

By their deeds shall ye know them ...teaching to the test: the impact of assessment on teaching and learning in secondary school ICT classrooms in England, Wales and Ireland.

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Testing and teaching are not separate entities. Teaching has always been a process of helping others to discover "new" ideas and "new" ways of organizing that which they learned. Whether this process took place through systematic teaching and testing, or whether it was through a discovery approach, testing was, and remains, an integral part of teaching. (Rudman 1989)

The majority of teachers with responsibility for teaching Information and Communication Technology do not necessarily have specific qualifications in the subject (either at degree or skills based level) and have, by and large, taken on the teaching of ICT as an adjunct to their teaching of other subjects. This, we would argue, has a direct impact on the approaches to teaching and learning in examinable courses; and in some schools on the choice of examinable course made available to students.

The requirement for schools to be seen to do well in terms of student attainment and the clarity of the relationship between teaching, learning and student outcomes has for some teachers engendered a feeling that if something is not to be assessed then it need not be taught. There is also an underlying, and often unspoken, assumption that a strategic approach to examination courses can ultimately lead to success. In many instances the emphasis on course work in many examination syllabi can mean that a high grade in course work can mitigate a lower, or even a fail, grade in the terminal examination.

Traditionally society has viewed the conditions for successful learning as being symbiotic with high levels of student attainment. Indeed the approach to the 'league tables' in the United Kingdom is a clear symptom of this approach. But the requirement for ever-increasing levels of attainment perhaps encourages a more pragmatic approach: a desire to buck the system by teaching to the test. This direction for teaching and learning is in sharp contrast with the priority attached to the value of 'learning to learn', one of the key indicators in a recent European Union report on the quality of school education (EU 2000), and implicit in the desire to foster the development of student problem-solving and thinking skills.

The locus of control in the teaching and learning process rests with teachers and their impact on student motivation and learning strategies. Entwistle (1988) categorised and described three key learning approaches – surface, strategic and deep. Those teachers who encourage a deep approach to learning would wish to foster within their students a general intention to understand what the course required and to engage fully with the knowledge, skills and concepts underpinning the course. There are teachers who employ and encourage this approach to teaching and learning, but we would argue, in ICT classrooms the lack of suitable expertise among the teaching profession leads more commonly to

the application of surface or strategic approaches. The movement towards deep approaches to learning in the ICT classroom is, we would argue, one which requires teachers to be confident in their subject knowledge and in their role as classroom manager and learning facilitator. Classrooms in which 'learning to learn' takes priority over 'I have learned what I need to know for the exam' are positive learning environments which move students and teachers beyond overtly skills based learning in ICT to project-based or contextualised learning. It is in classrooms such as these that "learning is at its most effective when learners are actively involved in and take responsibility for their learning" (Freeman, 2001).

Entwistle (op.cit.) summarises the surface approach to teaching and learning as an 'intention to complete task requirements'. In examinable skills based courses such as the Royal Society of Arts Certificate (RSA), Computer Literacy and Information Technology (CLAIT) and the European Computer Driving Licence (ECDL) this is perhaps the only way to be successful. Courses such as these, necessitate absolutely no requirement for either teachers or students to engage with the content or the knowledge inherent in the programme of study. The requirement to complete the work to the specifications is central to success: the measured outcome of courses like these is the ability to follow instructions and to produce documents that meet the specifications outlined in the test paper. Doing this without error results in a pass grade, but does not necessarily mean that students following the courses actually know what they are doing, nor does it, moreover, signify that they can apply what they have learned in other situations. In other words, they may have been able to develop skills and to show that they can apply those skills within a specific context – but these skills are, arguably, not transferable; nor are they aligned within any specific subset of knowledge to underpin them. And yet the students have a qualification! In terms of extrinsic motivation this is good: students feel that they have mastered a set of skills and have a qualification to prove it; teachers feel that they have enabled their students to perform well against a nationally agreed standard (international for the ECDL); and school managers have a set of data that enables them to identify and measure school attainment against local, regional and national benchmarks.

...national testing proposals are based on the fallacy that measurement by itself will induce positive change in education. (Davy & Monty 1991)

The final category Entwistle explores is the 'strategic approach', in which both teachers and students intend 'to obtain the highest possible grades'. This is an important and certainly widespread approach to the teaching of, and learning in, examinable courses taken at the end of compulsory schooling. While the approaches can be exemplified in many curriculum areas, the lack of subject qualifications in teaching staff in ICT, has a more profound effect on the way teaching and learning is managed and directed. The importance of understanding and manipulating the marking schemes and criteria presented within the syllabus is very important here. It establishes the framework of teaching for the teacher, and outlines the requirements, and this is where ICT may differ from other subjects, for being successful without doing everything as fully as you might.

For teachers and students operating in this way, the strategic approach ensures that they are working 'safely' - the parameters are clear. Both teacher and student know what it is they need to do in order to get the grade they want: and for many it will be the grade that counts in the public domain as being 'successful'.

It is for this reason that the strategic approach is accepted as one which has a distinct validity in the educational process – or at least in the process which leads to external examinations. In England where GCSE (and latterly GNVQ) is the predominant vehicle for teaching, learning and assessment the reliance on course work means that teachers who don't know, or who don't feel fully comfortable with, aspects of the syllabus can concentrate on the course work. Revisiting course work, refining it and developing it as fully as possible against the assessment criteria can mean that students following a course can be successful. Teacher mentors, and their student teachers, from eight schools in the North East of England were interviewed about the teaching and learning strategies they were using in getting their students ready for examinable components. For the question "How important is course work in determining overall success?", seventy-five percent of the respondents (n=24) felt that the course work was absolutely essential.

Without coursework my students would be sunk. They are able to deal with the coursework because I go over it again and again with them. It doesn't go off to the exam board until it's a damn near perfect as it can be. That way if the exam covers elements of the course that I haven't covered – like the control technology for example – then the course work grades will ensure that the kids still get at least a grade C. (Head of ICT Department)

In Ireland, the requirement to study ICT is not compulsory but it does exist within the school curriculum. One of the principle aims of NCCA policy (1998) is that all learners should be able to use ICT within appropriate subject and curriculum contexts. In terms of ICT as an examinable subject there are opportunities within Junior Certificate Technology to undertake assessment in aspects of what in England would be recognised as ICT. This being so, it is still possible for some students leaving school to have never used a computer as part of their educational experience. Most may well use computers during their schooling but many of these students will not get any national accreditation for what they have learned and achieved in ICT. This is recognised as a key determinant of potential ICT curriculum integration within the Irish system. Currently it is estimated that around 30% of teachers are integrating the use of ICT into their teaching and learning (Mulkeen 1999), this is perhaps understandable since there is neither a carrot nor a stick to encourage teachers to adopt this as an approach. Perhaps the change to the curriculum might well be that which has been adopted in England: the move towards ICT as a discrete subject rather than as a cross-curricular tool for learning with the computer. There is evidence that the NCCA is thinking along these lines:

The most common arguments in favour of providing a separate, discrete, computer-based subject centred on the need to give status and accreditation to computer courses already being taught in school. (NCCA 2000 p 56)

This is being addressed at national policy level and there is an increasing recognition that the integration of ICT in first and second level schools should ensure that “pupils in every school should have opportunities to achieve computer literacy and to equip themselves for participation in the information society...” (DES 1997). In terms of a strategic approach to assessment in ICT many schools are offering students in the transition year (a year between Junior Certificate and Leaving Certificate studies) the chance to study for the ECDL. We have argued elsewhere in this paper that this can by and large lead to surface approaches to learning: in this context it falls distinctly into the pragmatic and strategic approach. Students and teachers alike see the value in gaining additional qualifications in what is technically an examination free year, and it enhances the views of all parties about the role of the transition year in preparing students for continuing their studies at Leaving Certificate level. For school managers and principals the opportunity for including a computer based subject, without impinging on the traditional curriculum, could be seen as a way of complying with the perceived requirements of the IT 2000 policy framework (DES 1997) – without necessarily meeting the spirit of the document. In a recent study “33% of principals strongly agreed, and a further 51% agreed, that there was a need for a computer-based subject on the second-level curriculum” (NCCA 2000). When asked to clarify their rationale many responded in terms of the vocational value of such courses. In concentrating on the computer literacy aspect of the IT 2000 policy framework, they have in their introduction of ICT tended to go for the skills-based courses rather than the more time-consuming and resource intensive option of curriculum entitlement for all at Junior Level and an extension of the options available at Leaving Certificate (such as the Leaving Certificate Applied Programme (LCA) and the Leaving Certificate Vocational Programme (LCVP)).

The difference in approaches taken in England and Ireland needs to be highlighted. It raises questions about our national visions about the role of ICT in society and the approaches we are taking to developing and assessing appropriately the knowledge, skills and understanding required for our students to function effectively in an increasingly ICT literate economy. Although it is difficult to see the alignment in both policy and provision, both systems have a desire to see ICT as central to the development of our national economies and recognise the importance of developing a highly skilled workforce in ‘knowledge-based systems’. The vision is, in essence, the same. The route to accomplishing that vision is different. In the case of England, a National Curriculum for ICT is accompanied by a set of national benchmarks for achievement in the subject. In Ireland the route is much more flexible: it is not rigidly defined for schools; the opportunity is there and schools may make of it what they will. The English approach has brought about change through the application of power-coercive strategies (Benne, Bennis and Chin, 1969); in Ireland the approach appears to be more empirical-rational in approach – this change is good for us and good for the students and it’s up to the school system to decide how they are going to run with it.

What is interesting about the English approach to assessment is the impact of performance league tables on curriculum choice. While there is a defined national curriculum for ICT, while it is compulsory for all students to the age of 14 and while there is a defined requirement to extend knowledge and capability for students to the age of 16 – the choice of assessment is left open – as long

as it provides data for the national league tables. The choice of examination syllabus, and type of assessment, therefore is crucial to all players in the system: do we choose the approach that gives the best opportunity for student learning in general – or do we choose the syllabus that is going to give us the best results? The obvious answer for teachers and school administrators alike is the strategic one: we all want to show that we are good at what we do, so let's choose something we can be good at.

In the English context, schools are often choosing a variety of examinable courses dependent on the perceived ability of the students; or in some cases on the imposed school improvement targets. Where teachers are choosing an examinable syllabus based on ability some students would study for the full-course GCSE (a full award), others might be entered for the short-course GCSE (half an award), and still others might be entered for the skills based certificates such as CLAIT or ECDL. The benefits from a strategic point of view are tangible: the prospects for attrition are very much limited and the motivation to succeed for both teacher and student is high – everyone, regardless of ability, has the opportunity to leave with a symbol of successful learning. Those schools who are using examinable courses in ICT (among others) to raise levels of school achievement overall are beginning to adopt programmes such as the General National Vocational Qualification (GNVQ) in ICT at Intermediate level. Students who are successful in completing the assessment requirements of courses such as these would gain the equivalent of 4 GCSEs at grade C or above – an essential criterion for measuring school effectiveness against both local and national benchmarks. It is important to stress here that primary measure of 'success' in the school league tables is the percentage of students gaining 5 or more GCSEs. GNVQs are, more often than not, taught in the time normally given to 2 GCSE subjects. Students also have to take GCSEs in the core subjects – so students following a GNVQ Intermediate programme could well come out with the equivalent of 9 GCSEs, and the potential for just one of the extra 5 being at C and above is a very tempting offer to students, teachers and school administrators alike. From a strategic point of view, therefore, it is easy to see the advantages of choosing this model as a vehicle for delivery. The assessment benefits are clear: students have to meet coursework requirements (and the same benefits as for GCSE coursework apply here), and sit end of module external examinations – which can be repeated a number of times throughout the two years of study. It is not uncommon for students to sit an examination at the end of a unit of study, and to see that 'test' as a trial run – as something which highlights what needs to be learned next time. This pragmatic approach to curriculum development and teaching, learning and assessment is certainly governed by the test, but it is not without its risks. The award of the GNVQ Intermediate is heavily dependent on the students completing all their course work in the six units of study. Students have to work consistently through the two years of study – or be pressured to complete. Very often this means that both students and teachers are continuing to work on coursework long after the deadlines for GCSE coursework have passed.

At a time when the inclusion of a stand-alone certificate in ICT is being considered in the Irish context, the English experience could serve as a useful indicator of the approach to take. Indications are that the unit will be somewhat similar to Key Skills Accreditation for A Level students in England, and like

Key Skills will contribute to the overall points a student can accumulate for consideration in University applications.

So where do we go from here? The strategic approach to teaching and learning with the needs of external assessment firmly in mind is in many respects ultimately successful. There are many benefits to this approach that are demonstrable in both England and Ireland. The acceptance of the ECDL and equivalent courses as a vehicle for the development of 'computer literacy' is a testament to that fact. But what does this mean for the knowledge and skills we need to see developed as we move further and further towards the knowledge based economy? Our premise is that what we are teaching and assessing today is not what is required, either for today or tomorrow. It is incumbent upon curriculum planners at policy level, head teachers and principals at school management level, and teachers in the classroom to remember that with the advent of the new technologies, information has become a perishable good. As a consequence the traditional transmission of information and skills as part and parcel of the strategic approach to learning is no longer the only viable goal for education. The purpose of education is to produce autonomous life long learners, and as a consequence the emphasis needs to be placed on assessing students' ability not only to acquire and use information, but also their ability to transfer and use this information in a wide range of situations. (Freeman 2001).

The argument for a whole-hearted acceptance of deep approaches to learning in ICT in this respect becomes clear. It is by concentrating on the process of teaching and learning and our students' engagement in this process that teachers can facilitate the acquisition of effective Information Age skills. There are inherent risks for teachers and students under the systems which apply currently in both England and Ireland – but given the emphasis placed on external accreditation of school attainment in England, it is perhaps in this case that the risks are most tangible. Teaching to the test is effective – if effectiveness is judged by getting 'results'. Kellaghan (2000, p 12) cautions a warning on an overemphasis on the acceptance of this type of assessment result.

What happens, in practice, is that great emphasis is placed on examination-taking techniques, and students (with the assistance of teachers) focus their efforts on developing strategies to help them over the examination hurdle, rather than on mastering subject matter and honing lasting competencies.

The paper concludes by looking at how we might foster an enthusiasm for and confidence in, ICT as a subject rather than just as a set of applications to be used. The issue here is one of hearts and minds - where teachers are encouraged to move on from the strategic and pragmatic to more reflective and critical models of teaching and learning in the ICT classroom. An Irish Department of Education Report (1996) complemented the innovativeness of the 'Spin a Web' web authoring competition (www.spinaweb.ie) and highlighted the fact that putting together a successful website entry, required apart from computer skills, brainstorming, teamwork, research, writing and editing, artistic and design skills. The report emphasised the "potential educational value of a properly planned implementation of IT is vast and pupils gain much more from participation in such a project than a few, relatively quickly outdated, computer skills". (DES 1996). Is the way forward to integrate competition

work into school coursework, in order that students and teachers efforts are accredited within the system rather than outside it?

It involves for some, especially those teachers for whom ICT teaching is an unwelcome addition to their teaching timetable, an engagement with the subject knowledge and using the knowledge, rather than the applications per se, to enhance what they already do in terms of teaching to, or preparation for, the test.

Conclusion

“Information and communications technology is an integral component of everyday life. This area of technology application can help in the development of a range of abilities and can be a catalyst for learning and a stimulant for enquiry, infusing existing technology subjects with a modern approach, while at the same time meriting a study in its own right.” (NCCA 2000a, p 10)

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