

**THE IMPACT OF TECHNOLOGY ON LEARNING IN
SYNCHRONOUS E-LEARNING SYSTEMS AND FOR
YOUNGER AND OLDER LEARNERS**

Desmond Keegan

INTRODUCTION

This presentation is in three parts:

- Background to the study – the need for the study, its focus on adult education, lifelong learning, distance education, research methodology and approach
- Impact of technology on learning in synchronous e-learning systems – a study of the impact of technology on adult learning
- Impact of technology on learning by younger and older learners – a study of the impact of technology on younger and older persons.

RATIONALE

The rationale for the research study on *The impact of new technologies on distance learning students* is found in the enormous amounts of money paid annually by government Departments of Education and of Higher Education throughout the world for the purchase of educational technology for schools, colleges and universities.

RATIONALE

Allied to this massive expenditure on educational technology for schools, colleges and universities is the fact that the research on the impact of technology on learning is unacceptably fragile.

LITERATURE

In 1999 Schachter in his *The impact of education technology on student achievement: what the most current research has to say* states that 'research on the impact of technology on learning is in its infancy'.

LITERATURE

The scene is much the same today. In March 2005 the World Bank stated that 'the positive impact of ICT use in education has not been proven. In general, and despite thousands of impact studies, the impact of ICT use on student achievement remains difficult to measure and open to much reasonable debate'

APPROACH

In addition what research there is, is in the field of research of the impact of technology on American schoolchildren. Most of the research is on what the Americans call K-12 (that is Kindergarten to high school graduation).

This study is different. It focuses firmly on the impact of technology on adult education, distance education and lifelong learning.

METHODOLOGY

Because of the fragile research findings in the area of the impact of technology on learning every effort was made to choose the best methodology available.

This was identified as the United States Department of Education's (2003) *Identifying and implementing educational practices supported by rigorous evidence.*

DEFINITION

Randomized controlled trials are studies that randomly assign individuals to an intervention group or to a control group, in order to measure the effects of the intervention.

SYNCHRONOUS E-LEARNING SYSTEMS

Students attending Virtual Classroom courses are typically presented with PowerPoint slides that are verbally presented in real-time, by the instructor. Interactivity is a key element of this training method and, in addition to asking questions, there are numerous opportunities for interaction through the use of chatrooms, breakout sessions / small tutorial groups, application and document sharing and web surfing.

HORIZON WIMBA SYNCHRONOUS E-LEARNING SYSTEM

Path to the American Dream

Percent of High School Graduates Attending College, 1979-1997 and Projected to 2010

Year	Percent Attending
1979	53.9%
1985	57.7%
1991	59.8%
1997	67.0%
2000	68.4%
2006	71.5%
2010	75.4%

Source: U.S. Department of Education, National Center for Education Statistics and National Alliance of Business

Control Panel: Talk in On, Talk, Disconnected

Chat Window: Connecting to server... You have connected successfully! You have entered 'mattw'. Your media format is HLMG Interactive Audio. You say, "These are valuable stats" You say, "Compiled since 1979"

Video Feed: Exit - Lobby - Help

IMPACT OF TECHNOLOGY ON LEARNING BY YOUNGER AND OLDER LEARNERS

There is a considerable literature on the impact of technology on learning by younger learners. Much of this literature is American, and focuses on the impact of computers on learning in K-12 (primary schools and high schools).

Pride of place in this literature is still held by the American researcher, Tapscott's 1998 book *Growing up digital: the rise of the net generation*.

TAPSCOTT'S NET GENERATION

Many N-Gens, who have never used an instruction manual possess an authority of digital knowledge unknown by past generations. These are digitally savvy youngsters who assimilate the new media "like the air". Tapscott reminds the reader that in addition to the children acquiring valuable skills through their use of the new media, they are also having fun. When Tapscott asked N-Generations why they used the Internet, their overwhelming response was the same: "It's fun!"

RESULTS AND CONCLUSIONS

The two major hypotheses of the study, namely that 'technology has an impact on learning' and that 'the impact of technology on learning is beneficial' are both well supported by this research on the impact of technology on learning by younger learners and by older learners.

The best evidence for this conclusion is from the responses to Question 11 'From my personal study experience I find that the impact of technology on learning is valuable.' 80% of respondents agree and only 5% are in disagreement with this proposal. This is a major endorsement of the impact of technology on learning and of the beneficial nature of this impact.

RESULTS AND CONCLUSIONS

The work of the most important researcher in the field, the American scholar Tapscott, is well supported by the analysis

Tapscott's research would support Question 17 'Older learners have more difficulties in using technology in the learning process'. The respondents to this investigation clearly support Tapscott's position

Further support is provided by the respondents to Question 19 'Older persons are hesitant about online study'. As in Tapscott's work 62% agree that older persons are hesitant about e-learning while only 13% disagree.

RESULTS AND CONCLUSIONS

Further support is given to the hypotheses of the study by the responses to Question 10 'The opinion that the impact of technology on learning is beneficial is correct.' Over 50% are in agreement and only 28% disagree. Both groupings of respondents support the position that the impact of technology on learning is beneficial, with the older respondents being more favourable.

RESULTS AND CONCLUSIONS

The investigation addressed the difficult question of whether problems of access to learning for students with disabilities had been resolved by technology.

The question is blunt and challenging. It does not ask whether the problems of access to education for students with disabilities have been improved. The question says resolved.

In these circumstances the statistic that 54% either agree or strongly agree, supports the claim that technology has had an impact on learning and that this impact has been beneficial in the field of access to education for those with disabilities

RESULTS AND CONCLUSIONS

The study did not accept, however, that contacts between students and teachers can have the same intensity when mediated by technology and when they take place in face-to-face education.

In their replies both the younger group and the older group are very similar in their attitudes with 40% in disagreement divided almost equally between the groupings.

RESULTS AND CONCLUSIONS

In a reply slightly contradictory to the previous conclusion, the investigation supports the claim that the use of technology in educational communication 'allows increased amounts of communication between teacher and students' better than other forms of education.

A large group (27%) are uncertain but 52% agree and only 20% disagree, thus giving solid support to the use of technology in educational communication and in contacts between teachers and students.

RESULTS AND CONCLUSIONS

The study investigated the role of technology in making active participation in learning possible (Question 12).

The results are that 57% of respondents agreed and only 16% disagreed that 'Information and communications technology has usually been used to encourage us to be active participants in learning'.

These results show that the theme of active participation in learning is strongly supported by the younger learners who have both more respondents in the agree category and fewer in disagreement. The older respondents are also supporters of the idea of active participation in learning but less clearly than the younger grouping.

RESULTS AND CONCLUSIONS

The work of Marton in Sweden and of Entwistle in the United Kingdom had emphasised the importance in education of learning higher level thinking skills, synthesis and problem solving.

The study investigated the challenge presented to technology by this research into higher level skills. The question is: is technology only of value for learning lower level mechanical skills or can it have a beneficial impact on higher level thinking skills as well?

The contribution of technology to supporting the learning of higher level skills like synthesis and problem solving is quite well supported by the statistics with 57% choosing either agree or strongly agree and only 12% in disagreement.

RESULTS AND CONCLUSIONS

One of the great contributions of distance education was to contribute to the individualisation of education.

The study asked had information and communication technologies (ICTs) been used to support more individualized learning possibilities. This, if it could be proved, would be an important contribution of technology to learning, as individualization of learning is difficult in face-to-face schools colleges and universities.

56% of respondents are found to be in agreement with the statement and 16% disagree. Thus the role of distance education, e-learning and mobile learning in supporting the individualization of the learning experience and the central role of technology in achieving this, is supported by the study.

RESULTS AND CONCLUSIONS

Educational games have been one of the great contributions of technology to education and training. The great development of educational games and simulations today has been due to technology.

Again the responses are favourable to the impact of technology on learning in this area. 12% disagree or strongly disagree whereas 60% either agree or strongly agree.

In this case the younger respondents are much more enthusiastic than the older voters with 111 out of 150 younger respondents (74%) in the agree or strongly agree category. The older respondents are less favourable.