

## Music Technology in Irish Second Level Education – The Foobarian Model.

Lets imagine a country which we will call Foobar, where reading and writing don't exist, but which despite this has managed to develop a sophisticated culture of science, the arts, philosophy and commerce. A bit of a stretch I know, but not entirely inconceivable. All cultural transmission in such a society would take place by oral means and a good memory would undoubtedly be an invaluable asset. Education would probably consist of much rote learning and place a high value on memory work. Now imagine what the impact on such a society and in particular on its education system might be when someone finally invents the pen. Well, undoubtedly a politician somewhere will pound a table and insist that we need a '*pen in every classroom*'. An education administrator will say '*no, we should have a pen room where children can go once a week to learn how to use these pens*'. So, eventually schools will all have pens and teachers will have to figure out how to make use of them. The Foobarian Department of Education will ponder the issue. They will eventually write a 'pen' curriculum and issue guidelines on how the 'pen' may be used to support memory work and rote-learning in schools.....

The computer analogy here is obvious so I won't beat you over the head with it any further. This parable is frequently used by MIT Professor Seymour Papert to illustrate a number of general points about current approaches to the use of computers and digital technology in schools. Firstly, the computer, like the pen, is simply a tool. Children in schools use pens every day, but they don't study the pens themselves and are not specifically examined in their use. The pen is simply one means to engage with the subject matter at hand. Secondly, the curriculum in schools is at least to some extent a function of the tools available to deliver it. We do lots of reading and writing in schools because pens and books, blackboard and chalk are cheap and readily available. The appearance of computers offers the possibility of doing things differently or possibly even doing different things altogether. What doesn't seem to make much sense is to try to incorporate computers into the education system in a way which does not allow for some change in either the 'what we do' or the 'how we do it'.

When I sat down (at my computer) to write this article, I imagined that I would describe some of the various technological tools available to musicians and describe ways of using them in teaching and learning settings, illustrated with some examples of novel music technology and learning projects in which I have participated. I had hoped to briefly mention the use of technology in the Irish context as a positive illustration of how we can use technology-based resources to enhance the musical experience of children in our schools. When I set about examining the relevant documentation and talking to teachers and examiners in the Irish system, I very quickly became perturbed by what I found.

What follows, therefore, is simply a description of how music technology is applied and examined at Leaving Certificate level, with some personal comment. Unfortunately, as in many cases, when one starts to delve into syllabi, curricula and marking schemes, the devil is in the detail. I will spare the reader most of this detail, but those who wish to torture themselves further will find it in the Leaving Certificate Music Syllabus, the

NCCA Leaving Certificate Music Guidelines for teachers and the relevant State Examinations Commission marking schemes.

Music technology became part of the Irish curriculum as an element of the Leaving Certificate music syllabus newly introduced in 1997 and examined for the first time in 1999. Technology is referred to in the syllabus in two areas, performing and composing, but is specifically examined only as part of the performing option. Under this option, students may choose to sing, play an instrument, improvise, or demonstrate “an ability to understand and to use microtechnology music-making systems”.

For the sake of simplicity, I will look at a typical example of an Ordinary Level student and a Higher Level student, each taking music technology as a single activity music performance elective option. In each case the music technology examination completely fulfills the performing requirement.

Ordinary Level students taking what the NCCA Draft Guidelines for Teachers refers to as the “microtechnology music-making” option are expected to be able to input via electronic instruments or MIDI enabled conventional instruments, to save retrieve and edit the score and produced a taped or printed version of the music. These guidelines further specify that students taking this option should be able to *play* a piece of music with two independent parts by either “single track recording in real time” (recording each part separately by playing it into the computer using a MIDI instrument) or “double-track recording in real time” (recording both parts at the same time). At Ordinary Level this may be an existing piece of music or a newly composed piece.

At Higher Level, students complete a similar activity to that at Ordinary Level. There is also an extra requirement that students be able to ‘demonstrate an ability to compile their own prepared tape’. They would do this by having “pre-recorded in real time, backing tracks to an existing or newly composed piece of music” and then play along with this backing track on an instrument. Alternatively they may play four pieces from the standard repertory for electronic instruments. Example pieces given in the syllabus seem to be electronic keyboard pieces or arrangements in a conventional style.

It is not immediately apparent from the syllabus or the guidelines what the word ‘play’ means in the context of the Ordinary Level requirements, i.e. whether students are required to play and record the music live in the exam situation or just play back a pre-recorded piece (the guidelines say ‘play’ while the syllabus says ‘input via electronic instruments’). The specific reference to live performance at Higher Level, however, would seem to indicate that it is not in fact a requirement at Ordinary Level. It is not entirely clear from the syllabus or guidelines what lower level students are in fact required to do in their examination. In order to throw some light on the matter it is necessary to look at what actually happens in practice.

So what does happen in examination of the music technology/performing option? At Ordinary level there is no actual music performing required. Students simply enter notes into a piece of music software using the mouse so as to make a two part score. They then

perform three edits to the score, which may be as simple as moving a note or entering a dynamic marking, save and retrieve the file and print the score. As they enter the music into the computer, they work by copying from a pre-prepared score which they bring into the examination and may be a piece they have previously composed or an existing work by someone else.

At Higher Level, students use the mouse to enter two scores of three parts, make six edits, save the pieces and print a score. They then either perform along with a pre-prepared score or play four pieces on a synthesizer or other MIDI enabled instrument.

Marks are awarded in two categories (there is also a sight reading or aural memory test which doesn't concern us here);

- Control of vocal and/or instrumental medium
- Chosen music and standard of performance

At **Ordinary Level**, the first of these is awarded up to 20 marks and the second up to 60 marks. If the student has chosen the performing elective these marks are then doubled, making 40 marks and 120 marks respectively (In practice, Ordinary Level students don't actually make this choice. What actually happens is that after they have completed the two written papers and their practical exam, the one that scores highest, which may be the music technology practical, is automatically doubled).

The 2003 marking scheme issued by the State Examinations Commission gives no guidance as to what control of the medium may mean in this context, but a best guess might be a general facility with the software – ability to navigate menu items, create a basic score template etc. Of the 60 (effectively 120) marks under the 'chosen music and standard of performance' option, 40 (effectively 80) are awarded for 'inputting' – accurately and confidently copying the music into the computer using the mouse. The other 20 (effectively 40) marks are awarded for editing, saving and printing.

At **Higher Level**, students may choose the music technology single activity performing option. In this case, they may be awarded up to 40 marks for 'control of the medium', which the 2003 marking scheme defines as 'inputting and editing'. In the 'chosen music and standard of performance' category, they may be awarded up to a further 48 marks for more 'inputting and editing', along with saving and printing. The actual performing aspect counts for 92 marks (this performing aspect is no different then conventional performing other than the fact that it may be done on an instrument producing 'synthesized' sounds).

The net effect of this is that Ordinary Level music students may score up to 160 marks out of a total of 400, that is to say *40% of their entire Leaving Certificate music mark* for completing the mouse based task described. Higher Level students may score up to 88 marks out of 400 or *22% of their entire Leaving Certificate music mark* for completing a similar if slightly longer task.

This task is little more than a transcription. In the absence of a computer, an equivalent task would be to simply take a given piece of music and copy it out onto staff paper. There is no requirement that the student should engage with the musical material, understand anything about its content or even understand the meaning of the music notation symbols. There is not even any requirement to engage with any aspect of music technology other than at the most basic, trivial level.

Operating a mouse and navigating software is not a musical performing activity, and is not comparable with conventional performing or singing. There are no marks awarded for the musical relevance or appropriateness of the 'edits' or any other musical interaction beyond an instruction in the marking scheme that "music below required standard" be marked in a lower grade band (in practice this is simply a requirement that the music being copied be sufficiently complex). Finally, it seems that the form of the examination as generally applied is in conflict with the syllabus itself, which specifically specifies "*input via electronic instruments (and/or conventional instruments with electronic controllers providing a MIDI interface)*". It hardly seems plausible that a computer mouse might be considered to be an instrument (electronic or otherwise) for the purposes of a music performing examination.

In short, the music technology examination at Leaving Certificate level is largely trivial. It requires no engagement with music and only the most basic engagement with the technology. The level of marks awarded is completely out of proportion to the nature of the required task. In order to obtain similar marks in subjects such as maths or english, students are required to master much, much larger bodies of information and exhibit the ability to use or manipulate this information to a much higher level. For example, at Higher Level 22% is equivalent to more than the marks awarded for answering two full questions on a Leaving Certificate maths paper. By accepted international standards on the deployment of technology-based resources in education, this approach can only be regarded as an example of the worst possible practice. In my view, it devalues our subject, debases us as educators and does a disservice to the students we teach.

At the time of writing there are no figures available in the public domain indicating how many students take the music technology option. The music examiners report for 1999, the first year it was examined, indicates 0.5% at Higher Level and 0% at Ordinary Level. There are no further music examiners reports available for the Department of Education and Science website for the years 2000, 2001, 2002 or 2003 but anecdotal evidence indicates that numbers taking this option have been rising every year since it was introduced.

Apart from the specific examination of music technology under the auspices of performing as described above, students taking a composing elective also have the option to use music technology resources. In this instance, their facility with the technology is not examined at all. Rather, their compositions are rated according to the usual sorts of musical criteria, regardless of the means used in their production. This seems to be a more sensible approach. Unfortunately, of the 14,980 students who took the Higher Level music programme between 1999 and 2003, only 135 (0.9%) opted for the composing

elective, so there are clearly wider issues here with respect to composing in schools (figures taken from the Post-Primary Music Teachers Association website – <http://www.ppmta.ie>).

When any technology deployed in an educational setting, the choice is either to teach the technology itself or to use the technology to teach something else. In the context of composition, computers and appropriate software can be a powerful enabling tool for students studying composing. The alternative approach would be to teach and examine music technology itself in a meaningful way as part of the curriculum. (I know I might seem to be contradicting myself here, advocating ‘teaching the pen’ as it were. Music technology is a very complex pen though, and if its not actually music itself, it is at least a means of access to music.) One could envisage a module that might include study of the physics of sound, electro-acoustic manipulation of sound and the related software, history and analysis of electro-acoustic music, MIDI technology and related applications, recording techniques and equipment, technology-mediated composition and any of a variety of other related topics. Clearly though, funding, equality of access and provision of appropriate teacher training would be issues here.

For the most part as far as schools are concerned, music technology is in fact music composition technology and has no business poking its head into the performing arena. One possible exception here is sequencing software, which is used to make track-by-track recordings of live performance. In this instance, while most of the real music learning is done away from the computer it is undoubtedly a rewarding experience for students to be able to validate this learning by making a recording, and for highly skilled music students there is certainly at least the possibility of a more subtle engagement with music through the recording, mixing and editing process.

There are also a wide variety of music software products available in the area of listening. Most of these are drill-and-practice applications designed to increase aural awareness, along with some software that might be categorized as music analysis. The NCCA guidelines for teachers offer a list of some 69 software packages that range from notation and sequencing software through aural training packages and instrumental instruction to multi-media presentations on style, analysis and lives of composers. This list was included in the Draft Guidelines for Teachers in 1996 before the current syllabus was introduced and has not been updated since. Twenty-two of the software applications mentioned are from a single website. Some of the software mentioned is no longer available. Much of the software is designed for the American market and focuses on formal aspects of ear training, harmony and counterpoint that are no longer part of the Irish curriculum. The Leaving Certificate syllabus specifically mentions electro-acoustic composition as a possible option for students taking the composing elective, yet none of the standard audio editing software packages (WaveLab, Cool Edit, Soundforge, Peak etc) appear on the list. Neither does much ‘groove’ software routinely used in the popular music sphere (Recycle, Rebirth etc) nor any audio synthesis software. The list is basically out of date.

Even if it were not, there is limited value in publishing an uncategorized software list in isolation. In order to successfully deploy music technology in schools in a meaningful way we need to relate it to specific requirements of the curriculum, provide specific funding to schools so that they may purchase the recommended software (and necessary hardware) and provide training to teachers in both its operation and appropriate methodologies for technology mediated teaching and learning. There are obviously wider issues here relating to general policy on resources and training in the areas of both music and technology in schools that fall outside the scope of this article.

The majority of in-service training for Irish teachers is provided through the relevant teacher associations. The PPMTA regularly provides modules in technology at its conferences that specifically cover the use of technology to satisfy the Leaving Certificate performing requirements. While this meets the needs of teachers in helping to prepare students for the examination, much more work is needed to build a wider technical literacy among teachers and students. There is also a need for a fundamental re-examination of the current situation in the light of international best-practice, along with inclusive debate on how meaningfully to deploy music technology in our schools.

On a more positive note, there is a growing body of research indicating that specific types of technology, meaningfully deployed, can be of considerable benefits to students and teachers. In fact, I believe this is where we came in. My original intention in writing this article was to outline some of these approaches and suggest how they might be used in the Irish context – a topic for a future article perhaps. In the meantime, I'm off home to my 200 year old music interface technology (a Thomas Perry fiddle from 1780) to engage in some aural cultural transmission.....y'know, maybe the Foobarrians had a point!!