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Virtual Reality and Public Speaking: Will It Really Help my Students Manage Speech Fright?

Most experts agree that using virtual reality (VR) in the classroom helps students overcome the fear of public speaking. In 1997, half of the screened and chosen students in Introduction to Psychology courses at Clark Atlanta University strapped on virtual reality headsets and delivered speeches to a room full of avatars who laughed, chatted, and applauded. Clark University's Max North and his collaborators compared written responses of their participants to discover that those who used virtual reality headsets reported a "significant reduction in anxiety."

With North and several others touting virtual reality's training effectiveness in the public speaking classroom, I decided to see for myself if it made a difference in my students enrolled in COMM 2045: Public Speaking at Pellissippi State Community College in Spring 2019.

The Beginnings

Virtual reality, which allows students to manipulate, explore, and modify a three-dimensional interactive environment, worked its way into education in the 1990s, although creative minds toyed with primitive models as early as the 1830s. Norton repeated his 1997 study 11 years later using more sophisticated measures, and he reached the same conclusion: virtual reality training decreased communication apprehension symptoms and increased self-confidence in participants, and also allowed them to get involved in discussions and increased confidence levels in participants. So now it was my turn to test it in the college classroom, where a majority of students enter with a fear of public speaking.

My Experiment

Two COMM 2045 classes were chosen. Both met twice a week for 15 weeks, one on Monday and Wednesday and the other on Tuesday and Thursday. In all, 31 students participated in the experiment, either as part of the control group (15 students) or the experimental group (16 students). Six females and nine males made up the control class, and six females and ten males took part in the experimental class. During the semester, all students presented five graded speeches, the shortest being three minutes with no spoken sources and the most difficult being 6-8 minutes with five spoken sources and an optional presentation or visual aid.

On the first day of class, the same syllabus was distributed and discussed, and students played an introduction game. Because most communication scholars agree that the fear of public speaking is believed to affect approximately 75 percent of the population, the Public Report of Public Speaking Anxiety (PRPSA) was administered to students in both classes to determine students' level of apprehension. The PRPSA, developed by Professor James McCroskey at West Virginia University in 1970, is a set of 34 questions that determine a person's speaking apprehension level. Although created almost 50 years ago, it is highly reliable and valid and still is widely used, especially by colleges and universities around the world to assist those who want to improve their public speaking skills. Scores above 131 indicate high anxiety; between 131 and 98, moderate anxiety; and below 98, low anxiety. The national average (mean) for the PRPSA is 114.6 with a standard deviation of 17.2.

Control Class

After taking the PRPSA on the second day, calculating their scores, and hearing a short lecture on ways to manage their apprehension, the control class heard nothing more about this issue. Students were assigned a "buddy" based upon their PRPSA scores that matched those with the highest-leveFl scores to others with the lowest-level scores in hopes they would work together to balance and support each other. At the end of the semester, they took the PRPSA a second time in order to compare their numbers and see whether enrollment in the class, the lectures, exercises, quizzes, and, most of all, the speeches they presented had helped them reduce their apprehension. On the final day, they also answered three questions about what helped or hindered them in class.

Control Class Results by Greatest Drop in Scores – No Virtual Reality

Gender	PRPSA Pre-Test Score	PRPSA Post-Test Score	Difference
FEMALE	115	68	-47
MALE	118	72	-46
MALE	86	59	-27
MALE	115	97	-18
FEMALE	130	117	-13
MALE	120	107	-13

Gender	PRPSA Pre-Test Score	PRPSA Post-Test Score	Difference
FEMALE	146	134	-12
MALE	113	102	-11
FEMALE	84	75	-9
FEMALE	138	134	-4
MALE	95	94	-1
MALE	79	80	+1
MALE	65	67	+2
MALE	86	101	+15
FEMALE	142	158	+16

The female who entered with a moderate anxiety score of 115 but whose score dropped 47 points said this: "After my first two speeches, I had a realization that speaking isn't scary! Ever since this epiphany, my entire mindset has changed, and I've learned how to use nervous energy as excited, confident energy. The repetition of the speeches and the fast-paced (15-week) class leave no room for anxiety! I really had to use it all to focus rather than freak out days before."

The male whose score dropped a whopping 46 points commented: "I think it went down because I got used to giving speeches as the class progressed; also, because using an outline helped structure the speech, which lowered anxiety."

Yet four students experienced an increase in anxiety. The female, whose score jumped 16 points, said: "After stopping my anxiety medicine, I think I got more nervous. I also would get very anxious and my heart would beat so fast to the point I would feel like I was going to pass out. I got very worked up worrying about speaking in front of the class and trying not to forget everything." She said stress from other classes also made her feel overwhelmed. The male blamed his 15-point increase on his speeches being graded too harshly, and indicated he was "worried about doing good."

Experimental Class

On the second day of class, not only did the students take their initial PRPSA assessment and hear a lecture on ways to manage apprehension, they also received a secondary syllabus with supplemental information about virtual reality assignments. They, too, were assigned buddies. Toward the end of class, the college's reference librarian and virtual reality coordinator, Janine Pino, visited and explained what part she would play in their experiment.

In preparation for their second graded presentation, an informative 5-7 minute speech with an accompanying visual aid, students had seven days prior to the first day of delivery to practice a portion or all of their speeches using virtual reality equipment in a private library room. The students used the software known as Speech Trainer on equipment called the HTC Vive virtual reality system. It had the ability to load student presentation slides (or speech notes) as well as project student audio into a microphone and display time used for practice. Students donned virtual reality headsets that allowed them to move in 3D space and use hand-held controllers to interact with their virtual human audience. To remind the students, the following announcement appeared when they opened the course's online Desire-to-Learn Brightspace page on January 30, 2019:

"Are you ready to practice public speaking in a virtual world? Between February 13 and February 20, you are required to practice your informative speech with the library's virtual reality equipment. A schedule of available timeslots has been posted. Each timeslot is 20 minutes long. Please register for only one day/time. You will receive an email reminder of your appointment the day before. When you arrive to practice, please ask for Janine Pino on the first floor of the ERC. You must sign in before and sign out after your practice time. Please also come with your speech presentation, notes, or outline in a landscaped PDF file. This will allow you to view the document in the VR headset."

Between March 4 and March 13, students also practiced their third 5-7-minute persuasive speech (no visual aid) in the same manner. The librarian sent a similar announcement, and students regularly were reminded about the required assignment before the speeches began on March 25. The supplementary syllabus gave students a third opportunity to practice their fourth and most difficult speech using virtual reality equipment if they "found it useful" in helping them deliver their earlier speeches. Because this was optional, only one student took advantage of the extra session.

As the course came to a close, students in the experimental class took a follow-up PRPSA, and like the control class, completed a questionnaire about their experience in the class. The results of the PRPSA with the Experimental Class are as follows:

Experimental Class Results by Greatest Drop in Scores – With Virtual Reality

Gender	PRPSA Pre-Test Scores	Number of VR Sessions	PRPSA Post-Test Scores	Difference
MALE	147	2	100	-47
FEMALE	144	2	101	-43
FEMALE	128	2	95	-33
MALE	122	2	93	-29
FEMALE	117	2	92	-25
MALE	126	2	103	-23
FEMALE	119	2	105	-14
MALE	106	2	99	-7
MALE	129	2	122	-7
MALE	130	1	125	-5
FEMALE	118	2	114	-4

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Gender	PRPSA Pre-Test Scores	Number of VR Sessions	PRPSA Post-Test Scores	Difference
MALE	118	1	114	-4
MALE	113	2	109	-4
MALE	113	1	117	+4
FEMALE	76	2	111	+35
MALE	116	2	154	+38

It is interesting to note that the male who entered the class with the highest level of anxiety benefited the most from the virtual reality experience. His score dropped from 147 to 100, a 47-point drop. He credited not only this new adventure for his anxiety reduction, but also the opportunity to make friends with other students in the class. He wrote: "I'd never used virtual reality before, and I really wanted to try it. I enjoyed the feeling of being absorbed into another world. Getting to know everyone in the class made it less stressful because I began to consider them as friends. I'm more comfortable with people I know. I feel like I can be more genuine that way." He said that practicing out loud in front of a "fake audience" made it easier to transition to a "real audience."

Like her class member, the female whose score dropped the most enrolled in the course with a high level of anxiety. She, too, credited both virtual reality and the public speaking class for her significant score reduction. Most helpful, she said, was "feeling like I was actually in front of an audience while practicing my speech. It made me feel like I already did the speech once." She said the ability to make friends with others in the class also lowered her anxiety. She added, "The time we were partnered up and had our 'buddy' helped. She and I would text throughout the rest of the semester encouraging each other."

Another female suspected her score decreased 33 points because "when you are forced outside your comfort zone, you realize that outside isn't so bad. I had to do many speeches/exercises, and they helped make me more comfortable with speaking as well as me getting to know classmates more."

Most unexpectedly, the apprehension score of one of the most prepared and energetic speakers in the class jumped from a rather low anxiety level of 76 to a moderate level of 111, a 35-point increase. She blamed the rise of anxiety on the concern about her college grades. She shared that she didn't want to repeat the class, so she abandoned other class work and her grades suffered in other classes. "I risked it all to do well in this class."

The male student whose score shot up the most, even though he entered with moderate anxiety, said his score rose because he talked about "very personal things and was scared of people judging me." The VR experience, he said, did help him become accustomed to presenting his speech. On the last day of class, however, this student approached me to say that the last two weeks of group work especially eased his fears, and if he were to repeat the PRPSA, he was certain his score would return to the moderate range.

Students wrote of drawbacks such as exiting their sessions with slight headaches and vertigo, the soulless look of the avatars' eyes staring at them, a window in the practice room that left some with a feeling they were exposed, the software's lack of a classroom setting, the quality of the screen and display, a lag in the audio, the small size of the practice room, and finally, trying to fit another obligation into a community college student's busy schedule of school, work, and family obligations.

Conclusion

VR simulations can provide a deeper understanding of the material by a learner. It happened for a few in those speech classes, yet other factors were involved.

Students in both classes believed that becoming comfortable with their peers and understanding "clear expectations" of the class influenced the results of their final PRPSA and, therefore, the reason for their decrease in scores. Those in the control class whose numbers dropped significantly also joined the class with PRPSA scores in the moderate range. Upon entering, they were moderately comfortable, so in all but three of the 15 cases, establishing friendships and feeling more relaxed each session influenced their scores the most.

To a small degree, the experimental class results told a different story. The two students whose scores ranged in the high anxiety category also saw the greatest drop in their scores. Along with the student who experienced the third highest drop, they all agreed that the virtual reality experience, along with class camaraderie and understood expectations, contributed to their scores' reductions.

Two virtual reality sessions are unlikely to make much of a difference, although scores dropped for 13 of the 16 students. Had those in the experimental class been able to practice with virtual reality every week throughout the 15-week semester, the data might have been more reliable. This calls for a future study that would allow students to spend more time in a lab and earn separate credit for their effort so it is easier to determine whether a longer-term exposure would drop scores even more significantly. A different setting with more privacy might make a difference, and it may be worthy to investigate mobile applications for the students to practice their speeches at home.

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