The use of ICT in Music Composing

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> Aim

To raise awareness of the potential of ICT in music composition by investigating strategies teachers can use to raise pupil performance.

> Dimensions of this Case Study

This study was carried out with eight classes in eight different secondary schools. The pupils observed were from Key Stages 3, 4 and Post-16. Pupils were from the whole ability range. Eighteen schools took part in a questionnaire.

> Summary of Findings for this Case Study

- Music Technology opened up the subject of music to students who might not otherwise be interested in it because it tied in to their own experiences.
- All students were able to create, manipulate and refine sounds without being able to play what they had written. However, manipulation of that sound had to be balanced against a lack of subject mastery.
- The control of the physical learning environment was a crucial factor in strategies for success. Whole class teaching was beneficial to the class when they could watch the necessary technical operations on their workstation screens, and hear the musical result, rather than facing away from the teacher.
- Students made best use of ICT when they had been taught the building blocks needed to compose. This was most effective when progress was observed in units of work linked with prior musical learning, e.g. knowing about chords. Musical software alone was not enough to ensure success.
- Teachers who successfully incorporated ICT in their music composition work, had to use many different musical skills, such as: composing, demonstration and technical skills. This had to be balanced with good classroom management skills, such as: planning extension materials, suggesting refinements to pupils' work and monitoring the structure of their learning.
- Students achieved the highest standards when they were presented with musical and technological information as they needed it.

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Introduction

The National Curriculum requires that students use ICT *'to create, manipulate and refine sounds'* at KS3. The music IT Support Project Curriculum 2000 sees the potential of ICT in the music Classroom as an entitlement for all students.

Music Technology now exists as a subject in its own right describing *'any situation in which electronic technology is used to control, manipulate or communicate musical information'* (The Music IT Pack 1997).

I set out to explore what teaching and learning strategies were required for musical composition using ICT and whether there were practical ways in which we could raise student performance, using ICT as a support.

The Research Project

A questionnaire was designed:

- to provide data on the availability and use of teaching resources, such as hardware and software, in music classes;
- to find out how teachers used ICT to support music composition in all key stages; and
- to identify factors that teachers felt affected their use of ICT to support composition.

Eighteen secondary schools responded to the questionnaire. The replies came from different types of school - Comprehensive, Selective, Independent and Sixth Form College - giving details of their provision for students, and the perceived limitations of their set up.

The questionnaire was followed up in a sample of eight schools across the range and the researcher observed classes to investigate:

- how teachers used ICT to support music composition;
- what teaching strategies were used to meet intended teaching objectives and pupil learning outcomes; and
- how practice related to the findings from the questionnaire.

The lessons observed were mainly in specialist rooms within a music department, with one lesson taking place in the school's IT room.

The researcher also carried out short structured interviews with the students from the eight schools.

Findings

Equipment

Several schools in the initial survey remarked on the limitations of their hardware or software that had adversely affected their motivation to use ICT as a support for music composition.

Most teachers had to deal with the technical maintenance of their ICT facilities themselves. Classroom observation confirmed that up to a third of the lesson time was spent by teachers in correcting program bugs and defective MIDI links. Only one school had dedicated IT technical support for its Music Department.

> ***".... they think that music IT comes from another planet."***

Teachers felt that they did not have the time to update their knowledge and it was too costly to bring their departments up to speed on the use of ICT.

'Cubase' or a derivative was most frequently used as a program to record and manipulate sound, with a substantial number of schools using 'Sibelius' as a music publishing software program.

Every school that responded used electronic keyboards to support music composition, from lower grade versions to PC-linked multi-timbral ones. Headphones - a potential source of student isolation - were seen to afford improved concentration, particularly in whole class teaching.

Class Management

As it was common for large groups of students to share workstations and in some cases headphones, teachers felt that class management and the control of the physical environment was crucial in encouraging a successful learning climate.

In over 50% of the classroom environments observed, pupils had to face away from the teacher in an inadequate physical space. In lessons where the students worked most effectively, as measured by their understanding and creative response to the task, they were grouped facing the teacher with each workstation enabling sight of the main board and sound system.

Pupils were frustrated when too much class time was spent organising equipment, for example, learning how to put equipment away.

Teachers' Perceptions and use of ICT

Most teachers saw ICT as giving musical composition an immediacy and credibility that was positive.

In 95% of all the lessons observed, students worked on the handling of musical layers. The use of a suitable software program to layer music made learning accessible and challenging.

Analysis of the questionnaire highlighted patterns of use, with most schools using ICT to support Key Stage 4 work with its explicit examination focus. A third of schools used ICT weekly in Key Stage 3 classes with slightly less using it in the Sixth Form.

Teachers felt that music technology opened up the subject to students who might not otherwise be interested in it.

> ***"I have been using computers in my teaching for the past three years and have been bowled over by the results."***

Approaches to the Curriculum

In 80% of the classes observed teachers had opted for a building block approach to composing with 20% adopting a more exploratory freedom of choice.

Only two schools were working on units from the traditional Western Classical culture, most schools were exploring more pop-based topics such as 'Funky Song' and 'Pop Song'.

Teaching Styles and Strategies

Classroom observation showed that in the most purposeful lessons there was an expectation that pupils could and would make progress in music. In each case the teacher made the lesson objectives clear and put them in the context of previous learning. The lesson was considered in terms of "what did pupils learn in this lesson?" Use of ICT facilitated that progress rather than dominated it. During the observed lessons teachers often composed and performed on the equipment in a style more suggestive of 'fellow musician' than didactic authority. In classes where high student motivation was apparent the teacher used the ICT resources in the same way as he/she would have used a violin or piano.

In classes where pupils were observed making good progress towards the intended learning outcomes for the lesson, the teacher was seen to be the multi-skilled practitioner described by Odam (1999), able for example to:

- "demonstrate skills;
- compose and improvise 'on the hoof';
- have extension materials ready for moving some pupils on faster; and
- structure pupils' learning".

Where resources were limited, teachers' careful planning ensured that students had maximum access to a workstation. Prior knowledge of pupils' attainment was considered in grouping students to promote their learning.

A variety of teaching routines and class atmospheres was observed. In the most positive lessons, teachers:

- encouraged students to experiment, rehearse and manipulate their ideas;
- provided them with increasingly challenging tasks;
- ensured that everyone's musical ideas contributed to the work in hand; and
- fostered a structured independence that was relished by the pupils.

In all eight classes the development of students' technical skills was a sequential and progressive process. There were no crib sheets or shortcut guides needed as teachers gave students the required information sequentially. Students generally had good underlying levels of understanding to underpin their work. Editing skills were evident to a high level, often producing a musical product far beyond a pupil's physical capability on the instrument. This was particularly useful in layered compositions.

Training

Some teachers were concerned about the level of their staff development and expertise. Some were expected to develop schemes of work based on an insufficient knowledge of available programs. In most schools it fell to a single teacher who had a personal interest in ICT to deliver all the ICT in a music department.

Student Perceptions

Pupils of all abilities seemed eager to work with the ICT elements of each lesson.

> ***"It's encouraging. You can write songs and hear them as soon as you have made them."***

Mixed ability students with no musical background saw the benefits of the work, and were highly motivated, often staying in the music technology area at break time and at lunch.

> ***"We can write stuff like we listen to. Our 'Eastenders' theme sounds like a great dance track."***

Students with musical ability also found the use of ICT interesting, although some were frustrated by their lack of technological skills to deal with a musical problem.

Students were generally keen to acquire technical autonomy in their use of ICT. The style of learning using ICT/technology did not have a gender bias. Students responded positively when they could connect to their prior learning. They wanted to have the required musical skills to build up a successful piece. A carousel arrangement for modules of work hindered progress as students forgot routine elements in the intervening time.

Classroom Observations

ICT was used in the classroom as:

- tutor - *practice software, for example, Theory Trainer etc;*
- discovery/construction tool - *software that built up parts and sections, for example, Cubase, Cakewalk;*
- simulator – *a template in a prescribed style, for example, Cubase, Cakewalk, Notator; and*
- Toolbox - *manipulating existing data, for example, CD-Roms.*

Group composing, even at a computer, was observed to be better than the sum of its parts. At least one group of three boys observed who had no other musical training or background were able to construct in only one lesson a complex 5-part arrangement of the 'Eastenders' theme complete with countermelody, walking bass and varied drum track.

One teacher made use of the *'tutor'* aspect of ICT by setting up one workstation as a keyboard tutor, with drill exercises for notes, keyboard positions and simple pieces. This was particularly popular at lunchtimes as a revision aid.

As a sound exploration *'discovery/construction'* tool, ICT gave students a wide canvas for experimentation, with access to an almost limitless world of pre-recorded material for sampling and

sequencing. The teacher introduced pupils in one BTEC class to some professional 'ambient' music and then showed them how to use an audio ICT programme to sample tracks into their own version of that music. The most successful attempts were then 'mastered' onto a CD and entered for a Borough-wide DJ competition.

Over 75% of lessons observed made use of a *template* song-file that helped keep pupils on task and demonstrably making progress. Elements of the template could be muted so that pupils could progress according to their ability. For example, the more able pupils had more elements of the template muted. Teacher support for individual pupils was observed to be vital.

In about 80% of classes observed, teachers did not expect students to manipulate musical stave notation, despite the capabilities of the software for score editing and printing. Some students favoured stave notation, as it was not dependent on technical mastery of the equipment, the lack of which they felt impeded their musical creativity.

Learning Gain

ICT offered a wide range of opportunities to student composers that was generally associated with apparently higher achievement, exemplified by their consideration of complex matters of style, rather than technique or notation. Whether or not this apparent increase in standards was indicative of an increased underlying level of understanding was beyond the scope of this project but will be a consideration for future research.

There were clear benefits for student motivation and attainment. Students succeeded when they were taught the building blocks of what they needed to compose. For example, one Year 9 class had been taught about chords and cadences prior to working on a sequencing exercise *simulating* an 18th century minuet. They were able to select chords and chord groupings using ICT and then select appropriate voices for each part. A CD-Rom version of the same piece was used like a *toolbox* in comparison.

By using the computer, students could hear instantly what they had written, even when they did not have the musical skills to play it themselves. This increased the possibilities open to students, as they composed and experimented with sound.

Strategies for Differentiation

Within a normal music classroom individual differences in pupils' experiences posed several challenges. In the eight classrooms observed, ICT was used skilfully to provide differentiation.

A differentiated lesson plan was adopted in the most purposeful lessons. Often students were able to select the scope and outcomes of the task, appropriate to their experience. This was often coupled with a 'showing' of work near the end of the lesson so that listening could reinforce the main teaching points.

Differentiation by task was common. In one school the task was tiered in difficulty, starting with a bass and rhythm and moving to more complex melodies, chords and counter-melodies. In other classes students brought their own levels of skill to the task and the differentiation was by outcome.

Many of the lessons observed took account of pupils' different skill levels, for example as described above, where the pupils had to produce a theme suitable for a TV programme. The teacher built on prior learning and enabled the more able pupils to complete a complex task without leading to the impoverishment of the class as a whole.

Conclusions

The research showed that effective use of ICT in music lessons was not yet widespread. Increased provision may take some time to bring about improved teaching styles (Rogers, 1997). Teachers often acquired ICT equipment because of their teaching in Key Stage 4 and were uncertain about its potential use in Key Stage 3. Available equipment was not always used to full effect as a teaching and learning tool. For example, electronic keyboards were often used primarily as electric pianos, with their more advanced features rarely used. In a classroom where headphones may be

seen as a potential barrier to the teacher's direct contact with what the pupils are doing, a variety of flexible classroom interactions were needed.

Once harnessed by good teachers, ICT can offer a unique repeatability; control over layered sound; and easy refinement to musical composition, not available by conventional methods. When used appropriately ICT can deepen pupils' understanding of music without being reliant on the pupils' physical ability to perform the music written.

Further Reading

Murray A. et al., *'The Music IT Pack'* NCET (1997)

Thomas & Murray, *'The Music Technology in Action Pack'* BECTA (1998)

Rogers, K., *'Resourcing Music Technology in Secondary School'* British Journal of Music Education, 14: 2 (1997)

Hunt A & Ross K., *'Technology & music: incompatible subjects?'* British Journal of Music Education, 14: 2 (1997)

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