Enhancing presentation skills: a comparative study of students' performance in virtual and physical classrooms

Roland Rencewigg | Nancy Prasanna Joseph

Abstract This study aimed to establish how virtual classrooms play a crucial role in helping shy students overcome their public speaking anxiety and perform well in a presentation assessment. An in-depth analysis was carried out to show how virtual classrooms are effective scaffolding platforms for students with public speaking anxiety (PSA). The performance of 98 students in presentation assessments in two different settings—physical classrooms and virtual classrooms—was compared and thoroughly investigated. It was found that shy students who had not performed well in the presentation assessment in physical classrooms could perform relatively better in virtual classrooms due to the advantages exclusively available to them. Seven key factors that inhibit student performance in assessments in physical classrooms and seven key factors that facilitate student performance in virtual classrooms are identified.

Keywords: confidence, presentation skills, public-speaking anxiety, shy students, virtual classroom

1. Introduction

Communication is the most important of all life skills. It is so important that it has evolved to be a distinct academic discipline. The National Communication Association, a not-for-profit membership-based scholarly society, asserts the importance of the study of communication as a distinct discipline by providing a rationale for the centrality of the study of communication, annotating nearly 100 articles, commentaries and publications (Morreale & Pearson, 2008). Presentation is an essential form of oral communication skills (Flaherty, 1999). Students need to be trained to develop this essential skill by various means and assessed to monitor their progress in honing the same. According to Girard and Trapp, a presentation activity is one of the best ways to hone students' communication skills (Girard & Trapp, 2011).

A classroom comprises unique individuals with different learning capacities and communication skills. There are students who are generally gregarious, while others are reticent. Students with specific traits such as inhibition, lack of confidence, and social anxiety are tagged as shy students (Brophy 1996). Reticence is found in the students, especially when they must make a presentation in front of an audience. The fear that a person experiences when delivering or preparing to speak to an audience is called public speaking anxiety (PSA) or glossoaphobia (Nordquist, 2020). Glossophobia is the third most common psychiatric disorder according to the American Psychiatric Association (Wiederhold & Wiederhold 2005). In The Challenge of Effective Speaking, Rudolph F. Verderber et al. reported that "as many as 76% of experienced public speakers feel fearful before presenting a speech" (Verderber et al., 2012).

Clevenger and King (1961) identified three different types of stage fright: fidgetiness, inhibition, and autonomia. They identified 18 visible symptoms of stage fright. They are

- Pacing back and forth
- Paling of face
- Swinging arms
- Swallowing repeatedly
- Returning to the seat while speaking
- Blushing
- Stiffening the arms
- Placing hands in pocket or behind back
- Moistening of lips
- Tensing of facial muscles
- Trembling of knees

The above symptoms are common in fear of public speaking situations.
• Breathing heavily
• Lacking eye contact
• Displaying deadpan expressions
• Shuffling of feet
• Swaying
• Playing with something, and
• Trembling of hands (Clevenger & King, 1961)

1.1. Virtual Classrooms

Like how the history of humankind is divided into the Before Common Era and After Common Era, the way of life in every walk of life has dramatically changed with the advent of the unprecedented COVID-19 pandemic. As generally noted, COVID-19 may not have infected everyone, but it has impacted everyone in some way or the other. Along these lines, the teaching-learning realm was also significantly impacted by COVID-19. Online classes and virtual classrooms through online learning platforms became part of the new normal after COVID-19 (Dhawan, 2020). At the same time, the parallel use of regular physical classrooms and virtual classrooms impacted all those involved in teaching and learning. On the part of the teachers, despite several ancillary benefits such as the comfort of working from home and saving travel time, the teachers felt that the virtual classrooms were not as effective as the physical classrooms due to specific issues such as technical issues, safety and security, and lack of interaction (Deepika, 2020). However, faculty members were able to quickly learn and adapt to the new normal of teaching and learning and eventually began to accept and appreciate the online mode of teaching despite facing a few intimidations in handling technology at the beginning of the online classes (Shenoy et al., 2020).

On the other hand, virtual classrooms became a blessing in disguise for a good number of students (Lokanath et al., 2020). In particular, for students who experience stage frightfulness and other inhibitions while making presentations, virtual classrooms were found to be a scaffolding platform for overcoming these inhibitions, as established through this research.

2. Literature Review

Presentation skills have always played an inevitable role in the professional growth of many people. Scholars across the globe have researched and added to the existing corpus that deals with enhancing the presentation skills of the student community.

Van Ginkel et al. studied the effectiveness of a virtual-reality-based task in which first-year undergraduate students were given presentation tasks in a virtual environment with system-generated feedback on their components of presentation competence and face-to-face presentation tasks with feedback from experts. They found that the settings were immaterial for the students’ presentation competence. Students were equally competent in both the virtual environment and face-to-face presentations (Ginkel et al., 2019).

Hammick and Lee reported that shy students felt less apprehension in virtual discussions than in face-to-face communication. They also found that the students were able to overcome their communication inhibitions because visual/auditory cues were not integral components in virtual reality. VR may not increase confidence in presentation skills, but it can alleviate apprehensions about communication (Hammick & Lee, 2014).

Li et al. studied how online communication can satisfy college students’ psychological needs, help them shed their shyness and improve their social self-efficacy and subjective well-being (Li et al., 2014).

Laghi et al. reported that shy individuals are more comfortable expressing themselves using the online modality, mainly to engage in hostile exchanges, than their non-shy counterparts. This finding underscores the value of virtual classrooms in enhancing students’ presentation skills (Laghi et al., 2013).

McGovern et al. analyzed the use of VR in enhancing students’ presentation skills, specifically in business classes. Scholars have used the Oculus Rift, one of the best VR tethered headsets, to provide participants with different audiences, such as classrooms, courtrooms, boardrooms, and banquet rooms. The participants had options to adjust their environment and receive instant feedback on their performances (McGovern et al., 2019).

Boetje and Ginkel conducted an experimental study on how virtual reality enhances the oral presentation skills (OPS) of graduate students. Although they are not very definitive about the optimal number of practice sessions required to enhance OPS, they recommend at least three practice sessions before a virtual audience for the enhancement of OPS (Boetje & Ginkel, 2020).

While there has been much research on the different aspects of students’ performances in an oral presentation assessment, as specified above, this study seeks to identify the factors that affect students’ performance in two different settings: a physical classroom setup and a virtual classroom setup.

3. Research Questions

This study intends to answer the following questions:

https://www.malque.pub/ojs/index.php/mr
1. In which classroom do students perform better in presentation assessment: physical classroom or virtual classroom?
2. How are students able to perform better in virtual classrooms than in physical classrooms?
3. What are the factors that inhibit students’ performance in physical classrooms?
4. What are the factors that facilitate students’ performance in virtual classrooms?

4. Methodology

A total of 98 sophomore students pursuing a Bachelor of Technology degree in Computer Science Engineering at a private Institute of Science and Technology in South India participated in the study. They were in their fourth semester and were required to make two presentations on any topics of their choice relevant to the subject in two setups: a physical classroom and a virtual classroom. The students’ presentations were assessed on parameters comprising two significant sections: verbal skills and nonverbal skills as shown in Figure 1.

![Figure 1](attachment:Assessment_Parameters_for_Presentation_Skills.png)

**Figure 1** Assessment Parameters for Presentation Skills.

In verbal skills, the performance of the students was reviewed against the following key factors: content (organization, introduction, thesis, main points, support, and conclusion); coherence (preview, transitions, and reviews of the main points); language accuracy (diction, grammar, and sentence structure); and clarity. In nonverbal skills, the performance of the students was reviewed against the following key factors: volume (audibility, intonation); gesture (of hands and head); pause (rate of speech); and posture.

The assessment was performed using the Google Forms platform. The students were assessed in real time on the basis of the parameters they met while making their presentations, and the overall performance of the students was computed after downloading the responses as a .csv file. A sample presentation assessment form is shown in Figure 2.

![Figure 2](attachment:Sample_Presentation_Skills_Assessment_Form.png)

**Figure 2** Sample Presentation Skills Assessment Form.
5. Results

5.1. Students’ Performance in a Physical Classroom

Substance and Style are two pivotal components of any presentation (Joyce, 1988); in other words, Matter and Manner, Content and Form, or What and How. They are complementary to each other. Of the two major assessment parameters—verbal and nonverbal—the ‘content’ parameter of the verbal section directly accounts for the ‘substance’ aspect of the presentation, and all other parameters of both the verbal and the nonverbal sections fall under the ‘style’ category. The participants’ presentation performance in a physical classroom setup is displayed in Figure 3 given below.

![Figure 3: Students’ Presentation Performance in Physical Classrooms.](https://www.malque.pub/ojs/index.php/mr)

Of the 98 participants, 73, i.e., 74%, were able to meet the ‘content’ parameter. However, the percentage of participants who met the remaining components of the verbal section and all the components of the nonverbal section ranged between 58% and 69%. None of the components of the nonverbal section of the assessment parameters were met by even 50% of the participants. The underlying factor that causes such a performance on the part of the participants is the lack of confidence. A significant positive correlation exists between confidence and students’ performance in a presentation (Al-Hebaish, 2012). It is observed that the lack of confidence results in students’ inability to deliver their presentation in a coherent manner with clarity of expressions and linguistic accuracy despite having the necessary thesis, main points, support, and conclusion.

5.2. Students’ Performance in a Virtual Classroom

The same set of participants were asked to make another presentation on a topic of their choice in the same subject and were assessed on the same parameters using the same assessment tools. The results of the participants’ presentation skills in a virtual classroom setup during the lockdown are displayed in Figure 4, given below.

![Figure 4: Students’ Presentation Performance in Virtual Classrooms.](https://www.malque.pub/ojs/index.php/mr)

The results show that all 98 students were able to meet the ‘content’ parameter in the verbal section of the assessment component. The number of students meeting the remaining components of the verbal section and two sections of the nonverbal section—volume and pause—witnessed a significant increase in the virtual classroom setup. The percentage of students who met all components of the verbal section ranged from 81% to 100%, and the percentages of the students
who met the 'volume' and the 'pause' components of the nonverbal section were 70% and 71%, respectively. The students' 'gesture' and 'posture' parameters could not be assessed because the virtual classroom was not adequate to accommodate such components.

6. Discussion

A notable increase in the number of students meeting the assessment criteria was observed. On average, 22% of the students who did not meet the verbal components of the assessment parameters in a physical classroom were able to meet those components in the virtual classroom. Conversely, this indicates the percentage of shy students among the respondents. With respect to the 'volume' and 'pause' components of the nonverbal section of the assessment parameters, a remarkable increase of 31% and 27% of the students, respectively, was found for the 'volume' and 'pause' components. This indicates how virtual classrooms serve as a scaffolding platform for shy students to overcome their shyness and perform well in their presentations. In fact, many researchers have found virtual classrooms to be a perfect simulator for students to shed their inhibiting public speaking anxieties and gain confidence to present their ideas effectively in front of an audience. Many researchers have suggested that virtual reality therapy (VRT) is an essential remedy for public speaking anxiety (Harris et al., 2002; North et al., 1998; Powers and Emmelkamp, 2008; Slater et al., 2006 and Wörtwein et al., 2015). Figure 5 represents the comparison of students' performance in physical and virtual classrooms.

![Graph Comparing Students' Performance in Regular and Virtual Classrooms](image)

Figure 5 Comparison of Students' Performance in Physical and Virtual Classrooms.

A questionnaire was sent to the participants, asking them to select and add all factors that intimidated them to deliver their presentations confidently in a physical classroom and those that facilitated delivering their presentations confidently in a virtual classroom. From the responses of the students, at least seven factors that affect the students' performance in both the regular and virtual modes are identified as shown in Table 1.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Factors Affecting Students' Performances in a Physical Classroom</th>
<th>Factors Affecting Students' Performances in a Virtual Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Physical Presence of Students</td>
<td>Virtual Presence of Students</td>
</tr>
<tr>
<td>2.</td>
<td>Presenting from a Stage</td>
<td>Presenting from Home</td>
</tr>
<tr>
<td>3.</td>
<td>Low Audibility</td>
<td>Good Audibility</td>
</tr>
<tr>
<td>4.</td>
<td>Lack of Assisting Props</td>
<td>Scope to Use Notes, Tips, and Other Materials</td>
</tr>
<tr>
<td>5.</td>
<td>Conspicuousness of Stage Fright</td>
<td>Inconspicuousness of Stage Fright</td>
</tr>
<tr>
<td>7.</td>
<td>Nonverbal Communication Factors</td>
<td>Absence of Nonverbal Communication Factors</td>
</tr>
</tbody>
</table>

To quantify the number of students on how each of the aforementioned factors in regular and virtual classrooms affects participants' performance in presentation assessments, the participants were asked to rate the impact of the aforementioned factors on their presentations on a 5-point Likert scale—Strongly Facilitates, Facilitates, Neither Facilitates nor Inhibits, Inhibits, Strongly Inhibits. The responses of the participants are given below in Figure 6 and Figure 7.

https://www.malque.pub/ojs/index.php/mr
6.1. Physical presence of the audience vs virtual presence of the audience

The presence of the audience is a major premise that has implications for students’ performance in the presentation assessment in both regular and virtual classrooms. As illustrated in Figure 8, 74 students said that the physical presence of the audience intimidates them from presenting their thoughts effectively in a physical classroom. In contrast, 73 students said that the physical absence of the audience in a virtual classroom helps them shed their public speaking anxiety and deliver their presentations confidently. Even though the audience is the very presenters’ classmates and a few of them are presenters’ friends, students with public speaking anxiety feel nervous and fumble for words while presenting before them.
Moreover, in a physical classroom, when students are physically present, the presenter has the ability to watch the audience’s body language while making the presentation. All of the audience’s body language may not always be positive; sometimes, any display of body language indicating disinterestedness, such as gazing all over the place, not looking at the person talking but anywhere else, doodling, or finding other things that captivate their interest instead of listening, showing signs of tiredness—yawning, slouching in their chair, leaning up against the wall, and blank or neutral facial expressions from the audience’s side—could be an intimidating factor for the presenter (Patrick, 2011). Virtual classrooms solve this problem by virtually presenting the audience to help the presenter feel that the presenter is actually speaking to the audience. At the same time, probable intimidating signs from the audience’s side are eschewed by the virtual presence of the audience in a virtual classroom setup.

6.2. Presenting from a Stage vs Presenting from Home

Being on stage is another inhibiting factor that hinders students’ effective delivery of their thoughts. As shown in Figure 9, as many as 74 students noted that presenting from a stage is a stumbling stone. The very stage is the cause of stage frightness for a good number of students. Students commented that it is one thing to sit on the audience’s side and look at a stage and that it is another thing to stand on the stage and look at the audience. Students noted that they are not able to present confidently when they stand on the stage.

![Figure 9 Presenting from a stage vs. Presenting from home.](https://www.malque.pub/ojs/index.php/mr)

At the same time, 82 students noted that the absence of the stage contributed to their confidence in delivering their presentations effectively. Author Cindy L. Griffin, Professor Emeritus in the Department of Communication Studies at Colorado State University, listed ‘Presenting in a formal setting’ as one of the causes of public speaking anxiety among students. Cindy contends that, in such a setting, the behaviors of the speaker are more prescribed and rigid (Griffin, 2018). However, this intimidating ambiance is removed in a virtual setup: students can feel at home and, at the same time, experience a simulated formal setup of an audience facilitated by the virtual classroom.

6.3. Low Audibility vs. Good Audibility

Volume is an important part of communication. It is an integral component of public speaking skills to transmit the message clearly to the audience and to sustain their attention (DeVito, 2020). In a physical classroom that comprises a seating capacity of 60 students, the presenters find it difficult to be audible enough to be heard by every single individual in the audience, particularly those who are seated in the last two rows of the classroom. The problem becomes aggravated when the speaker employs volume variation. Students with public speaking anxiety always have witnessed feedback from the audience that they are “not audible”. Low audibility could be either a cause or an effect or both a cause and an effect of low confidence levels.

As shown in Figure 10, 66 Students reported that they received feedback that they were not audible enough while presenting in a physical classroom setup. Regardless of whether the feedback was a cause or a result of a low confidence level, virtual classrooms alleviated this problem. In a virtual classroom, the presenter’s voice is received through a microphone—either built-in or headphones—and the output is sent through the speaker in the audience’s gadget. The audience can either amplify or condense the volume of the speaker’s voice. The speaker is also audible in both loud and soft volumes. Seventy-four students said that the virtual classroom facilitated good audibility of their voices. The students were audible even when they employed volume variation.

https://www.malque.pub/ojs/index.php/mr
6.4. Restricted Use of Notes vs Unrestricted Use of Notes

In a physical classroom, while doing a presentation, students, especially those who have public speaking anxiety, feel that they would perform well if they had the provision to see the notes and present. Although the use of notes is a recommended practice for the effective delivery of speech (Templeton, 2010), students with high anxiety are generally reluctant to use notes or see them and read/speak, as frequent references to notes are considered symptoms of lack of confidence. Therefore, such students fear being deemed poor performers (Daly et al., 1989). Figure 11 shows student’s response about assisting props.

<table>
<thead>
<tr>
<th>No. of Students</th>
<th>Low audibility</th>
<th>Good audibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Facilitates</td>
<td>11</td>
<td>55</td>
</tr>
<tr>
<td>Facilitates</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Neither Facilitates Nor Inhibits</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Inhibits</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>Strongly Inhibits</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Figure 10 Low audibility vs. good audibility.

<table>
<thead>
<tr>
<th>No. of Students</th>
<th>Lack of assisting props</th>
<th>Scope to use notes, tips, and other materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Facilitates</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Facilitates</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Neither Facilitates Nor Inhibits</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Inhibits</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Strongly Inhibits</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Figure 11 Lack of assisting props vs. scope of assisting props.

Seventy-one students expressed that this restricted use of notes was an inhibiting factor for them to deliver their presentations effectively. However, in a virtual classroom, students have the ability to use notes liberally. Seventy-five participants expressed that the virtual classroom facilitated them in referring to their notes as and when needed, without their actions being perceptible to the audience. This provision adds value to those with public speaking anxiety, providing them adequate support by enabling them to use their notes frequently, thereby boosting their confidence and, at the same time, giving them a sense of achievement that they were able to perform well amidst their peers.

6.5. Conspicuousness of Stage Fright vs. Inconspicuousness of Stage Fright

Students generally tend to portray themselves as good performers in any assessment endeavor. Although certain students with an average performance level lack the pivotal aspects of a good presentation, they still want to mask their inadequacies and project themselves as good performers. As shown in Figure 12, 61 students said that, in a physical classroom, when they unconsciously express visible symptoms of their stage fright during their presentation, the
consciousness that the audience can perceive their stage fright further aggravates their public speaking anxiety. This becomes a cyclic effect until the students reach a halt midway during their presentation.

![Figure 12 Conspicuousness of stage fright vs. inconspicuousness of stage fright.](image)

However, in a virtual classroom setup, 71 students said that although they exhibited visible symptoms of stage fright, they were not very easily conspicuous to the audience. The speakers' consciousness that their visible symptoms of stage fright are not conspicuous to the audience not only prevents them from losing confidence but also encourages them to progress through their flow of presentation.

6.6. No Provision to Self-monitor vs Provision to Self-monitor and Correct

In a physical classroom setup, the presenters have very little scope to monitor their performance and correct or improve their way of delivery–live. The best possible way of self-monitoring one’s own performance would be to decode the body language of the audience, interpret and infer, and then make the necessary amendments while presenting. This means that live self-correction cannot be accurate. As shown in Figure 13, 58 students expressed this as an inhibiting factor of concern in a physical classroom setup.

![Figure 13 No provision of self-monitoring vs. no provision of self-monitoring.](image)

However, in a virtual classroom, be it the Zoom or Google Meet platform, the students have the provisions to pin their videos to the screen and thereby monitor their performances live and make necessary corrections and improvements as and when needed. Seventy-nine students said that they made adequate corrections in their way of delivering their content by reviewing their performances.

6.7. Nonverbal Communication Factors vs Absence of Nonverbal Communication Factors
Nonverbal aspects constitute a significant quantum of communication. This is true with presentation as well. Hence, 50% of the assessment parameters comprise nonverbal components. In communication, it is important to use nonverbal communication cues such as gestures, posture, volume, and pauses. At the same time, poor communication cues in the form of stage fright are visibly evident through expressions such as incoherent gestures, low volume, display of deadpan expressions, and inappropriate pauses. Both the necessary nonverbal cues required for an effective presentation and the visible symptoms of stage fright are expressed through the same physiological medium: the body language of the person. Figure 14 shows student’s response about nonverbal communication factors.

![Physical Classroom vs. Virtual Classroom](image)

**Figure 14** Nonverbal communication factors vs. Absence of nonverbal communication factors.

Sixty students admitted that their consciousness of meeting the nonverbal communication factors had resulted in them unconsciously exhibiting symptoms of stage fright. This whole challenge with respect to nonverbal communication factors is nullified in a virtual classroom setup. There is little scope to assess body language, i.e., the posture and gestures of presenters. However, other nonverbal assessment parameters, such as volume and pause, could be assessed. As discussed in the ‘Low Audibility vs. Good Audibility’ section, the virtual classroom setup provides better audibility for students who speak at a low volume level due to public speaking anxiety. Furthermore, with the seven different facilitating factors, as discussed above, the presenters were able to meet another nonverbal assessment parameter—the appropriate use of pauses—in their presentation.

7. Final considerations

Virtual classrooms have turned out to be a blessing in disguise for students with PSA, according to the results of this research. Students found it difficult to perform well during class oral presentation assignments in a physical classroom setup due to the seven inhibiting factors identified by the participants of the study. The identified inhibiting factors are the physical presence of students, presenting from a stage, low audibility, lack of assisting props, conspicuousness of stage fright, no provision for self-monitoring, and nonverbal communication factors. On the other hand, the same set of students performed better in oral presentation assessments in a virtual classroom setup. The virtual classroom functioned as a simulator for the students to make optimal use of the setting to present their ideas confidently and effectively in the presentation assessment. The participants identified the following as facilitating factors in a virtual classroom setup: the virtual presence of students, presenting from home, good audibility, scope to use assisting props, absence of stage fright, provision for self-monitoring, and absence of nonverbal communication factors. Thus, virtual classrooms play a significant role in helping shy students overcome their public speaking anxiety and perform well in a presentation assessment. The study revealed the advantages of a virtual classroom setting involving oral presentations to boost the confidence of students who cannot fare well in a physical classroom setting.

Ethical considerations

We hereby declare that we obtained informed consent from all research participants involved in this study. Prior to their participation, each participant was provided with detailed information regarding the nature of the study, its objectives, the procedures involved, and any potential risks or benefits. Participants were assured of confidentiality and anonymity, and they voluntarily consented to participate in the research. The consent process adhered to ethical guidelines and regulations governing research involving human participants.

Funding

https://www.malque.pub/ojs/index.php/mr
This research did not receive any financial support.

Conflict of Interest

The authors declare no conflicts of interest.

References


