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Summary

Research provides substantial evidence that ICT can have a positive effect on students' enjoyment and interest in learning.

Key benefits

- increased commitment to the learning task
- increased independence and motivation for self-directed study
- enhanced self esteem and improved behaviour.

How teachers can maximise the impact of ICT on students' motivation

- being confident in its use and undergoing training
- exploring new opportunities for improving classroom practices when using ICT, in particular, to make lessons more stimulating and enjoyable

What the research says about ICT and motivation

This report is based on an analysis of available research about the motivational effects of Information and Communication Technologies (ICT) on students' commitment to and engagement in learning. It summarises the key findings and suggests resources for further reading.

Research evidence shows that ICT can stimulate, motivate and spark students' appetites for learning and helps to create a culture of success. This can be demonstrated in their increased commitment to the learning task, their enhanced enjoyment, interest and sense of achievement in learning when using ICT, and their enhanced self esteem.

This report summarises research literature on topics including:

- students' attitudes and perceptions towards ICT
- why and how ICT activities can motivate learners
- how online learning communities can re-engage disaffected teenagers
- effective classroom pedagogy using ICT
- motivational effects of different types of technology such as laptops and digital video
- benefits to students with Attention Deficit Hyperactivity Disorder (ADHD) and emotional and behavioural difficulties (EBD).

This report considers a wide range of ICT including:

- portable ICT devices
- school networks
- web-based resources
- video conferencing
- common office applications such as spreadsheets, word processors and databases.

Becta
ICT Research

Key research evidence about the motivational effects of ICT in teaching and learning

On the basis of Becta's analysis, ICT can have positive effects on student motivation in the areas outlined below (there are references for further reading supplied alongside some of the findings).

About Becta's 'What the Research Says…' series

This series of briefing papers is designed in particular for teachers, ICT co-ordinators and school managers, in order to provide an initial idea of the available research evidence for the use of Information and Communications Technology (ICT) in schools and colleges. We welcome feedback and suggestions for further titles in the series (contact details can be found at the end of this briefing).

General benefits

- regular use of ICT across different curriculum subjects can have a beneficial motivational influence on students' learning *(Cox 1997)*
- online learning engages de-motivated and disaffected students *(Duckworth 2001; Passey 2000; Harris and Kington 2002)*
- improved confidence, motivation and self-esteem particularly for children with special educational needs and disaffected students *(Passey 2000)*
- increased motivation to write and re-draft work across a range of abilities *(Moseley and Higgins 1999)*.

Benefits for students

- students who used educational technology in school felt more successful in school, were more motivated to learn and have increased self-confidence and self-esteem *(Software and Information Industry Association 2000)*
- boys spent more time drafting and re-drafting their work in English when using laptops, compared to those who did not have access to the technology *(Passey 2000)*
- production of correctly spelt, neatly presented work can motivate those students who find difficulty producing such work by hand *(Wishart and Blease 1999)*
- students found learning in a technology-enhanced setting more stimulating and student-centred than in a traditional classroom *(Pedretti and Mayer-Smith 1998)*.

Benefits for teachers

- students are generally more 'on task' and express more positive feelings when they use computers than when they are given other tasks to do *(Becker 2000)*
- amount of non-task directed behaviour significantly decreased during computer and classroom sessions, following the use of multimedia programs for reading and spelling *(Van Daal and Reitsma 2000)*
- using digital video as part of learning tasks improved behaviour and on-task concentration *(Reid/BFI 2002)*
- laptops motivated students to work longer and harder with an increased pride in their work *(Rockman 2000)*.

Benefits for parents

- computer use during lessons motivated students to continue using learning outside school hours *(Becker 2000; Chen and Looi 1999; Harris and Kington 2002)*.

Factors for effective use

- individual ownership, more than simply access to the technology increases motivation *(Harris and Kington 2002; Hennessy 2000; Passey 2000; Rockman 2000)*
- regular use of ICT across the curriculum can increase student confidence and motivation in learning *(Cox, 1997; Hennessy 2000)*
- teachers providing ICT activities offering opportunities for active, independent learning can increase students' motivation to learn *(Becker 2000; Hennessy 2000)*.

Using ICT to motivate students in practice

Windmill Primary School has a high percentage of students with special educational needs and prides itself on accepting students who have been excluded from other schools. The school has a strong ethos of encouraging all students to fulfil their potential and has equipped all 46 students in Year 6 with their own desktop computer, including internet access. Two full-time learning support assistants (LSAs) support the teacher, who uses an interactive whiteboard to extend the ways he communicates with all students.

Comments from the staff illustrate the different ways ICT motivated the students:

- 'they extend the things they're asked to do according to their interests – take tasks much farther than expected in other classes'.
- students with special educational needs (SEN) 'don't have to worry about copying things down. Anything that goes up on the [interactive] board can be recorded on anyone's PC…They can call up information from weeks ago which would have been wiped off a traditional board. It increases [students'] self-confidence and they don't get worried'.
- '…for the first time in their careers they have felt success. They can all go as far as they can go. There is no exclusion in opportunity'.
- '…the evidence of the children applying themselves is in the work and their high achievement in the National Curriculum assessments'.

This case study is drawn from HARRIS, S., and KINGTON, A., 2002, Innovative classroom Practice Using ICT in England: the Second Information Technology in Education Study *(SITES)*.

Explanation of findings

As with ICT more generally, positive impacts on student motivation depend on the ways in which the ICT is used. Improvements in students' attitudes in learning and changes in behaviour will inevitably be reliant on the capacity of teachers and students to use ICT as an effective pedagogical tool. Drawing clear conclusions on the effects of ICT from the range of research evidence and reports available can be problematic. There are a number of factors that limit effective comparisons, such as differences in sample sizes, methodologies and effects, and the extent and purpose of ICT use involved. However, ICT can help to motivate students in a number of ways.

Increased commitment to learning

Teachers providing more engaging technology-enhanced lessons report that students are motivated to continue using computers at other times of the school day and outside school *(Becker 2000; Rockman 2000)*. Students involved in Challenge 2000, an internet-based resource, were keen to work in their own time, before and after school, as well as during the timetabled sessions and did not have a problem maintaining motivation and excitement *(Harris and Kington 2002)*.

Enhanced sense of achievement

Exploiting ICT can lead to an enhanced sense of achievement for many students who have previously been under-achieving. Learning gains and increases in motivation have been found in literacy and mathematics *(Moseley and Higgins 1999)*, geography and English *(Hennessy 2000; Van Daal and Reitsma 2000)* and for special needs students in terms of producing higher standards of work *(Harris and Kington 2002)*. However, as with any task which does not include ICT, if the experience is either too difficult or too easy it can be de-motivating *(Cox 1997)*.

Supporting self-directed study

Students using an online GNVQ course developed an increased independence and motivation for an autonomous style of learning that is seen as a valuable preparation for lifelong learning *(Harris and Kington 2002)*.

Greater self esteem

Notschool.net is a virtual community that gives young people the opportunity to develop their self-esteem and be re-introduced to learning. This online research project looked at ways of re-engaging 92 disaffected young people aged 14-16 into an environment in which they were able to develop new ways of learning. Learning through an online community was a key element in encouraging these students to participate in learning again *(Duckworth 2001)*.

Improved behaviour

There is evidence of improved behaviour by students with Attention Deficit Hyperactivity Disorder (ADHD) when using digital video *(Reid/BFI 2002)*. Students with low levels of motivation and feelings of uncertainty regarding their learning capabilities can show more positive behaviour during lessons using computers than during traditional lessons *(Van Daal and Reitsma 2000)*. Many case studies reveal a range of positive impacts on students, including increased ability to work independently, enhanced confidence in communicating with others outside their school and family circles, improved attendance at school and improved group work and co-operative skills *(Harris and Kington 2002)*.

Key questions for schools

- How can you ensure your teachers explore new ways of using ICT that have a range of beneficial impacts on students?
- What active and independent ways of learning using ICT can students use to take responsibility for their own learning?
- Are you providing students with competencies and technological skills that allow them to communicate and express their ideas through a variety of media?

About the research literature

Some of the research literature focuses specifically on student motivation, while some studies reveal the motivational effects of ICT as a part of wider examinations into ICT in teaching and learning. Examples of research range from small-scale investigations to national projects and include classroom practices using ICT in primary, secondary, special educational needs and non-traditional educational systems of learning. Many of the studies rely on classroom observations, questionnaires and interviews with students and teachers to collect their opinions on the effects ICT has on student motivation.

Current research

Towards the end of 2002 the DfES funded a pilot project *(DfES 2002050)* to identify and quantify the impacts of ICT on behaviour, motivation, truancy and associated crime among students in secondary schools. It aims to identify what aspects of ICT and content are effective in improving motivation and how this can be harnessed by teachers and within the curriculum to engage students in learning. The research will involve interviews with headteachers, teachers and students in a sample of schools which have in-house behaviour and support units to investigate how ICT is used and what effect it has on students. It will also look at best practice in the use of ICT with disaffected students. The research pilot ends 31 October 2003.
http://www.dfes.gov.uk/research

Key areas for further research

Further areas for future enquiry might be to:

- explore the relationship between motivation and attainment across a range of subject areas
- further evaluate the use of digital video technologies with students of varying abilities
- look at the relative motivational effects of different types of technologies.

Bibliography and further reading

The research referred to in this briefing represents a selection from the rapidly growing field of ICT research, and should not be regarded as a definitive list of the 'most important' research in this area.

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This briefing and others in the 'What the Research Says' series can be found on the Becta Research web site at: www.becta.org.uk/research

Becta's ICT Advice site provides further information, services and tools for those who use, implement and manage ICT in schools: www.ictadvice.org.uk

Becta's ICT Research Network

If you're interested in research on the use of ICT in education, you can join Becta's ICT Research Network.

The ICT Research Network seeks to encourage the exchange of information in order to inform the national agenda and professional practice.

Membership is free and is open to:

- teachers
- ICT co-ordinators
- ICT advisors
- school managers
- researchers
- policy makers
- research sponsors
- industry.

The Network provides them with an opportunity to:

- exchange information on current research
- develop partnerships
- discuss priorities for further investigation
- focus research on issues of importance to practitioners and policy makers.

They can do this via:

- an e-mail discussion list
- publications
- conferences and events.

More information on Becta's ICT Research Network can be found at:

www.becta.org.uk/research/ictrn

Alternatively, e-mail: ictrn@becta.org.uk or write to: Michael Harris, ICT Research Network, Becta, Millburn Hill Road, Science Park, Coventry CV4 7JJ

About Becta

Becta is the Government's lead agency for information and communications technology (ICT) in education and supports UK Government, national organisations, schools and colleges in the use and development of ICT in education to raise standards, widen access, improve skills and encourage effective management.

About the ICT in Schools Programme

The ICT in Schools Programme is the Government's key initiative to stimulate and support the use of information and communications technology (ICT) to improve standards and to encourage new ways of teaching and learning. The enormous potential of ICT means that for the first time it is becoming possible for each child to be educated in a way and at a pace which suits them, recognising that each is different, with different abilities, interests and needs. The challenge over the next four years will be to successfully embed ICT in every facet of teaching and learning where it can directly impact on raising standards of attainment. A vision for the future of ICT in schools is provided in the paper Transforming the Way We Learn, available at: **www.dfes.gov.uk/ictfutures**

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