

# Interactive Virtual Reality Public Speaking Training Simulator to Empower Confident Communicators

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DOI: <https://doi.org/10.17979/spudc.000024.39>

*Abstract:* Public speaking is a valuable skill that plays a crucial role in personal, academic and professional success. Many individuals struggle with anxiety and lack confidence when facing an audience. To address this challenge, a virtual reality public speaking simulator has been developed to empower individuals and enhance their public speaking abilities. The virtual reality simulator offers a dynamic platform for immersive practice and training, incorporating distinct modes. Autonomous mode and interactive real-time intervention by physiological biofeedback mechanism and/or a therapist. By leveraging the immersive nature of virtual reality, this simulator aims to boost users confidence, enhance their articulation, persuasion skills and foster their ability to connect with diverse audiences.

## 1 Introduction

Public speaking is a fundamental skill that has played a pivotal role in human communication for centuries (Lillis, 2005). It is the art and science of addressing an audience, conveying a message, and inspiring, persuading, or informing others through spoken words. The ability to speak effectively in public is a skill that transcends professional fields and personal contexts (Ningsih et al., 2023), (OECD and Organization, 2017).

Public speaking is not merely about talking in front of a group; it is a powerful mean of connecting with people, sharing ideas, and influencing minds. It's a skill that can empower individuals to lead, educate, inspire change, and foster understanding. Moreover, it is a skill that, when honed, can boost self-confidence and personal growth.

Glossophobia, derived from the Greek words "glossa" meaning tongue or language and "phobos" meaning fear, is a common and deeply ingrained fear that afflicts a significant portion of the population. It refers to the fear of public speaking or speaking in front of an audience. This social anxiety disorder can range from mild nervousness to severe panic and can have a profound impact on a person's personal and professional life (Dansieh et al., 2021).

Glossophobia is more widespread than one might think. Surveys consistently rank the fear of public speaking as one of the most common fears, often surpassing even the fear of death in prevalence (Ambit and Pandayan, 2020). It affects people of all ages, backgrounds, and levels of experience. Even accomplished professionals and seasoned public speakers can experience glossophobia when facing a particularly daunting audience or topic.

The origins of glossophobia are multifaceted and can vary from person to person (Bodie, 2010). Some common causes and contributing factors (Nahliah and Rahman, 2018) include: **Fear of Judgment:** Many individuals fear being evaluated or criticized by their audience. This fear of judgment can be particularly paralyzing, as it taps into our innate desire for acceptance and approval. **Performance Anxiety:** Glossophobia often stems from a fear of making mistakes, forgetting one's lines, or losing one's composure in front of others. The pressure to perform flawlessly can be overwhelming. **Traumatic Experiences:** Past negative experiences with public speaking, such as embarrassing moments or harsh criticism, can leave lasting psychological scars and reinforce the fear. **Lack of Preparation:** Insufficient preparation and a lack of confidence in one's knowledge or content can exacerbate glossophobia. Feeling unprepared can amplify feelings of anxiety. **Social Anxiety:** For some individuals, glossophobia is a subset of a broader issue of social anxiety. The fear of speaking in public is just one manifestation of a more generalized social anxiety disorder.

Glossophobia is a treatable condition. Various strategies and interventions can help individuals overcome their fear of public speaking, including:

**Practice:** Repeated exposure and practice are effective in desensitizing individuals to the fear of public speaking (Ortiz et al., 2022). **Cognitive-Behavioral Therapy (CBT):** CBT can help individuals identify and challenge irrational beliefs and thought patterns related to public speaking (Anderson et al., 2005). **Breathing and Relaxation Techniques:** Learning to manage anxiety through techniques such as deep breathing and progressive muscle relaxation can be helpful. **Public Speaking Courses:** Enrolling in public speaking courses or joining organizations provide a structured and supportive environment for skill development.

Virtual reality can be a valuable tool for helping individuals overcome glossophobia by providing a safe and controlled environment for exposure therapy and skill development (Lindner et al., 2021).

This work aims to create an interactive immersive virtual reality system to practice public speaking techniques and that can also be used in glossophobia treatment programs.

The virtual environment aims to recreate a simulated environment in which the participant is in front of an audience that reacts to their speech. Throughout the presentation, the environment can change its behavior autonomously, through the intervention of the therapist, or through real-time biofeedback.

## 2 Methods

A virtual reality system was designed to allow the training of public speaking through practice and Cognitive-Behavioral Therapy.

It consists on a solution that replicates a conference auditorium (Figure 1) and can be used in two modes:

- **Autonomous mode:** For use independently by the user.
- **Controlled Mode:** For use with therapist monitoring and intervention.
- **Real-time biofeedback mode:** For use with therapist monitoring and intervention.

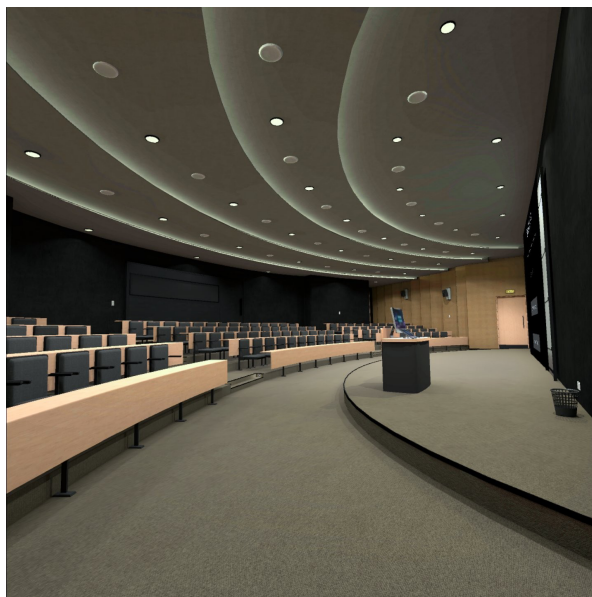


Figure 1: Conference auditorium

The system allows to choose several parameters such as: duration of the presentation, noise level, number of audience present (Figure 2).

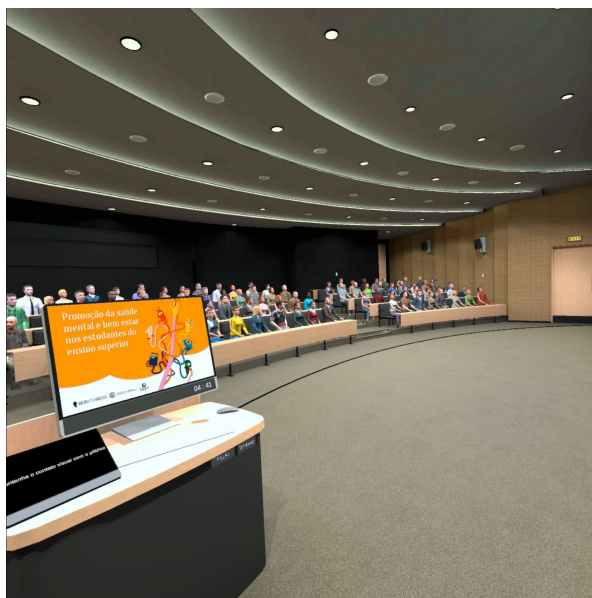


Figure 2: Parameters

In controlled mode, the therapist can vary the factors to reduce or increase the level of stress. He can send predefined or personalized messages, in real-time, to the patients during presentation to calm them down and suggestions to improve their performance (Figure 3).

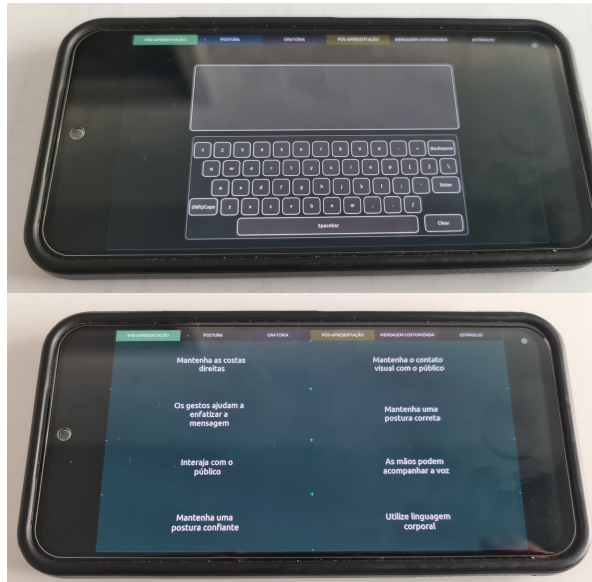


Figure 3: Therapist Module

### 3 Future Work

The use of a third mode using real-time biofeedback in conjunction with an AI algorithm will allow the system to react in real time recognizing the type and intensity of user emotions and adapt the variables to optimize the experience.

Also the development of other scenarios that allow the user to train public speaking in different situations such as meetings, social events, interviews should be considered using the framework developed.

### 4 Conclusion

The developed VR environment allows users practice public speaking and in real time check the result of their performance. The therapist can track and monitor the values obtained in real time and change the environment conditions to send different stimuli to users so that they can adapt their attitudes to new situations.

In real-time biofeedback mode, the VR environment has an adaptive behavior according to the biodata collected during the presentation. Through its portability, the system allows personalized individual training and sessions accompanied by a therapist who may or may not influence the virtual environment.

### Acknowledgments

CITIC is funded by the Xunta de Galicia through the collaboration agreement between the Consellería de Cultura, Educación, Formación Profesional e Universidades and the Galician universities for the reinforcement of the research centres of the Galician University System (CIGUS).

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