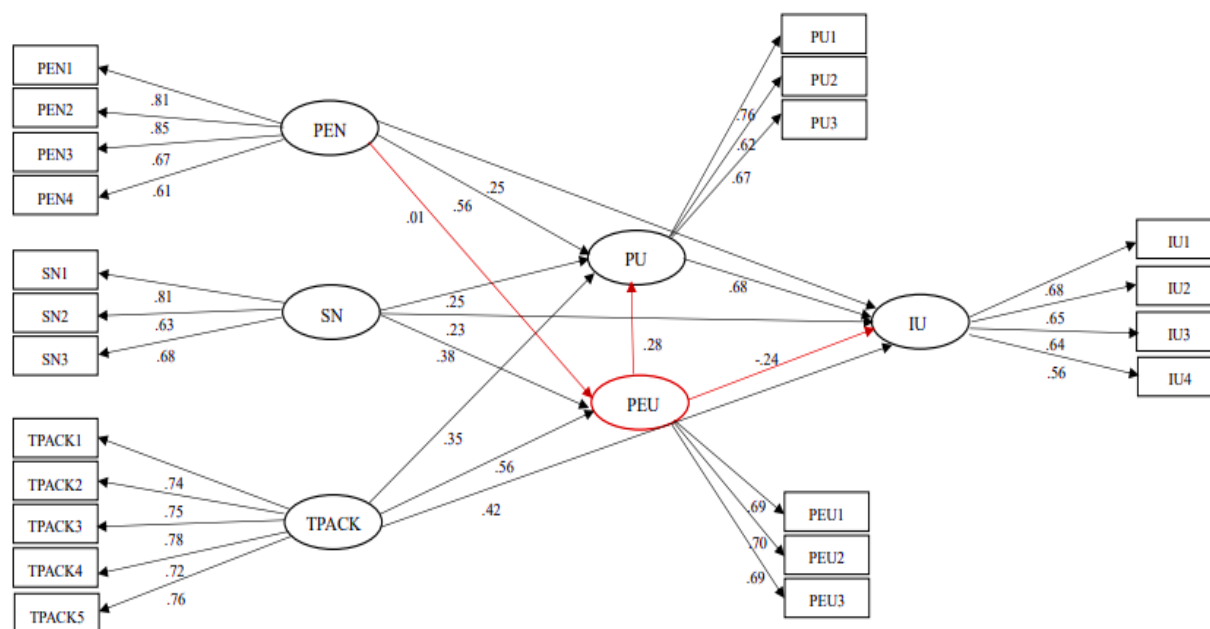
teaching and accept online teaching. This result echoes Mei’s (2019) research on Chinese pre-service EFL teachers’ intention to use CALL 2.0. One motivation for pre-service English teachers to implement online teaching is that they believe online teaching could promote language teaching and learning effectiveness, as evidenced by the participants’ frequent mentioning of the usefulness of online applications in the interview. Moreover, this result is consistent with prior studies on language teachers’ perceptions of online teaching during the pandemic because the teachers think that online teaching is useful and effective, but also challenging for them (e.g., Jin et al., 2021; Zou & Li et al., 2021).

Factors Influencing Online Teaching Acceptance

The results of the statistical analysis reveal a significant correlation between online teaching acceptance and the predicted variables, namely PU, PEU, PEN, SN, and TPACK. Structural Equation Modeling (SEM), a multivariate statistical methodology, was used to test the pre-service English teachers’ online teaching acceptance model. Figure 2 presents a proposed SEM model for the teacher candidates’ online teaching acceptance. PU shows a significant, direct, and positive relation to IU. PEU is found to have an insignificant association with PU and IU. PEN has a significant positive impact on PU and IU, but has no significant association with PEU. This means that PEN influences IU directly and indirectly via PU. Furthermore, the results for SN reveal it has significant associations with PU, PEU, and IU. Additionally, TPACK is found to have a substantial direct positive association with IU, PU, and PEU.

Figure 2

Path Correction Values of Proposed SEM Model



The statistics suggests that IU was determined by SN, TPACK, PEN, and PU in the model. According to Wu (2000), the larger the absolute value of the standardized path coefficient is, the more significant the impact the independent variable will have on the dependent variable. Among the five variables, PEN, SN, and TPACK directly affect pre-service English teachers’ IU of online teaching and indirectly affect their online teaching IU via PU. PU directly affects IU and pre-service English teachers’ online teaching practices.

The analysis of the interview data also supports that PU, PEN, TPACK, and SN influence pre-service English teachers' acceptance of online teaching. Pre-service English teachers think online teaching is exciting and are more likely to accept it if they perceive online teaching as enjoyable (PEN). For example, P7 said that using online tools is fun for both teachers and students:

Teaching through technology will enliven the atmosphere. Not only the students but also the teacher will be energized. Online teaching can bring more joy to students. And it gives me a sense of achievement when students enjoy my classroom.

The participants also addressed the perceived usefulness of online teaching (PU). For instance, P8 commented, "Of course I plan to use online applications to teach English because it can help students promote their English learning, especially their listening skills." P10 also mentioned the benefits of online teaching tools for students' learning motivation: "You know students are easily distracted. Using online teaching tools may be more likely to bring up their interest in learning English."

It was also found that TPACK influenced the pre-service English teachers' intention to use online teaching. Based on the results, the teacher candidates would be more likely to teach with online tools if equipped with a high level of TPACK. They are aware of the vital interface between pedagogy, technology, and content knowledge as an essential component of implementing online teaching. From their perspectives, if they had better TPACK, they would use online teaching technology more often. Though most participants were not confident in their TPACK, the pre-service English teachers were determined to increase their technological pedagogical content knowledge. As P3 stated, "I think it might be a little bit difficult [to integrate online technology into English teaching], but I will try my best to do it."

Moreover, a significant effect of SN upon the pre-service English teachers' acceptance of online teaching is confirmed in both questionnaire and interview data. From the pre-service teachers' perspectives, the support from students' parents and school leaders is significant in the participants' decision to adopt online teaching. As P10 said, "If students' parents or school leaders encourage me to use it, I think it is also a kind of recognition for online teaching, and I will have the courage to use online tools." Most of the interviewees agreed upon the influence of authoritative persons on their willingness to adopt online teaching. However, a few maintained that their teaching only depends on students' learning performance rather than leaders' requirements. For example, P3 said, "Their [leaders'] ideas are not so important to me. Rather, students' learning is important. My class should be student-oriented." Hence, the influence of SN does not necessarily promote greater use of online tools.

In summary, PU is found to directly and positively influence pre-service English teachers' acceptance of online teaching. This result supports prior TAM studies' general findings (Mei, 2019). This result is also in line with recent TAM research findings on integrating online technologies into language teaching (Mei et al., 2018). Similar to Teo and Noyes (2011), our study shows that PEN has a small but direct association with IU, as well as an indirect association through its significant effect on PU, which in turn affects IU. Contrary to the findings of previous studies on Chinese university students' intention to use MOOCs (Zhou, 2016) and to use CALL 2.0 (Mei, 2019), which finds no association between SN and PU, a significant positive effect from SN upon PU is also identified in this study. Unlike You et al.'s (2014) and Wang et al.'s (2017) findings that IU has significant influences on TPACK, the current study reveals that the pre-service English teachers' TPACK has a direct impact on IU. In addition, PU plays a mediating role in the relationship between TPACK and IU.

Conclusion

This study shows that Chinese pre-service EFL teachers have positive attitudes towards online teaching, despite challenges regarding the use of technologies and technology-supported pedagogies during the COVID-19 pandemic. It also explores multiple factors influencing Chinese pre-service EFL teachers' acceptance of online teaching. This study provides some implications for EFL education.

Since perceived usefulness plays a vital role in online teaching, it is necessary for teacher educators to discuss the advantages of online teaching with the teacher candidates. First, a well-structured orientation to online teaching applications should be presented to inform pre-service teachers of the functions and usages of online teaching tools. Second, pre-service English teachers should facilitate their self-teaching/training by, for instance, frequently participating in webinars on CALL. Next, developing pre-service English teachers' TPACK is crucial. Our study shows that pre-service English teachers recognize the importance of TPACK and online teaching. Nevertheless, they are not confident in integrating the online teaching tools into their classrooms. The lack of TPACK becomes one of the reasons for their hesitation to implement online teaching. Therefore, teacher educators need to integrate content-based multimodal tasks into the TESOL curriculum so that the pre-service teachers can enhance their TPACK while developing their online teaching skills (e.g., Li, 2020; Ko et al., 2022). In addition, given the role of SN, it is necessary for policymakers to create a systematic plan to promote effective online teaching practices. School leaders should create a friendly environment for English teachers to adopt online teaching; for example, they can provide adequate broadband, software, hardware, and timely technical support. All the above-mentioned factors can help improve pre-service English teachers' acceptance level, thus gradually normalizing online teaching.

Notes

1. Bin Zou is the corresponding author for this article.

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Appendix. Chinese Pre-service EFL Teacher Questionnaire: Acceptance of Online English Teaching

Part I

Please select the option that corresponds to your actual situation.

Gender: A. Male B. Female

Age: A. 21–22 years old B. 23–24 years old C. 25 years or older

Hometown: A. Coastal city B. Inland city C. County D. Town or rural areas

School type: A. Teachers' training university B. Comprehensive university C. Sino-foreign university

Part II

Please read the following statements and indicate the extent to which you agree with each statement by checking the appropriate number as follows:

1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

Statements	1	2	3	4	5
1. Online teaching will enhance my English teaching effectiveness.					
2. Online teaching will increase my productivity in my English teaching.					
3. Online teaching will be useful for my English teaching.					
4. Learning to implement online language teaching will be easy.					
5. It will be easy to carry out my teaching plan using the online modality					
6. It is easy and clear for me to use online applications in language teaching.					
7. English teaching is more interesting with online teaching applications.					
8. Online language teaching is fun.					
9. I like using online teaching applications in English teaching.					
10. I like the part of language teaching that requires online tools.					
11. I can teach English lessons that appropriately combine content, online teaching applications, and teaching approaches.					
12. I can select appropriate online teaching applications to facilitate English teaching and students' learning in my English classroom.					
13. I can use strategies that integrate content knowledge, online teaching applications, and teaching approaches that I learned about in my coursework.					
14. I can provide leadership in helping others select appropriate teaching content, online teaching applications, and teaching approaches in my class.					
15. I can choose a suitable online teaching application that can enhance teaching English.					
16. People whose opinions I value will encourage me to use online teaching applications in English teaching.					
17. People who are important to me think that I should use online teaching applications in teaching.					
18. People expect me to use online teaching applications in English teaching.					
19. I'm willing to use online teaching applications in English teaching.					
20. I will use online teaching applications in my future English teaching.					
21. I plan to use online language teaching applications often.					
22. I intend to use online teaching applications as much as possible in my teaching.					

Note. The original questionnaire is in Chinese.

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