

IS THERE A PLACE FOR VIRTUAL REALITY IN INDIVIDUAL INSTRUMENTAL TUITION?

Will virtual reality headsets be a common feature of the instrumental lesson of the future? Ben Sellers, leader of Wiltshire Music Connect's 'Over the Digital Horizon project' writes about a unique research project that aims to shed light on this very question.



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Is it possible to identify the first use of technology in an instrumental lesson? Was it the metronome in the early 1800s, or perhaps the first printed music in the 1400s? What we can be certain of is that the pace of technological development, and the amount of technology used in instrumental learning, has increased exponentially in the past few years. This trend follows wider societal shifts, most notably the development of the smartphone, a device that allows each of us to tune our instrument, download repertoire, record and listen back to our playing and even create and email audition videos with minimal fuss or cost.

What might be the next piece of hardware that radically changes the way we live and learn? One strong contender would be the virtual reality headset. The Meta Quest 2 VR headset is used widely (its app was top of the US app charts for the last two Christmases in a row) and it is likely that at least some of your pupils have access to a VR headset at home.

I first put a VR headset on a few years ago along with a group of pupils, and was able to watch a performance by the Philharmonia Orchestra as if I was there, turning my head to look around into the audience and moving between different areas of the orchestra. As an 'immersive experience' it is undeniably impressive, but how about as a teaching tool?

VR Piano Technology

There are now several apps available for the Meta Quest that claim to allow a user to 'learn to play' the piano. Those familiar with Guitar Hero will recognise the concept: moving coloured blocks overlaid over the user's real life keyboard,

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signifying which key to press when. It provides a more immediate visual alternative to staff notation and 'gamifies' the learning process: users are told exactly how many notes they played correctly, and receive stars and other rewards as their playing becomes more accurate. In addition, apps allow users to slow down the piece, practise one hand at a time and loop tricky sections. Some are even beginning to use artificial intelligence to highlight areas of the piece that need work and suggest practice routines.

This approach will appeal to many learners, but as instrumental teachers we know that there is much more to learning an instrument than 'putting your hands in the right place at the right time'. What about phrasing, dynamics, articulation, posture and some good old human encouragement? It is clear to me that apps like the ones described cannot *replace* human teachers, but they might enhance certain elements of the learning process.

The Experiment

This is the premise on which a unique and very exciting experiment is about to begin. We have developed a partnership between the Royal College of Music, four music education hubs - Wiltshire, Leicestershire, Lincolnshire and Norfolk - and several secondary schools to explore the question:



In what ways can a virtual reality piano app support piano tuition for beginner pupils aged 13-16?

We will work with eight piano tutors and 32 beginner pupils for ten weeks. Half of the pupils will use a VR headset as part of their lessons, and also have a headset to take home and practise with. The other half will have regular lessons with no access to headsets. Tutors will be free to use the headsets in their lessons as much or as little as they like, and a team of researchers from the RCM will gather data from tutor diaries, questionnaires and focus groups, and compare the progress made between the two groups of pupils. We will consider whether access to VR increases pupil engagement and progress, including their motivation to practise at home. We will ask how the use of VR headsets in lessons affects what tutors teach and how they teach it, and we will also see if there are any ways that the software could be developed to better support teaching and learning.

Repertoire acquisition & Gamification

The specific app that we will be using for the research is called Pianovision, and is freely available on the Meta Quest app store. As a jazz clarinet player whose piano playing skills can best be described as 'jam along', I have been using the app myself to learn some simple classical pieces and was able to get to a point where a given piece sounded respectable much more quickly than when working from staff notation.

Each of the headsets has repertoire from the beginner books that the teachers will use pre-loaded, so my guess is that

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pupils will be able to learn about fingering and hand position in their lesson, and then practise using the app. My hunch is that the strong visual stimuli, similarity with computer games and ability to progress at a relatively fast pace will engage participants for longer and lead to increased time spent practising and accelerated progression.

Notation

One possible side effect of this new approach to learning is that pupils will need more convincing as to the value of staff notation. The core argument for learning to sight read, to be able to play the music they love as well as discover new music, has already been eroded by the many 'cascade' style youtube videos that use a similar visual approach.

However, what happens when the pupil wants to play for someone else? Are they going to keep their headset on, and be completely disconnected from their audience? Are they going to memorise the piece before they are able to take their headset off and play? Or do they need to use a combination of VR and notation learning so that they can take their learning out of the virtual world and into the real one? Though it will require more work, my guess (and hope) is the latter. This is another reason why a human tutor is essential in a pupil's learning journey.



Tutor buy-in is key

I would love to stop each reader at this point and ask: 'what is your response to everything that you have read so far?'. It may be that you find the concept really exciting and are keen to try it out yourself. You may have a strong negative reaction to the idea of a pupil wearing a headset in your lesson, feeling it could disconnect tutor and pupil and lead to poor playing and learning habits. You may, like many of the tutors involved in the project, see the potential but have questions about how it might play out in practice.

Each of these responses is important because pupils' experience with the technology does not happen in a vacuum. Tutors are the gatekeepers and guides of each pupil's learning journey, and experts in instrument pedagogy. Without tutor buy-in there may be people who want to learn piano with VR, but they are unlikely to be able to do so effectively. Therefore, alongside exploring whether VR does indeed increase pupil engagement and progress, my role in the research is to explore tutors' attitudes to the technology before, during and after the project. The tutors on the project come from a range of stylistic and pedagogical backgrounds, and I am keen to see how the VR is used with a range of teaching styles and approaches.

Possible future developments

This piece of research is likely to be the first of many that explores the impact of virtual and augmented reality systems on instrumental tuition. Apart from diversifying into more instruments (unlike many other instruments the piano has the advantage of being stationary, and so easier to 'map' a virtual world onto, but similar systems for guitar are already in development), a natural next step would be to look at whether intermediate piano pupils - those who have been

playing for some time, but whose sight reading skills are preventing them mastering repertoire as quickly as they would like - benefit from using a VR system. Additionally, within improvisation, the app could highlight harmonic possibilities as the user experiments with different combinations. Finally, developing ways that indicate other musical elements, such as articulation and dynamics, could make a huge difference to a pupil's development of their musicianship.

Tutors as partners in development

Good instrumental tuition is flexible, pupil-centred and relational. Tutors are role models who provide access to ensembles and progression pathways. VR cannot do what a human tutor can do. However, that doesn't mean that others won't claim that it can. As experts in music and education we need to engage with developers now in order to shape what will come in future and its suitability for our profession. Developing evidence-based guidance on how VR can enhance, rather than replace, tutor-led instrumental teaching will support training and advocacy across music education and contribute to society's wider discussion of the role of VR in education. Through our partnership between tutors, hubs and the RCM, we hope to create an environment in which technologists, tutors and researchers can work together to create the best possible learning opportunities for pupils, increase pupil retention, and keep learning fun and relevant well into the 21st century.

Follow the project and find out more about the future of technology in music education:
<https://overthedigitalhorizon.org.uk>