# THE IMPACT OF TEACHER SKILLS ON THE INTEGRATION OF ICT IN IRISH SCHOOLS.

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Most developed countries have invested in the development of ICT in schools in recent years. In doing so most countries have also invested in ICT training for teachers, which is often seen as the major obstacle to progress in ICT in schools (OECD, 1999). This paper examines the investment in teacher ICT training in Ireland and seeks to measure the impact of this training both on teacher skill and on ICT integration.

Ireland has just over 4,000 schools (3,300 primary schools and 700 post primary schools) serving a population of under 4 million. A government programme known as "Schools IT 2000" began in 1998. This programme provided equipment grants to all schools, organised ICT training for teachers, provided support services and funded a number of ICT pilot projects. In partnership the national telecommunications company provided each school with free Internet access.

## METHODOLOGY

This paper is based on data from two national surveys of ICT in schools. The first survey was conducted just before the start of IT2000 in 1998. The second survey was conducted 2 years later, when the equipment was in place and the initial training completed. These two surveys had very high response rates, with 98% of schools replying to the first and 86% replying to the second. The data from these two surveys is supplemented by a small scale survey conducted in 1999 based on a surveys of individual teachers in a stratified sample of schools.

## OUTCOMES OF IT2000

Between 1998 and 2000 the number of computers in use in Irish schools grew by 65%. The result of these increases was that by 2000 there was one computer for every 18 pupils in primary schools and one per 13 students in post primary schools. There was a big increase in Internet connectivity too. Almost all schools had Internet access by 2000, compared to 25% in 1998.

One of the interesting effects of IT2000 was a narrowing of the gap between the best-equipped schools and those with least equipment. The schools each received a free computer and an equipment grant from the government calculated as £2,000 plus £5 per student. In addition schools designated as disadvantaged received additional

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funding. This formula meant that the schools with least equipment, typically the very small rural schools and the schools in disadvantaged areas, received proportionally more funding.

## IT2000 TRAINING FOR TEACHERS

The IT2000 programme provided training using a cascade model. Short courses were developed, typically of 20 hours duration, and interested teachers were trained to be trainers. These teachers then ran courses for other teachers on a part time basis. Teachers were not paid to go on the courses, but volunteered to attend in the evenings and out of school term.

The level of participation in these courses was very impressive with 74% of the teachers in the country doing an ICT course. Take up was higher in the primary schools where 83% of teachers did a course, compared with 65% of post primary teachers. These courses resulted in significant increases in the levels of skill reported by teachers. By 2000 90% of primary teachers and 73% of post primary teachers were reported to have some computer skills.

There was a marked increase in the level of access to ICT in schools. For example in 1998 50% of primary schools reported that pupils in third class made use of ICT, but by 2000 this had risen to 86%. In post primary schools 54% of students in second year had access to ICT in 1998, and this rose to 67% by 2000.

The survey showed little gender difference in terms of teachers' ICT skills. The same proportions of male and female teachers were reported to have "some computer skill" in both primary and post primary schools. More of the male teachers in primary schools had "some Internet skill", but the differences were small. Teachers' age was not recorded in the national survey, but some indication of the age pattern can be drawn from the teachers in the sample schools. In these schools the older teachers had slightly higher levels of computer skill although the differences were small.

## IMPACT ON INTEGRATION

In order to explore the impact of teacher training on integration an "index of integration" was constructed. In each school every subject on the curriculum was given a score ranging from zero to 3 depending on the frequency of ICT use. The sum of these scores for all subjects provided a single numerical indicator of the level and frequency of use of ICT in the school. The average integration score was 12.6 in primary schools, and 8.3 in post primary schools.

Primary schools where no teacher had participated in training had a lower average integration score (9.8) than schools where at least one teacher had been trained. In the post primary schools a similar pattern appeared. Those schools where no teachers had

been trained had an average integration score of 6.8, while those where 20 or more teachers had been trained had scores of over 9.

These figures suggest that there is some connection between training and ICT integration. However a number of other factors appear to be at least as strongly related to levels of ICT integration. Three factors that appear to be related to the level of integration are:

- Teachers in the school having done a higher degree in ICT in education.
- School having participated in a pilot project (even if not related to ICT)
- The school principal's use of email.

In primary schools where no teachers had a higher degree in ICT the average integration index was 11.9, while in those schools where one or more had a higher degree the average was 13.4. In post primary schools the same pattern emerged, with integration index rising from 7.6 for those schools with no teacher with a higher degree in ICT in education to 9.4 for those where 3 or more teachers had such a qualification.

A second key factor was participation in an ICT pilot project. As might be expected those schools that had been part of an ICT pilot had higher levels of integration than other schools. However schools that had participated in an innovative project unrelated to ICT also showed higher levels of ICT integration.

The level of ICT skill of the school principal also appeared to be related to the level of integration. School principals were not asked to indicate their level of skill, but were asked to indicate whether they used email "never", "occasionally" or "frequently". Schools where the principal made frequent use of email had higher integration scores than other schools at both primary and post primary level.

## CONCLUSION

These surveys provide good news for the policy makers. IT2000 has resulted in more equipment and connectivity, high participation in training, increased teacher skill and increased usage in schools. Basic skills training is clearly an important pre-requisite for ICT integration and schools with high participation in training can be seen to have more use of ICT in teaching.

However integration requires more than simply basic skills. Other factors such as the schools' vision, leadership and readiness to change also play an important role. The survey data does not provide accurate measures of these variables, but the crude proxies available suggest that these factors play at least as great a role as teacher skills. If these are an accurate guide, future training will need to focus on building a pedagogical vision for ICT, aimed at both teachers and principals.

# REFERENCES

OECD 1999, Education Policy Analysis.  Centre for Educational Research and Innovation, Organisation for Economic Co-operation and Development, Paris. Chapter 3, Technology in Education.