Educational research into the use of ICT in initial teacher training (ITT) – a selection of abstracts and further sources.

Introduction

This document presents a selection of research into ICT in ITT. Topics covered include:

- the use of computer conferencing by student teachers;
- using ICT to provide direct links between university and classroom;
- telementoring of school pupils by student teachers;
- the effects of compiling electronic portfolios on students.

Far from being an exhaustive literature review, this collection of abstracts and list of further sources should be seen as a starting point for those interested in the theme of ICT in ITT. Becta’s Evidence and Research team welcomes discussion, and indeed, suggestions for further inclusions.

Over 50 articles and reports of relevance were selected, from which 10 have been abstracted below. A list of further sources follows the abstracts, after which there is a tabular presentation of the main findings of the shortlisted 10.

ICT has been made an integral part of the ITT National Curriculum and students must demonstrate that they use ICT effectively in their teaching. They must also pass a skills test in ICT before being awarded qualified teacher status. This ensures a continuing high level of interest amongst researchers, and there is no shortage of material. It is a broad area though, and many potential factors may come to bear on a student teacher’s likelihood to incorporate ICT in their teaching – how ICT is introduced to them during their professional training, personal access to ICT, and the existence of role models to name but a few. Consequently there are many different strands which may be researched, resulting in a diverse range of literature.


Examines the effects on student teachers of using video as an observation tool. 62 student teachers on classroom placement were divided into equal groups. In one group they supplemented their normal observations of teaching by constructing digital video case studies. These were made by recording their mentors, downloading the video to their computer, reviewing and editing it. The control group only made the normal observations. Participants' ability to identify, interpret or analyse evidence of effective teaching was then assessed using an online tool that required written responses to other video case studies. Students who had been engaged in making video case studies significantly outperformed control students in their interpretations of effective teaching. (US)


A study of the use of computer conferencing by student teachers. Online discussion was developed with the initial aims of fostering ICT skills, providing a venue for reflective practice, and reducing the sense of isolation often felt by students dispersed on teaching practice. The study's focus was 12 students in the 2000-2001 cohort, analysing the dialogue and interactions between them and their tutor in online conferences. It found that a community of practice among student
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teachers began to develop, where individuals could share their own school experiences and from which they could readily obtain information, advice and support. The value that students found in conferencing was evident from the volume and nature of dialogue, and their enthusiasm to continue online discussions once in post. *(Northern Ireland)*


Discusses the use of an electronic discussion group by student teachers. 68 students of limited computer experience participated, their messages were collected and analysed, the students were surveyed, and a group debriefing session held. It was found that:

- the environment led to high levels of participation;
- students started to look to each other for support and guidance and shared ideas;
- students on school placement used high level reflection skills while integrating new information and expanding their knowledge.

It seems that the faceless medium for teaching and learning provided by a discussion group is less intimidating to students than the classroom, and that consequently they are more likely to participate. It also supports the development of a community of caring individuals, where thoughtful interaction can take place. *(US)*


Investigates the benefits and limitations of using video conferencing technology to assist in the supervision of students on teaching practice. Four students, two teachers, a paraprofessional and a university supervisor took part. Qualitative analysis was based on the supervisor's field notes, and interviews with students and teachers. Perceived benefits found include:

- increased contact by students with university staff;
- face-to-face interactions;
- the opportunity for university staff to provide more immediate feedback to students based in schools;
- when used for supervision the conferencing technology was felt to be less disruptive to students than having a live onsite supervisor.

The main drawbacks were technical problems and overcoming the fear of being on camera. *(US)*


Investigates whether computer conferencing can be successful between ITT students from different educational systems, and without tutor moderation. Considers to what extent computer conferencing can raise confidence in the use of ICT and may encourage reflective practice among student teachers. The report also examines the extent to which online discussion may provide emotional support and stress relief for students on teaching practice. 29 student teachers in Northern Ireland used computer conferencing to compare experiences relating to their teacher education course and to establish communication with their counterparts in the Republic of Ireland. Data was collected via questionnaire and interviews. It was found that computer conferencing improved students’ ICT skills, promoted reflective thinking, encouraged debate.

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about classroom situations and provided a means of peer support. Links were successfully established between students on both sides of the border, and in most cases participation levels remained high. (*Northern Ireland, Republic of Ireland*)


Describes measures taken to link student teachers with school pupils, thereby connecting activities in their university based work with what happens in classrooms. Students were provided with the opportunity to access the thinking of children and teachers while exploring the potential of ICT. In one project an audio conference with children was held, prior to making visits to a school. This medium highlighted aspects of communication, and led to students developing techniques of questioning and conversation with children. In another project, students established communication through email with a pupil. As well as learning more about children and their classrooms, students gained an insight into the realities of ICT in school from pupils lacking full access to a computer. They also appreciated having real life contact with children and by using email the chance to get to know them without preconceived ideas as to their abilities. (*New Zealand*)


An experiment in telementoring, where student teachers linked with pupils over the internet using a text based environment. Seven student teachers were divided amongst four classrooms with pupils aged from six to 12. Communication was based around a variety of collaborative online science investigations. The telementors' notes were analysed, they were also interviewed, and two group discussions held between telementors and teachers. Text based communication with the youngest class proved impractical due to the children's undeveloped literacy skills. The students showed their inexperience in supporting pupil led investigations and often over directed, or even unwittingly closed down threads of discussion through the messages that they wrote. The studies engaged student teachers in a non-traditional pupil-centred form of education which they had previously encountered at a theoretical level only. They found it professionally valuable, and telementoring may be a useful means for forming tighter links between educational theory and practice. (*Canada*)


Reports an investigation into the effectiveness of a module for PGCE students. The module was concerned with how the use of technology can support and enhance children's learning. An initial audit of students' ICT skills (54 participants) was compared with an exit audit (48 participants) during the final week of the module. Information was also taken from questionnaires completed by students and school mentors, discussions with mentors, the students' placement reports and a survey of student views. As measured by the audits, the skills and perceived confidence of the students improved a great deal. Comments from mentors showed that students were willing to use ICT in classrooms, often to good effect, and that this compared favourably to earlier cohorts. The module was deemed to be effective, but with certain provisos. (*UK*)

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Education students were required to produce electronic portfolios, consisting of websites, teaching case studies, databases, concept maps and more. Students were evaluated on the basis of these. 23 participated in pretest and posttest surveys to assess their perceptions of the value of the portfolios, and their ideas of how technology can enhance teaching and learning. Extensive planning was required to support the project, but it became clear that the preservice teachers were motivated by the use of electronic portfolios, and found them enjoyable. The experience also had an impact on their attitudes to technology in general: students became more positive about the potential for using ICT with their own classes, looking forward to exploiting the variety of learning styles available, as well as the motivational force of technology in the classroom. (US)


Describes a study that examined changes in preservice and inservice teachers’ attitudes towards computers before and after their completing a basic computer course. 114 preservice and inservice teachers receiving professional training were surveyed, and it was found that their attitudes to ICT significantly improved after the course. They gained in confidence when using computers, increased their awareness of ICT and of how it might be integrated into the curriculum. Also explored are other factors that contributed to their computer use: these included having a home computer, the use of ICT by their tutor, and the environment in the schools in which they worked. (US)

Further sources


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http://dwc.hct.ac.ae/publications/elearning/Bonk%20Articles,%20Reports,%20and%20Chapters/Alternate%20Format%20c,%20Bonk%20K-12%20Articles%20and%20Chapters/Cases%20online%20and%20COW--entitled-%20to%20dream--cyberlearning-ref.doc

http://www.iste.org/jcte/pdfs/te17416bru.pdf


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Summary table of educational research into the use of ICT in initial teacher training (ITT)

This summary table provides a quick reference guide to the main findings from selected documents of a managed literature search carried out by Becta in April 2003. It complements the more detailed bibliography by identifying the key findings, age/level and sample size wherever possible for each abstracted reference.

<table>
<thead>
<tr>
<th>Key findings</th>
<th>Sample</th>
<th>Summary</th>
<th>Full Reference</th>
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<tbody>
<tr>
<td>- using digital video to construct case studies during teaching observation develops students' capacity to interpret effective pedagogy</td>
<td>62 student teachers</td>
<td>One group of students supplemented normal teaching observations by creating video case studies, while the other acted as a control and only made the normal observations. Their capacity to interpret evidence of effective teaching was subsequently assessed. (US)</td>
<td>BECK, R.J., et al., 2002. Effects of videocase construction on preservice teachers' observations of teaching. <em>Journal of Experimental Education, 70</em> (4), pp. 345-361. <a href="http://pt3.gse.uci.edu/pt3research/Beck%20Papers/3Video_Study.pdf">http://pt3.gse.uci.edu/pt3research/Beck%20Papers/3Video_Study.pdf</a></td>
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<td>- computer conferencing can support the development of a community of practice where individuals share experiences, obtain information and receive support</td>
<td>12 student teachers</td>
<td>Online discussion was developed among students, and the resulting dialogues and interactions between students and tutor were analysed. (Northern Ireland)</td>
<td>CLARKE, L., 2002. Putting the 'C' in ICT: using computer conferencing to foster a community of practice among student teachers. <em>Journal of Information Technology for Teacher Education, 11</em> (2), pp. 163-179.</td>
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<td>- the faceless and non intimidating nature of an online discussion group can lead to high levels of participation where students gain support and ideas from each other, and reflect on their experiences of teaching practice</td>
<td>68 student teachers</td>
<td>Use of an electronic discussion group was examined. Messages were collected and analysed, students surveyed, and a group debriefing session held. (US)</td>
<td>DUTT-DONER, K.M., POWERS, S.M., 2000. The use of electronic communication to develop alternative avenues for classroom discussion. <em>Journal of Technology and Teacher Education, 8</em> (2), pp. 153-172.</td>
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<td>• video conferencing enables increased face to face contact between students and university staff, allowing more immediate feedback</td>
<td>four students, two teachers, one paraprofessional one supervisor</td>
<td>Video conferencing was used to assist in the supervision of students on teaching practice. Analysis was based on the supervisor’s field notes, and interviews with students and teachers.</td>
<td>FALCONER, K.B., BENJAMIN, L.K., 2002. A qualitative analysis of the benefits and limitations of using two-way conferencing technology to supervise preservice teachers in remote locations. <em>Teacher Education and Special Education</em>, 25 (4), pp. 368-384.</td>
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<td>• it is less disruptive for supervision than having a live on site supervisor</td>
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<td>• students’ ICT skills improved</td>
<td>29 student teachers</td>
<td>Computer conferencing was used amongst education students in Northern Ireland to share course experiences and communicate with counterparts in the Republic. Data was collected via questionnaire and interviews.</td>
<td>GALANOULI, D., COLLINS, J., 2000. Using unmediated computer conferencing to promote reflective practice and conference-building in initial teacher education. <em>Journal of Information Technology for Teacher Education</em>, 9 (2), pp. 237-254.</td>
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<td>• reflective thinking was promoted</td>
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<td>• debate about classroom situations took place</td>
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<td>• conferencing provided a medium for peer support</td>
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<td>• students learnt about the realities of ICT in school</td>
<td>student teachers, five to eight year old pupils (unknown number)</td>
<td>Communications links were established between student teachers and school pupils, first using audio and then email. A visit to the school itself followed.</td>
<td>GRAHAM, S., THORNLEY, C., 2000. Connecting classrooms in pre-service education: Conversations for learning. <em>Asia-Pacific Journal of Teacher Education</em>, 28 (3), pp. 235-245.</td>
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<td>• student developed techniques of questioning and conversation with children</td>
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<td>• students showed their inexperience by either over directing or closing down discussion threads through the messages they wrote</td>
<td>seven student teachers, practising teachers, six to twelve year old pupils (unknown number)</td>
<td>A telementoring experiment where students linked with pupils using a web based environment. Communication was based around collaborative online science investigations. Telementors’ notes were analysed, interviews conducted, and group discussions held between telementors and teachers. (Canada)</td>
<td>HEWITT, J., 2002. Pre-service teachers as telementors: exploring the links between theory and practice. <em>Journal of Information Technology for Teacher Education, 11</em> (1), pp. 7-22.</td>
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<td>• this first practical involvement with pupil centred education proved to be a valuable learning experience for the students</td>
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<td>• skills and confidence improved</td>
<td>54 student teachers</td>
<td>An investigation into the effectiveness of an ICT module for PGCE students concerned with how ICT may be used to support and enhance children’s learning. Students’ skills were audited before and after completion. Students and mentors completed questionnaires and held discussions. Students’ placement reports were also examined. (UK)</td>
<td>PRITCHARD, A., 2001. Meeting the requirements of the Initial Teacher Training National Curriculum for the use of information and communications technology in subject teaching, with one year’s cohort of postgraduate primary trainees. <em>Journal of Information Technology for Teacher Education, 10</em> (3), pp. 293-309. <a href="http://www.triangle.co.uk/jit/index.htm">http://www.triangle.co.uk/jit/index.htm</a></td>
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<td>• students became willing to use ICT in classrooms, often to good effect</td>
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<td>• there was a favourable comparison to earlier students who had not benefited from the module</td>
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<td>• students were motivated by completing electronic portfolios</td>
<td>23 student teachers</td>
<td>Students produced electronic portfolios including, amongst other things, websites, teaching case studies, databases and concept maps. These were used for assessment. Students were surveyed as to their perceptions of the portfolios, and the place of ICT in teaching and learning. (US)</td>
<td>WRIGHT, V.H., et al., 2002. Challenges of electronic portfolios: student perceptions and experiences. <em>Journal of Technology and Teacher Education, 10</em> (1), pp. 49-62.</td>
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<td>• there was a positive effect on attitudes to technology and how students saw themselves using it in the classroom</td>
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<td>• confidence in using computers increased</td>
<td>114 students and qualified teachers</td>
<td>Both student teachers and those already practising, completed a basic computer course. Their attitudes to computers were surveyed before and after. (US)</td>
<td>YILDIRIM, S., 2000. Effects of an educational computing course on preservice and inservice teachers: a discussion and analysis of attitudes and use. <em>Journal of Research on Computing in Education, 32</em> (4), pp. 479-496.</td>
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<td>• awareness was raised of how ICT might be used in the curriculum</td>
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