

REDUCING STUDENT ANXIETY IN ONLINE TERTIARY MUSIC EDUCATION THROUGH THE APPLICATION OF UNIVERSAL DESIGN FOR LEARNING

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Online teaching and learning are not new, nor are they new to tertiary music education. While an “anytime, anywhere” attitude and flexible study suits some learners, for others this is a contributing factor to student anxiety and attrition. This article explores the relationship between student anxiety in online learning and universal design for learning (UDL), and how UDL principles can be applied to reduce anxieties about musical performance in an online class. It explores common barriers for students in the online environment and offers strategies for sustainable learning design in a way to accommodate students before, during, and after unit completion. As well as designing with UDL, this study includes approaches to modeling accessible learning activities in order to provide students with the support they need to perform in an online space, meet learning objectives, and reduce attrition.

KEY WORDS: music performance anxiety, learning design, online music education, music performance, accessibility, universal design for learning

1. INTRODUCTION

Music performance anxiety (MPA) is a common form of social phobia experienced by music students and professionals, often stemming from the drive for self-preservation (Guyon et al., 2020; Klickstein, 2009; Osborne & Franklin, 2002; Spahn et al., 2021; Taborsky, 2007). Curtis states, “The most important psychological contributor to the onset of performance anxiety is a performer's concern or fear of the outcome of the performance: that is, the performer's thoughts become focused on an imagined negative outcome or failure” (Curtis as cited in Klickstein, 2009, p. 135). It is often situational and involves physiological, behavioral, and cognitive responses (Cox & Kenardy, 1993). This form of anxiety usually manifests through fear of failure or a feeling of unease from a personal evaluation by others in a nonanonymous performance environment (Kokotsaki & Davidson, 2003). There are multiple factors that may contribute to MPA, including gender, age, and performance context (Kenny et al., 2014; Kenny & Osborn, 2006; Nusseck et al., 2015). Spahn et al. (2021)

considered all of these possible contributors to MPA but concluded that self-efficacy plays an important role in lowering symptoms of MPA.

Although MPA has been closely analyzed (Burin et al., 2017; Fogel, 1982; González et al., 2018; Nicholson et al., 2015; Taborsky, 2007), until recently there has been little research on the impact on MPA among online tertiary performance students. Ritchie & Sharpe (2021) explored the self-efficacy, resilience, and well-being of conservatoire music performance students' reactions to lockdown in 2020. The results of this study, like Spahn et al. (2021), demonstrated that students with a high level of self-efficacy were able to continue with the original set performance assessment task, despite having a lack of teacher input and resources due to the lockdown stemming from the COVID-19 pandemic. However, this study was based on a situation where there was a sudden shift in delivery and assessment, not the reactions of students who had already been studying online and taking classes designed for online instruction. This article considers ways in which online design can reduce levels of learner anxiety while providing flexible performance options to lower MPA.

There has been some research into the levels of performance anxiety using a virtual reality performance simulator. Interestingly, these studies show that the audience does not have to be “real” to create feelings of anxiety for the performer (Aufegger et al., 2017; Orman, 2003, 2004). These studies consider the use of virtual concert halls or jury panels for performance training, with the aim to simulate performance experiences to lower anxiety levels. In addition to the study of virtual performance simulators, there is evidence to show that different performing conditions or situational factors can contribute to varying levels of MPA (Cox & Kenardy, 1993; Hamann, 1982). Cox & Kenardy (1993) highlight the social phobia of performance anxiety and the increase in anxiety in situations where there is “potential for personal negative evaluation, for example, when performing in solo situations compared to group situations” (p. 50).

What makes MPA complicated is Fogle's (1982) suggestion that MPA can develop through self-evaluation rather than social evaluation, where performers focus on their own mistakes and failures more than the response of a listener. The results of Cox & Kenardy's (1993) research can also be considered for adapting online performance studies. In an online course, MPA can possibly be decreased through flexibility in performance venue/space or audience, and by allowing students to make their own performance choices to shape their learning journey.

In addition to MPA, Johns et al. (2020) note that student anxiety, or learner anxiety, is prevalent among many students, generally, and is heightened when taking an online class. For an online performance class, it could be that anxiety levels in students are considerably increased due to the additional requirements and knowledge of technology.

2. STUDENT ANXIETY IN ONLINE LEARNING

There has been a significant amount of research into student anxiety in the classroom, both face-to-face and in the online environment (Abdous, 2019; Kahn & Madden, 2018; Pekrun et al., 2002; Zembylas, 2008). Johns et al. (2020) acknowledge that educators today strive to

meet the needs of their students but face the daily challenge of student anxiety, which is becoming more prevalent even among school children. Research suggests that student anxiety ranges from young school children to higher education students, many not having experienced feelings of anxiety before studying. Student anxiety may not come from a diagnosed condition, and it interferes with the learning process by preventing students from performing academic tasks and avoiding social situations.

Through investigations into online student experiences, it is reasonable to assume that technology can be one of the main contributing factors to student learning anxiety in the online environment (Abdous, 2019; McDonald, 2018; Zembylas, 2008). Sull (n.d., p. 16) notes there is “a wide range of enthusiasms when it comes to taking an online course for the first time: from a level of total comfort and ease in using computers to major fear and anxiety.” Many students who embark on online study do not expect fear and anxiety to surface. A common misconception is that everyone taking an online course has a reasonable knowledge of technology and does not need face-to-face interaction.

St. Clair (2015) also revealed that many students spend a lot of time worrying about accessing technology which distracts them from their study; they develop fear around online assignments and exams, or an inaccessibility of course materials. They wrestle with isolation and the fear that there is no one to approach with their concerns about course content, unlike a face-to-face classroom.

Student anxiety is also a common theme in discussions in relation to online student retention. St. Clair (2015) suggests that a “check-in” quiz can be implemented to assist with course navigation and to help manage student expectations. It was revealed in St. Clair's study that this check-in quiz reduced the number of anxious emails from students about formal assignments and learning material. Abdous (2019) also proposes that an online learning orientation is an efficient way to reduce online student anxiety.

Sun et al. (2008) examined the drivers of learner satisfaction across six dimensions (learner, instructor, course, technology, design, and environment). The results of their research revealed that learner computer anxiety, instructor attitude toward online learning, course flexibility, course quality, usefulness of learning materials, ease of use, and diversity in assessments were critical factors affecting learners' perceived satisfaction.

Jung (2013) found that certain stress factors were associated with asynchronous online collaboration, including self-confidence, instructional design, technology use, and the overall collaborative process. Jung suggests that learner-learner interaction is a critical component in online student collaboration, and instructors should facilitate and support online collaborative activities. This encourages participation and minimizes student stress associated with concerns of isolation.

It is evident that the factors which contribute to student anxiety can be minimized through course design and acknowledging flexible learning and accessibility to a wide range of instructional material. Student support is also an important element of the student experience; this can be related to technical troubles or general learning support and teacher presence.

This paper takes a theoretical view of applying universal design for learning (UDL) principles to an online music performance unit of study. The aim of this research is to consider what is possible in designing a learning environment that may reduce student anxiety—and subsequently MPA—and provide a holistic learning experience for today's tertiary music students.

3. UNIVERSAL DESIGN

There are mechanisms to help minimize student anxiety in the online context. Many teachers and designers are already aware of (and practice) universal design. Some may be completely new to it, while in some instances many may be approaching online teaching and design without even knowing it. In a general context, universal design is a method of designing environments, services, and products to be usable by the highest number of people. The emergence of the universal design paradigm can be related to two different major social changes: legislative matters which include the requirement to accommodate people with a disability (physical environment), and responses to an aging society (product) (Ostroff, 2011, p. 1.4). This design philosophy is applied so a single solution is used to reach the most people, without enhancement to accommodate for people with different needs (Story, 2011). The best use of universal design also goes unnoticed, as features have been fully integrated into the design solutions. Although universal design sometimes includes adaptable customization, it is best practice to present all choices equally (Story, 1998, p. 4).

Universal design emerged mostly to normalize disability (Story, 1998, p. 10) but assists a much wider range of people—including the elderly, pregnant women, children, and people with a temporary illness or injury—to access a range of environments. Designers can do this by employing the 7 Principles of Universal Design assembled in 1997 by the Centre for Excellence in Universal Design at the North Carolina State University (Centre for Excellence in Universal Design, 2020). These include:

- Principle 1: Equitable Use
- Principle 2: Flexibility in Use
- Principle 3: Simple and Intuitive Use
- Principle 4: Perceptible Information
- Principle 5: Tolerance for Error
- Principle 6: Low Physical Effort
- Principle 7: Size and Space of Approach and Use

Figure 1 demonstrates an entrance to a building which caters for many people, for example, someone in a wheelchair, an elderly person on a mobility scooter, a new mother with a pram, or a removalist with a trolley. Each person can use the ramp to access the entrance of this building. This entrance design also gives others the choice to use either the stairs or the ramp. No matter the need or choice, everyone has access to the building.



FIG. 1: Building entrance with stairs and a ramp for people who use a wheelchair at a large modern office building, store. Getty images copied under license.

If this physical building is thought of as an online teaching space, it raises the following questions: How can online learning be designed so that it allows open access to everyone? And, for students that are unsure or anxious about accessibility within the online environment, how can the design reduce anxiety? This is where UDL can be applied as a pedagogical design.

UDL is a set of principles designed to create learning opportunities for all students, regardless of their learning background or need (CAST, 2018). This means providing a range of learning options which

- offer different ways of learning and responding to learning
- accommodate different cultural values and ways of responding to our world
- engage and motivate students.

The purpose of UDL is to provide pedagogical strategies to maximize learning opportunities and allow all students, from any background or level of education, to have an equal opportunity to learn (Lancaster, 2008; Rose, 2000). UDL reduces barriers and provides support for all students, including students with disabilities and from diverse backgrounds (Dell et al., 2015, p. 167). The inclusive nature of UDL provides opportunities for students to incorporate flexible learning choices as part of their study and access necessary support from staff and peers to reduce occurring instances of learner anxiety.

Figure 2 demonstrates equitable opportunities. The three images contain three people of different heights (tall, medium, short). In the first image, all three people are standing on one box, each in front of a solid fence. In this scenario, the shortest person cannot see what is on the other side of the fence even though they are all treated equally, as they each have one box of the same height. In the center image, the shortest person has two boxes (having taken one from the tall person); thus all are able to see over the solid fence, creating an

equitable scenario. In the right picture, none of people have boxes, but the fence is no longer solid. This translucent fence allows them all to see through it, creating a flexible environment. This means that no matter what restrictions, limitations, or challenges someone might have, the barrier (solid fence) has been taken away to provide more flexible options for viewing.

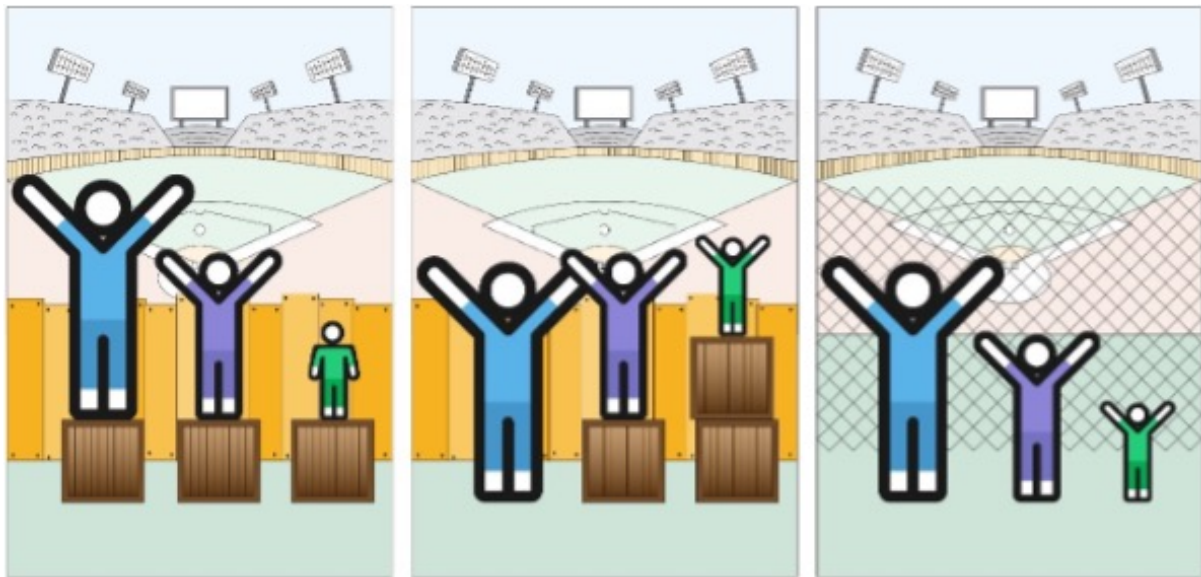


FIG. 2: Equity vs equality, TAFE NSW 2021 [adapted from CAWI (2015), 17]

Traditional forms of instruction (for example, lectures and comprehensive reading tasks) may be a beneficial method of learning for some students. Students who might be challenged by these tasks or have a specific learning style may need to seek accommodations and modifications to the learning activities. Finding alternate ways to access learning materials or approaching instructors can cause anxiety in some students. However, if flexible learning experiences are incorporated from the beginning (for example, offer different options in the instruction), everyone will benefit and student anxiety is decreased or eliminated.

There are three key principles of UDL which can be applied to online instruction (CAST, 2018):

1. Provide multiple means of *Engagement* (the “WHY” of learning). Gain knowledge and understanding into learners' interests, while challenging and motivating them to learn.
2. Provide multiple means of *Representation* (the “WHAT” of learning). Supply learners with different ways of acquiring information, knowledge, and skills.
3. Provide multiple means of *Action & Expression* (the “HOW” of learning). Encourage learners to use different ways of demonstrating what they know.

The principles are further broken down into nine guidelines which have supporting checkpoints. For example, the *Engagement* principle's first guideline is “recruiting interest,” which has three checkpoints, one being “minimize threats and distractions.” An example

could be to offer schedules for students, so they understand what is expected of them in the particular course or unit of study and create an inclusive environment (CAST, 2018).

These guidelines are a set of strategies that can be used to overcome barriers in curricula and stress factors for students. They can serve as the basis for building in options for flexibility that are necessary to maximize learning opportunities and reduce student anxiety within the online space.

4. TEACHING MUSIC PERFORMANCE ONLINE

The pedagogical examples in this paper are taken from a fully online performance unit at a university in regional Australia. The students enrolled in this unit come from a range of courses including the bachelor of music, bachelor of education (secondary music), and bachelor of arts (music) major. Many students are of mature age, who are particularly prone to learner anxiety (Bigdeli, 2010). Some students may have completed performance for their final school exams, while others are returning to music after a break in study (for example, work or family commitments). Therefore their experience in music performance and subsequent levels of MPA can vary. This unit of study takes a holistic view of performance study. Music performance in some tertiary music schools and colleges is still taught through a *master and apprentice* model, a model that has existed since the 19th century through a conservatoire approach. There is question about the sustainability of such a model for future musicians and whether this teaching context suits all music students (Liertz, 2007). This unit challenges this outdated model by providing performance instruction in a fully online environment and is designed with a focus on a constructivist model of teaching whereby students access prior knowledge in performance and apply this information to future performance contexts (Blackburn, 2017).

Until 2020, online learning was new to most music students. They may have been used to personal face-to-face tuition or the school classroom, so this new concept of learning music online can also raise anxiety levels for learners both in terms of MPA and learner anxiety. As mentioned earlier, the fear of being unsupported (either technically or throughout the learning journey), or fear of isolation, are two common triggers for learner anxiety in the online environment. These uncertainties are worsened when a student feels like they do not have the support or presence of a teacher like they might have been accustomed to in the past. In addition, many student anxieties in online learning are a result of not being familiar with, or anxious about, using online learning management systems (LMSs) or learning new music technologies, including microphones and recording equipment.

As this was a practical unit of study, students are required to use video, audio, and upload large files to the LMS in two ways: in the discussion fora, and in the assessment portal. It was the responsibility of the teacher and designer to ensure enough information was provided before and during the study period to ensure students can access the required technology and information needed to complete the learning and assessment activities. As students were entering this environment with different backgrounds and skills, it was important that the teacher understood the different levels of support needed and welcomed

students to express concerns and raise questions, establishing a supportive learning environment.

For this unit of study, the students were required to upload “practice videos” throughout the unit in preparation for a public performance exam at the end of the study period, which is also video recorded and uploaded for marking. The students were aware that they were required to perform in front of a live audience at the conclusion of their study, and the video would be shared with the class and markers. Like most performance students, there was naturally an element of MPA; this can be exacerbated by having to perform in front of a camera for the practice videos, with an unfamiliar audience (of staff and students) viewing it. Throughout the unit, these videos were also used for peer review and assessment, which may add to the levels of anxiety among online students, although they can be minimized by the focus on student-centered learning activities.

Several mechanisms were in place within the LMS and the individual unit site to reduce student anxiety around using the technology needed to upload performances. In the introduction to the unit there was a chapter on how to use the embedded MyMedia player to upload performances. The use of an embedded media player ensured privacy, safety, security, and copyright of live performance. It also meant that one set of instructions could be included in the unit material. There was a one-page document, or a series of videos that demonstrate how to record, upload, and then embed into the assignment portal or the discussion fora. One challenge was different bandwidth and internet speed for large movie file uploads. The student support included reassurance and information on how to compress videos so they could be uploaded easier. The links for this support material were also placed in the assignment submission section to be sure students had easy access to the information. The inclusion of practice videos as one of the learning activities also assured students of this process before their final assessment while also allowing them to meet other students, creating a collaborative community of practice.

5. APPLYING PRINCIPLES OF UNIVERSAL DESIGN FOR LEARNING IN AN ONLINE MUSIC PERFORMANCE CLASS

In education, UDL is not only applied to support students with a disability but used to benefit all students. When applying UDL to instruction, Rose & Meyer (2002) define UDL as “a research-based set of principles that together form a practical framework for using technology to maximize learning opportunities for every student.” Burgstahler (2021) provides guidelines and performance indicators to consider when planning curriculum instruction. Teachers can consider developing curricula with the following guidelines in mind, even in the online environment (Burgstahler, 2021):

1. Class climate — high values applied to all students; avoid stereotyping; be approachable and available; address individual needs inclusively rather than segregating or drawing attention to an individual's need for special accommodations.

2. Interaction — encourage cooperative learning; communication accessible to all group members; regular and effective interactions between students and the instructor.
3. Environments and products — make sure products are available and accessible to all students; organize an environment that is safe for all students.
4. Delivery methods — use flexible, accessible instructional methods that motivate and engage all learners.
5. Information resources and technology — ensure that course materials are accessible to all students; use flexible technology to assist in delivery of information; course materials should be engaging.
6. Feedback — provide feedback on a regular basis to all students.
7. Assessment — assess student progress regularly and in a variety of ways.
8. Accommodation — plan for specific accommodation needs for students whose needs are not met by UDL.

These guidelines can be incorporated within the three principles of universal design described earlier so a framework can be formed to assist designing learning activities and assessment for a diverse student cohort in an online music class, ensuring that the content and assessment are accessible, flexible, and suit the learning journey of each individual student.

UDL has already been applied within the physical music classroom to reduce barriers to learning by designing instruction for students with a broad range of skills, reading levels, learning styles, and personal motivations (Darrow, 2010, 2016). At a tertiary level, UDL has also been applied to teaching music theory and musicianship to provide different learning opportunities to accommodate increased learner variability among students (Quaglia, 2015). However, incorporating flexible learning and principles of UDL to online music education in the performance context for online instruction is yet to be examined in detail.

Using the three key principles of UDL (engagement, representation, action, and expression) (Kennette and Wilson, 2019), a framework is established that can be used to guide the design of learning and teaching activities and assessment. Table 1 outlines how the three key principles can be applied to an online music performance unit; these principles are explained in more detail below.

TABLE 1: Application of three key principles of UDL to online music performance class

Key Principle	Approach to Teaching	Approach to Learning	Approach to Assessment
Engagement	Students are not classified by genre or type of instrument or music (inclusive)	Flexibility for learning relevance	Personal practice videos
Representation	Constructivist method of teaching	Make information more accessible by activating background knowledge	Engage with people they feel comfortable and confident with, and apply to performance assessment
Action & Expression	Varied assessment (written, self-reflection, peer review)	Assistance with goal setting, prompts, and check points	Set own personal goals in addition to formal learning objectives

5.1 Engagement

Students are not classified by genre or type of instrument or music. The unit teaches the scholarship of performance and provides opportunities for students to engage with their own choices of music, instrument, genre, and performance environment. This ensures learners remain comfortable and motivated to learn as their interests are engaged and optimized, as well as encouraging student autonomy. This flexibility allows students to see the value in what they are learning within their own context. The use of practice videos as a learning mechanism promotes self-regulation and develops self-assessment and reflection skills.

5.2 Representation

A constructivist method of teaching is used within this unit of study (Blackburn, 2017). Students engage with their local community or environment and learn from their own and others' experiences to develop new knowledge. The purpose of engaging with this pedagogical method is to supply or activate background knowledge that makes information more accessible and likely to be understood by learners. In this case, they can reduce barriers by engaging with people and knowledge they feel comfortable or confident with and apply this to their performances.

Additional student support is provided through regular contact with the teacher in online tutorials, written asynchronous forums, and the recent addition of video feedback. Learning activities have students listening, watching, reading, and performing to create a safe,

comfortable environment and engage learners in a variety of ways to interact with the learning material. This is also where the LMS is optimized for UDL, and the accessibility of the LMS provides alternatives for visual and aural information.

5.3 Action & Expression

Assessment is varied, and there is a written task so students can engage with the literature on performance, peer review and self-reflection tasks, and live (prerecorded) performance. These provide multiple opportunities to demonstrate what they know or have learned during the trimester. As this is a first-year subject, students need varying levels of assistance with goal setting for their summative performance assessment. Prompts and checklists or points are provided throughout the study period to assist in the planning of their performance. In addition to the learning objectives for the unit, students are also asked to set their own personal goals, further shaping their personalized learning journey.

The final performance provides students with the opportunity to conduct their performance in a familiar, comfortable environment before uploading to the LMS. Allowing students to choose their own context in which they want to perform also provides equitable and flexible assessment. This in itself is a learning activity—to find a space that suits their ideas, abilities, and addresses their strengths rather than demand a particular way or context in which the students should perform. This approach provides “*multiple means of action and expression*” by providing a variety of ways that students can demonstrate their understanding of performance (Darrow, 2010, p. 44). An example of the venue choices students have made in the past is illustrated in Fig. 3.

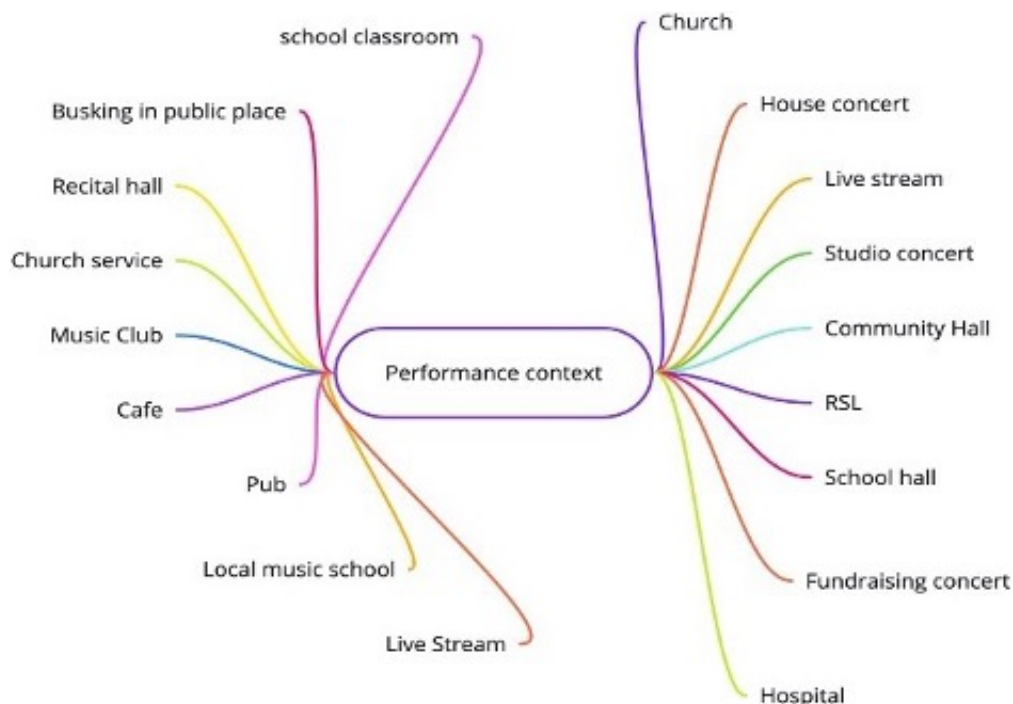


FIG. 3: Chosen performance contexts of online performance students

Each student makes a personal choice for their performance context. They take advantage of a familiar place, setting, and audience to reduce the amount of performance anxiety they might experience. Although it may not reduce performance anxiety to zero, this flexibility is in accordance with Cox and Kenardy's (1993) research results by allowing students to adapt their performance environment. In addition, they are working within their own community and engaging in places and people they trust.

The difference between the pedagogical design of this performance unit and one that may be delivered face-to-face is the freedom students have within the class to respond to their own learning and the world around them, engaging and motivating them to pursue their own interests while learning the fundamentals of musical performance. The aim of this holistic approach to performance and the reliance on constructivist methods of acquiring knowledge is that MPA levels are catered to.

Students are given regular feedback from peers and teachers before embarking on their final performance exam. Students can choose the context in which they want to perform to make them feel more comfortable in public performance. They are also guided through the course to meet their own personal objectives, focusing their performance on their personal achievements and expectations rather than criticism from another. The assessments are also varied and designed to encourage student-centered learning, including self-reflection specifically designed to minimize any interference from students' performance anxieties. Learning outcomes and assessment criteria are also designed to support an all-inclusive approach to performance, including venue and context preparation, and not necessarily focusing solely on technical skill.

6. LIMITATIONS AND FUTURE DIRECTIONS

There has been little evidence of applying UDL principles to online music performance instruction, mostly due to the perceived limitations of applied music studies in the online environment. This theoretical paper demonstrates an approach that can be taken forward to develop an inclusive pedagogy that can not only reduce performance anxiety during online instruction, but also develop higher levels of student self-efficacy through a constructivist learning pedagogy and a more equitable learning experience.

Due to the sudden shift to online learning—and music studies not being immune to this—the application of these concepts can now be applied to a class to develop an empirical study on students' shifts in attitudes, beliefs, and levels of MPA in online performance studies. If consideration is also given to the digitized performance world professional musicians have engaged in recently, this form of online learning can also have implications for students' future professional work.

A second stage to this research would be to involve students and test their levels of perceived (or real) MPA before, during, and after taking the unit of study. Data collected could inform teachers how students normally rate their level of MPA in a live context, measure their anxiety related to taking a performance class online, and whether any of the tools and strategies implemented by UDL assisted in relieving some of these anxieties.

Feedback would inform performance teachers (both online and live) what measures could be taken to allow students to shape their own learning journeys to suit their needs, expectations, and adapt to their own levels of performance comfort.

7. CONCLUSION

This paper has provided a framework in which learning activities and assessment can be designed for a fully online music performance unit using universal design principles to reduce student and music performance anxiety (MPA). The application of these principles and guidelines ensures that all learners feel more comfortable in the online environment and feel supported when preparing for an online performance. Although MPA may not be eliminated, the increase in anxiety for online learners can be minimized by applying different and varied forms of learning activities and assessment, ensuring student engagement and motivation is maintained through accessible learning materials and following a student-centered approach. The next stage of this research is to invite feedback from performance students regarding their levels of MPA in their online unit performance preparation and assessment, and their level of student anxiety learning music fully online.

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