Changes in and Effects of TED Talks on Postgraduate Students' English Speaking Performance and Speaking Anxiety

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This research study explored the changes in and effects of TED talks on Chinese postgraduate students' English speaking performance and speaking anxiety over a period of 10 weeks. In this research, TED talks were used as a learning mode to provide a quasi-realistic sociocultural context for speaking English. 166 students from the experimental group using TED talks and 156 in the conventional mode participated in the quasi-experiment. They made eight-minute oral presentations and answered the 12-item English Speaking Anxiety Scale prior to and after the experiment. Analyses of the data revealed three major findings: 1) both the experimental and control groups did significantly better in English speaking performance and became significantly less anxious about speaking English over the 10-week period, 2) the experimental group did significantly better in move structure and were significantly less anxious about speaking English than the control group at the end of the 10-week period, and 3) the learning modes had a significant effect on students' move structures of oral presentations but had no effect on their oral presentation performance and English speaking anxiety. These findings support the benefit of supplementing EFL (English as a foreign language) teaching and learning with TED talks and other similar virtual situated learning. Thus, the present study not only contributes to the current literature, which is short of studies on the effects of technology on SL/FL teaching and learning and the dynamic characteristic of the emotions associated with SL/FL learning, but also suggests that virtual situated learning like TED talks should be incorporated into SL/FL teaching and learning.

Keywords: TED talks, learning mode, English speaking performance, English speaking anxiety, change, effect

Introduction

The ability to speak a second/foreign language (SL/FL) has always been one of the four basic language skills and a basic competency desired by SL/FL learners (Astawa, Mantra, & Widiastuti, 2017). Since it involves instantaneous planning, conceptualization, organization, and articulation, it is rather challenging and thus anxiety-provoking for most SL/FL learners due to limited access and exposure to the language (Horwitz, Horwitz, & Cope, 1995; Liu & Xiangming, 2019). It is more so for postgraduate students who need to share their research results via oral presentations, seminars, lectures, and conferences in oral English. Studies have revealed that authentic materials and adequate practice and exposure help enhance both speaking ability and confidence in speaking the target language (DeKeyser, 2007; Liu, 2018; Martinsen, 2011). With the development of technology in recent decades, more authentic materials are being made available to SL/FL learners who, assisted by computers, have more access and exposure to the SL/FL as well. One such example is TED talks, a series of formal virtual speeches on various topics that provide realistic sociocultural contexts for students to observe while ruminating on real speakers' speaking speed, paralanguage elements (e.g., pitch, stress, pauses, etc.), facial expressions (e.g., eye contact, smiling, etc.) and body language (e.g., gestures and moving around) as well as the organization of the speeches and use of arguments/details (Huang, Yang, Chiang, & Su, 2016; López-Carril, Añó, & González-Serrano, 2020). Students can then use the speeches as models and better their own oral presentations. This has led to more research on the effects of technology on students' learning of SLs/

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FLs and their emotions when using the target language (Kim, 2009; Melchor-Couto, 2017; Rahimi & Soleymani, 2015; Yang, 2017).

In spite of the growth of research in this area, the number of studies on the effects of technology on emotions and SL/FL learning outcomes is still inadequate considering the complexity of both technology and language learning (Aydın, 2018; Xiangming, Liu, & Zhang, 2020). Hence, the present research sought to examine the changes in and effects of TED talks on Chinese postgraduate EFL learners' English speaking performance and speaking anxiety, where TED talks were used as a learning mode to provide a quasi-realistic sociocultural context for English speaking. By examining the effects of technology on SL/FL teaching and learning and the dynamic characteristics of emotions associated with SL/FL learning, the present research is expected to enrich the current literature and suggest ways to incorporate virtual situated learning like TED talks into SL/FL teaching and learning.

Literature Review

Foreign language speaking anxiety

As one of the four basic language skills, the ability to speak is the primary means to communicate with the community of the target language. As a world lingua franca, English has been learned by millions of people around the world with various linguistic and cultural backgrounds. High English speaking proficiency has often been desired by ESL/EFL (English as a SL/FL) learners to communicate with people with diverse language backgrounds in both their daily and academic lives. Nevertheless, it is not easy for most ESL/EFL learners to achieve high proficiency in spoken English. Public speaking itself is anxiety-provoking (Spielberger, 1972). Speaking in a SL/FL is even more anxiety-provoking for most learners due to various linguistic, cultural, psychological, educational, and personality factors (Horwitz et al., 1986; MacIntyre, 2017).

The role of affect in SL/FL learning and acquisition has long been observed and researched: Positive affect like motivation and enjoyment helps enhance learners' commitment in learning while negative affect like anxiety often leads to undesirable results (Botes, Dewaele, & Greiff, 2020; Chow, Chui, Lai, & Kwok, 2017; Chow, Chiu, & Wong, 2017; Dewaele & Alfawzan, 2018; Horwitz et al., 1986; Gregersen, 2020; Liu, 2021). Foreign language anxiety (FLA), is defined in Horwitz et al. (1986, p. 128), as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process." This definition assumes that FLA is situation-specific, dynamic, and highly related to language learning. To measure this anxiety and explore its correlation with SL/FL learning outcomes, a variety of instruments have been developed such as diaries, self-ratings, interviews, observations, and questionnaires (Bailey, 1983; Graesser, D'Mello, & Strain, 2014; Horwitz et al., 1986; Loderer, Pekrun, & Lester, 2018). For example, Bailey (1983) wrote diaries to document the anxiety she experienced during the process of learning French as a FL. Picard (2010) used technology-advanced sensors to detect learners' brain activities, heart rates, blood pressure, and eye movement to explore their physiological states. The 33-item Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz et al. (1986) has been embraced by researchers to investigate SL/FL classroom anxiety and speaking anxiety (Cheng, Horwitz, & Schallert, 1999; Huang, 2018; Liu, 2018; Liu & Jackson, 2008; Yan & Horwitz, 2008).

The use of these instruments has generated a plethora of empirical research in various SL/FL contexts on anxiety related to SL/FL listening, speaking, reading, and writing (Botes et al., 2020; Dewaele & Al Saraj, 2015; Dewaele & Alfawzan, 2018; Horwitz, 2016; Liu, 2018, 2021; Liu & Jackson, 2008; Liu & Xiangming, 2019; Liu & Yuan, 2021; MacIntye, 2017; Serraj & Nordin, 2013; Shirvan & Taherian, 2021; Zhou, 2017). These studies have consistently shown that FLA is largely negatively correlated with SL/FL learning outcomes although it has sometimes been shown to be facilitating. The studies have also shown that speaking is the most anxiety-provoking activity, and that FLA interacts with the learning situation and changes as situations differ. For example, Dewaele and Alfawzan (2018) explored the effects of positive and negative effect on FL performance in 189 foreign language pupils in London and 152 Saudi EFL learners and users of English in Saudi Arabia. They found that positive affect had a stronger effect on FL performance. Dewaele and Al Saraj (2015) found that self-perceived proficiency was the strongest predictor of FLA and that participants who felt more proficient in oral English exhibited lower levels of FLA in English.

Both quantitative and qualitative methods used for anxiety research have shown that anxiety exists in almost every aspect of SL/FL learning and changes over time (Gregersen, 2020; Liu & Xiangming, 2019; Lu & Liu, 2015; MacIntyre & Gardner, 1994). Speaking publicly in the target language has always been found to be particularly anxiety-provoking for many SL/FL students, even those who feel little stress in other aspects of language learning (Horwitz et al., 1986; Králová, 2016; Liu & Xiangming, 2019; MacIntyre & MacDonald, 1998). The speech of anxious students is often accompanied by blushing, trembling hands, pounding heart, and headache (Cohen & Norst, 1989). Anxious students are less active in language classes and even perform avoidance behaviors like skipping classes and postponing their homework (Argaman & Abu-Rabia, 2002; Ely, 1986). Nevertheless, as they have more access to the target language and begin to use it more, they are likely to become more confident and less anxious when speaking the language (Bailey, 1983; Gregersen, 2020; Liu & Xiangming, 2019; Shirvan & Taherian, 2021). Thus, what causes foreign language speaking anxiety and how to reduce or even eliminate it has also become a research topic in the area.

Anxiety coping strategies

Concurrently, a complex set of reasons has been identified as contributors to foreign language speaking anxiety, including the inability to pronounce strange sounds and words, lack of practice, limited vocabulary, low self-confidence, low language proficiency, unfamiliarity with the learning environment, past unsuccessful experiences, evaluation, improper beliefs, and peer pressure (Bailey, 1983; Horwitz et al., 1986; Liu, 2018; McCoy, 1979; Young, 1991). Consequently, how to reduce or alleviate FLA and improve speaking performance has increasingly become the concern of more researchers. Various cognitive (e.g., being prepared and cooperative learning), affective (e.g., building and enhancing self-confidence via encouragement and praise, and being empathetic), and behavioral (e.g., having more practice and access to speaking English) strategies have been proposed for instructors and learners to help handle FLA in and outside classrooms (Alrabai, 2015; Chow et al., 2017; Guo, Xu, & Liu, 2018; Horwitz et al., 1986; Lee, 2016; Liu & Huang, 2011; Liu, 2018, 2021; Liu & Xiangming, 2019). In spite of these suggestions, little research has been done on using specific strategies to reduce FLA in classrooms, which may be largely due to the lack of practicing environments. Moreover, traditional classroom activities seldom truly reflect real-world contexts and thus are not well equipped to respond to situated language learning. This, nevertheless, can be (well) compensated for with the integration of technology into SL/FL instruction, which creates (nearly) authentic use of the target language in virtual environments, increases practice and exposure to the target language, and enhance learners' self-confidence when using the language (Alcòn-Soler, 2015; Ataiefar & Sadighi, 2017; DeKeyser, 2007; Grant, Huang, & Pasfield-Neofitou, 2018; Hashemi & Abbasi, 2013; Hsiao, Lan, Kao, & Li, 2017; Lindgren, Tscholl, Wang, & Johnson, 2016; Moeller & Catalano, 2015; Stout, 2019).

For example, in Grant et al. (2018), chatting with anonymous identities in the virtual environment increased students' practice, reduced their FLA, engaged them more in the learning activities, and enhanced their language competence. Rahimi and Soleymani (2015) adopted an experimental design and explored the effect of using podcasts to practice listening skills on 50 intermediate EFL learners over the course of a semester. The results showed that listening to podcasts significantly reduced listening anxiety and enhanced listening capacity in the experimental group. Shams (2005) examined the use of computerized pronunciation practice as a tool for the reduction of foreign language anxiety via a pre-test/post-test comparison group design. Students in the experimental group practiced their pronunciation using the computer while students in the comparison group practiced with cassettes. ANOVA analyses revealed that the computer-aided practice significantly improved the quality of the experimental group's pronunciation but exerted no significant effect on decreases in anxiety. The researcher believed that this was because the students could set their own learning pace and control the learning activities when practicing on the computer. Xiangming et al. (2020) designed a 10-week longitudinal study to examine the effects of the Rain Classroom mobile learning app on 158 Chinese postgraduate students' English speaking anxiety and English performance. Statistical analyses of pre- and post-test data revealed a significant decrease in anxiety and improvement in English performance, especially speaking performance. This might be because the app not only provided the learners with more practice but a collaborative learning environment in which they could observe and assess their own learning as well as their peers'.

Research Questions

As reviewed above, foreign language speaking anxiety exists in many learners and consistently has a negative effect on their performance to varying degrees. Meanwhile, FLA is dynamic and interacts with various other factors. Thus, it is always worthwhile to research it using students with varying backgrounds in different SL/FL contexts. Along with research on foreign language speaking anxiety is research on how to handle it to improve students' confidence and proficiency in the target language. Although more research has been conducted on the use of technology in relation to language learning outcomes and anxiety, works like these are still scarce, meaning that both learning outcomes and FLA as well as other feelings associated with technology-assisted learning contexts need to be further researched. TED talks, as free virtual talks, are often used as educational resources to help students improve their speaking proficiency in the target language and presentation skills, but have not been researched sufficiently (Greenhow & Galvin, 2020; Hsiao et al., 2017; Taguchi, 2018). Therefore, the present study designed a quasi-experiment to explore the changes in and effects of TED talks on Chinese postgraduate students' English speaking performance and speaking anxiety over a period of 10 weeks.

TED, starting in 1984 as a conference where technology, entertainment, and design converged, is a nonprofit organization devoted to spreading ideas, usually in the form of short and powerful virtual talks (18 minutes or less) and covers a wide range of topics, from science to business to global issues, in more than 100 languages (www.ted.com/about/our-organization). In this research, TED talks in English were used as a learning mode to provide a quasi-realistic sociocultural context for students to learn from, model, and develop their own English speeches. The research questions were:

1. How will students' English speaking performance and speaking anxiety change during the 10-week period?
2. What are the effects of TED talks on students' English speaking performance and speaking anxiety?

Materials and Methods

Context

This study was conducted on first-year doctoral students of the Advanced English Speaking course instructed by two female teachers in their 30s with a similar educational background in a Chinese university in Beijing. The course aimed to improve postgraduate students' ability to present ideas and communicate with others in formal situations like lectures, seminars, and conferences. Hence, classroom teaching generally consisted of instruction and practice speaking English in various forms. Instruction mainly focused on the structure of a speech: How to state claims/ideas, how to support the claims/ideas, how to organize ideas in a speech, how to prepare a presentation for a conference/seminar, and how to ask and answer questions after a presentation. Understandably, instruction was often brief, followed by a variety of activities exercised in class, such as pair work, group discussion, and individual and group presentations on differing topics. Example topics included in the activities were progress on a project, communication with the supervisor, experiences with and feelings of participating in/presenting at a conference/seminar, women rights, and so on. Individual and group presentations also covered a variety of topics such as technology and privacy protection, wireless charging, cringe attacks, presidential elections in USA, autonomous driving, narrative design in museum exhibitions, and so on. In addition to questions and answers, the instructors commented on each individual/group presentation in terms of its strengths and weaknesses.

When the present research was conducted, each of the two teachers taught four sections (each class had about 40 students) of the same course. According to the results of the English placement test taken upon entering the university, these students were intermediate to advanced learners of English at a similar English proficiency level. In order to increase students' exposure to real English speaking scenarios and practice of English speaking, especially English speeches in formal situations, the instructors used TED talks in English on various topics (e.g., collaborative consumption, positive emotions, artificial intelligence, bitcoin, design in life, etc.) every other week for 10 weeks in half classes, keeping all the other activities the same for all classes. To test the effects of TED talks, two classes from each instructor were randomly chosen as the experimental group (with TED talks) and the other two as the control group (without TED talks), and these were considered to be two different learning modes in the present research. In experimental classes, a 15-18 minute TED talk was played

first and then analyzed by the instructors in terms of the move structure (Appendix B), ideas, and development of the ideas. After that, the students were asked to discuss and share ideas on any aspect of the video in terms of questions and answers, group discussions, and pair work. The analysis and discussions took up about 30 minutes. Meanwhile, the students were encouraged to watch and imitate TED talks, including those discussed in class, after class, for at least one TED talk per week. It was hoped that the TED talks would provide students with a nearly realistic context to listen to, watch, and model their English speeches on at their own pace and from different angles such as the organization and delivery of the speeches.

Participants

A total of 322 (217 male and 105 female) first-year postgraduate students from eight natural intact classes of the Advanced English Speaking course taught by two instructors participated in this research. They were chosen as participants of the present research because they had the need to communicate in academic oral English, which is more challenging and anxiety-provoking than general oral English, and the use of TED talks was consistent with the aim of the course.

With an average age of 22.295 (SD = 2.59), the students were from various disciplines such as Civil Engineering, Architecture, Chemistry, Automation, and Economics and Management. Data for the final analyses showed that 166 (114 male and 52 female) students were in the experimental group and 156 (103 male and 53 female) students were in the control group. During the 16-week term, each instructor and the students met once a week, lasting 90 minutes each time.

Instruments

The participants in this quasi-experimental research made individual presentations and answered the English Speaking Anxiety Scale before and after the 10-week period, as detailed below.

English speaking performance
Students' English peaking performance was measured via oral presentations in the present research. The students were required to give an eight-minute oral presentation on subjects of their own choice in weeks 2 and 3 (pre-test, namely prior to the use of the TED talks) and weeks 14 and 15 (post-test, namely after the use of the TED talks) respectively, each followed by a five-minute question and answer session to clarify or expound ideas. Both topics and presentations should be formal and academic.

The questionnaire
The questionnaire had two parts: the background information questionnaire and the English Speaking Anxiety Scale. The background information questionnaire was intended to collect such information about the participants as gender, age, and discipline. The 12-item Speaking Anxiety Scale used in the present study was modified from the 33-item Foreign Language Classroom Anxiety Scale developed by Horwitz et al. (1986). To measure students' English speaking anxiety, the present study selected only the items associated with anxiety/ confidence when speaking English, which resulted in a total number of 12 items named the English Speaking Anxiety Scale (ESAS). Example items were "I never feel quite sure of myself when I am speaking English in my class" and "I don't feel anxious when I talk to native speakers of English". All the ESAS items were placed on a 5-point Likert scale ranging from 'Strongly disagree' to 'Strongly agree', with values 1-5 assigned to the descriptors respectively. Consequently, the higher the ESAS score, the more anxious about speaking English a respondent was. The basic characteristics of ESAS are presented in Table 1, which revealed fairly high reliability and good mean item-total correlation for ESAS in each phase for both the experimental and control groups.

Table 1

Characteristics   of   the   English   Speaking   Anxiety   Scale   (ESAS)

Group/Learning mode	Phases	No. of items	Reliability	Mean item-total correlation (p = .01)
Experimental group (N = 166)	Pre-test	12	.924	.505
	Post-test	12	.806	.463
Control group (N = 156)	Pre-test	12	.921	.464
	Post-test	12	.802	.480

Data collection procedure and analyses

The present study employed an experimental design and collected data over a 10-week period of time during a 16-week semester. Since the placement test showed that the students were at a similar English proficiency level, the eight intact classes were randomly assigned to the experimental and control groups, with four classes in each group. In week 1, the instructors informed students of the course purpose and requirements, classroom activities, and the use of TED talks in respective classes. Students filled in the survey and a consent form, and gave oral presentations in weeks 2-3 as well as in weeks 14-15. Each oral presentation was recorded and assessed in terms of overall performance and move structure. The overall performance was holistically scored by two instructors using the oral presentation rubric adapted from the one developed by Bresciani and his associates (2009) (Appendix A) on a scale of 1-20. The rubric covered four dimensions: Organization, originality, authenticity, and delivery, with a score of 1-5 for each dimension. To better fit the present situation, the significance of the topic and citation of resources were added while being interesting and enthusiastic was deleted from the rubric. With an inter-rater reliability of .913, the mean of the two scores was chosen as the final score of an oral presentation. Meanwhile, the two instructors scored each presentation's move structure on a scale of 1-20 according to the scheme adapted from the one developed by Chang and Huang (2015) (Appendix B). The scheme consisted of five main categories and nine subcategories of move structures of oral presentations: listener orientation, speaker presentation, topic introduction, topic development, and closure. Listener orientation is when presenters greet and engage the audience; speaker presentation is when presenters introduce themselves and connect themselves with their topics; topic introduction is when presenters introduce their topics to the audience; topic development is when presenters develop their topics in different ways, describing, supporting, and expanding the main theme; and closure is when presenters signal the completion of their presentations. With an inter-rater reliability of .929, the mean of the two scores was chosen as the final score of the move structure of an oral presentation.

The survey data were analyzed via SPSS 20. Paired samples t-tests were conducted to explore differences in English speaking performance and anxiety of the experimental and control groups between the two phases; independent samples t-tests were run to examine differences in English speaking performance and anxiety between the experimental and control groups in the two phases; and then a one-way between-groups analysis of covariance (ANCOVA) was conducted to explore the effects of the TED talks on English speaking performance and anxiety.

Results

Changes in English speaking performance and speaking anxiety

In order to explore the differences in English speaking performance and anxiety of the experimental and control groups in two phases, paired samples t-tests were run between pre- and post-test scores of oral presentations, move structure, and English speaking anxiety. The results are reported in Table 2, which shows that the experimental group scored higher on their oral presentations (mean = 17.60 ~ 20.25) and move structure (mean = 17.22 ~ 21.13) but lower in ESAS (mean = 2.87 ~ 3.14) in phase 2 than in phase 1. All of the differences were statistically significant, with t values ranging from -24.53 to 4.92 (p ≤ .001), as evidenced by the paired samples t-test results reported in Table 2. A similar pattern was observed for the control group over the 10-week period, with t values ranging from -24.73 to 6.53 (p ≤ .001). These findings clearly indicate that

both the experimental and control groups did significantly better on their oral presentations and move structure and became significantly less anxious about speaking English at the end of the 10-week period.

Table 2

Means and SDs of English speaking performance and anxiety of the experimental and control groups (N = 166)

Mean			Pre-test	Post-test		Paired samples t-test results	
		SD	Mean	SD	t	p	Cohen's d
The experimental group (N = 166)	Oral presentations	17.60	1.49	20.25	1.37	-24.53***	.000	22.08
	Move structure	17.22	1.46	21.13	1.18	-23.74***	.000	13.96
	ESAS	3.14	.81	2.87	.59	4.92***	.000	1.23
The control group (N = 156)	Oral presentations	17.78	1.67	20.15	1.39	-21.37***	.000	8.46
	Move structure	17.55	1.43	20.62	1.46	-24.73***	.000	10.23
	ESAS	3.30	.78	3.02	.59	6.53***	.000	1.47

Notes: *** = p ≤ .001; degree of freedom = 165; effect size of Cohen's d: small = d ≤ 0.2;   medium = d = 0.5; large = d ≥ 0.8 (Cohen, 1988)

Differences in English speaking performance and anxiety between the experimental and control groups

As summarized in Table 2, the experimental group scored slightly lower on their oral presentations, move structure, and ESAS than the control group in phase 1, but higher on their oral presentations and move structure, though lower in ESAS than the control group in phase 2. Nevertheless, statistically significant difference occurred in move structure (t = -2.04, p = .043) between the two groups in phase 1, and in move structure (t = 2.46, p = .014) and ESAS (t = -2.31, p = .021) in phase 2, as reported in Table 3. These results indicate that the experimental group did significantly better on move structure than the control group (d = .02) but their oral presentations and English speaking anxiety were similar to the control group in phase 1. Meanwhile, the respondents in the experimental group did significantly better in terms of move structure (d = 0.11) and reported feeling significantly less anxious about speaking English (d = 0.15) than their counterparts in the control group in phase 2.

Table 3

Independent   samples   t-test   results   of   English   speaking   performance   and   anxiety

	Pre-test			Post-test		
	t	p	Cohen's d	t	p	Cohen's d
Oral presentations	-1.02	.310	/	.685	.594	/
Move structure	-2.04*	.043	0.02	2.46*	.014	0.11
ESAS	-1.88	.061	/	-2.31*	.021	0.15

Notes: * = p ≤ .05; degree of freedom = 320; Effect size of Cohen's d: small = d ≤ 0.2;   medium = d = 0.5; large = d ≥ 0.8 (Cohen, 1988)

Effects of using TED talks on English speaking performance and anxiety

To explore the effects of TED talks on English speaking performance and anxiety, a one-way between-groups analysis of covariance (ANCOVA) was conducted on oral presentations, move structure, and English speaking anxiety, respectively. Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate.

Effects on oral presentation

In order to explore the effects of using TED talks on students' oral presentations, ANCOVA was employed with post-test oral presentation scores as the dependent variable, pre-test oral presentation scores as a covariate, and learning modes (namely the experimental group using the TED talks and the control group using conventional methods) as the independent variable. The results are reported in Table 4, which shows that the learning modes had no effect on students' post-test oral presentations (F = 2.346, p = .127, partial Eta squared = .007).

Table 4

Results of ANCOVA on oral presentations

Resources	Type III sum of squares	df	Mean Square	F	p	Partial Eta squared
Intercept	329.359	1	329.359	253.873	.000	.443
Pre-test oral presentations (covariate)	197.132	1	197.132	151.951	.000	.323
Learning modes	3.043	1	3.043	2.346	.127	.007
Error	413.850	319				

Effects on move structure

In order to explore the effects of using TED talks on the move structures of oral presentations, ANCOVA was employed with post-test move structure scores as the dependent variable, pre-test move structure scores as a covariate, and learning modes (namely the experimental group using the TED talks and the control group using conventional methods) as the independent variable. The results are reported in Table 5, which shows that the learning modes had a significant effect on students' post-test move structures (F = 12.228, p = .001, partial Eta squared = .037).

Table 5

Results   of   ANCOVA   on   move   structures

Resources	Type III sum of squares	df	Mean Square	F	p	Partial Eta squared
Intercept	326.464	1	326.464	110.296	.000	.257
Pre-test move structures (covariate)	167.061	1	167.061	56.441	.000	.150
Learning modes	36.193	1	36.193	12.228***	.001	.037
Error	944.206	319				

Effects on English speaking anxiety

In order to explore the effects of using TED talks on students' English speaking anxiety, ANCOVA was employed with post-test ESAS scores as the dependent variable, pre-test ESAS scores as a covariate, and learning modes (namely the experimental group using the TED talks and the control group using conventional methods) as the independent variable. The results are presented in Table 6, which indicates that learning modes had no effect on students' post-test English speaking anxiety (F = 2.112, p = .147, partial Eta squared = .007).

Table 6

Results of ANCOVA on English speaking anxiety

Resources	Type III sum of squares	df	Mean Square	F	p	Partial Eta squared
Intercept	39.863	1	39.863	183.553	.000	.365
Pre-test ESAS (covariate)	42.427	1	42.427	195.361	.000	.380
Learning modes	.459	1	.459	2.112	.147	.007
Error	69.278	319				

Discussion

This quasi-experiment investigated the changes in and effects of TED talks used as a learning mode on Chinese postgraduate students' English speaking performance and speaking anxiety over a period of 10 weeks.

Research question one was related to changes and differences in English speaking performance and speaking anxiety during the 10-week experiment. Analyses of the data revealed that both the experimental and control groups outperformed in post-test oral presentations and move structures and became significantly less anxious about speaking English after the experiment, with a large effect size. Consistent with those found in many studies on anxiety in SL/FL contexts (Alcòn-Soler, 2015; Ataiefar & Sadighi, 2017; Grant et al., 2018; Hsiao et al., 2017; Lindgren et al., 2016; Liu, 2021; Liu & Yuan, 2021; Moeller & Catalano, 2015), these findings further confirm the belief that increased exposure and practice help improve speaking performance and reduce anxiety. As previously described, to improve students' English speaking ability in formal situations, the instructors organized various activities to practice using English. Ten weeks' instruction in this way definitely provided substantial exposure and chances to practice speaking English, which enhanced the students' English speaking skills and performance as well as their confidence in speaking English. As students' proficiency in spoken English increased, they became more confident when speaking English, and vice versa. At the same time, these findings further confirm the dynamic nature of foreign language anxiety (Dewaele & Dewaele, 2017; Gregersen, 2020; Liu, 2021; Liu & Xiangming, 2019; Piniel & Csizer, 2015; Shirvan & Taherian, 2021; Xiangming et al., 2020).

Research question two was concerned with the effects of TED talks on students' English speaking performance and anxiety. This question was answered by the results of independent samples t-tests of English speaking performances and anxiety scores between the experimental and control groups and ANCOVA of TED talks on English speaking performance and anxiety. Independent samples t-tests revealed that the experimental group outperformed the control group in move structure but were similar to the control group in oral presentations and English speaking anxiety in phase 1, suggesting that they were basically at a similar starting point in English speaking performance and anxiety prior to the experiment. The tests also showed that the experimental group did significantly better in move structure and became significantly less anxious about speaking English than their counterparts in the control group in phase 2, although with a small effect size. This was partially consistent with the results of ANCOVA which demonstrated that using TED talks had a significant effect on students' move structures in their oral presentations but had no effect on their oral presentations and English speaking anxiety. These findings clearly indicated that using TED talks helped improve students' English speaking performance and reduce their speaking anxiety levels. As previously reviewed, virtual reality created by technology (i.e., computers and multimedia) provides realistic sociocultural contexts for language learning, in which learners can interact in real-world situations with instruction from educational applications (Greenhow & Galvin, 2020; Hwang & Chang, 2011; Mulyono & Suryoputro, 2020). Likewise, using TED talks provided adequate chances for the participants to learn from and model the talks, especially the move structures of the talks in the present research, and enhanced their confidence when giving English oral presentations. This was largely the reason why the experimental group outperformed the control group in move structure and English speaking anxiety. Nevertheless, probably because the TED talks did not offer any chance for viewers to interact with the speakers or other viewers, as in other learning-oriented virtual environments (Greenhow & Galvin, 2020; Hsiao et al., 2017; Mulyono & Suryoputro, 2020; Taguchi, 2018), it seemed that the participants' overall English speaking performance was not significantly affected by the TED talks. Even so, as suggested in Huang, Hsu, Lai, and Hsueh (2016) and Hwang and Wang (2016), situated learning with computers and multimedia technologies can be employed as an alternative to real-life settings to supplement SL/FL classroom teaching and learning. This can not only increase learners' interest in, exposure to, and practice of the target language but also other linguistic competencies like pragmatic abilities (e.g., the ability to address the audience, the ability to elicit responses from the audience, the ability to stress an idea, etc.) as well as confidence in using the language (Gee, 2012; Huang et al., 2016; Kim, 2009; Lan & Lin, 2016; Liu & Xiangming, 2019). Ultimately, their competence in the language will be promoted and emotions in learning and using the language will become more positive and proactive (Hsiao et al., 2017; Lindgren et al., 2016; Liu & Xiangming, 2019; Shirvan & Taherian, 2021; Xiangming et al., 2020). For example, the participants using TED talks in the present research raised their awareness of textural features of English oral presentations and improved the move structures of their oral presentations. Understandably, they became more confident and less anxious when giving oral presentations in English. With more practice, they would learn to become more skilled at organizing and presenting the contents and interacting with the audience, improve their pronunciation and intonation, and learn to stress important ideas better. Accordingly, they would also enhance

their proficiency in oral English. This is especially so in the pandemic COVID-19 context when most schools are closed and shifting to online teaching and learning. As evidenced in López-Carril et al. (2020), TED talks can be employed as useful pedagogical resources in education.

Meanwhile, it should be noted that there were some limitations in the present research. The major limitation was that it remained unclear whether the students in the control group accessed and watched TED talks on their own outside the classroom. This made it less likely to determine the degree of effects that TED talks had on the respondents' English speaking performance and anxiety. Future research should be more cautious to reduce such risks. Moreover, interview data would enable us to better understand how TED talks helped improve students' speaking performance and decrease their anxiety. For example, whether it was the content of TED talks or increased exposure and familiarity with English speeches aided by TED talks that played a more important role in affecting students' speaking performance and anxiety remains to be further researched. Furthermore, it is commonly acknowledged that individual differences (e.g., differences in cognition, language aptitude, emotion, behavior, and personality) play a crucial role in SL/FL teaching and learning (Liu, 2018; MacIntyre & MacDonald, 1998; Skehan, 1989), thus future research should include more such individual variables to explore the varying effects of technology as well as their interactive effects on SL/FL learning. The results may also, in return, provide useful feedback for the development and innovation in technology.

As technologies and technology-created virtual environments are increasingly applied in language education, their effects need to be continuously researched, which will reveal more effects of the technology on SL/FL teaching and learning.

Conclusion

The present longitudinal study examined the changes in and effects of TED talks used as a learning mode on Chinese postgraduate students' English speaking performance and speaking anxiety. The study yielded the following major findings:

1. both the experimental and control groups performed significantly better in oral presentations and reported feeling significantly less anxious about speaking English in the post-test phase,
2. the experimental group did significantly better on move structures and were significantly less anxious about speaking English than the control group in the post-test phase, and
3. learning modes exerted a significant effect on students' move structures of oral presentations but had no effect on their oral presentation performance and English speaking anxiety.

These findings clearly showed that TED talks significantly improved students' oral presentations' move structures and that the experimental group did better on their oral presentation and became less anxious than the control group in phase 2, indicating that TED talks did benefit the students' learning of oral English. The present study not only contributes to the current literature, which is short of studies on the effects of technology on SL/FL teaching and learning and the dynamic characteristic of emotions associated with SL/FL learning, but also suggests that virtual situated learning like TED talks should be incorporated into SL/FL teaching and learning. Nevertheless, the application and effects of TED talks in second/foreign language classrooms need to be further researched.

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Appendix A

Oral   **presentation**   **scoring**   **rubric**

Criteria	*5*	*4*	*3*	*2*	*1*
Organization	Information presented is complete and in a logical order. Very good timing and pace.	Information presented is nearly complete and in a logical order. Appropriate timing and pace.	Some information is presented out of sequence. Some information is missing. Have some timing and pacing problems.	Poor sequence or illogical presentation of information. Much information is missing. Poor timing and pace.	Lack sequence/logic in the presentation. Present too much/ little material for the allotted time.
Originality	Ideas are very creative or original; expand on established ideas.	Ideas are fairly original or creative.	Ideas are moderately original or creative.	Ideas are limited in originality and creativity.	Ideas are not original or creative.
Authenticity	Topic is extremely relevant and/or significant. Very well-cited. .	Topic is fairly relevant and/or significant. Well-cited.	Topic is moderately relevant and/or significant. Has some citation problems.	Topic is somehow relevant and/or significant. Poorly-cited.	Topic is not relevant and/or significant. Little/no citation
Delivery	Rely little on notes, express ideas fluently in own words. Very good voice, body language, and communication skills. Very good PPT slides.	Rely little on notes. Fairly good voice, body language, and communication skills. Good PPT slides	Often refer to notes. Pause often. Good voice, body language, and communication skills. Fairly good PPT slides.	Rely extensively on notes. Low voice, inappropriate body language and communication skills. Poor PPT slides.	Read notes/materials. inappropriate body language and communication skills. Poor PPT slides.

Appendix B

The coding scheme for oral presentation move structures

Main categories	*Subcategories*	*Examples*
Listener orientation	A1. Greet audience	*Good morning, everyone.*
	A2. Engage the audience	*AI (artificial intelligence) has been heatedly discussed in recent years.*
Speaker presentation	B1. Introduce oneself	*I am Joan from the School of Civil Engineering.*
	B2. Show stance/position (optional)	*I believe architecture is closely related to people's health.*
Topic introduction	C1. Announce the topic	*The topic of my presentation is climate change and food quality.*
	C2. Outline structure (optional)	*The outline of my presentation is as follows: I'll talk about the first industrial revolution, and then the second industrial revolution, followed by the third and the fourth industrial revolutions respectively.*
Topic development	D1. Present the content logically	*Studies have shown that people are unwilling to have a second baby due to many reasons, such as …. The two main reasons are the cost of education and high housing prices. …*
Closure	E1. Concluding messages	*That's the end of my presentation.*
	E2. Acknowledgements/gratitude	*Thank you for listening.*