

## Online music tuition in rural Scotland

Janet Macdonald, The Agar Trust, Feb 2017

*Dr Janet Macdonald has a background in educational research and has published two books and numerous academic papers on the practicalities of teaching and blended learning. Whilst with the OU in Scotland she worked with students and staff in rural Scotland, so she has an understanding of the challenges they face. Music making has been her lifelong passion, hence the direction of this Trust.*

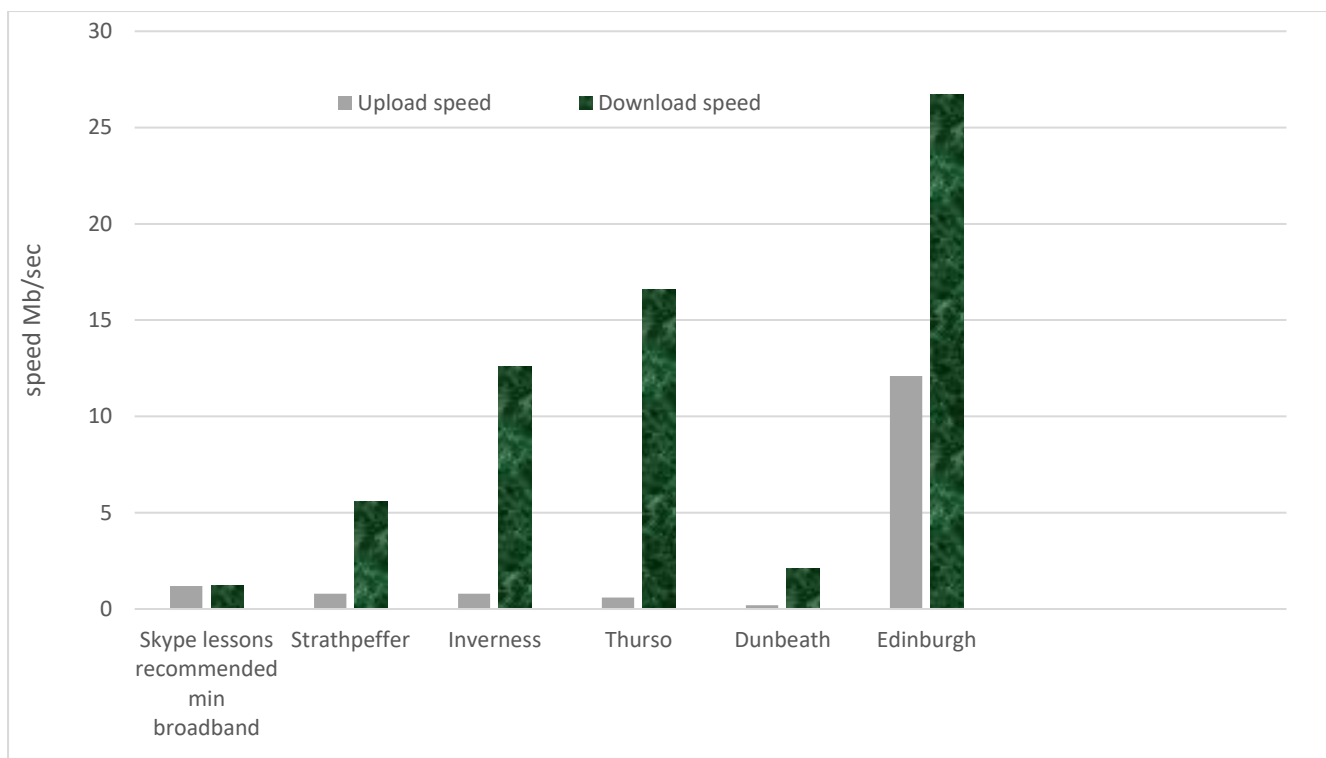
Many young musicians living in rural Scotland have no option but to travel long distances to benefit from specialist tuition. With the support of local tuition, they have already demonstrated their potential and ability. However, over the last two years, the Agar Trust has made 123 awards to young musicians wishing to travel, in order to further their studies.

The alternative to these journeys is online tuition using a variety of technologies, which has so far had limited uptake. This is partly because broadband speeds can be patchy and poor in rural Scotland, but it is also a matter of available technology and the staff with the motivation and expertise to use it. The aim of this report is to:

- make an appraisal of the potential of this teaching at a distance, in the context of the needs of young musicians in rural Scotland;
- explore where the hurdles are, and what could be done about them.

We describe a pilot Skype-to-Skype lesson in a domestic setting, and then go on to discuss the experiences learnt from other projects.

We recently set up an experimental “lesson” with the pupil (myself) and my teacher (Katy Bell) working from her home in Inverness, together with cellist Will Conway, working from home in Edinburgh. We checked broadband speeds at the outset, and not very surprisingly, speeds in Edinburgh were more than twice as fast as those in Inverness (see Fig 1). We note download speeds are much greater than upload speeds. This is a drawback for a music lesson because the upload speed is the direction which carries the audio and video from the student to the tutor.



**Figure 1: A comparison of broadband speeds Feb 2017**

The broadband speeds measured here should be treated with caution: they are variable, depending on the time of day, and they reflect the current situation from specific houses in various areas.

We found satisfactory positions in front of the webcams so that instruments and faces of both myself and Will were in view. However, various technical issues arose during the lesson:

- the sound quality was poor from Inverness and Edinburgh, sometimes dropping away completely;
- the quality of audio and video *received* by the pupil when the teacher played was a lot better than that which was *sent* to the teacher, reflecting the difference in download and upload speeds;
- audio and video were better coordinated when the teacher played from Edinburgh, but there was still a loss of tone and colour;
- if both parties spoke or played simultaneously, the sound was cut off;
- there was a problematic delay between the sound and video, which was worse when playing from Inverness.

The delay between audio and video, or *latency* is a known problem with all forms of videoconferencing. There are a variety of reasons for latency, including the computer processing power at both ends, the quality of the signal (a good quality audio and video signal uses more bandwidth) and the broadband speed.

In terms of its teaching potential, while Will identified a couple of technical issues with my playing, he commented that intensive bow change work would be impossible; and work on interpretation could also be challenging. We considered that some of the teaching issues could be addressed by:

- the pupil sending a recording to the teacher for review before the Skype lesson when feedback could be given;
- establishing an etiquette for the timing of teaching comments during playing;
- a third party, preferably a teacher or parent, present with the pupil to help interpret feedback or move the technology around to help the teacher see or hear the student.

There is always a balance between the musical experience for teacher and student, the technology which is employed, and the administrative and technical support required. In the case of Skype lessons in a domestic environment, while the musical experience can be challenging, the technology is free and relatively familiar, and there is no significant administrative overhead. And, it is probably true to say that the enthusiasm of the teacher or student for this method will be coloured by the alternatives available to them.

This is certainly true in the case of one of our award winners who lives in Dunbeath, and has had Skype and Facetime lessons with various teachers, including violin lessons from Glasgow and Shetland and piano lessons from Thurso. Their poor broadband speeds are illustrated in Fig 1, however the family are determined and enthusiastic. Her mother provides considerable input, and stressed that tutors need to believe in this method and the pupil must be well motivated. They found that teaching by ear was tricky, and clapping a rhythm was also difficult. It also helped to meet face-to-face initially so that tutor and pupil could build a relationship. Kirsty now attends Junior RCS in Glasgow which she finds exciting, and motivating, with excellent tuition, but they face a 500 ml round trip to attend each week.

### Other projects

Despite the challenges, online instrument teaching to students in the home using Skype is offered by a number of agencies, for example [www.yourspacemusiclessons.com](http://www.yourspacemusiclessons.com) and [www.musicalorbit.com](http://www.musicalorbit.com). They recommend a minimum broadband speed of 1.2 Mb/sec download *and* upload, which we were unable to achieve from Inverness, in common with much of rural Scotland, although speeds in Edinburgh would be considered acceptable by these agencies.

To supplement individual tuition on Skype, the National Piping Centre has an [e-learning portal](#) containing a range of recorded video lessons on technique. Pre-recorded video lessons on are also available for tin whistle, gaelic song, guitar and fiddle, for example via [Feis Rois](#).

Beyond Skype-to-Skype lessons, various projects have delivered online music tuition to groups of children over the past few years, mostly at primary school level. One of the earliest, and longest running projects is in Moffat and Dumfries, where distance learning has been used for brass and wind tuition in primary schools over the last ten years, with the tutor, Grant Golding, operating from a videoconferencing studio in RCS. He is enthusiastic about its potential, and his watchword is “Listen with your eyes”, presumably because latency is a fact of life which you have to get used to if you teach online. To supplement online teaching sessions, his website includes a range of videos to illustrate various techniques, together with backing tracks and teaching materials for local music teachers <http://www.brassblast.co.uk/> <http://www.windblast.co.uk/>. He recommends using a separate camera in the school, so that it can be angled to see relevant parts of the instrument; and an external microphone. He uses Zoom, which is a “Skype equivalent” and makes use of Sibelius score editing software for quick examples, and Audacity for recording students.

In a similar vein, the [Connect/Resound](#) project (2014-15) has also been researching the practicalities of distance music tuition, working from music Hubs in rural Yorkshire with those selected primary schools in the area with access to superfast broadband connections, although speeds were still variable. The schools which could afford specialist cameras with zoom options and multiple camera angles found them beneficial; others used an external camera and microphone with Skype, and this was less satisfactory. Tutors working from music hubs gave lessons in clarinet, guitar and violin. Few problems were reported in teaching beginner technique, though teaching bow hold was reported to be very challenging. They note that assembling instruments and tuning them was a potential issue, and pupils needed to learn how to do this themselves. It was also not possible to reliably count a steady beat for pupils to play along to, or indeed for the teacher to accompany them, and this is presumably why the Dumfries and Galloway project is making use of backing tracks and videos of techniques. The project has now expanded to other music Hubs of northern England, as well as to Cornwall.

From 2015-16, Birmingham Conservatoire was running tuition for groups of pupils in Soweto, as part of the ARCO project. They offered one to one mentoring and string quartet coaching using Skype. They also planned live event streaming of master classes, workshops and performances from Birmingham. This looks like an exciting and ambitious project, but there is no evaluation report on their website so we don't know how well it worked.

At the top end of the technological scale, videoconferencing has been widely in use between universities for many years, and they benefit from the high-speed JANET research network which connects universities in the UK with each other and with other parts of Europe. With speeds of 40 Gbits/sec this is another world from that achievable using broadband. With the use of specialized audio/video transmission software developed in Trieste (called Lola, for Low Latency) it is possible for professional musicians to play together over thousands of kilometers with no adverse latency effects. Indeed, in 2015 Hebrides Ensemble worked from Napier University with musicians in University of London and Trieste. The system is demanding of technical input and considerable institutional readiness and it is not known to what extent it would be feasible in rural parts of Scotland.

Finally, the Online Orchestra (2014-15) <http://onlineorchestra.com> worked with groups of amateur musicians and children in rural Cornwall and the Scilly Isles, offering them the opportunity to play with each other online, each group working from school or a local hall. The project, which was impressively well organised and run, developed software which would compensate for latency whilst making use of the available broadband. The project also commissioned some music which was "Latency friendly" and designed to be played by groups of musicians operating at a distance from each other. They staged a concert at the end of the project, a recording of which is on the website. Software which compensated for latency could be an attractive proposition for individual tuition in rural Scotland, or for remote tutoring of groups playing in the same place. However their model of distributed performance is somewhat limited in its further application because the repertoire would be restricted to commissioned works. A distributed performance would not work with Beethoven.

## **Conclusions**

We have illustrated a variety of options for online music tuition, whose viability and sustainability depends on balancing the availability and cost of technology and the administrative and technical support required, against the value of the musical experience.

Skype music lessons in a domestic setting are probably on the bottom rung of the ladder in terms of technical sophistication and the quality of audio and video signal. However, they are likely to prevail in rural Scotland simply because they are administratively and technically easy to organise, and the alternatives are not there at present.

In spite of the publicity on superfast broadband in Scotland, parts of rural Scotland may never benefit from the current rollout. While the speed we measured in Inverness was more than twice that experienced in Strathpeffer where I live, and no doubt many other parts of northern Scotland, the pilot showed how it was still limited in its ability to support effective Skype teaching in the home. The quality of transmission, and particularly the latency, could seriously limit the experience of the lesson for both student and teacher. Having said which, “necessity is the mother of invention”, and with the prospect of a long weary journey as alternative, both teachers and students will find a way of making it work.

Beyond the technical challenges is the need for online teaching techniques. The experience of different teachers on various projects has provided insight into online teaching techniques, but they are not universally available. It is also not clear to what extent techniques used with primary school children will work effectively with more advanced players such as we support in the Agar Trust. It seems likely that there will be teaching techniques which are generic to all levels and others which are specific to a particular level, and certainly to a particular instrument or voice.

There are exciting prospects on the horizon. Several of the projects described here make use of centres for both teachers and pupils, and there is merit in this approach because it provides some control and consistency in the technical setup. There could be potential for the organisation of lessons in a centre where the broadband speeds were reliably good, which could be in university centres, using the JANET network, if Lola were feasible and more widely available. An alternative could make use of ordinary halls, using software developed in the Online Orchestra project. While the Online Orchestra software was designed to support musicians in multiple centres, an experimental pilot would be needed to test its use in the context of joining young musicians in one centre, with a remote tutor. Such strategies could greatly improve the musical experience for the pupils, but there would be overheads in technology support and administration.

Use of a rural centre would only be economically viable if a sufficient number of pupils could be brought together in one place, and it would seem sensible to work with existing local and regional music groups, who are already undertaking a magnificent job for young musicians, against considerable odds. The Agar Trust has contact with these groups in various parts of rural Scotland. The use of a centre would also give young musicians the opportunity to meet or play with fellow pupils, providing some additional motivation and excitement.

Finally, the availability of methods of online learning really challenges us to think in new ways about teaching: what can work online, and what requires a face- to-face environment. For example, the question of motivation and excitement should not be neglected because it can be central to generating and maintaining the enthusiasm of youngsters for learning music. More widely, we need to be clear about the purpose and expectations of teaching sessions, in order to maximise the options available.

## **Appendix (March 2017)**

In response to this report, a number of online tuition projects in Scotland have since come to light, which it seems appropriate to share here.

With reference to tuition which makes use of domestic broadband, a project on Lewis funded by the local council makes use of e-Sgoil, which is a dedicated e-learning school in Stornoway <http://www.cne-siar.gov.uk/education/esgoil.asp> . The school is equipped with VScene, a video conferencing system. We understand it is used to reach children in outlying areas, teaching various subjects including instrumental tuition, in conjunction with face to face visits.

Of relevance to the discussion on agencies which broker Skype lessons for instrumental tuition, two members of staff at RCS are investigating the potential of [e Staccato](#), an agency which uses software which is specifically designed for music teaching. Unfortunately it is likely to face the same broadband limitations in rural Scotland which we have observed with Skype lessons.

Ben Redman, a part time PhD student registered with RCS is researching the use of emerging technologies in instrumental teaching, and the experience of both the teacher and the learner in face-to-face and videoconferencing lessons. He is particularly interested in the potential of low latency video conferencing, specifically a scaled down version of LOLA, as described above, which may be appropriate for tuition purposes.