Office for Standards
in Education

2004 Report: ICT in schools – the impact of government initiatives

Secondary music

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Introduction

This report is based on subject-specific evidence from visits to secondary schools made as part of the inspection of the impact of government ICT initiatives between April 2002 and December 2003 and supplemented by evidence from other school visits where appropriate. This contributed to the main report, *ICT in schools*, which is available from the Ofsted publications centre (07002 637833) or via the Ofsted website (www.ofsted.gov.uk).

Main findings

❑ ICT has had a positive impact on teaching and learning in music in the majority of secondary schools. Music technology is often used successfully to enhance the development of a wide range of musical skills, as well as being an area of study in its own right.

❑ Developments have taken place in spite of a majority of music departments being under-resourced. Although most possess adequate numbers of electronic keyboards, these are not always of sufficiently good quality to enable pupils to carry out sequencing and recording. It is rare for a department to be equipped to a level that allows whole-class use of music technology equipment at Key Stage 3. For this reason, use of computers and software is more common in music examination groups.

❑ Most music departments base the majority of work in music technology on one piece of software – typically either sequencing or score-writing. This can result in pupils gaining limited experience in the wide-ranging applications of ICT in music. A minority of departments make good use of a range of software, including audio editing programs and CD-ROMs to develop skills such as aural perception and understanding of musical form and history.

❑ A minority of secondary music departments fail to meet the National Curriculum requirements for ICT in the subject, usually owing to lack of resources.

❑ The impact of New Opportunities Fund (NOF) training on teaching and learning in music has been negligible. The majority of music teachers have received little or no formal training in music technology; many are self-taught, and others benefit from informal in-house training, often provided by technical support staff or, in a small minority of cases, visiting teachers from Local Education Authority (LEA) music support services.

The impact of the initiatives

Teaching and learning in music

In the majority of secondary schools, the use of ICT has had a positive impact on teaching and learning in music. The most widely used resources enable music teachers to use various aspects of music technology in order to enhance the development of a wide range of musical skills. In a significant minority of schools, there is a direct correlation between increased use of music technology at Key Stage 3 and numbers of pupils opting to study music at Key Stage 4. There is also increasing interest in music technology at post-16 level.

In many music departments, ICT work at Key Stage 3 is based on the use of electronic keyboards. These instruments are often used in order to teach basic piano keyboard skills to a whole class, including technical points such as hand position and finger technique. In the best cases, keyboard skills are taught as part of a practical music-making experience, sometimes involving whole-class performance, as in the following example in which a class of Year 7 pupils worked together on a performance of a simple piece of commercial chart music, based on a repeated 4-bar pattern:

> *The three parts were differentiated by the teacher, according to the skill level of the pupils, and consisted of a repeated bass line (minims – G,A,F,C), a chord progression of G, A minor, F and C, and a melodic ostinato. Pupils rehearsed parts individually, and then performed the piece together, the drum track being provided by the teacher's keyboard. The performance was recorded and played back to the class, who then sang the vocal line over the backing track that they had produced.*

Where electronic keyboards have sequencing functions, some teachers use them very effectively to introduce pupils to multi-tracking and recording, as in the following example from Year 8:

> *Pupils were given printed instructions that outlined the task very clearly. Working in pairs, they recorded a bass line of a 12-bar blues pattern on one track, the chords on another track, and melodic improvisations on the third track. All pupils engaged enthusiastically with the task and quickly mastered the sequencing functions of the keyboard.*

Electronic keyboards are also often used effectively for creative work in music. For example, pupils are asked to experiment with a variety of available timbres in order to compose an effective piece in response to a given stimulus. In a minority of cases, electronic keyboards were used very successfully in combination with acoustic classroom instruments to produce good-quality composition work.

Less successful use of electronic keyboards at Key Stage 3 is typically due to an over-emphasis on technique, with limited opportunities for performance. For example, one Year 7 class spent a term concentrating on five-finger exercises using the notes C to G, with extension work based on learning to play a C major scale. The vast majority of pupils found this work uninspiring, repetitive and insufficiently challenging.

The great majority of music departments have at least one computer linked to a musical instrument digital interface (MIDI) keyboard; numbers of between four and ten computers are typical. While this level of resources means that it is not possible for a whole class at Key Stage 3 to use computers simultaneously, some teachers have found ways to make very good use of a small number of computers to enhance the quality of musical teaching and learning. For example, a teacher with just one computer used MIDI files regularly to accompany whole-class singing. Adjustments to tempo could be made easily, and melody/harmony parts could be isolated. Such use of MIDI files also allowed the teacher to move around the class during singing sessions, and give full attention to the quality of singing, without the need to concentrate on producing a good-quality accompaniment. This practice was combined with the occasional use of live accompaniment, as well as unaccompanied vocal work. The example below describes a Year 9 lesson on reggae in a music room with five computers, linked to MIDI keyboards:

The teacher started off by playing a MIDI file of the song 'One Love'. The pupils discussed the style of the piece, making reference to the instrumentation, and features such as the off-beat guitar chords. The whole class then sang along to the MIDI file.

The MIDI file was loaded onto the other four computers, and pupils divided into five groups, each group working with one computer. They were given instructions to mute a number of tracks, including the melody. Using a variety of acoustic instruments, including classroom percussion and guitars, the pupils then used the MIDI file as a backing track. They played from stave notation, and parts were appropriately differentiated. The teacher provided very good support for the pupils throughout the lesson, and advised them to adjust the tempo of the MIDI file if necessary. The lesson concluded with each group performing its version of the piece. There were examples of very good ensemble work, and the pupils were clearly enthused and motivated by the activity.

Very few music departments possess sufficient up-to-date computers to allow all members of a Key Stage 3 class to work singly or in pairs. However, the following is an example of a successful lesson in a music department that had recently acquired 15 new computers linked to MIDI keyboards; a class of 30 Year 8 pupils were working on a topic on 'Soundscapes':

The teacher explained that they were to use a variety of timbres and sound effects to tell a story, which was detailed clearly on worksheets. The pupils had limited experience of using the sequencing software and were advised to work initially on just one track, experimenting with a bank of 'SFX' sounds. They remained on task throughout the lesson, and produced some very good quality work, which was shared at the end of the lesson.

In some schools, teachers make good use of interactive CD-ROMs to develop pupils' skills of aural perception and understanding of stave notation. These are available at all levels; some applications cover work from basic to advanced levels and can therefore be used with pupils across the full age and ability range. In the following example, a group of Year 10 pupils of different abilities worked individually with such software:

The teacher used two interactive CD-ROMs: one designed to teach basic aural and stave notation skills, and the other to develop more advanced aural skills. He allocated carefully chosen tasks to the ten pupils, who worked individually. Pupils worked on a range of tasks appropriate to their individual needs, ranging from basic work on pitch and treble clef notation through to advanced work on cadences. The teacher was able to move around the class giving support where necessary, and accurately assess the progress of each pupil.

Use of interactive whiteboards in music departments is uncommon. However, where these are used, evidence shows that there is a positive impact on the quality of teaching and learning. Interactive whiteboards have been used very successfully to demonstrate the functions of sequencing and score-writing programs to a whole class of pupils.

Standards and achievement in music

A very small minority of pupils have gained experience in music technology at primary school. However, the majority, who have not, are able to grasp quickly the main functions of the most commonly used sequencing packages during Key Stage 3. In the following example, a secondary school had provided the opportunity for Year 6 pupils from neighbouring primary schools to gain some experience of using the music technology resources in the school as an after-school music technology club:

These pupils were taught how to use the sequencing software and were provided with a number of creative tasks in order to develop their expertise. This has had a very positive impact on the standards of music technology use in Year 7.

The effective use of score-writing software is usually restricted to those pupils who have a secure knowledge of stave notation, whereas those who have limited knowledge gain little benefit through the use of such programs.

In schools where ICT is well planned, work-based music technology has a positive impact on pupils' achievement, including their wider musical skills, such as understanding of musical form and structure. In the following example, the school had used arts college funding to equip a music technology room, principally for use at Key Stage 3. There were 15 computers linked to MIDI keyboards, enabling pupils to work in pairs, and an interactive whiteboard, linked to the teacher's computer. Year 7 pupils were asked to compose a piece using a pre-recorded template, created by the teacher using sequencing software.

The template showed a clear structure, with the introduction and subsequent sections being labelled in different colours. Pupils composed within the given structure but were encouraged to focus on timbre – experimenting with a great variety of tone colours and blends. They made improvements to their work throughout the lesson, and were very confident in their use of the software. Most of the pupils' work was of a good standard, with some very good examples. The emphasis on structure, organisation and continuous revisiting and improvement has also had a positive impact on the pupils' composition work using acoustic instruments.

In a substantial minority of schools, there is a direct correlation between increased use of music technology at Key Stage 3 and numbers of pupils opting to study music at Key

Stage 4. In most schools, however, it is in Key Stage 4 rather than Key Stage 3 that ICT has more marked benefits for pupils' achievement. In some cases, this use is limited to score-writing software, for both composition purposes and the transcription of hand-written music. In this example, involving General Certificate of Secondary Education (GCSE) music students in Years 10 and 11, pupils make substantial progress from their different starting points:

> *The pupils were all trained to use both sequencing and score-writing software packages, and were aware of the most appropriate use of each type of program. The sequencing software was an entry-level package, with basic audio recording and editing; pupils used both microphone and 'line in' functions in order to record and edit sound, as well as using MIDI. They were also confident in the use of score-writing software; some pupils preferred to carry out all their composition onscreen, while others used the software to notate, and often enhance, pieces that they had composed initially without the use of technology.*

Modern dance music software, which requires pupils to layer and organise pre-recorded sound, has been used with much success at Key Stage 3 in a number of schools; such programs have generated a great deal of enthusiasm among pupils, as well as enabling them to experiment with structure – a skill transferable to other work in music technology. This has a positive impact on pupils' achievement in music technology, as well as other aspects of musical study.

The use of music technology has had a positive impact on the quality of presentation and recording of pupils' composition and performance work, particularly in examination classes. Pupils store such evidence electronically, in the form of notated scores, MIDI files and audio files. Examination courses in music technology at post-16 level continue to be popular, with increasing numbers opting for such courses in some areas.

In a small minority of cases, music technology had limited impact on pupils' achievement overall. In such cases, lack of resources often led to little or no use of music technology at Key Stage 3, and restricted access at Key Stage 4. In a few music departments, pupils following examination courses had to take turns in using a small number of computers; this restricted the potential for the creative use of music technology.

Implementation in schools

Leadership and management

In the majority of schools, the quality of ICT leadership within the music department is at least satisfactory; this includes a substantial minority of departments staffed by only one music teacher. In spite of widespread under-resourcing, most heads of department have clear ideas about the ways in which they would like to develop music technology work, and in the best cases such plans are clearly documented and integrated into general departmental planning. In cases where heads of department have good levels of

competence in their own use of ICT, lack of resources often leads to a considerable degree of frustration, as staff are unable to implement planned developments.

In almost all cases, the most effective management of ICT use within the music departments stems from the music teacher being directly involved with whole-school ICT issues to some extent, for example, attending meetings of ICT working groups, or maintaining a constant dialogue with the ICT co-ordinator. Such dialogue not only enables music teachers to plan developments within the whole-school context, but also presents an opportunity for technical staff to advise on the most appropriate courses of action, for example possibilities for integrating music department computers within the school network.

The following example shows how a head of department within a large school manages and monitors the current use of music ICT, together with planned developments:

The music department has three full-time staff and is very well equipped in terms of music technology resources. The head of department, who is also head of the performing arts faculty, is a very skilled user of the most common applications in music technology and has provided valuable training to his two colleagues. He also attends regular meetings of the ICT management committee, and is very much in touch with whole-school developments in ICT. The department has very clear plans for future developments in music technology and each member of staff has been given responsibility for a particular area for development. For example, one of the music teachers is working on developing a series of interactive on-screen worksheets, linked to the school's system for the electronic collection of pupil performance data. All three staff are totally committed to their work in music technology and clearly enthusiastic about future developments.

In a small minority of schools, the quality of ICT management in the music department was unsatisfactory. This stemmed from a lack of confidence on the part of the music teachers, who often said that they lacked sufficient personal skills in the use of music technology, and as a consequence were unable to integrate such work into the curriculum successfully. In such cases, help is needed, but this must be carefully tailored to the school's and department's individual context, and be sustainable, as is demonstrated in this example:

A school's music department had adequate resources in terms of hardware and software, but the head of department had limited expertise in the use of ICT. The school bought in support from a local supplier of music technology equipment; however, this was only partially successful, owing to the fact that the visiting member of staff took the main responsibility for delivering lessons involving ICT, and also because the head of music did not take steps to address her own training needs. This had a negative impact upon the management of ICT within the music department. The quality of planning for the future development of ICT within the department was unsatisfactory because of the lack of involvement on the part of departmental staff in whole-school ICT development work. Any future developments were suggested by the visiting member of staff, who had very limited knowledge of school priorities or policies.

Staff development

The impact of NOF training on teaching and learning in music has been negligible. In a small minority of cases, music teachers felt that such training had been beneficial, since developing generic ICT skills had resulted in higher levels of confidence in the use of ICT. However, most music teachers felt that the training was of little relevance, and did not address their pedagogical needs. The majority of music teachers have received little training in specific applications of music technology.

Some recently qualified teachers have received training as part of their initial teacher training course, and in most cases this has provided a good foundation for future development of skills. A growing number of those entering the profession have studied music technology at undergraduate level, and consequently are competent users of subject-specific hardware and software; however, it does not necessarily follow that they will have the necessary pedagogical skills for the effective use of such technology in the classroom, especially when faced with the challenge of limited resources.

Many music teachers are largely self-taught in music technology skills. Some felt that training courses, including those other than NOF-funded courses, were often of limited use as they were not always sufficiently relevant. For example, some courses focus only on the use of one particular piece of software. In many cases, informal training was provided in-house. For example, several music teachers took advantage of the specialist knowledge of visiting instrumental teachers, who had considerable expertise in music technology. In all of these cases, the training was felt to be very effective, and a minority of schools were considering formally buying in tailored training from teachers employed by LEA music services.

There was some evidence of effective staff development in the use of music technology through peer training, often carried out by groups of music teachers within a particular area or LEA. In one case, a music teacher who had limited expertise was being very effectively trained by a teacher from a neighbouring school who had been using music technology in the classroom for some time and with great success. The training consisted of a few one-to-one sessions, followed up by telephone and email support. Within a relatively short time, the teacher's confidence and skill levels had greatly increased. In another case, a group of secondary music teachers within an LEA met regularly to discuss a range of issues, including music technology, they supported each other in the use of commonly used software, as well as sharing lesson plans and their own evaluations of new products

A substantial number of music teachers benefit from good-quality technical support, usually provided by the school's ICT technicians. In a minority of cases, schools employed technical staff who had specialist knowledge of music technology and were also able to provide day-to-day support and ongoing training to music department staff.

Resources and accommodation

Under-resourcing in terms of equipment is the most significant factor limiting the effective use of music technology in secondary schools, especially at Key Stage 3. The great majority of secondary music departments possess an adequate number of

electronic keyboards, usually enough to allow pupils to work in pairs. However, some keyboards are old and do not incorporate functions such as multi-tracking; this limits their use.

In terms of computers, most music departments' resources are limited; numbers of between four and ten computers are typical. The fact that computers need to be linked to MIDI keyboards, coupled with the need for specialist software, means that computers in other areas of the school, such as libraries, can not normally be used for music. It is very rare for a music department to be equipped with sufficient computers to allow whole-class use at Key Stage 3.

The majority of music departments base most of their music technology work on one piece of software. Typically this is either a sequencing package or a score-writing program. In the case of departments which work solely with score-writing programs, the fact that this software is based on the use of stave notation can restrict its use among pupils. Although most basic sequencers feature audio recording facilities, the majority of work with this software, especially at Key Stage 3, focuses exclusively on MIDI. A significant number of music departments purchase expensive sequencing software designed for professional studio use, when in most cases entry-level versions of the software would be adequate for the needs of the department.

Only a small minority of departments used a full range of sequencing, score-writing, and audio editing software, together with CD-ROMs designed to enhance learning. However, the introduction of e-learning credits is beginning to have a positive impact on the level of resourcing in terms of software.

In a significant minority of cases, accommodation for music technology equipment, particularly electronic keyboards, is unsatisfactory. Limited space and concerns regarding security can result in time being wasted when keyboards are distributed and collected in at the beginning and end of lessons, and in equipment being damaged.

As most departments possess only small numbers of computers, it is common for these to be housed within the main music teaching room or rooms. In a substantial minority of schools, lack of space within the music department limits the potential for the expansion and development of music technology resources. A small number of schools possess small dedicated areas such as recording studios, used mostly with examination groups; only a few schools have high-quality accommodation for whole-group use of computers and software at Key Stage 3.