

<p>Institution: Manchester Metropolitan University</p>
<p>Unit of Assessment: C25 Education</p>
<p>Title of case study: Changing policy and practice in the use of educational technology in schools – informing national and international policy</p>
<p>1. Summary of the impact</p> <p>This case study reports impact derived from a sustained programme of research extending over 15 years. The research has impacted policy makers, practitioners, young people and their families both in the UK and internationally through:</p> <ul style="list-style-type: none"> • informing the development of the Harnessing Technology Strategy (the UK government strategy for ICT in education from 2005-2010) leading to the Home Access Initiative (2009-2010) which improved educational attainment and lifetime earning potential for the beneficiaries, and driving the uptake of learning platforms and web 2.0 technologies for supporting teaching and learning; • evidencing the impact of ICT on attainment (eg the current UK government, UNESCO); • underpinning European policies on the use of interactive whiteboards to support teaching and learning (eg for the OECD).
<p>2. Underpinning research</p> <p>The research was conducted by the ICT Pedagogy and Learning research group (led by Somekh), continued by the Technology, Innovation and Play for Learning research group (TIPL, led by Lewin and Whitton); total income £2.7M. The work provides significant evidence for policy that has been disseminated widely including 44 research reports, 13 books, 53 book chapters and 62 refereed journal articles. Key projects include:</p> <p>ImpaCT2 (1999-2001, £70,500, Becta) found a positive relationship between students' level of ICT use and improved attainment. It also revealed differences between students' access to and use of ICT at home and at school. Somekh was Co-Investigator evaluating the impact of digital technology in education through surveys and case studies with 60 primary, secondary and special schools. Lewin, initially based at the OU (1997-2003), was a member of the ImpaCT2 consortium and moved to MMU in 2001. (Harrison C., Comber C., Fisher T., Haw K., Lewin C., Lunzer E., McFarlane A., Mavers D., Scrimshaw P., Somekh B. & Watling R. (2002) ImpaCT2: The Impact of Information and Communication Technologies on Pupil Learning and Attainment. DfES: Annersley, Notts, UK.)</p> <p>ICT Test Bed (2002-2006, £923,000, Becta) produced substantial research insights including: whole-school provision of technology has a positive impact on school's national test outcomes (once technology was embedded); improved understanding of the potential benefits and challenges of learning platforms and management information systems; whole school implementation of technology strengthened sharing cultures and led to pedagogical changes; and a greater understanding of how to roll out home access to technology. Somekh led this investigation of the impact of high levels of digital technology provision in schools on teaching, learning and attainment. Lewin undertook fieldwork and day-to-day project management. (Somekh, B., Underwood. J., Convery, A, Dillon, G., Jarvis, J., Lewin, C., Mavers, D., Saxon, D., Sing, S., Steadman, S., Twining, P. and Woodrow, D. (2007). Evaluation of the ICT Test Bed Final Report. Becta: Coventry.)</p> <p>The evaluation of the Primary Schools Whiteboard Expansion project (SWEEP) (2004-2006, £223,000, DfES) also reported a positive impact of technology on pupil attainment: the length of time pupils were taught with an interactive whiteboard (IWB) was a factor contributing to attainment gains in literacy and mathematics. When teachers had sustained experience, of around two years, of using an IWB, they were able to change their teaching practices to make best use of its facilities. Somekh and Lewin led this evaluation. Haldane was one of senior researchers in the team. (Somekh, B., Haldane, M., Jones, K., Lewin, C., Steadman, S., Scrimshaw, P., Sing, S., Bird, K., Cummings, J., Downing, B., Harber Stuart, T., Jarvis, J., Mavers, D. and Woodrow, D. (2007). Evaluation of the Primary Schools Whiteboard Expansion Project. Becta: Coventry.)</p> <p>The Web 2.0 Technologies for Learning project (2007-2008, £56,300, Becta) found that: use of web 2.0 tools in schools was at an embryonic stage with individuals exploring the potential; young people were prolific users of the internet and web 2.0 tools but not in very sophisticated ways – they were largely consumers rather than producers. It was one of the earliest Becta-funded studies of Web 2.0 technologies in secondary schools, the relationship between school and home, and e-safety issues. Lewin was co-investigator. (Crook, C., and Harrison, C. with Cummings, J.,</p>

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Fisher, T., Graber, R., **Lewin, C.**, Logan, K., Luckin, R., Oliver, M. and Sharples, M. (2008). [Web 2.0 Technologies for Learning at Key Stages 3 and 4: Summary Report](#). Becta: Coventry.) Since Somekh retired, Lewin and Haldane have sustained the policy relevant work, through Innovative Technologies for an Engaging Classroom (**iTEC**, EU 2010-2014). This €9.5 million 'flagship' FP7 project involves 14 Ministries of Education and 1000+ teachers across Europe who are engaging in participatory design and trying out new ideas for using technologies in their classrooms. Findings from the first four cycles of evaluation have been synthesised and presented to all MoEs as well as disseminated widely. (See <http://itec.eun.org/web/guest/deliverables> for project reports to date).

Key researchers

Bridget Somekh. Appointed Professor 1999. Retired 31/10/2008

Keri Facer. Appointed Professor 01/11/2008; Left 31/03/2012

Cathy Lewin. Appointed RF 01/02/2001; SRF 01/08/2009; Professor 10/06/2013

Maureen Haldane. Appointed SL 01/09/1991; SLTF 01/09/2004; SRF 01/09/2011; Retired 30/06/2013

Jonathan Savage. Appointed SL 01/09/2001; Reader 01/08/2008

Nicola Whitton. Appointed SL 01/09/2005; RF 01/06/2007; SRF 10/06/2013

3. References to the research

Somekh, B. (2007). *Pedagogy and Learning with ICT: researching the art of innovation*. London and New York: Routledge. ISBN 0-203-94700-2 [ImpaCT2, ICT Test Bed, SWEEP]

Lewin, C. & Luckin, R. (2010). Technology to support parental engagement: Lessons learned and future directions. *Computers & Education*, 54(3), pp.749-758. DOI 10.1016/j.compedu.2009.08.010 [ICT Test Bed]

Somekh, B. (2008). Factors Affecting Teachers' Pedagogical Adoption of ICT. In J. Voogt & G. Knezek (Eds), *International Handbook of Information Technology in Primary and Secondary Education, Part One*. New York: Springer. pp.449-460. ISBN 978-0-387-73314-2 [SWEEP]

Lewin, C., Somekh, B. & Steadman, S. (2008). Embedding interactive whiteboards in teaching and learning: The process of change in pedagogic practice, *Education and Information Technologies*, 13(4), pp. 291-303. DOI 10.1007/s10639-008-9070-2 [SWEEP]

Somekh, B., Haldane, M., Jones, K., Lewin, C., Steadman, S., Scrimshaw, P., Sing, S., Bird, K., Cummings, J., Downing, B., Harber Stuart, T., Jarvis, J., Mavers, D. and Woodrow, D. (2007). *Evaluation of the Primary Schools Whiteboard Expansion Project*. Becta: Coventry. <https://www.education.gov.uk/publications/standard/publicationDetail/Page1/SWEEP-Report#downloadableparts> [SWEEP]

Mavers, D., Somekh, B. & Restorick, J. (2002) Interpreting the externalised images of pupils' conceptions of ICT: methods for the analysis of concept maps. *Computers & Education*, 38(1-3), pp.187-207. DOI 10.1016/S0360-1315(01)00074-4 [ImpaCT2]

The quality of this work is indicated by a range of indicators including:

- 400+ citations for the research listed above (Google Scholar)
- Quality of cited journals (eg Computers & Education)
- Invited seminars/keynotes (13 Somekh, 12 Lewin) including an expert seminar held at the DfES on SWEEP in May 2007 (attended by 50 academics and policy makers) and an invited presentation on SWEEP at an international conference in Norway in April 2009, involving 400 national teachers and 75 international academics. Refereed conference papers at prestigious international conferences including AERA, BERA, CAL and IFIP.
- Somekh and Lewin co-authored eight of the 22 publications in the DfES and BECTA 'ICT in Schools Research and Evaluation Series' (2001-2004).
- ImpaCT2 and ICT Test Bed feature as two of 17 impact case studies from across Europe reviewed for a report commissioned by the European Commission (Balanskat et al, 2006) and presented to the OECD-Keris expert meeting, 16-19 October 2007: Session 3: Comparative international evidence on the impact of digital technologies on learning outcomes: empirical studies.
- ImpaCT2 continues to be widely cited internationally as evidence of the impact of ICT on attainment, for example in a recent report from UNESCO (Kozma, 2011).

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- SWEEP (Somekh et al, 2007) and ICT Test Bed evaluation reports cited 17 times and drawn on extensively in a recent working paper on interactive whiteboards for the OECD (Hennessy & London, 2013).
- SWEEP (Somekh et al, 2007) and ICT Test Bed referred to as 'essential reading' in the EUScribe project (Bannister 2010).
- In response to a question in the House of Lords about the impact of ICT on literacy and personalised learning, [Lord Adonis stated](#), "In the past five years there have been 10 in-depth studies which have assessed the use of information and communications technology (ICT) in schools to support children with literacy and personalised learning." The ten projects listed included **SWEEP**, **ICT Test Bed** and **ImpaCT2**. This reference provides evidence of the significance and high regard of these important projects.

Key research grants:

- March 1999-February 2001 Becta £70,500 ImpaCT2 (Somekh, with University of Nottingham and the Open University)
- February 2003-December 2006 Becta/DfES £923,000, 'ICT Test Bed' Evaluation (Somekh, with Nottingham Trent University)
- April 2004-December 2006 DfES £223,000 Primary Schools Whiteboard Expansion Project (SWEEP) (Somekh and Lewin)
- September 2007-August 2008, Becta £56,300, Web 2.0 Technologies of Learning at KS3 and KS4 (Lewin, with University of Nottingham and Institute of Education)
- September 2010-August 2014 EU FP7 £510,000, Innovative Technologies for an Engaging Classroom (ITEC) (Haldane and Lewin, with European Schoolnet and 25 other partners, total funding €9.45 million) Grant Agreement No: 257566

4. Details of the impact

MMU had a close and productive relationship with Becta (1999–2010), which provided a conduit for influencing policy. Subsequently, a developing relationship with European Schoolnet (an organisation representing 30 European Ministries of Education, working with policy makers, teachers and researchers) has created opportunities to influence policy at European level. The selected projects described in this case study were commissioned by the UK government and/or its agency for ICT in schools (Becta) in order to develop policy to support the use of ICT in schools. ImpaCT2 was led by the University of Nottingham with MMU and the Open University as co-investigators; ICT Test Bed was led by MMU with Nottingham Trent university as co-investigator; SWEEP was led by MMU with consultancy from the University of Bristol and Web 2.0 Technologies for learning was led by the University of Nottingham with MMU and the Institute of Education, London University as co-investigators.

The program of research underpinned government strategies for ICT in education (Harnessing Technology from 2005-2010) during the last Labour Government (eg [Becta 2008a, p14 and p19](#)). In Becta's annual review of technology and education (Harnessing Technology Review), for the years 2008 and 2009 (eg [Becta 2008b](#)), Somekh and Lewin were co-authors on 4 reports cited as key evidence of the positive impact of ICT on learning. **ImpaCT2**, **ICT Test Bed** and **SWEEP** are also cited in a current government-authored paper summarising the impact of technology ([DfE 2011b](#)) evidencing the continuing importance of this work under the current coalition government. The beneficiaries of resulting policy developments include schools, teachers, young people and their families through financing of infrastructure in schools and homes, and impact on learning outcomes. The research insights have also informed policy making and research at an international level.

ImpaCT2 continues to be cited widely internationally as evidence of the impact of ICT on attainment. For example, in a recent publication from UNESCO ([Kozma 2011](#)). Drawing on findings from **ICT Test Bed** ([Home Access Task Force, Becta 2008c](#)) the Government sought to reduce the inequitable home access to the Internet through the Home Access Initiative, a £194 million voucher programme. 267,244 low-income houses with children were provided with an Internet-enabled computer between 2009 and 2010. PricewaterhouseCoopers estimated the project produced a positive Net Value of +£768 million through improving educational attainment and the consequential improvement in lifetime earnings for the beneficiaries ([DfE 2011a: 5](#)).

In one **ICT Test Bed** cluster (one secondary school, seven primary schools) a trailblazing learning platform was developed that underpinned an integral part of Becta's approach to embedding such technology in schools ([Becta 2008a](#)). In the year 2009-2010 67% of primary

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schools and 93% of secondary schools had learning platforms ([Becta 2010](#)). **ICT Test Bed** also marked an important shift in government-sponsored evaluations, which had given primacy to quantitative empirical work. The project included 116 action research projects of innovative work with ICT led by 90 teachers and para-professionals from the ICT Test Bed sites. Nine of these were cited in a Becta-commissioned large-scale research review evidencing the impact of this work on the nature of research evidence that is acceptable. This further embedded ICT R&D in schools impacting on professional practices, including producing published teacher-led studies (e.g. [Burkett 2008](#)). Some practitioners presented their work at international conferences such as CAL, the National Teacher Research Panel and the Collaborative Action Research Network annual conference. Participation in the project for many of these teachers resulted in changes in career trajectories. One, for example, now manages the **iTEC** project on behalf of European Schoolnet whilst others have moved into academia.

Since 2008 there has been widespread international interest in the use of interactive whiteboards (IWBs) to support teaching and learning. The EUscribe project ([Bannister 2010](#)), commissioned by European Schoolnet for its Ministry of Education partners to provide guidance for effective use of IWBs, refers to **SWEEP** and **ICT Test Bed** as 'essential reading'. In a recent review for the OECD on IWBs commissioned, **SWEEP** and **ICT Test Bed** were cited 18 times and drawn on extensively ([Hennessy and London, 2013](#)).

The [archived website for Becta](#), captured on 30th January 2011 just before it closed, includes a page on the impact of ICT; it lists **ImpaCT2**, **ICT Test Bed** and **SWEEP** as key projects evidencing the benefits of technology for learning. **SWEEP** (the Primary Schools Whiteboard Expansions project evaluation) was also cited as evidence for the cost-effectiveness of interactive whiteboards in [Hansard, 21st July 2010](#).

The **Web 2.0 Technologies for Learning** project has informed policy makers and practitioners on supporting collaboration through technology. For example, a [blog post](#) on the iTEC website about this project (published in February 2011) has had over 8500 views. Other users include OER Africa (an open educational resources site for the African educational community) and the Victorian government in Australia (presented as an international exemplar of ICT use in schools).

The **iTEC** project directly involves 14 European Ministries of Education as project partners plus a further three national organisations as associate partners. The evaluation, which MMU is leading, is supporting mainstreaming activities in a number of countries and influencing policy making. In France **iTEC** is linked to the national strategy and has been promoted through online channels (<http://eduscol.education.fr/cid71352/projet-europeen-itec.html>). See also press release issued by EUN 17/09/13 on CORDIS website:

<https://cordis.europa.eu/wire/index.cfm?fuseaction=article.Detail&rcn=39348>

5. Sources to corroborate the impact

Bannister, D. (2010) [Guidelines for effective school/classroom use of interactive whiteboards: The EuSCRIBE Project](#). Brussels, Belgium: European Schoolnet.

Becta (2008a) [Harnessing Technology: Next Generation Learning](#). Coventry: Becta.

Becta (2008b) [Harnessing Technology Review 2008: The role of technology and its impact on education](#). Coventry: Becta.

Becta (2008c) [Extending opportunity: Final report of the Minister's taskforce on home access to technology](#). Coventry: Becta

Burkett, E. (2008). 'A new way of looking?' [Reflections upon one teacher's experience of supporting learners using handheld computers](#). *Educational Action Research*, 16 (4), pp. 481-493. doi: 10.1080/09650790802445668

Becta (2010) [Harnessing Technology School Survey: 2010](#). Coventry: Becta.

Hennessy, S. and L. London (2013), [Learning from International Experiences with Interactive Whiteboards: The Role of Professional Development in Integrating the Technology](#), OECD Education Working Papers, No. 89, OECD Publishing. doi: 10.1787/5k49chbsnmls-en

Kozma (2011) [Transforming Education: The Power of Education Policies](#). Paris, France: UNESCO.

Becta (former Executive Director)*

DfE (head)*

European Schoolnet (Senior Manager)*: * see confidential appendix for names & addresses