

An analysis of educational studies undergraduate students' perception of ICT: a case study

Ioanna Palaiologou

Nottingham Trent University

Corresponding author: ioanna.palaiologou@ntu.ac.uk

Abstract

The rapid increase in the use of ICT in education and the changing demands of the labour force requiring transferable skills provided by educational studies is an emerging reality. Even though in recent years there has been an upsurge of interest in the use of new technologies in higher education, there is as yet relatively little research on the ICT skills of undergraduate students in educational studies courses or how educational studies degrees can offer ICT skills to their students as a part of their study programme. Thus this research project was two fold. Firstly, it was intended to identify the ICT skills of Level 5 undergraduate students. The aim was to investigate students' self perception of their ICT skills over a period of three months. Secondly, it aimed to investigate how students' self perception changed over a module created to improve their ICT skills. The research project attempted to assess students' self perception of their ICT skills using an ICT Audit test prior to and after the module had finished. The statistical nominal analysis of the ICT audit revealed that the Level 5 students with computer anxiety or less preparation for using computers are most at risk of not taking advantage of the wide range of universities ICT resources. However, the qualitative data revealed that these students overcame their computer anxiety when ICT is purposeful and contextualised.

Introduction

Since the introduction of transferable skills and learning outcomes in higher education, all the undergraduate degrees aim to meet these learning outcomes through their study programmes. The delivery of the modules, as well as the ways of assessing students, demonstrates how these learning outcomes/transferable skills are met. One of the main learning outcomes/transferable skills in all courses is the use of a range of ICT skills and their application. Moreover, the advances of ICT in higher education has been perceived as the main tool to improve quality, reduce work load for students and academic staff, increase access to a range of resources in order to facilitate students' progress, and finally increase flexibility of learning.

Furthermore, even though in recent years there has been an upsurge of interest in the use of ICT in higher education, Educational Studies students appear to meet this learning outcome by accessing and using virtual learning environments, such as Blackboard, accessing and using electronic materials and word processing their coursework. The potential of ICT as a tool in higher education and specifically in Educational Studies degrees is promising. However, a qualitative study of a web based distance education course by Hara and Kling (2000) revealed that students experience feelings such as frustration, anxiety, confusion and distress when using ICT.

Rae (2004) provides a rationale on why students might experience these feelings. He claims:

Skills associated with ICT are increasingly taken for granted at all stages of a student's university existence. They are becoming a necessity even to gain university entry through filling in an on-line UCAS entry form and are important to the student for using the Internet to check on the progress of their student loan or to word-process their dissertation. There is a growing interest by universities in capitalising on these "taken for granted" ICT skills by providing e-learning resources for students to access and use outside the conventional lecture theatre setting. (2004:1)

He continues by raising the fundamental question of whether academic staff overestimate undergraduate students ICT competencies and whether university students are able to make the best use of the ICT resources. The existence of ICT in higher education and particularly in Educational Studies Degrees is a fact. However, our understanding of what constitutes ICT may vary from students understanding of ICT.

This paper views ICT as the use of technologies or technological tools in order to access resources, communicate ideas, explore and share knowledge. ICT tools, such as e-learning, virtual learning environments, the web, computers are purposeful and mastering the use of these tools should not be the end of the process. It should not be the end product, it should not be a learning outcome to be met but an evolving process, a tool for students to use in discovering and mastering knowledge.

In the work of Simon Rae (2004), researching where, when and how university students acquire their ICT skills, it is suggested that the majority of students' ICT skills were either taught by family and friends and learnt in the context of general leisure or interest activities, not in an academic or focused educational context.

On the other hand Veen (2003) argues that the young generation is gradually becoming the "net generation" of "homo zappiens", that the only technologies they are capable of using are the ones that they grow up with such as the TV remote control, PC mouse and mobile phones. The risk is that the ICT skills such as word processing, scanning, processing information obtained by previous generations may decline in future generations.

While there has been a great attempt from all universities to integrate ICT more and more in their study programmes in order to help undergraduate students to develop their ICT skills the remaining questions are how much undergraduate students are using all these facilities and to what extent. These are broad questions which this paper does not attempt to answer, However, what this paper does attempt to investigate is to what extent Educational Studies (non QTS) students are able to follow the evolving nature of ICT and to what extent they are using ICT or are they simply computer users?

Thus the aim of this research project was two fold. Firstly, it aimed to identify second year /Level 5 Educational Studies students self perception of their ICT skills and secondly to investigate whether there will be any changes in students perceptions of their ICT skills through the attendance of a module. This module was designed with two purposes. Firstly, it was aimed to discuss the pedagogy and the implications of ICT in the early years education

and secondly to help students to acquire ICT skills and become confident and competent users of it.

Background of the study

Three factors were considered prior to the study. First, there was an attempt to avoid the assumption that we know students ICT skills and abilities. Thus an ICT Audit was developed in order to investigate students ICT skills and competencies. One of the main aims was to define with the students what we meant by the term ICT or IT capabilities that had come into common usage since 1990 (NCC, 1990). ICT was defined in terms of attitudes, values curriculum, design, pedagogy and styles. It was also defined as an evolving process due to the nature of ICT as was explained in the introductory section. The crucial question was whether the aim to help students to acquire these skills meant a transfer of students into technicians of ICT or whether the main aim of the module was that students become competent ICT users in a contextual way. From the beginning, when the module was in draft form the ultimate aim of the module became clear. The study programme and the assessment methods of this module were designed around the main aim which was to help students to understand the purpose of ICT, not to be afraid or anxious to use it in any context and moreover to see the applicability of ICT in their professional development as well as the evolving nature of ICT.

Second, the module was designed on an introductory basis and the level of the module would have increased as the taught sessions were progressing depending on the responses of the students. Finally, students were constantly asked for on going evaluations of the module in order to identify any issues.

ICT Audit

The purpose of this audit was to assess students' perceptions of their ICT skills and to identify students' attitudes towards ICT. The ICT Audit contained five sections: general computer skills (such as the ability to manage files, install hardware, install software, use of CD-writer), word processing (being able to start a new document, save, edit, format, insert pictures and tables), data handling (the ability to access data, produce spreadsheets and graphs, create databases), presentation and graphics (knowing how to use power point, Paintshop Pro, a digital camera), information services (being conversant with the web, the internet, electronic journals and on-line libraries)

The ICT Audit was applied to all students prior to the module and after the module so comparison of students' responses could be made in order to investigate whether there were any changes in students' perceptions of their ICT skills.

Pedagogy and structure of the module

The module was named: "ICT and the Early Years Learning Environment". In the main introduction to the module the pedagogical value of ICT in the early years was stated. There was a discussion of ICT as a part of our every day life. Recently a substantial body of research (Abbot, Lachs and Williams, 2001; Cohen, 1993; Davis and Shade, 1999; Alliance of Childhood, 2000; Haugland, 1999) has focused on the use of ICT in early years education. It has been found that the use of ICT improves young childrens' acquisition of basic key skills, such as literacy, numeracy and creativity (Turbill, 2001; Wright, 2001;

Yelland, 1999). Thus this module was designed around the main key issues of introducing ICT in the early years and it aimed to explore the pedagogy of ICT in the early years learning environment. The use of the Internet (e-mail, web), CD ROMs and software packages was explored in relation to the pedagogy of the early years. By the end of the module it was expected that the students would understand the pedagogy of ICT in the early years learning environment, as well as improving their own IT skills and that they would be able to use ICT in order to develop activities for early years learning. This purpose met the fundamental aim of understanding the applicability and the relevance of ICT. It was assumed that when students understand the reasons for developing their ICT skills then they would be motivated to explore ICT and develop these skills further.

The main elements this module allowed the students to demonstrate an understanding of the pedagogical uses of ICT in the learning environment, to improve their IT skills, to improve their presentation skills, demonstrate an understanding of Virtual Learning Environment (such as Blackboard), explore new pedagogical practices for the early years and debate these practices and finally, demonstrate evaluation skills. The module was designed with the hope that students would be engaged in a discussion around applicability and relevance of ICT in the early years settings.

Careful consideration was given to the establishment of the learning outcomes/transferable skills. The main issue was not to overwhelm students with learning outcomes that meet the development of ICT. Thus the learning outcomes were divided into eight main categories in order to meet the QAA Benchmark Statements for Educational Studies. It was suggested that as students study this module they will develop communication skills such as written communication (e.g. appropriate language and form, accuracy, precision and concision); oral communication (e.g. communication of ideas to different audiences); interactive discussion (e.g. ability to listen actively and persuade rationally); and presentation skills. They would also develop their ICT Skills (general IT skills; the ability to use electronic search and retrieval skills in order to access relevant information; the ability to evaluate this information; and the ability to select, use and evaluate computer systems and software). In addition students would develop collaboration, group-work and problem solving.

Throughout the module a lot of support was offered in order to enable students to progress further in terms of their learning, focusing on their ability to evaluate current knowledge and skills and to set targets for improvement; their ability to locate and use sources for support; their ability to evaluate progress; and their ability to take increasing responsibility for managing their own learning.

Finally, students were encouraged to locate information from a wide range of sources, to work independently and autonomously as well as part of a group, and acquire self confidence and questioning perspectives on theories and practices around ICT.

There was clarification of how students would meet these learning outcomes. For example, by exploring their ideas during a session in front of the whole class or in a small group so they would need to use appropriate language to articulate their ideas. Power point presentations are typical of the applications they would need to apply in the work place. The short presentations that they were going to practice during the module aimed to help them obtain these skills.

For both their assignment and their further reading they were asked to search the Internet, a range of software packages and data bases and to be able to use CD-ROM's. This requires

IT skills and the ability to use IT appropriately. Moreover, the group work requires team skills such as turn taking and listening.

To a large extent, this module involved using evaluating and analysing skills when different types of children's software programmes are involved. This enabled them to be able to work with IT confidently in the professional environment. During the module a number of criteria for selecting IT programmes for children were discussed and analysed and students were asked to evaluate these criteria according to the needs of children age groups.

During this module a number of tasks were set and undertaken by students, with the main task being their assignment. In order to succeed in the tasks they were asked to read the proper materials, to manage their time and set realistic targets. It was decided to return to the initial aim of the module which was to help students to understand the evolving nature of the ICT and to enable them to obtain confidence with their ICT skills. Thus the assessment of the module should capture precisely this aim. Two case studies scenarios were developed and the students had a choice of topic. In addition they would present a five minute discussion plan of their essay. The case studies offered a context so students could explore their opinions about ICT.

Case study 1

"Consider your self a head teacher of a pre-school setting. You have been offered a grant in order to introduce ICT in your school. You need to prepare a report of how you are going to use ICT for pedagogical purposes in your school."

Case study 2

"Consider your self the head teacher of a pre-school setting. You have been offered a grant in order to introduce ICT in your school. You need to prepare a report of how you provide staff development for this event."

The study programme was developed around the key themes and elements of using ICT in the early years learning environment. It started with a discussion of the historical development of ICT in teaching and learning and moved on to the pedagogy of ICT. Once the pedagogical value of ICT in the early years learning was established the variety of ICT was explored in terms of using it in the early years curriculum. Thus how ICT can promote literacy, numeracy, creativity and communication in the early years was discussed, then some examples of good practice were provided as well as a discussion of how parents can be involved in the use of ICT with their children. The concluding sessions allowed students to critically question and evaluate the wide range of ICT in usage in the early years.

Methodology and data collection

The main aim of the study was to assess student's self perception of their ICT skills and to investigate whether there were any changes after completion of the module. As mentioned earlier, students were asked to complete an ICT audit prior to and after taking the module. The data from the ICT audits were gathered and a statistical analysis took place. Understanding students' perceptions of their ICT skills would have enabled us to develop the module in such a way that we would appreciate the attitude of the students towards such a module.

During the module the students on going evaluation comments were gathered in order to provide qualitative data for this small scale research project. Throughout the module a great emphasis was placed in the interactive aspect of ICT and students were constantly encouraged to be involved in group interaction.

From the 38 students enrolled to attend this module, 32 ICT audits were collected. Of the students undertaking the module, all had prior experience with word processing, internet or other multimedia packages as they were Level 5 (year 2) students. 86.4% of the students had a computer at home and 67.0% had access to the internet from home.

Analysis of results

The data from the ICT Audit conducted prior to the module revealed that students' self perception of their ICT skills was very low and there was a general negativity towards ICT. The areas that students were afraid of and where anxiety levels were high were:

- accessing and using electronic journals (62.0%);
- using spreadsheets (34.0%);
- presentations using PowerPoint and graphics (24.0%);
- installing software (24.0%);
- EXCEL (21.0%);
- ACCESS (21.0%);
- inserting tables and pictures (19.8%);
- using digital cameras (19.8);
- the use of e-mails especially opening files, adding and sending attachments (14.0%);
- Blackboard (12.0%).

They felt confident using Word in order to process their essays (92.0%), using the internet (87.0) and sending and receiving e-mails (87.0). However, it came as a surprise that two students had never used e-mail ("I do not do e-mails!", "I do not have a clue of how to use e-mail and I have not said this to anyone"). Also there were three students who had never accessed Blackboard as they were not able to understand how it works. The majority of the students had never searched electronic journals, on line libraries, and e-books in order to find information for their coursework (62.0%). The main source of finding information for their coursework was coming from www.google.co.uk (46.2%) and a relatively high percentage of students (19.8%) had never used any electronic search machine to find information and articles for their coursework. These students claimed that all their information for their coursework was coming from searching the library and the books.

Rather surprisingly a low percentage of students (0.8%) said that they did not know how to use the library system in order to find books. They were not aware how to use keyword, or authors and they used to rely on their friends in order to find information or on the indicative reading lists of the module handbooks. This takes us back to what was said in the introduction that there is a huge assumption that students enter university with competent ICT skills. However, the data from the ICT audit revealed that only a 6.2% were feeling confident of their ICT skills.

In the after module audit the results had changed greatly. The majority of the students (91%) said that they overcame their anxiety of using ICT, especially electronic journals (34.0%), PowerPoint (93.0%), inserting tables (92.0%), create database (71.8%). The data revealed that a high percentage of students (54.9%) found ICT a social activity that enhances collaboration among peers. It helped them to achieve their goals and they confidently claimed that it enabled them to obtain better grades. However, they said that in order to understand ICT and to overcome fears, anxiety and stress they needed to understand the context of the ICT and its applicability. Despite prior experiences in using a computer they claimed that after this module they had developed a further interest in and improved attitudes towards the evolving nature of ICT. Here are some quotes of the qualitative data that demonstrates precisely this:

I felt I have confidence in using ICT, I meant computers though. Taking this module has changed my thinking of using ICT in personal life and in professional (for the better!). (original emphasis).

This module prepared me for the work force. With my "newly" acquired ICT skills I feel more confident now around a computer and not only.

Have become slightly more confident because of this module and feel I can at least give things a try even if I get it wrong.

I started with negative feelings towards this module because my ICT skills were not good. Yet I feel I gained a lot, I am more confident with ICT use and enthusiastic about it. I never thought I would like technology.

Overall, there was a significant increase in students self perception of their ICT skills. In general computer skills there was an increase of 8%, in word processing there was a smaller increase of 3% because most of the students scored higher prior to the module. In the data handling section there was an overall increase of 12%, in presentations and graphics there was an increase of 11.9%, in information services there was the greater increase in terms of students self progress of 23%.

This can be explained as students' notions of what constitutes ICT changed considerably through out the module. The main findings were that students started with an anxiety and fear towards this module. However, they demonstrated the ability to understand ICT, became keen and performed within a context and purpose. The majority of the students used ICT as a tool for other modules as well. They took responsibility of their own learning, they explored other ways of using ICT and they overcame the anxiety of using unfamiliar ICT tools in order to achieve their purpose. The fact that a wide range of ICT was introduced within a context and for a purpose enabled students to understand that they do not need to

master ICT in order to use it. Students realised that they can explore ICT and experiment around it. They also realised that they can explore and experiment with ICT with young children in their professional life without mastering it. From the anecdotal notes, every time a session was finished a large number of students wanted to stay in the computer room to try out software or a CD-Rom.

Students also showed evidence of starting to evaluate software and understand the limitations as well as what they can do with ICT. They overcame the fear and embarrassment of stating that they are not confident with their ICT skills and realised that ICT need not be a solitary activity. One does not necessarily have to be on your own in front of a computer. ICT can increase social interaction, especially for shy and not very confident students.

ICT is changing rapidly thus the main purpose of this module was not to teach students how to use a particular software or hardware programme but to help students to obtain the ability to follow the applicability and the relevance of ICT, and to be able to overcome anxieties of anything new and anything unknown around ICT. It was found from the on going evaluations of the module that students' perceptions of ICT changed and they moved away from the technical knowledge of ICT as users and became more adventurous in exploring it.

The main concern explored in the beginning of this paper was that sometimes technology and university studies do not walk a parallel way and the relationship between educational studies students and ICT is often neglected in the name of the pedagogical values and principles. However, incorporating ICT as part of the curriculum of the study programme overcame the gulf.

Conclusions

This small study found that the majority of Educational Studies Students (non QTS) had anxieties about using ICT and were at risk of not making best use of the universities' ICT resources as part of their student experiences and academic studies. There was also a risk that academic staff do not realise these anxieties and are therefore unable to meet the needs of these students. The aim of this study was to identify students' perceptions of their ICT skills in order to address the requirements of learners to enable appropriate curriculum development within the study programme. Despite the small sample of this study and heavy reliance on anecdotal information, it yielded some interesting conclusions.

Firstly, ICT skills acquired by the students prior to the university entrance were not generally sufficient to allow them to cope with the requirements of the university course. This small study has highlighted that anxieties around the use of ICT are yet an additional source of stress for new university entrants. This study also illustrated that this fear increased as the course progresses. If students conceal these fears, and anxieties they will fail to take full advantage of the opportunities offered by ICT.

Secondly, perceived usefulness and perceived easiness were found to have significant positive relationships with students' attitudes toward ICT. In other words, students are more likely to increase their confidence in using ICT and enhance their skills and develop positive attitudes towards ICT when they become aware of the purposes and relevant application of ICT. More specifically, when students use computers to complete essays and projects they become more confident with their ability to use the computer and this will also lead them to believe that ICT is a useful and easy learning tool. The same applies when they start

searching electronic journals or any other tool from the wide range of ICT. When students realise that ICT can help them to communicate ideas, can help them to increase their grades and explore knowledge they will eventually become frequent users.

Thirdly, evidence gathered throughout this small study has confirmed that students who perceive ICT as both useful and easy to use and have understood its evolving nature are more likely to develop a positive attitude towards ICT. They are also more likely to admit their lack of knowledge in certain areas.

Finally, students who perceived ICT as a social interaction and a social activity overcame their anxieties in a shorter period of time than those who viewed ICT as a solitary activity.

To conclude, this study highlights students' self perception of their ICT skills. It was found that many students had a low self perception of their abilities in and negative attitude towards ICT. However this changed during this module. Most students came to realise that ICT can be a useful tool and an aid to learning. In addition the study shows that it is important for educators to show positive attitudes and behaviour towards the use of ICT which will help to develop similar attitudes in their students. As universities increasingly incorporate a wide range of ICT in teaching and learning facilities, students' habits will change. However, educators in higher education should not assume the level of students' ICT skills and they should work along side students in order to enhance study habits and positive attitudes towards ICT.

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