Developing Academic Oral Presentation Skills Through a VR-Assisted Course

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Abstract
The burgeoning popularity of immersive technologies seems to foretell the mainstreaming of such technologies in educational settings in the not-so-distant future; thus, it seems wise to gain a better understanding of their potential for language learning. Juxtaposing the capabilities of virtual reality (VR) with the pedagogical guidelines and practices of English for Academic Purposes (EAP), this study investigates the effectiveness of an interactive VR-assisted course on the development of academic oral presentation skills and the enhancement of self-efficacy beliefs regarding presenting in English in the Iranian academic context. To this aim, a mixed-methods study was conducted, and 3 Iranian university lecturers and 6 post-graduate students participated in a 6-session academic oral presentation course in which the participants accessed *Alzahra VR Academy (1.0)*, a self-designed virtually simulated academic platform, to practice academic oral presentation. In the quantitative phase, a comparison of the participants' pre-test and post-test scores revealed that the course had a positive effect on the participants' academic oral presentation performance. In the qualitative phase, semi-structured interviews on the learners' self-efficacy beliefs regarding presenting were conducted before and after the course; moreover, their weekly reflection notes on the course were gathered. The analyzed bodies of data indicated that the interactive virtual learning environment of the course had made contributions to the improvements in their academic oral presentation skills, and achieving higher levels of self-efficacy regarding presenting after the course. The findings have implications for educational policy makers, administrators, curriculum developers, EAP teacher educators and EAP practitioners in the ELT context.

Keywords: Virtual Reality, Academic Oral Presentation, Self-Efficacy Regarding Presenting

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Introduction

Recognized as one of the major components of the internationalization of universities (Ardakani et al., 2011; Nakhoda et al., 2021), oral presentation competence is gaining in importance and attention (Adams, 2004; Tucker & McCarthy, 2001; van Ginkel, 2015; Yudintseva, 2023). Simultaneously, the educational affordances of virtual reality have inspired researchers and educators to investigate the incorporation of VR in language teaching and learning (Boetje & van Ginkel, 2021; Radianti et al., 2020). This has led to studies examining various aspects of the employment of VR for oral presentation, such as fostering academic oral presentation competence (e.g., Castillo, 2016; Huang et al., 2020), lessening anxiety (e.g., Gruber & Kaplan-Rakowski, 2020), providing feedback (e.g., van Ginkel et al., 2020; van Ginkel & Sichterman, 2023), etc. Nevertheless, it seems that self-efficacy regarding presenting, as an affective factor associated with oral competence, is less explored in VR-assisted language courses. This mixed-methods study attempted to investigate the impact of integrating VR in an academic oral presentation course, utilizing the *Alzahra VR Academy (1.0)* software. In addition, it explores how the integration of VR in the course can affect learners' self-efficacy beliefs regarding presenting.

Participants and Context

This study was conducted at Alzahra University (a single-sex school for women) in Tehran, Iran. Since the preliminary condition for attending this course was having a minimum English proficiency level of B2 (according to the Common European Framework of Reference indicators), 21 volunteers, either university lecturers or post-graduate students, were interviewed using the rubrics for the speaking module of IELTS. Ultimately, 3 Iranian university lecturers and 6 post-graduate students (9 females, age range 26-48 years old, M = 35.2, SD = 7.27) were recruited. It is worth noting that pseudonyms are used in order to protect the participants' anonymity.

Instruments

Alzahra VR Academy (1.0)

Alzahra VR Academy (1.0) is a virtually simulated interactive academic environment which was developed in accordance with pedagogical considerations for language learning in 2022. The simulation of a conference hall is the situation which was used in the current study. As shown in Figure 1, the learner can find herself as a presenter on the conference stage accessing her PowerPoint slides as soon as she wears an *Oculus Quest 2.0* headset. This learning environment enables the presenter to interact with other classmates and her instructor, who are in the simulated conference hall as dynamic avatars.

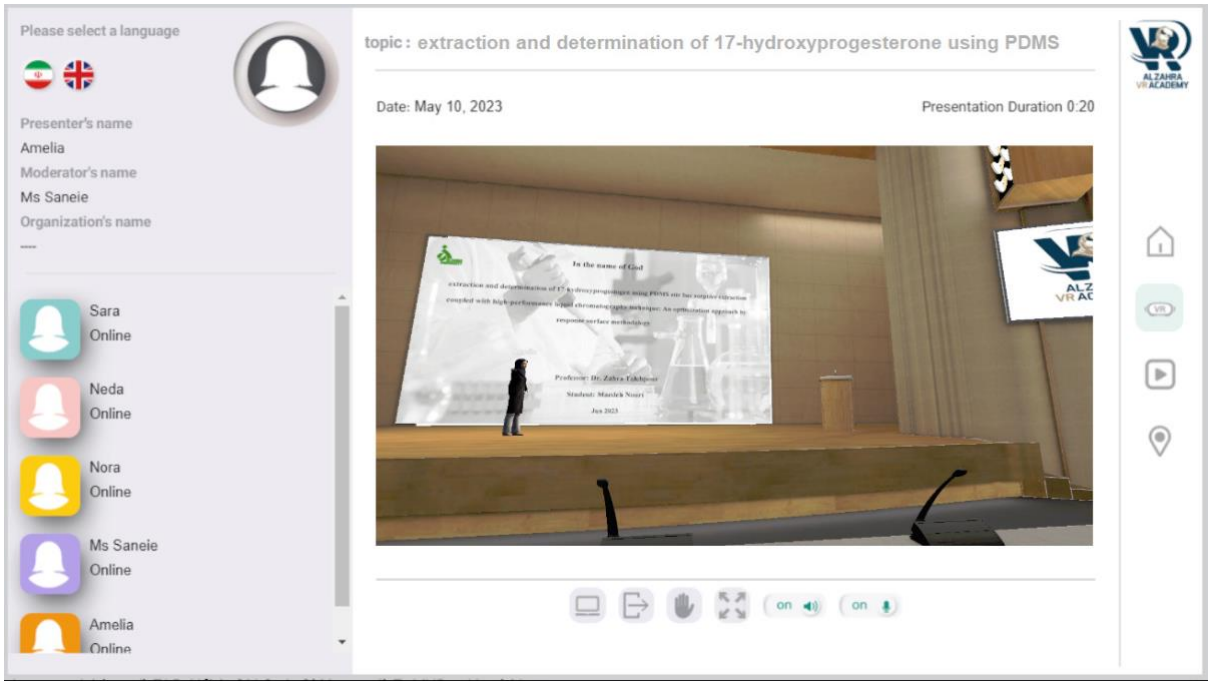

Figure 1: A screenshot of Alzahra VR Academy (1.0)

Pre-course Interviews

In order to have a vivid picture of learners' evaluations of their own self-efficacy beliefs regarding presenting, they were interviewed based on semi-structured protocols before the course.

Participants' Reflection Notes

The participants were asked to report their reflections on the virtual learning environment, their own progress, and course content each session as a part of their assignments.

Post-course Interviews

In order to explore any possible changes in the learners' evaluations of their self-efficacy beliefs, they were interviewed again, one month after the course.

Classroom Observation

One of the instruments for collecting qualitative data in the current study was classroom observation. All the sessions were audio-recorded for further use.

Oral Presentation Skills (OPS)

In order to rate the learners' presentation skills, OPS, the rubric developed by van Ginkel et al. (2017) was utilized. Content, structure, interaction, and delivery are the components of OPS (see Appendix).

Speaking Assessment Rubrics for IELTS

To ensure the homogeneity of the participants with regard to English proficiency level, the speaking assessment rubrics for IELTS was used in the placement interviews. The instructor also used the rubrics for providing linguistic feedback to the learners.

Data Collection

This project was hosted by the CALL Research Center in the Faculty of Literature of Alzahra University in 2023. Semi-structured interviews were conducted to explore the learners' self-efficacy beliefs regarding presenting before the course began. In order to prevent their unfamiliarity with the virtual reality learning environment and its equipment becoming a hindrance (Diemer et al., 2015), an introductory session was held, and they were further assured that the researcher assistants at the center would aid them in case of any problems or questions. Since the basis of the course was practicing presentation skills, the participants were required to select a journal paper in their own fields of study so that they could practice presenting it as a part of their assignment each session.

In order to evaluate the learner's presentation skills, a pre-test was first administered: Each participant delivered a presentation based on her selected paper in the first session before receiving any instructions. The post-test consisted of a presentation of the same paper in the last session, after receiving sufficient instruction and opportunities for practice.

The participants attended the VR-assisted course on a weekly basis, for six weeks. Each session lasted 90 minutes, and the beginning was allocated to providing instructions on effective presentation skills. This was followed by practice opportunities for all learners in *Alzahra VR Academy (1.0)*, where they practiced presenting parts of their papers according to the instructions. In addition to observing the mini-presentation practices, reflection notes of the learners were gathered every session. Finally, semi-structured interviews were conducted again one month after the VR-assisted course to investigate any possible changes in their self-efficacy beliefs regarding presenting.

Results and Discussions

Quantitative Phase

In order to examine the impact of the VR-assisted course on the learners' performance, descriptive statistics were firstly computed. As shown in Table 1, the learners had a better performance in the posttest (M = 97.55, SD = 9.52) compared to the pretest (M = 81.22, SD = 15.52).

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Posttest	97.55	9	9.52	3.17
	Pretest	81.22	9	15.52	5.17

Table 1: Descriptive statistics of pretest and posttest

In addition, as shown in Table 2, a paired samples t-test was carried out after ensuring the statistical assumptions were met. The results showed that there was a statistically significant difference between learners' scores in pretest and posttest, t (8) = 4.70, p =.002. As the value

of Cohen's d is equal to 1.56, the effect size of the findings can be considered high (Plonsky & Oswald, 2014); however, the width of the confidence interval indicates that the precision of the estimate is less than optimal (Larson-Hall & Plonsky, 2015).

	Paired Differences						
			95% Confidence Interval of the Difference				
	Mean	Standard Deviation	Lower	Upper	t	df	Sig. (2-tailed)
Posttest and Pretest	16.33	10.41	8.32	24.34	4.70	8	.002

Table 2: Paired samples t-test for oral presentation scores

According to these results, the course had a positive effect on fostering the learners' academic oral presentation competence; thus, it would appear that VR can contribute to developing oral competence skills and to the process of learning and teaching.

Qualitative Phase

To interpret the data gained from the participants' reflection notes, as well as the transcripts for the recorded interviews and classroom observations, these were thematically analyzed by the second author (Creswell & Poth, 2016) through the three stages of open, axial and selective coding scheme (Ary et al., 2006). Ultimately, two main themes emerged with reference to self-efficacy beliefs regarding presenting: *presenting style* and *presentation content.*

Presenting Style

As one of the course objectives, an attempt was made to draw the attention of participants to various aspects of presentation manner, such as maintaining appropriate posture, paying attention to body language, and maintaining eye contact with the audience. Tina, one of the university lecturers, commented:

> I would sometimes turn my back to the audience unconsciously, and just read my slides aloud while I was presenting; however, practicing in the VR learning environment of this course, coupled with the instructions I had received about presentation strategies, made me more mindful of my posture while giving a lecture.

Mona, who had considered the course to be beneficial for her in terms of promoting presentation skills, maintained:

> While presenting in English, I was so shy that I would either look at my notes or stare at the floor. This learning environment and the instructor's instructions made me more confident looking in the eyes of avatar audiences, and after my second speaking practice, I felt at home!

The excerpts reveal that the course helped the learners to feel more self-efficacious after training. These comments are consistent with previous research endorsing virtual reality,

since it allows for the practicing of the skills required in the settings resembling real-life situations (Gruber & Kaplan-Rakowski, 2020). As Sitzmann (2011) maintained, practicing in simulated environments can bring about higher levels of self-efficacy after training. Additionally, the findings are in line with the literature on developing presentation skills (Adams, 2004; De Grez et al., 2012).

Presentation Content

Since efficient use of audiovisual aids makes presentations more effective, a part of the course focused on the format of slides in terms of their background color, layout and design, proper font size and color, etc. In the practice opportunities, the interactions between the presenter, instructor and classmates in the virtually stimulated learning environment enabled each student to be informed on the strengths and weaknesses of her presentation slides. In her reflection notes, Elina stated:

> It was through interacting with the dynamic avatars that I learned to make my presentation more comprehensible with the use of proper keywords in bullet points while applying consistent slide format to my presentation.

Mona also noted in her post-course interview:

> The practice opportunities in the immersive VR environment of the course helped me to go through my slides while presenting on a stage resembling a real conference hall… While practicing, I realized some font sizes, tables and figures were not readable for my classmates who were the dynamic avatars in the virtually simulated conference.

Reflecting on her achievements throughout the course, Sara stated:

> I thought the choice of vibrant colors with lots of animations would make my presentations more interesting, but it was through the interaction with my instructor and other avatars in my presentation practices that I realized that such colors and animations were distracting and not always suitable for academic presentations.

These comments confirm that VR learning environments can bring about meaningful contextualized learning (Yang et al., 2020) and prepare learners to perform real-life tasks. The findings also complement studies on academic oral competence (Boetje & van Ginkel, 2021; van Ginkel et al., 2019).

Conclusions

Aligned with research trends in VRALL examining different aspects of fostering academic oral competence through the affordances of virtual reality (Parmaxi, 2023; Yudintseva, 2023), this research aimed at investigating the impact of a VR-assisted course for developing academic presentation skills and exploring the learners' self-efficacy beliefs regarding presenting. The findings of this study indicated that the VR-assisted course had a positive effect on the learners' performance; they also suggested that the application of virtual reality in a course for developing academic oral presentation skills can promote learners' self-efficacy beliefs regarding presenting. At the same time, it is worth noting that the sample size of this research is small, and the data was restricted to a small group of Iranian university

lecturers and post-graduate students at Alzahra University; therefore, the findings cannot be safely generalized to a broader context. Hopefully, further research with larger sample sizes can consolidate the results of this study by increasing the reliability of the estimate.

Appendix

Rubrics for Oral Presentation Skills

Student: ---------- Trainer: ---------- Date: ----------

	++(10)	+(8)	+/- (6)	-(4)	-(2)	P1	P2
Personal learning goals	The presenter has formulated two specific language goals and is able to articulate his/her plan of action in detail.	The presenter has formulated one specific learning goal.	The presenter has only partially formulated his/her learning goal according to the set of criteria.	The presenter has stated a learning goal, but she/he did not use the set of criteria at all.	The presenter did not think of any learning goal in advance.		
	The presenter has included his/her two learning goals in the presentation by actively adopting the plan of action.	The presenter has included one learning goal and its related plan of action in the presentation.	The presenter has only partially one learning goal in the presentation.	The presenter has been barely aware of his/her learning goal during the presentation.	The presenter has been unaware of his/her learning goal during the presentation.		

	++(10)	+(8)	+/- (6)	-(4)	-(2)	P1	P2
Keeping the attention	The presenter has been able to keep eye the attention of the audience completely.	The presenter has been able to keep eye the attention of the audience for most of the time.	The presenter has been able to keep eye the attention of the audience on a regular basis.	The presenter has been able to keep eye the attention of the audience occasionally.	The presenter has been unable to attract the attention of the audience.		
Non-verbal communication	The presenter has been able to maintain eye contact with the audience continuously.	The presenter has been able to maintain eye contact with the audience for most of the time.	The presenter has been able to maintain eye contact with the audience on a regular basis and only sometimes he/she had to look at his/her notes.	The presenter has been able to maintain eye contact with the audience occasionally, because he/she often had to look at his/her notes.	The presenter mainly had to look at his/her notes.		
	The presenter has been able to maintain an open posture continuously with illustrative gestures.	The presenter has been able to maintain an open posture for most of the time with supporting gestures.	The presenter has been able to maintain an open posture on a regular basis both with supporting and non-supporting gestures.	The presenter has been able to maintain an open posture occasionally with mainly non-supporting gestures.	The presenter mainly had an unstable or closed posture with non-supporting gestures.		
	The presenter has been able to present in an authentic way and use his/her voice as in an animated conversation (for example regarding its pace, volume, articulation)	The presenter has been able to deploy all techniques considering use of voice in a conscious manner (for example regarding its pace, volume, articulation)	The presenter has been able to deploy one or a few techniques considering use of voice, but he/she still needs to focus on one of these aspects: -pace -volume -Articulation (e.g. mumbling) -Monotony -Filler/ Stopgap	The presenter has been able to speak in an understandable way, but he/she needs to actively work on one of these aspects: -pace -volume -Articulation (e.g. mumbling) -Monotony -Filler/ Stopgap	The presenter has not been understandable because of one of these aspects: -pace -volume -Articulation (e.g. mumbling) -Monotony -Filler/ Stopgap		
Audience awareness	The presenter has been able to react on both verbal and non-verbal signals send by the audience and she/he has been able to adjust the way of presenting accordingly.	The presenter has been able to react on both verbal and non-verbal signals send by the audience for most of the time.	The presenter has been able to react on both verbal and non-verbal signals send by the audience on a regular basis, but he/ she sticks to the prepared story.	The presenter has occasionally been aware of the audience, but he/she has been able to answer questions.	The presenter has not been aware of the audience.		
Structure	The presenter has been able to clarify the presentation's goal and he/she selected a corresponding structure.	The presenter has been able to structure the presentation and he/she has been able to connect the different parts in a fluent manner.	The presenter has been able to structure the presentation by listing the various parts.	The presenter has been able to structure the presentation by listing the various parts, but does this without any cohesion.	The presenter has been unable to structure the presentation or he/she has been unable to emphasize its selected structure.		
	All INTROS elements are fully and creatively incorporated in the introduction and the closing part of presentation matches with the introduction.	All INTROS elements are listed in the introduction and the closing part corresponds to this.	The introduction contains several parts of INTROS elements except for Time and Response and the closing part corresponds more or less to the start of the presentation.	The introduction lacks crucial parts of INTROS like Interest and Need, and the presenter concludes with a sentence similar to "That was my presentation"	The presentation lacks all of the INTROS elements of the introduction, and the closing part is absent as well.		
Content	The presenter has been able to internalize the subject of presentation completely and he/she has been able to connect the relevant parts in a creative way.	The presenter has been able to internalize the subject of presentation thoroughly and he/she has been able to connect the relevant parts.	The presenter has been able to internalize the subject of presentation sufficiently and he/she has been able to connect several parts in an understandable way.	The presenter has been able to internalize the subject of presentation only partially, as a consequence he/she has been able to connect the various parts.	The presenter has been unable to internalize the subject of presentation and he/she has been able to connect the various parts.		
	The subject of presentation connects perfectly with the prior knowledge of the audience and the presenter has been able to increase the knowledge level of the listeners.	The subject of presentation connects adequately with the prior knowledge of the audience.	The subject of presentation connects sufficiently with the prior knowledge of the audience.	The subject of presentation connects only partially with the prior knowledge of the audience.	The subject of presentation does not correspond with the prior knowledge of the audience.		
Use of media	The slides of the presentation are visually attractive, readable and supportive to the content.	The slides of the presentation are readable and supportive to the content.	The slides of the presentation are readable, contain the necessary information and are more or less supportive.	The slides of the presentation are readable, include only fragments of the necessary information and are barely supportive.	The slides of the presentation are hardly readable and contain insufficient, incorrect or unnecessary information.		
	The presenter has been able to present by heart.	The presenter has been able to present by heart, but he/she glances at the slides during a detailed explanation.	The presenter has been able to present, but he/she still needs the slides in order to structure the presentation.	The presenter has been able to present, but the slides guide him/her through the presentation and/or surprise him/her every now and then.	The presenter has been unable to present without slides.		
Average grade:							

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