

# Social Responsibility in the Information Society: A Potential Knowledge Gap for Tomorrow's Policy Makers

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## Abstract

The technical advances that have enabled the development of “the cloud” have resulted in an exponential increase in the speed of information dissemination. Policy makers, sponsors of IT infrastructure and users of information and communication technologies, while being aware of the benefits of “the Cloud” as a mechanism to facilitate more efficient access to information, do not always appreciate that these developments may not always have the positive outcomes intended.

University courses such as those in Social Informatics have managed to keep pace with this rapid evolution of information and communication technologies and their societal impacts, but within the secondary education sector this has not always been possible, potentially creating a knowledge gap for tomorrow's policy makers.

## Introduction

The rapid development and proliferation of information and communication technologies has irrevocably changed the way we live and work. The “Cloud”<sup>1</sup> as well as providing a backbone to our digital society, brings both opportunities and challenges that must be appreciated by the citizens of tomorrow. With citizens submitting ever increasing amounts of information into the Cloud, concerns are being expressed both about the ethical issues that may arise in the governance of these critical IT infrastructures (systems) and whether future citizens will be able to make informed decisions as they interact with these systems. One contributory factor in the ability of citizens to effectively interact with these IT systems may result from their study of ICT<sup>2</sup> during their Secondary education.

Within the UK Secondary<sup>3</sup> Education Sector the study of IT systems and the way that human beings interact with them has been addressed in through a myriad of ICT courses, considered to ‘academic’ or ‘vocational’, with varying degrees of success. Regardless of the type of ICT course that is followed by the students, there is a tendency to have a greater emphasis on the skills required to develop IT systems at

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<sup>1</sup> The term “the cloud” may be used as a metaphor for the Internet or a more expansive description of anything beyond the firewall <http://www.infoworld.com/d/cloud-computing/what-cloud-computing-really-means-031>

<sup>2</sup> In this paper ICT is defined as a subject area with secondary education. IT is used for to refer to any IT system or infrastructure.

<sup>3</sup> Secondary Education is defined in this case as any education or training provided received between the ages of 11 to 19.

the expense of the ability to view these IT systems in a wider context.

## The ICT Debate

There has been much debate about what constitutes an appropriate ICT education in UK schools. Michael Gove, the Education Secretary, has indicated that he would like to see a reworking of the ICT National Curriculum<sup>4</sup> to include more computing (Michael Gove to scrap ‘boring’ IT lessons, 2012). Stephen Twigg, his opposition counterpart, also called for an overhaul in ICT lessons: “For too many pupils computer teaching can be little more than a glorified typing course (Burns, 2012)”. The effect of such interventions could lead to a greater focus on the technical side of the subject, potentially sidelining the overarching social impacts and ethical issues and creating a potential “skills” mismatch as the vast majority of future citizens will be IT users rather IT developers. In addition to this, political and commercial considerations may restrict the teaching of themes relating to the relationship between human beings and IT systems into schools. ICT is not currently included in the eBacc<sup>5</sup>, and as a consequence not seen as a priority for inclusion in the post 14 curriculum. In the 16-19 (11th and 12th Grade) curriculum, it is not recognised by the Russell Group universities as a facilitating subject.

The concerns about the nature of the ICT curriculum has led to a number of interest groups such as NAACE<sup>6</sup>, the Royal Society and Computing at School (CAS)<sup>7</sup> have publishing recommendations for the future direction of ICT and Computer Science which could help guide politicians and shape the development of future ICT curricula. Unfortunately, due to the lack of clarity in defining the relationship between the two subjects, where they are often seen as substitutes rather than complements, has retarded the development of a coherent strategy.

In 2011, the [UK] Government has proposed to disapply ICT from the National Curriculum Programme of Study [at Key Stage 3<sup>8</sup>], along with the associated Attainment Targets and statutory assessment arrangements, from September 2012. This means that, while ICT will continue as a subject within the National Curriculum (pending the outcomes of the Government’s review of the National Curriculum in England), schools and teachers will have much more freedom to teach it in ways that are creative, innovative and inspirational (Department for Education, 2012). One response to this announcement was the NAACE Draft Key Stage 3 ICT discussion document has been recently published. This focuses on a broad range of topics that may provide a suitable framework for the discussion of the wider implications of IT systems. If implemented, this would allow teachers in schools to use the framework as a springboard to develop the themes in a local context further. However, the innovative nature of some of the content may be problematic by the difficulties in ensuring ICT teachers are able to keep their subject knowledge up to date, something that can be difficult with the current workload and shortage of funds for dedicated professional development.

The Royal Society paper predominantly directed at the Secondary Education sector attempts to define ICT. It considers that the subject consists of three discreet strands, shown in Figure 1; Information

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4 National Curriculum - The National Curriculum is a framework used by all maintained schools to ensure that teaching and learning is balanced and consistent. (Crown Copyright, 2012)

5 eBacc - The measure recognises where pupils have secured a [GCSE] C grade or better across a core of academic subjects – English, mathematics, history or geography, the sciences and a language (Department of Education, 2011)

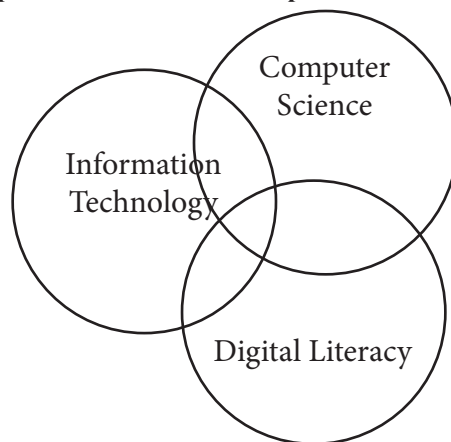
6 NAACE – National Association for Advisors for Computers in Education

7 Computers at School – Group formed to promote the teaching of Computing in UK Secondary Schools.

8 Key Stage 3 – this equates to Years 7 – 9 (6<sup>th</sup> – 8<sup>th</sup> Grade), the first three years of secondary education

Technology as “the assembly, deployment and configuration of digital systems to meet user needs for particular purposes”, Computer Science as “the rigorous academic discipline encompassing programming languages, data structures, algorithms ...” and Digital Literacy as “the general ability to use computers” (Royal Society, 2012). However, there is almost no explicit identification of the wider social, ethical and legal implications of these technologies.

**Figure 1: The interrelationship of the three constituent parts of ICT as proposed by the Royal Society**



Adapted from “Shut down and restart” (Royal Society January 2012)

In the 16-19 age range, ICT courses are provided by exam boards such as OCR<sup>9</sup> and AQA<sup>10</sup>. These courses are predominantly based on the design and development of IT systems at the expense of the associated social/ethical considerations which are usually addressed as single assessment statements<sup>11</sup>. Examples of these assessment statements include “discuss the impact of ICT on society, organisations and individuals” (OCR, 2008) and “discuss with examples the consequences of the use of ICT for different groups of individuals and society” (AQA, 2007). Courses such as these are developed over cycles that may run over a number of years and unless mechanisms are included to enable updates to the course as technology evolves, sections of these courses which are specifically linked to IT systems will become obsolete relatively rapidly.

The NAACE press release of September 2011 included reference to the emergence of new technologies where it stated “Consumer use of technology is being increasingly used for semantic and behaviour analysis; for example consumer profiling by supermarket loyalty cards .... (NAACE, 2011)” and “workforce CPD and Standards, need to be shifted in order to address the current mismatch between human web-influenced behaviour and educational practice” (NAACE, 2011). Unless ICT is able to adapt to accommodate the emerging technologies, there will always be a lag between technologies used and when they are discussed in Secondary education. An example of this can be seen with data mining which has yet to be included in any UK specification yet is a significant issue for most IT users.

## A New ICT

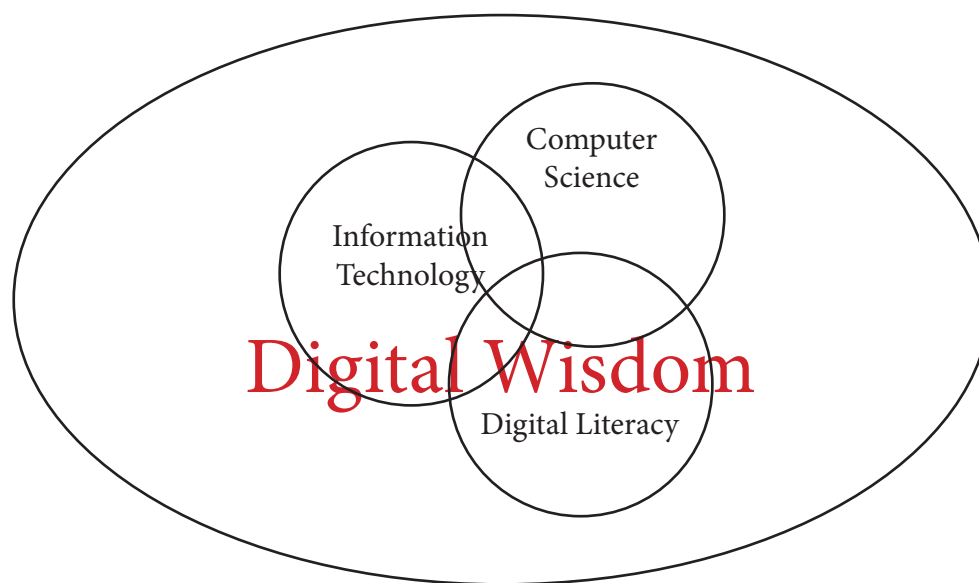
As technologies continue to advance and societal expectations of IT systems change; ubiquitous computing

<sup>9</sup> OCR - Oxford Cambridge and RSA Examinations, a UK awarding body,

<sup>10</sup> AQA – Assessment and Qualifications Alliance, a UK awarding body

<sup>11</sup> Assessment statement – a statement relating to a particular part of a specification that provides guidance to teachers about the depth at which it will be examined.

becoming the norm, the cloud becomes increasingly pervasive and the use of social networking services such as Facebook lead to a blurring of different aspects of a citizens life, the developers and managers of ICT curricula need to investigate ways to make the subject evolve to accommodate these changes. This should include an explicit framework that enables students to have a deeper understanding of the interaction between human beings and IT systems, and the social, ethical and legal considerations that arise. This essential and overarching part of any ICT course may be encompassed under the umbrella term “digital wisdom<sup>12</sup>”. One representation of this relationship is indicated in Figure 2 below.



**Figure 2: An alternative overview of ICT**

Digital wisdom encompasses; responsible and informed use, awareness of risks, respect of relevant ethical and legal positions, the expectations and needs of different user groups.

## Conclusions

The pervasive and ubiquitous nature of information and communication technologies has not only irrevocably changed the way in which we live and work, but also the nature of our interaction with them. It is possible in the university sector to deliver courses that are able to respond rapidly to these changes, but within the secondary education sector this has not been possible. The political landscape has emerged where transformative change of ICT is achievable. Any new ICT course, in order to reflect the society in which we live, would need to reflect the ever changing inter-relationship between the technology and society, within an explicitly defined ethical framework. The transformative change that ICT requires will be a major undertaking and require effective marketing the new course, making sufficient resources available for the professional development of current and new ICT teachers, engaging in discussions with awarding bodies (exam boards) and universities to develop continuity of ideas and best practice as well as raising the profile of the subject so that it is seen by key external groups such as the Russell Group as a facilitating subject. A new ICT that focuses on the relationship between human beings and IT systems has the potential to be at the centre of 21st Century education rather than at the periphery, it is an opportunity that has to be taken.

<sup>12</sup> Digital wisdom – based on an interpretation of the term “media wisdom” that encompasses; technical competence, creativity, analysis and reflection (Martens 2011).

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