

## **Requirements versus reality: Music technology in the UK National curriculum.**

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### **Introduction**

'Pupils should be given opportunities to apply and develop their ICT capability through the use of ICT tools to support their learning in all subjects' (National Curriculum for KS3 Music, 1999).

Technology is becoming constantly more prevalent in society, and nowhere more so than in the world of modern music. The creation and dissemination of popular music, film music and even much 'western art music' has become increasingly reliant on the use of electronic and computer based systems, whether for recording, editing, notation, arranging or composing. Studies have already demonstrated that use of music technology is suggested to improve the quality of composition of school pupils (Rogers, 1997), and improve the rate of musical attainment (Mills and Murray, 2000). There have also been indications that use of technology can help to increase the interest of male pupils in music making (Comber *et al*, 1993). Over recent years the National Curricula for schools in England, Wales, Scotland and Northern Ireland have been updated to reflect this, as part of the overall aim to increase the use of ICT in all school subjects. The use of ICT in the Music Classroom (i.e. Music Technology) has been a statutory requirement of the National Curriculum since the early 1990s. Over the 1995 and 1999 revisions of the National Curriculum, the provisions have included ever-higher requirements of technology input into the act of music-making. However, according to recent Office for Standards in Education (OFSTED) reports on secondary music, more than a third of schools in England and Wales are still classified as weak in their provision of ICT in Music Lessons.

'The use of technology and software needs to be improved in Key Stage 3 in the majority of schools.' (OFSTED 2000:1)

'The use of technology in music remains weak in more than one third of schools, particularly in Key Stage 3' (OFSTED 2001: 3)

Music in schools – traditionally financially disadvantaged – has come under increasing budgetary pressure over recent years, as schools prioritise core subjects at the expense of 'costly' subjects such as Music and PE. When there are insufficient funds in many schools to provide the sheet music and instrumentation required to teach the traditional music syllabus, purchasing expensive music technology equipment with which to teach is usually the last concern of departmental heads.

'In several schools, resources are insufficient to offer these opportunities to pupils in key stage 3' (OFSTED 2002b: 5)

The National Curriculum requirements for use of technology in music adds to this pressure by recommending the purchase of large amounts of hardware and software, much of which is out of financial reach for many schools. Furthermore, even when the equipment has been purchased, many teachers do not have the training in the use of music technology to make effective use of the equipment.

'In particular, there has been insufficient training in effective subject applications of the technology...particularly at Key Stage 3 (OFSTED 2002b: 7)

While it is often feasible to provide sufficient equipment for older groups, it is at Key Stage 3 (age 11-14) that particular difficulties arise.

'Teacher's use of ICT in Music is effective with examination groups in Year 10 and above, but is much less secure in Key Stage 3. This is because resources are adequate only for the smaller groups found in examination classes and for the more independent and individualised work with these pupils' (OFSTED, 2002a: 4)

Most schools are attempting to implement an ICT strategy for music. But are schools in reality achieving what the requirements demand of them? The author has been investigating the facilities and use of music technology in English schools to compare actual practice with the curriculum requirements. This report presents initial findings of the study related to Key Stage 3. The author also briefly examines a pilot study which uses freeware to try to address technology inequity in school music lessons.

### **Methodology**

Questionnaires were sent to two hundred and sixty-three Heads of Music at secondary schools in England. The schools were a mixture of State and Independent schools, including both those with mixed and with single-sex intakes.

The schools selected were spread across all regions of the country, including both rural schools and city schools. Of the initial mailing, 81 responses were received, including 11 from independent schools and 70 from state schools.

The questionnaire asked 10 questions, in 3 sections. These covered: The provision of music technology to various curriculum groups - Key Stage 3 (age 11-14), GCSE (15-16) and Advanced Level (17-18) and class sizes of the various levels; Access to computers and other music technology hardware, and available software. Respondents were asked to specify the proportion of lessons at each stage that they used music technology in their music lessons, and also to identify on a scale of 1 to 5 how much they used ICT for exploring certain key areas of the syllabus. Respondents were also asked to identify the number of computers that they had access to for teaching purposes, whether or not they had internet access in lessons, what types of music technology hardware they had access to and the number of software installations for music specific applications.

## Results

### Class sizes and computer provision.

Class sizes (number of pupils)		KS3	GCSE	AL
All	mean	28.4	16.1	6.4
	median	28.0	16.0	6.0
	stdev	7.5	5.9	3.4
State	mean	29.1	16.3	6.5
	median	28.0	16.0	6.0
	stdev	7.5	5.8	3.4
Independent	mean	28.3	16.7	6.7
	median	28.0	16.0	6.0
	stdev	6.8	5.6	3.2

**Table 1 – Average Class sizes for curriculum stages**

As can be seen from smaller classes, with no class smaller than 20. There are however a small number of schools with extremely large music classes – two schools identified table 1, there is minimal difference between the class sizes for music between state and independent schools. The Mean size is between 28 and 29 pupils for Key stage 3. As music lessons are compulsory at this stage, there are few schools identifying Key Stage 3 cohorts of 60 pupils.

<b>Computer Access All Schools</b>	
	32 % of music departments have access to shared computer facilities
	92 % of music departments have dedicated computers
	45 % with access to 10 or more machines
	55 % have access to fewer than 10 computers
	32 % have access to 4 or fewer computers
<b>Computer Access Independent Schools</b>	
	25 % of music departments have access to shared computer facilities
	100 % of music departments have dedicated computers
	38 % with access to 10 or more machines
	63 % have access to fewer than 10 computers
	13 % have access to 4 or fewer computers
<b>Computer Access State Schools</b>	
	34 % of music departments have access to shared computer facilities
	93 % of music departments have dedicated computers
	54 % with access to 10 or more machines
	47 % have access to fewer than 10 computers
	35 % have access to 4 or fewer computers

**Table 2 – Access to computers during lessons by school music departments**

Table 2 examines the access to ICT facilities of schools split by sector. Overall the results demonstrate that the majority of schools do have access to at least some computing facilities for use in music lessons (93% of state schools and 100% of Independent schools). However, few schools report access to and use of centralised ICT facilities – only 34% of state schools and 25% of Independent schools surveyed had access to shared facilities. This, combined with the relatively low numbers of dedicated machines in music departments means that nearly 50% of State schools and 63% of independent schools have fewer than 10

computers. Over 35% of state schools and 12.5% of independent schools have 4 or fewer computers to use in music teaching and learning.

When considered against class sizes, this paints a bleak picture (table 3)

Pupils per computer		Breakdown of results
<b>All</b>		
mean	7	4 % have no access to computers in music lessons
median	3	66 % have more than 2 pupils per computer
stdev	8	51 % have more than 3 pupils per computer
95% confidence	2	25 % have fewer than one computer per 10 pupils
<b>State</b>		
mean	7	4 % have no access to computers in Music lessons
median	4	60 % have more than 2 pupils per computer
stdev	8	51 % have more than 3 pupils per computer
95% confidence	2	22 % have fewer than one computer per 10 pupils
<b>Independent</b>		
mean	3	0 % have no access to computers in Music lessons
median	3	67 % have more than 2 pupils per computer
stdev	3	22 % have more than 3 pupils per computer
95% confidence	2	11 % have fewer than one computer per 10 pupils

**Table 3 – Pupil to computer ratios for music departments in England**

The mean pupil to computer ratio for state schools is 7:1, which is not conducive to effective teaching and learning. However the lower median demonstrates a skewed distribution which implies a stark difference between the technology 'haves' and 'have nots.' Of the respondents, 3 of the state schools (4%) did not have access to any computers at all for teaching and learning in music. While the independent schools appear to be better off, two thirds of them still have more than 2 pupils per computer, and 22% more than 3 per computer.

### Funding and staffing

<b>All</b>	69 % have no music tech specialist on staff 43 % have no internet access for music lessons 57 % have enough equipment for GCSE and A level, but insufficient for ks3 10 % have little or no music tech provision for any level 18 % have excellent funding/facilities sufficient for all levels
<b>State sector</b>	68 % have no music tech specialist on staff 45 % have no internet access for music lessons 42 % have enough equipment for GCSE and A level, but insufficient for ks3 12 % have little or no music tech provision for any level 16 % have excellent funding/facilities sufficient for all levels
<b>Independent sector</b>	75 % have no music tech specialist on staff 13 % have no internet access for music lessons 38 % have enough equipment for GCSE and A level, but insufficient for ks3 0 % have little or no music tech provision for any level 38 % have excellent funding/facilities sufficient for all levels

**Table 4 – staffing and funding provision for music technology in English schools**

As can be seen in table 4, there is a serious shortage of both funding and teachers trained in the use of music technology. 75% of independent schools and 68% of state schools have no music technology specialist in the music

department, while 42% of state schools and 38% of Independent schools consider that they have insufficient equipment and funding to provide music technology at Key Stage 3.

Software All Schools	
21.6	% of those with computer access have dominance of notation software (more than 4 copies to every one other)
9.5	% of those with computer access have only notation software for use in music
68.9	% of those with computer access have fewer than 5 dedicated notation packages
54.1	% of those with computer access have fewer than 5 sequencing packages
<1	% of those with computer access use dedicated audio recording software
28.6	% make no use at all of the internet for their teaching
Software Independent schools	
50.0	% of those with computer access have dominance of notation software (more than 4 copies to every one other)
37.5	% of those with computer access have only notation software for use in music
50.0	% of those with computer access have fewer than 5 dedicated notation packages
75.0	% of those with computer access have fewer than 5 sequencing packages
<1	% of those with computer access use dedicated audio recording software
25.0	% make no use at all of the internet for their teaching
Software State schools	
18.5	% of those with computer access have dominance of notation software (more than 4 copies to every one other)
4.6	% of those with computer access have only notation software for use in music
73.8	% of those with computer access have fewer than 5 dedicated notation packages
52.3	% of those with computer access have fewer than 5 sequencing packages
<1	% of those with computer access use dedicated audio recording software
29.4	% make no use at all of the internet for their teaching

**Table 5 – software possession and use.**

Table 5 demonstrates an even poorer position for English schools. Over 78% of state schools have 4 or fewer notation packages for producing scores, and 52% have 4 or fewer sequencing packages, which allow for creative composition and performance. Access to computers in itself does not necessarily mean suitable teaching and learning can take place – particularly given that nearly 30% of either sector do not use the internet for teaching and learning. Independent schools on the other hand have a dominance of notation software. This indicates an old-fashioned approach to ICT in music. The notation package is simply a ‘word processor equivalent’ for music, and leaves little scope for exploring the potential of the computer as a musical instrument.

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