Employing Virtual Reality-enhanced Task-based Language Learning and Teaching to Mitigate Interview Anxiety

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ABSTRACT

One of the main essences of task-based language learning and teaching (TBLT) is performing real-world and authentic tasks. This study investigates the potential of virtual reality (VR) as the medium to reinforce TBLT to stimulate authentic and real-world tasks to promote language learning. The present study's objective is to use a VR application called /spiːx/, designed to reduce learners' anxiety in job interview settings. Fifty undergraduate learners from engineering, technical, and sciences enrolled in Professional Communication classes were recruited to participate in the study. Their interview anxiety was measured before and after three sessions of using /spiːx/. The findings reported a reduction in interview anxiety by 12%. A paired two-sample for means t-test was conducted, indicating a significant difference between the pre- and post-tests with a p-value of <0.05. The study suggests the potential of using VR in TBLT classrooms, which elevates interview learning experiences for the learners, especially for those with zero interview experience. The integration of VR through task-based learning could equip learners to navigate real job interviews more effectively and enhance their employability.

Keywords: task-based language teaching and learning (TBLT), virtual reality (VR), interview anxiety, /spiːx/, employability

Introduction

Founded in the 1980s, task-based language learning and teaching (TBLT) is one of the learner-centered approaches in the field. Using real-world authentic tasks, TBLT places learners in the centre of the class activity where they need to process their thoughts while learning a second or foreign language. This could encourage learners to actively shape and control the discourse because of the meaningful tasks they must perform, and consequently complete them. In the current world of digital natives, the rapid advancement of technology has significantly influenced language learners, highlighting the need for language learning to be aligned with

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contemporary technological developments while adhering to the foundational language learning and teaching theories. Consequently, it is not surprising that numerous contemporary studies advocate for the integration of technology into language classrooms (Adams*, et al.,* 2024; González-Lloret & Ortega, 2014; Stockwell, 2010). Muller-Hartmann and Ditfurth (2010) discuss the rationale behind incorporating technology into TBLT. Their exploration, which spans from theoretical frameworks to concept development, indicates that technology-mediated TBLT is a highly sought-after topic in modern language instruction. In a recent study by Mukhtar *et al*. (2024), it is evident that language produced via synchronous computer-mediated communication as learners performed tasks in language classrooms is beneficial in promoting syntactic complexity.

Many task-based studies have investigated various technological tools to enhance language acquisition, including the earlier ones like text chat and Wikispaces (Ahamat & Masrom, 2014; Nik *et al.,* 2012). Hampel (2010) also addresses task design for virtual environments, noting that several factors contribute to the feasibility of virtual task-based learning today, including the use of engaging electronic tools such as forums and chat rooms. As learners find these tools interesting, the landscape of language learning has evolved from simpler platforms like chat rooms and forums to more complex ones like blogs that incorporate multimedia stimuli such as graphics, text, and audio. Interestingly, approximately 14 years after the publication of Hampel's chapter, these once-advanced tools like blogs are now considered outdated and obsolete, illustrating the rapid pace of technological innovation. González-Lloret (2017) similarly argued that earlier iterations of Web 2.0 technologies may need further adaptation as newer, more sophisticated technologies emerge, especially in light of their adoption by younger generations, often referred to as digital natives. Given this context, the current study aims to leverage a contemporary technology, which is VR in TBLT to investigate its effectiveness in interview settings.

Problem Statement

Unemployment is not an aberrant issue in Malaysia, but recent research indicates that it has worsened, particularly after the COVID-19 pandemic. Ismail and Zakaria (2021) provide evidence in their job-hunting book, showing the increasing competition in the job market. They report that since 2014, about 20% of new graduates were unemployed annually, up until 2019. A study conducted by a public university in Malaysia found that the pandemic intensified this trend, severely affecting more graduates during the economic downturn (Rahman *et al*., 2020). Interviews with recent graduates revealed that many are willing to accept jobs lower than their academic qualifications, highlighting their struggles and desperation in finding employment post-pandemic. The challenge of unemployment is often associated with insufficient English communication skills in the workplace (Ismail & Zakaria, 2021; Rahman *et al*., 2020). As such, addressing the issue of undergraduate English proficiency to improve graduates' employability is necessary. To counter the issue of employability among Malaysian graduates, courses like Professional English are developed to cater to more authentic and real-life applications of English language tasks for the students. For instance, documents preparation for job employment and mock job interviews. This aligns with the core fundamental of the TBLT approach, which is to "create a communicative/real-world rationale" (Abdollahzadeh, 2010, p. 28). More discussion on the application of TBLT will be explored in the next section.

Literature review

In the beginning of technology-mediated tasks in research involving second language acquisition (SLA), tasks tend to be more generic. For instance, tasks such as information gap and jigsaw are perhaps seen as more feasible in face-to-face settings and not applicable in online mode. To better fit into a more contemporary context of technology-mediated TBLT, González-Lloret (2017, p. 235) reiterated the essential characteristics of a task as follows:

1. The task must prioritise meaning, be communicative in nature, and emphasise the message rather than the language itself. It should also be goal-oriented and as authentic as possible.
2. A student's success is determined by the completion of the task itself rather than by their focus on linguistic accuracy, aligning with Dewey's experiential learning theory.
3. TBLT aims to foster language acquisition through a task-based syllabus, rather than through isolated tasks or lessons.

These serve as the fundamentals when designing the lessons for the Professional English course to ensure that it is a task-based syllabus. When designing TBLT lessons, it is crucial to refer back to past literature on task characteristics as the task design impacts the types of interactions and linguistic outcomes. In this discussion, different task designs will be explored and later in 3.2 Pedagogic Setting: TBLT Instruction and Lessons, the task designs applied for the present study will be discussed.

Focused vs. Unfocused Task

Task can be either focused or unfocused. Focused task, according to Shintani and Ellis (2014) is a "situational grammar exercise" (p. 138) designed to ensure the learners use specific language focus. Unfocused, on the other hand, is when the task is designed with general usage of the language without a specific language focus. Previous literature found that focused tasks induced higher retention, especially for vocabulary and grammar achievements compared to unfocused tasks (Ahour & Shemshadsara, 2015; Yahya, 2019).

Convergent vs. Divergent Task

Task also can be classified as convergent or divergent. Convergent tasks direct learners to one single answer, whereas divergent ones allow learners to handle multiple answers and engage in a debate to achieve a consensus. According to Yahya (2019), convergent tasks encourage teamwork, whereas divergent tasks allow creative thinking.

One-way vs. Two-way Task

A one- way task is when the information flows in one direction, such as listening task where the learners only have to listen and answer the questions. On the other hand, two-way task is when two or more learners can exchange the information to negotiate for meaning. Past studies have shown that two-way tasks such as jigsaw tasks help learners interact more as they need to exchange information (Shintani and Ellis, 2014; Yahya, 2019).

Simple vs. Complex Task

Tasks can also be simple or complex tasks. According to Robinson and Gilabert (2007), simple task requires minimal cognitive efforts, whereas complex task has different layers and more cognitive effort by the learners.

Technology-Mediated TBLT Language Classroom

The benefits of technology-mediated TBLT approach language classrooms include creating authentic and applicable real-life situations for the learners to practice. For instance, Reinhardt (2020) found that using social media as a platform for language learning provides authentic learning, promotes collaboration, and increases students' motivation. Adams *et al.* (2024) researched computer-mediated communication modalities and found that task complexity and modality play a significant role in facilitating the production of lexical complexity and quantity of learner language. Given the numerous advantages of integrating technology in task-based classrooms, this research aims to explore the use of one of today's most sought-after technologies, VR. Dailey-Hebert *et al.* (2021) predict that in a few more years, people will be using virtual spaces, also known as Metaverse when communicating, which delineates the significance of researching virtual spaces as a language platform. This is further supported by Wang *et al.* (2021), who highlight the importance of virtual spaces in their research.

More studies examining technology-assisted language learning reported great advantages such as Le et al. (2024). The study found that VR has been proven to improve learners' motivation and self-efficacy. Another study also reported on VR's effectiveness in reducing speaking anxiety (Ha, 2024). Similarly, in a study by Shamsuddin *et al.* (2022), it was found that students that went through three sessions of VR treatments experienced more reduction in public speaking anxiety compared to their friends who did not. Many studies also reported on the use of VR in language classrooms (Xue, 2022; Zhao *et al.,* 2023). These studies highlight on the potential of VR in language classrooms. However, not many studies have been done to utilize VR as the medium for language acquisition using TBLT approach.

Perhaps, the closest study was done by Jaurengi *et al.* (2011) that studied the task-based learning framework in a virtual environment called *Second Life*. It was found that *Second Life* has the capacity to replicate real-world tasks. Several of the authentic tasks include shopping in the mall and joining online meetings. These provide affordances for the learners to engage in meaningful interactions with other online players. This not only encourage language practice but also helps with social and cultural awareness as the learners have to engage in authentic conversations with online learners. In addition, the virtual setting also helps to improve learners' negotiation skills. *Second Life* VR application creates a great platform for learners to practice their language but does not include a mock job interview. In an in-depth review on technology-mediated TBLT applications, Ziegler (2016) emphasises that there should be more research on other virtual platforms in task-based settings. The researcher mentions that there is a gap in the literature in understanding how a virtual environment can influence language production and performance. In response to this, this study aims to fill in this gap to utilise VR as a tool to implement the TBLT approach which features job interviews as the main language focus. By utilising VR, this aim hopes to create an immersive and authentic virtual environment for learners to improve their interview skills while alleviating their interview anxiety.

Interview Anxiety and VR

Interview anxiety can vary from one person to another. Some reported feeling anxious and discomfort, whereas some may exhibit physiological symptoms like increased heartbeats and sweaty palms (Ryness *et al*., 1991). In most cases, a job interview can be anxiety-inducing as it is used as the main strategy for many companies to hire people (Heimberg *et al.,* 1986; McCarthy & Cheng, 2014; Posthuma *et al*., 2002; Pulakos, 2005). Another reason job interview is stressful is due to the negative correlation to interview performance (Schneider et al., 2019). This means that if one has high interview anxiety, that person is more likely to perform poorly in the interview. Not only that, with the alarming unemployment rate in Malaysia, most people

find job interviews more daunting (Hanapi & Nordin, 2014; Ibrahim & Mahyuddin, 2017). This is even more concerning after the COVID-19 pandemic. A study by Anggeraeni and Mara (2024) studied interview anxiety amongst engineering students post-COVID. It was found that the stress was mostly rooted in the preparation of the interview, and the stress due to the pandemic also induced more anxiety.

According to McCarthy and Goffin (2004), there are five components of interview anxiety. The first is communication anxiety, which refers to a candidate's fear of communicating during the interview. This component includes both verbal and non-verbal communication. According to Watson and Bossley (1995), the interview session can be an anxiety-inducing situation for some people because during an interview, interviewees are expected to maintain a two-way communication with the interviewer, which can be quite pressuring. Appearance anxiety is another component in interview anxiety which refers to the candidate's anxiety with physical appearance, which also includes physical attractiveness, dress code, and weight (Watson & Friend, 1969). This component can be more evident in some countries and cultures such as South Korea. The third component is social anxiety, which refers to the fear of maintaining good relationship with the interviewer. Social anxiety can be linked to performing expected social cues such as shaking hands or even cracking jokes. The fourth component is interview performance. McCarthy and Goffin (2004) mention that some candidates have fears on the outcome of the interview or the interview performance. The last component is behavioural anxiety, which refers to physiological changes happening to the candidate which include heart palpitations and sweaty palms. Past studies that utilised MASI as the instrument reported varied findings in which suggest uniqueness based on the learners' background and cultures (Melchers et al., 2021; Santos *et al.,* 2021; Young et al., 2004). Santos et al. (2021) for instance utilized MASI in Portugal and found that the learners recorded the highest anxiety in performance whereas Melchers et al. (2021) adapts MASI in Germany and found that the learners exhibited the highest anxiety in communication component. By studying these five components of interview anxiety, the course instructor can help to target more specific components to help graduating students to overcome their interview anxiety.

Much research is done to study ways to alleviate interview anxiety. One of the ways is through the use of VR. Smith *et al.* (2014) designed a VR application for people with autism to improve their interview anxiety. Another study by Luo *et al.* (2023) studied how VR helps people with anxiety to prepare for job interviews. In the VR application, high-pressure situations in job interview settings were replicated; for instance, maintaining eye contact with the interviewer and dealing with negative behaviours. This allows the learners to experience and get exposure to these situations so that they can develop ways to improve their interview skills. And in a more recent publication, Carlson (2024) used Mixed Reality (MR) for people with intellectual disabilities to practice and improve their interview skills.

Research Gaps from Past Literature

Even though many past studies have created VR interview simulators, these readily available VR interview simulators are mostly catering to Western contexts (Huett & Huett, 2011; Kwon, Powell & Chalmers, 2013; Stanica, 2018). This includes the graphics, VR scenarios, non-player characters (NPCs), and language inputs, all of which reflect Western cultural settings. There is a general paucity on the available VR applications made for Malaysian job seekers to practice their interview skills for more applicable and authentic experience in Malaysian context. To address this gap, the present study seeks to create a VR environment called /spiːx/ tailored to the Malaysian context, aiming to benefit Malaysian students specifically. This study seeks to investigate the effectiveness of this VR application in reducing interview anxiety among

Malaysian learners. Moreover, this study also examines the most evident component of interview anxiety experienced by the learners to gain deeper insight of their anxiety.

Research Questions

Following are the research questions formulated for this study:

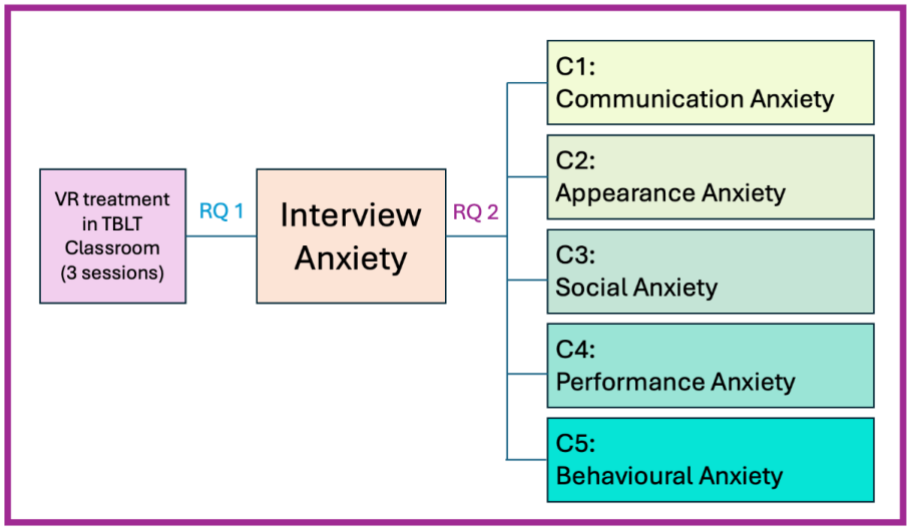
RQ1: Is there any significant difference in learners interview anxiety after three sessions of VR treatments in a task-based language class?

RQ2: Out of the five interview anxiety components (i.e. communication, appearance, social, performance, or behavioural), which component is the highest among learners who experienced three sessions of VR treatments at a technical university in Malaysia?

To better illustrate the relationship between the research questions, the following figure shows the conceptual framework of the present study.

Figure 1.

Conceptual Framework of the Present Study



Note. The relationship between the two research questions in this study.

The above framework is created based on the two research questions. First, the study inquired about the effect of VR as a tool in reducing interview anxiety in TBLT instruction. Then, the second research question investigated which component is the highest out of the five components in interview anxiety amongst the students who completed three rounds of VR treatments.

Methods

Participants

A total of 50 students enrolled in a course on English for Professional Communication at a technical university in Malaysia participated in this study. At the beginning of the study, 54 students volunteered and participated in the study. However, only 50 students completed the three VR treatments sessions. Therefore, the present study only considered the data from the 50 participants who completed the VR treatments. They were undergraduates from various engineering and technology programmes. There are several reasons for recruiting the

participants from the English for Professional Communication course. First, the participants should have completed two compulsory English courses prior to the course, and according to the course alignment, the participants should be at least B1 CEFR level. Their English proficiency, based on Malaysian University English Test (MUET) scores taken at the beginning of their study, ranges from band 2 to 4.5 (equivalent to CEFR levels A2 to B2), with the median score being band 4 (CEFR B2 level). Therefore, the participants' language proficiency can be considered as adequate for task completion, aligning with the CEFR levels. Secondly, the participants were recruited due to the homogeneous population. This means the participants have similar traits, as they come from the same technical university and age group. Although the participants have diverse socio-economic backgrounds, they have relatively similar academic backgrounds since they started the academic program together. Therefore, to control from external variables such as institutional exposure and familiarity with course content, all participants were recruited from the same course.

Pedagogic Setting: TBLT Instruction and Lessons

The course enrolled by the participants, English for Professional Communication, is a compulsory course at the university, with participants attending three hours of face-to-face lectures each week for 14 weeks. The course encompasses three modules: Module 1 focuses on job search skills, Module 2 covers job interview skills, and Module 3 addresses meeting skills. This study specifically covers on the second module, job interview skills, where students learn various techniques to succeed in job interviews.

Since this course adopts TBLT instructions, the lessons were conducted following TBLT's three main stages (pre-task, during-task, and post-task) as highlighted by Ellis (2009). Pre-tasks include introducing the topic before the actual task to activate students' schemata followed by the main tasks. Lastly, post-tasks after the performance as reflection and feedback based on the main tasks.

The lesson plans were designed following using the following task design. As reviewed in literature section, the present study utilised focused task as many past studies reported that learners acquired more target vocabulary and language focus (Long, 1988; Long, 2015; Loewen, 2018). Secondly, divergent task was used in the present study to encourage creative and critical thinking amongst the learners. Not only that, the learners also needed to participate in a group discussion in one of the assessments for the course. Therefore, as a practice to prepare the learners for the group discussion, a divergent task was utilised. A two-way task was also utilised as it is believed to encourage students to interact more with each other. Therefore, a jigsaw task was designed for the two-way task. Finally, a complex task was designed to challenge the learners' linguistic repertoire. The lesson plans for each lesson are provided in the appendices. Not only the task designs were created based on the reviewed literature on TBLT, the materials used for the lessons were also derived from authentic materials such as newspaper articles and real minutes of meetings.

Table 1.

Design Tasks Utilised for Present Study

Type	Meaning	Lesson
Focused task	Task is designed to elicit specific language form(s).	Lesson 1: Focused task (See: Appendix A- Lesson Plan 1)
Divergent task	Task is designed to encourage intellectual discussions amongst students	Lesson 2: Divergent task (See: Appendix B- Lesson Plan 2)
Two-way task	Two-way task was used to promote exchange of information between the students.	Lesson 3: Two-way task (See: Appendix C- Lesson Plan 3)
Complex task	Complex task helps to improve linguistic production as it encourages turn-taking and clarification requests.	Lesson 4: Complex task (See: Appendix D- Lesson Plan 4)

Note. The task designs employed in the lesson plans in present study.

Design of the Study

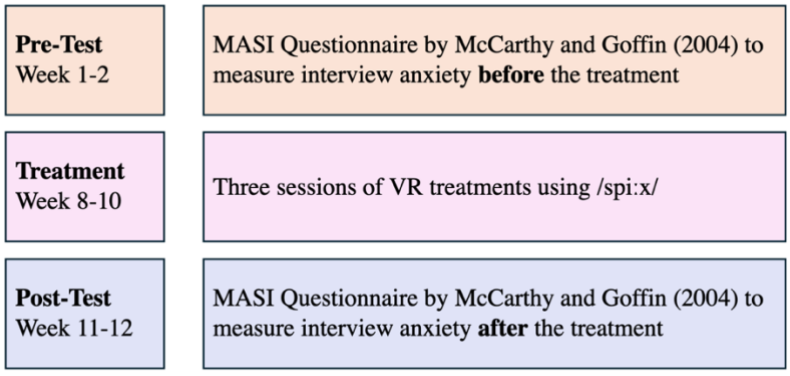
This study adopts quantitative experimental pre-test/posttest research design to achieve the research objectives. As mentioned by Mackey and Gas (2015) by using a pre-test/post-test design, the researcher can determine the immediate effect of the treatment. In order to investigate the impact of the VR application /spiːx/ as an intervention in reducing interview anxiety, this research design is utilised. Not only that, this study also employs quantitative data which includes numerical evaluation to assess the VR treatments. Therefore, the descriptive analyses such as overall means and standard deviation together with the statistical tests such as t-test and Analysis of Variance (ANOVA) were utilised. Quantitative approach has been widely used in TBLT research to evaluate the effectiveness of the approach (Alwi, 2010; Masrom, 2015; Jassem & Sarkhosh; 2024; Lu *et al.,* 2024).

Research Procedures

As this study follows a pre-test/post-test design, participants underwent a pre-test, treatment, and post-test as shown in the figure below.

Figure 2.

Research Procedures



Note. Steps taken for the present study include the pre-test, treatment, and post-test.

An online survey using MASI questionnaire was administered in Weeks 1-2 to measure participants' interview anxiety before using the VR. The lessons on the interview skills module, which utilised the VR treatments, commenced in Week 7. After the introduction to the module for a week, the participants went through three sessions of VR treatment using the application /spiːx/ starting Week 8. They were guided on how to use the VR headset before the treatment started, and the possible side effects of VR were also explained. Students who experienced side effects were encouraged to drop out of the research study to avoid problems. Most of the participants were able to use the VR headset competently and confidently after the first treatment. The participants spent about 10-15 minutes completing the game for each treatment. As mentioned, in the beginning of the study, 54 students volunteered to participate in this study. However, four participants did not complete all three treatments. Therefore, only the data from the remaining 50 participants were considered for this study. Lastly, in Weeks 11-12, another round of online surveys using MASI questionnaire was again administered to evaluate the participants' interview anxiety after the VR treatments.

Instruments

McCarthy and Goffin's (2004) Measure of Anxiety in Selection Interviews (MASI)

This study used the Measure of Anxiety in Selection Interviews (MASI) developed by McCarthy and Goffin (2004) to assess interview anxiety. The instrument covers five key components of interview anxiety: communication, appearance, social aspects, performance, and behaviour. The MASI questionnaire contains 25 items, and participants were required to rate each item on a 5-point Likert scale through an online survey via Google Forms.

This questionnaire was used in both pre-test and post-test to measure if there are any changes in terms of interview anxiety before and after the VR treatments. Both pre-test and post-test data were imported from Google Forms into Microsoft Excel which is later exported to Statistical Package for Social Sciences (SPSS) software. After segregating the data with only 50 participants who completed the three VR treatments, the data was analysed using descriptive analysis to obtain the overall means. Then, a paired two-sample for means t-test was conducted to see if there is any statistical significance between the pre-test and post-test of the same group or sample.

When analysing the data, this study utilised the mean score interpretations by Landel (1997) as seen in Figure 3 below.

Figure 3.

Mean Score Interpretations and Cut-off Value

Scale	**1.000- 2.333**	**2.334-3.665**	**3.666-5.000**
Level of Measurement	Low	Medium	High

Lower interview anxiety ← 3.000 → Higher interview anxiety

Note. The interpretations of overall means of the questionnaire MASI

Based on Landel (1997) interpretations of mean score for five-point Likert scale, there are three levels of measurement. The mean below 2.333 is considered as low interview anxiety, whereas

mean of 2.334 to 3.665 is medium anxiety and mean of above 3.66 is high interview anxiety. To further analyse the anxiety, the cut-off points of 3.000 is used. In other words, any data with a mean of less than 3.000 is considered less anxious and the mean above 3.000 is considered more anxious.

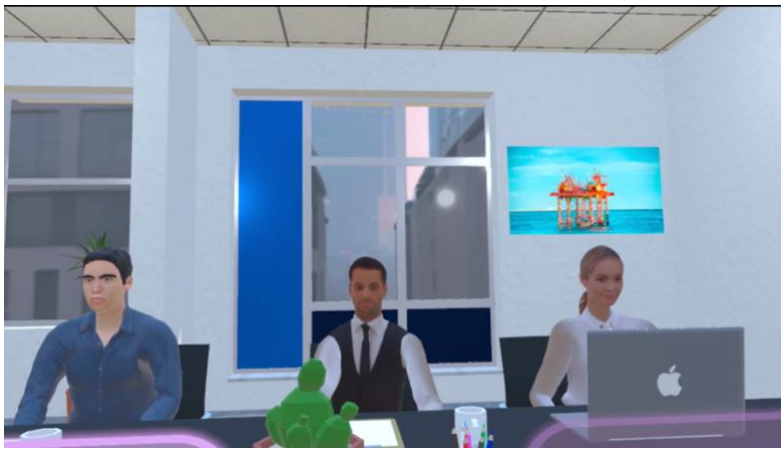
As for the analysis of the statistical tests used for this study which are the paired two samples and ANOVA test, the interpretation lies on the p-value based on the aforementioned tests. The findings are considered as statistically significant if the p-value recorded is below 0.05 (Pallant, 2020). If the p-value for the ANOVA test is below 0.05, another test using post hoc Tukey Highly Significant Difference (HSD) test should be conducted to determine which components are statistically significant to another. The results from the post hoc test should be able to determine which components are highly significant to another (Pallant, 2020).

VR Application /spiːx/

This study also utilised a VR application called /spiːx/. This application was created by a group of developers from the Faculty of Computing, UMPSA. The application is designed for speaking tasks in the context of a job interview setting to replicate the performance of a real-world task. The application offers students two scenarios to choose from. In the first scenario, three native English-speaking interviewers from a multinational company, SynovaTech, are featured. The second scenario involves three local Malaysian interviewers from a local company, Palm Ventures Sdn Bhd. Both scenarios are set in a panel interview format with three interviewers. Since the interview is conducted individually, each participant (player) undergoes the interview alone, simulating a one-on-one interview experience.

Figure 4.

First Scenario Featuring Three Native English Speakers



Note. The screenshot from the VR application that features three native English speakers from United States, United Kingdom, and Australia.

Figure 5.

Second Scenario Featuring Three Malaysian English Speakers

Note. The screenshot from the VR application that features three Malaysian speakers from three main races: Malay, Chinese, and Indian.

This application has three key features: 1) It uses VR technology to simulate a real-world language task, 2) It includes frequently asked interview questions that have been validated by Malaysian hiring managers from both the public and private sectors, and 3) It offers two scenarios, one featuring a multinational company and the other featuring a local Malaysian company. One of the novelties of this study is the creation of localised context for the second scenario, which features three interviewers with Malaysian contexts (accents and clothing) to represent the authentic Malaysian company.

The VR application is played using Meta Quest 2 Advance All-in-One VR headset (256 GB). The application is installed in the VR headsets as seen in Figure 6 below.

Figure 6.

One of the participants playing /spiːx/ using Meta Quest 2

Note. A participant during one of the three sessions of VR treatment.

Results

RQ 1: Is there any significant difference in students' interview anxiety after three sessions of VR treatments in a task-based language class?

The overall average levels of students' interview anxiety and the standard deviations were calculated to address this research question.

Table 2.

Overall Means and Standard Deviation for Interview Anxiety in Pre-test and Post-Test (N=50)

Pre-test		Post-test	
Overall Means	**Standard Deviation**	**Overall Means**	**Standard Deviation**
3.1271	0.8199	2.7464	0.6665

Note. The comparison of overall means in the pre-test and post-test.

Table 2 illustrates the overall means and standard deviations for pre-test and post-test. It can be inferred from the table that students who underwent three VR treatment sessions using /spiːx have decreased interview anxiety from pre-test (M= 3.1271, SD= 0.8199) to post-test (M=2.7464, SD=0.6665). To further analyse the significance of the decrement in interview anxiety, a paired two sample for means t-test was calculated as seen in Table 3.

Table 3.

T-Test Result and Rate of Change from Pre-test to Post-Test (N=50)

T-test (Paired two samples for means)	<0.05
Rate of Change (%)	-12%

Note. Statistical results comparing pre-test and post-test.

From Table 3, the t-test recorded a p-value of <0.05, which indicates a significant difference between the pre-test and the post-test. The rate of change was also calculated to show how much the change is from the pre-test to the post-test. It was found that the interview anxiety was reduced by 12% after the three VR sessions using /spiːx/.

According to Landel's (1997) statistical mean interpretation, illustrated in Figure 2, the initial analysis of the participants' interview anxiety levels during the pre-test phase revealed a mean score of 3.1271, which is categorised as moderate anxiety. This indicates that, prior to the intervention, participants exhibited a fairly elevated level of nervousness about interviews. However, after undergoing three sessions of virtual reality (VR) treatments using /spiːx/, a noticeable reduction of 12% in interview-related anxiety was observed, bringing the mean score down to 2.7464. Despite this decline in anxiety levels, the mean value still falls within the medium anxiety category, comparable to the initial pre-test phase.

RQ2: Which anxiety component (i.e. communication, appearance, social, performance, or behavioural) is the highest among students who experienced three sessions of VR treatments at a technical university in Malaysia?

To answer this research question, the items in the MASI instrument from the post-test were organised based on the five components, and the overall means were computed. A summary of

the overall means related to the interview anxiety component is presented in Table 4.

Table 4.

Overall Means in Interview Anxiety Components (N= 50)

Interview Anxiety Component	Overall Means
Communication	2.8920
Appearance	2.3600
Social	2.8800
Performance	3.0960
Behavioural	2.5040

Note. Comparison of all five interview anxiety components

Table 4 shows that the participants experience the highest anxiety in performance (*M*=3.0960) and the lowest anxiety in appearance (*M*=2.3600). As seen in the interpretations by Landel (1997) in Figure 3, it can be observed that the appearance anxiety is considered as lower anxiety when compared to the cut-off point (i.e. 3.000). On the other hand, performance anxiety (*M*=3.0960) is classified as higher anxiety because the value is above the cut-off point. To measure whether there is any significant difference between all five components, a one-way ANOVA test was computed as seen in Table 5.

Table 5.

ANOVA Test Results

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	92.3328	4	23.0832	17.2058893	9.5514E-14	2.3790769
Within Groups	1670.276	1245	1.34158715			
Total	1762.6088	1249				

Note. Comparison of all five interview anxiety components using ANOVA test.

A one-way ANOVA test was conducted, yielding a p-value of <0.05, which indicates a statistically significant difference among all five components of interview anxiety. This means that there is a significant difference in the levels of anxiety experienced by the learners from these five components. In order to know which components are significant to one another, a post-hoc test should be done. As mentioned in methodology section earlier, since the p-value is below 0.05, a post hoc Tukey HSD test was conducted to indicate the statistical difference between all five components which is illustrated in Table 6 below.

Table 6.
Tukey HSD Post Hoc Test Results

Component (I)	Component (J)	Mean Difference (I-J)	P-Value
Communication	Appearance	0.53	0.1678
	Social	0.01	0.0625
	Performance	-0.20	0.8917
	Behavioural	0.39	0.4445
Appearance	Social	-0.52	0.1841
	*Performance**	*-0.74**	*0.0283**
	Behavioural	-0.14	0.9668
Social	Performance	-0.22	0.8705
	Behavioural	0.38	0.4748
Performance	Behavioural	0.59	0.1033

Note * is used to indicate significant mean difference between group comparisons

The post hoc test illustrated in Table 6 indicates that there is statistically significant evidence between appearance and performance components. The p-value is recorded as 0.0283 which is below 0.05; thus, indicating statistical significance between the two components. This implies that there is significant difference between the level of anxiety between appearance and performance components amongst the participants. Therefore, it can be suggested that the participants have the biggest fear to perform well in the interview which causing the anxiety to aggravate. On the other hand, out of the five components, the participants portrayed less anxiety in physical appearance and attractiveness.

Discussion

This finding presents an intriguing point of discussion when compared with the results of Anggeraeni and Mara's (2024) study, which highlighted significantly higher levels of interview anxiety among engineering students during job interview preparation. In contrast, the participants in the present study demonstrated only moderate anxiety levels throughout the experiment. This suggests that even though the VR treatments have a certain level of reduction in interview anxiety, but the reduction does not change the category from medium to lower. This finding is similar to a study by Hall and Gisha (2018) on the interview anxiety of African American community studying computer science. It is found that even with a few practices for the interview, the participants still reported to have anxiety and jitters during the interview. This means that the anxiety will still be there. However, the researchers added that, the interview anxiety decreases with experience in the sense that participants who have prior experience going for interviews reported lower interview anxiety.

For the first research question, the findings reported that the VR application /spiːx/ is proven to reduce learners' interview anxiety. The findings, however, revealed a relatively small rate of change which is 12%. Other studies on VR also found a similar effect. For example, Shamsuddin *et al.* (2022) found that the use of VR reduces public speaking anxiety by 17%. Other studies also found that VR treatments are effective to reduce various forms of anxiety such as social anxiety (Dailey-Hebert *et al.,* 2021 and 2022; Shahid *et al*., 2024). In different studies that used statistics to analyse the correlation between VR and language learning, Zhao *et al.* (2023), Xue (2022), and Wang *et al.* (2021) found positive correlation between the two.

In another study that investigated the authentic tasks in the *Second Life* game, it was found that the virtual game created avenues for language production as the participants are able to communicate with other players (Jaurengi *et al.*, 2011). This is also supported by Ziegler (2016), who reported on the advantages of *Second Life,* especially on increasing interactions through the authentic tasks in the game and also improving participants' cultural awareness. In short, this study supports the conclusion that VR treatments can effectively reduce students' interview anxiety in a TBLT setting, consistent with prior research in the field.

The second research question probes to identify which out of the five interview anxiety components is the highest. This is important as the information may suggest pedagogical implications to help learners reduce their interview anxiety. Out of the five components (i.e. communication, appearance, social, performance, and behavioural), the component with the highest mean is performance. This is equivalent to test anxiety in an educational context. This means that the learners are mostly consumed with the thought of the interview outcome and the idea of doing well in the interview caused them to be more anxious. In comparison to other studies that utilised MASI as instrument, Santos *et al.* (2021) also reported similar findings for high anxiety in performance anxiety. However, other studies found different findings. In other studies that utilised MASI as the research instrument, it is found that the highest anxiety component is communication anxiety whereas the lowest anxiety is appearance anxiety (Melchers *et al*., 2021; Young *et al.,* 2004). According to McCarthy and Goffin (2004), those who scored the highest in performance anxiety are more likely to self-rate poorly in interview performance. Therefore, it is important that the instructors take note of the students' interview anxiety components to guide and suggest ways to overcome their interview anxiety. In this situation, Schneider *et al.* (2019) suggested that the learners use the interview environment as a stimulus. This is so that the learners can be more mindful and enjoy the interview process without worrying too much about landing the job.

Conclusion

In conclusion, this study has found that the VR application /spiːx/ is effective in reducing students' anxiety in job interviews. This was achieved by using VR as a tool to practice job interviews, which are real-world tasks and one TBLT core approach. This study also highlights the effectiveness of VR as a teaching tool in language classrooms. Furthermore, this study also provides pedagogical implications to help learners with high interview anxiety to manage their anxiety better. These insights can ultimately contribute to enhancing students' confidence and performance in job interview scenarios.

Limitations

Although the study managed to achieve its objectives, the research has several limitations. First is the "Hawthrone Effect". According to Chiesa and Hobbs (2008), "Hawthrone Effect" is the possibility that participants react differently due to a new change or technology. The researchers acknowledge that there would be a possibility that since VR is a relatively new technology, the participants may respond more favourably to the new technology. Second, this paper utilises the pre-test/posttest research design which contextualise the findings limited to the students who underwent the VR treatments. Therefore, the findings are limited to the context of the participants only.

Future Studies

For future improvements, the researchers plan to include several other features in the VR application including automated calculation of speech production during the language task and the selection of accents in the application. In other words, the players can get immediate data on their speech production, and they are able to select the characters' accents that they prefer in the application. The idea is replicating the personalized learning as mentioned by Arani (2024). Linking the application with a large language model (LLM) technology would make these possible (Binh & Mai, 2025). The researchers are also planning to measure the language production during the interview performance and compare the language production before and after the VR treatments. The language production can be measured in terms of complexity, accuracy, and fluency as highlighted by Nguyen (2025). The comparison of language production could help to measure language acquisition and provide linguistic perspective on the current project. Future studies also can consider using real job seekers as participants to measure the effectiveness of actual job interviews. Similar to a study done by Smith *et al.* (2014) that created VR applications to improve interview skills for job seekers with special needs. The findings would indicate a new perspective on human capital development.

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