Dissertation Writing

A Practical Guide

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Introduction

This guide to writing your M.Ed. dissertation gives some simple and practical advice on getting started, getting organised, dividing the huge task into less formidable pieces and working on those pieces. It includes a suggested structure and a guide to what should go in each section. This guide is designed to answer any of the practical questions that may arise in the course of your dissertation writing.

Getting Started - Writing a Dissertation Outline

Writing a dissertation seems a long and difficult task but it will be more manageable if broken down into smaller sections. Writing a dissertation outline will help you make such a start. A dissertation outline is several pages containing chapter headings, sub-headings and perhaps some other notes and comments. Once you have a list of chapters and under each chapter heading a reasonably complete list of things to be reported or explained you have struck a great blow against writer's block. When you sit down to type, your aim is no longer a dissertation but to write a paragraph or section about one of your subheadings. It helps to start with a manageable one: this gets you into the habit of writing and gives you self-confidence. Often the Methodology chapter is a good starting point: explain carefully what you did and how in a logical order.

Once you have made an outline of the entire dissertation you need to make an outline of each chapter. To do so assemble all the information or data that you will use in it and put them in the most logical order. Once you have found the most logical order, note down the key words and use these as sub-headings. These sub-headings provide a skeleton for your chapter outline. The way you structure your data (the headings you use, etc.) will also be informed by the theoretical framework that you have constructed from your literature review.

Once you have an outline, discuss it with your supervisor. This step is important as s/he will have useful suggestions. Once you and your supervisor have agreed on a logical structure, you will need a copy of this outline to hand when writing the chapters. This will help you keep to the agreed structure. Agree a timetable with your supervisor: a list of dates for when you will give the various drafts of each chapter to him/her. This structures your time and provides intermediate targets. If you merely aim to have the whole thing done by some distant date, you can deceive yourself and procrastinate more easily. Setting short-term targets will focus your attention.

Organising Your Dissertation Writing

To help organise your dissertation writing you will need some sort of filing system. Open a word file for each chapter *and one for the references.* You can put notes in these, as well as text. While doing something for Chapter n, you may think "Oh I must refer back to/discuss this in Chapter m" and so you put a note to do so in the Chapter m file. Or you may think of something interesting or relevant for that chapter. When you come to work on that chapter, the more such notes you have accumulated, the easier it will be to write. Make a back-up of these files at least every day.

You should also have a physical filing system: a collection of folders with chapter numbers on them. This again will help you to organise your information and data. Your files will contain notes, references, papers, journal articles and web references relevant to that chapter. If you have a collection of audio tapes you will need to have a storage system so that you know when it was recorded and who is being interviewed.

Dissertation Drafting

It would be nice if clear, precise prose leapt easily from the keyboard, but it usually does not. It is easier to improve something that is already written than to produce text from nothing. Start by putting down a draft (as rough as you like) for your own purposes, then clean it up for your supervisor to read. Word-processors are wonderful in this regard: in the first draft you do not have to start at the beginning, you can leave gaps, you can put in little notes to yourself, and then you can clean it all up later. Your supervisor will expect to read each chapter in draft form. S/he will then return it to you with suggestions and comments. As you write your dissertation, your writing is almost certain to improve. Often several drafts are required before a satisfactory end product is reached.

Writing Style

Obviously each individual has their own writing style. However the dissertation text should be clear and good grammar and thoughtful writing will make the dissertation easier to read. Slang and informal writing should be avoided. Short, simple phrases and words are often better than long ones. On the other hand, there will be times when you need a complicated sentence because the idea is complicated. Sometimes it is easier to present information and arguments as a series of numbered points, rather than as one or more long and awkward paragraphs. A list of points is usually easier to write. You should be careful not to use this presentation too much: your dissertation must be a connected, convincing argument, not just a list of facts and observations. Graphs and diagrams should be used where appropriate but be mindful of over use. One important stylistic choice is between the active voice ("I interviewed the teacher...") and passive voice ("The teacher was interviewed..."). The passive voice makes it easier to write ungrammatical or awkward sentences and is the preferred choice for academic writing.

Presentation

Note: The following requirements are taken from the University Calendar (Part 2) and are mandatory.

The dissertation must be printed on good quality A4 **white** paper. The type must be black and not less than 10 point. A size 12 font with line-and-a-half spacing is recommended for the body of the dissertation. Indented quotations should be single-spaced and of size 11 font. Margins at the binding edge should be not less than 35mm and other margins not less than 20mm.

The two copies of the dissertation for examination should be soft bound (not ring-bound) and printed on one side of the page only. A dissertation which has been examined and in which all necessary corrections have been completed must be printed on both-sides of white paper (of a weight of at least 90 gsm) and securely bound in hard covers with dark blue cloth. The degree for which the dissertation has been submitted, the year, and the name of the candidate, in that order should be lettered in gold, in 24 pt or larger type, down the spine. The title must also appear in gold lettering on the front cover of the dissertation. The year on the spine should be the year of final submission (not the year of initial submission) where there is a difference.

Pages should be numbered consecutively throughout the text, including those pages incorporating photos or diagrams which are included as whole pages. Appendices should be named alphabetically. Page numbers should be located centrally at the bottom of the page and approximately 20mm above the edge of the page.

Where an acronym or abbreviation is used it should be spelt out the first time it occurs - e.g. "The ESAI (Educational Studies Association of Ireland)...". Where used in text numbers should be spelt out - e.g. "twenty five percent". In tables numbers should be represented as figures - e.g. "25%". Centuries should be spelled out - e.g. "sixteenth century". Years should be represented in figures - e.g. "1994".

Title page

The title page of the dissertation should contain the following information:

1. The full title of the dissertation and the subtitle if any
2. The full name of the author
3. The award for which the dissertation is submitted to the University
4. The name of the University
5. The name of the supervisor of the research
6. As a last line the statement "Submitted to the University of Dublin, Trinity College, Month, Year"

Declaration

A declaration must be included on a single sheet following the title page. The required form is: "I hereby declare that this is entirely my own work and that it has not been submitted as an exercise for the award of a degree at this or any other University. I agree that the Library may lend or copy this dissertation on request. (Signature/name/date)"

Summary

A summary of the methods used and the major findings of the dissertation must follow the declaration. It must not exceed two pages of typescript. The summary provides a synopsis of the dissertation and should state clearly the nature and scope of the research undertaken and the contribution made to knowledge of the subject treated. A brief statement of the method of investigation where appropriate, an outline of the major

divisions or principal arguments of the work and a summary of any conclusions reached should be included.

Abstract

An abstract not exceeding 300 words or one page in length must be submitted loose with each copy of the dissertation. The abstract should be printed in single spacing and should indicate the author and title of the dissertation in the form of a heading. Two copies of the abstract must be submitted loose with the final hard-bound copy.

It is best written towards the end, but not at the very last minute because you will probably need several drafts. It should be a distillation of the dissertation: a concise description of the problem(s) addressed, your method of solving it/them, your results and conclusions. An abstract must be self-contained. Usually they do not contain references. When a reference is necessary, its details should be included in the text of the abstract. Check the word limit.

The abstract is often the most read part of a dissertation. Writing a good abstract is no easy task.

Acknowledgements

A formal statement of acknowledgements must be included in the dissertation, following the summary. This is a page of thanks to those who have helped in the course of the research.

Table of Contents

A table of contents is included after the acknowledgements. It helps to include the subheadings within each chapter, as well as the chapter titles as this makes it easier to find sections quickly.

The following are included if relevant, following the table of contents:

List of Appendices

Normally on a single sheet - in alphabetical order

List of tables and illustrations

All tables, photographs, diagrams etc., in the order in which they occur in the text, should be listed.

List of Abbreviations

Normally on a single sheet - in alphabetical order

Note: All of the above pages are numbered in roman numerals. Page 1 is the first page of Chapter 1. The page number is not normally printed on the title page.
Examples of the above are included at the end of this document.

Dissertation Structure

The following is a suggested dissertation structure. The structure of your dissertation may vary according to the nature of your research work.

Chapter 1: Introduction

The introduction should lay the foundations for the remainder of the dissertation. It outlines the broad field of study and then leads into the focus of the research problem. This section is short and aims to orient the readers and grasp their attention.

It should include the following:

- Background to the research - this may take a historical approach
- A brief overview of the research undertaken
- An introductory overview of the methodology
- An outline of the dissertation - each chapter is briefly described in this section

In the introduction it is important not to overestimate the reader's familiarity with your topic. Give an introduction that is appropriate for a person with a general background in the area. This section might go through several drafts to make it read well and logically, while keeping it short. For this section it is a good idea to ask someone who is not a specialist to read it and to comment. Is it an adequate introduction? Is it easy to follow? There is an argument for writing this section - or least making a major revision of it - towards the end of the dissertation writing. Your introduction should tell the reader where the dissertation is going, and this may become clearer during the writing.

Chapter 2: Literature Review

A literature review is an account of what has been published on a topic by accredited scholars and researchers and aims to build a theoretical foundation upon which the research is based. In writing the literature review, your purpose is to convey to your reader what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are. As a piece of writing, the literature review must be defined by a guiding concept (e.g., your research objective, the problem or issue you are discussing). Depending on the scope of your literature review it may need to be divided into a number of sections. Ideally, if you have been keeping up with the literature over the course of your research, and if you have made notes about important papers you will already have much of the hard work done. If you have summarised those papers, then you have some good starting points for the review.

Chapter 3: Methodology

Chapter 3 describes the methodology used to collect the research data. It should include the following:

- Statement of the research objectives/goals/questions
- Rationale for the research approach taken
- Description of each instrument used to collect data and details of pilot studies carried out.
- Rational for each data collection instrument used
- Sampling and administration of research instruments (for example, when, where, who, response rates and time frame)
- Details of subjects and sources of data e.g. location, school size, teacher profiles etc. Ethical considerations must be borne in mind
- Triangulation
- Limitations of the methodology
- Computer programs used to analyse the data (if any), with justifications for their use.

The appendices should contain copies of the instruments used e.g. questionnaires. Transcriptions of interviews and computer printouts should also be included as appendices where appropriate.

Chapter 4: Research Findings

Chapter 4 presents the research findings. Tables and figures of results may be necessary to illustrate patterns in the data presented in this chapter. This chapter should be clearly organised and may need to broken into clearly defined sections. Chapter 4 should be restricted to the presentation and analysis of the collected data, without drawing general conclusions or comparing results to those of other researchers, which were discussed, in the literature review. The following chapter (Chapter 5) will discuss the findings within the context of the literature.

Chapter 5: Discussion of Results

Chapter 5 discusses the research within the context of the literature and provides the 'link' between the research results and conclusions arising out of the research. The discussion should explore how the findings fit into the existing body of knowledge: Are they consistent with current theories? Or do they give new insights? The literature discussed in Chapter 2 should be addressed and 'new' relevant literature may be introduced. The implications of the research findings for educational policy and practice may be explored if appropriate. Suggestions for further research may be given.

Chapter 6: Conclusion

This chapter is usually reasonably short and may include a summary of findings. The implications and recommendations arising out of the research should be highlighted.

Bibliography

A bibliography containing references to all books, articles, journals, web sites etc. cited in the text is included following the final chapter. The citations must conform to the recommended standard as outlined in the M.Ed. Handbook.

Appendices

Any material that should be in the dissertation but which would break up the flow or bore the reader unbearably is included as an appendix. Some things that are typically included in appendices are interview transcripts, questionnaires, computer programs and data files that are too large to be represented simply in the main body of the dissertation.

Special Forms of Dissertations

Whilst this structure is applicable to the majority of dissertations, it may be altered in accordance with the research being undertaken. In the case of dissertations that involve the development of computer software the above structure may be amended as necessary in consultation with the project supervisor. The software will need to be presented as part of the dissertation assessment. Dissertations which take an 'Action Research' approach may also follow a slightly different format to that outlined above.

Referencing

Note: from 2011 the School of Education will adopt the APA version 6 referencing conventions. Students who commenced their studies prior to 2011 should continue to use the Harvard system presented below.

The Harvard system is a method of acknowledging sources in which names and dates are included in the body of the text and a full reference is listed alphabetically at the end of the dissertation/paper. Footnotes are not used are they are not in keeping with the Harvard system.

It is important that whenever you use the ideas of other writers, or quote directly from their works, that you acknowledge them in the text and in a list of references at the end. As others who read your work may wish to follow up on a particular author it is important that references are complete and accurate. Failure to acknowledge sources may be regarded as plagiarism. The University has established regulations in relation to plagiarism (section G of the University Calendar). It is important to understand what constitutes plagiarism as it is the action and not the intention that constitutes this offence.

Using the Harvard system within the text

The author and year of publication are cited in the text.

Example 1
One study has identified students' control of the program and the support provided by external sources, such as the peer group, as major motivational factors for students using computer-based instruction (Brown, 1986).

Example 2
In the early 80s the computer was seen as a revolutionary innovation and was expected to have a direct impact on student learning (Kulik et al., 1985; Kulik & Kulik, 1991; Kulik, 1994).

In the above examples the sources are cited chronologically. The full stop is placed after the closing bracket.

If the author(s) surname is part of a sentence then only the date appears in brackets

Example 1
According to Newman (1994) computer networks afford schools numerous benefits.

Example 2
Pedersen (1999) and Jedeskog (1999) agree that .....

Example 3
Wilson & Pederson (1995) used the case study method to evaluate the impact of technology on the school community

Example 4
Shin et al. (1994) established the need for guidance, and identified some of the limitations of student control

If there are three authors or less, all names are included in the text. If there are more than three authors only the first author's name followed by et al. is included in the text.

Works published by the same author(s) in the same year

Works published by the same author(s) in the same year are assigned letters of the alphabet in ascending order so as to distinguish between them.

Example
Jonassen (1994a, 1994b) has suggested that.....

The same principle applies to different authors with the same surname and same year of publication.

Using direct quotations

Direct quotations should be reproduced exactly as they are in the original text. The author, year and page number must be included. In the case of electronic or web-based sources (which do not have page numbers) the type of source is included in square brackets instead of a page number e.g. [Internet], [CD-Rom] etc.

Short quotations
A short quotation is a sentence or part of a sentence quoted with the text. Short quotations are normally less that twenty-one words in length and are enclosed within quotation marks.

Example 1
Dalin & Rust (1990, p.115) emphasise the role of the school stating that "schools must help young people to learn how to take advantage of information media and new communications technologies for their own learning".

Example 2
According to one study computer use enabled learners to become "producers of knowledge as they analysed data and information and developed testable propositions" (McKinnon et al., 1996, p.465).

Block quotations
Block quotations are quotations longer that twenty-one words. These quotations should be intended one tab from the left hand side of the page and formatted in single line spacing. Font size 11 should be used i.e. one size less than standard text in the body of the dissertation/paper. The author, date and page number must be included. Quotation marks or italics are not used.

Example 1
The contribution of the software was summarised as follows:

> Multimedia technologies enable the creation of environments in which constructivist learning can take place. They make original materials available to students instead of pre-interpreted and diluted information. They provide tools for the exploration of that data so that students can investigate a topic and approach it with genuine questions (Heidmann et al., 1996, p. 301).

Example 2
According to Merrill et al. (1996, p.6):

> Instruction involves directing students to appropriate learning activities; guiding students to appropriate knowledge; helping students rehearse, encode, and process information; monitoring student performance; and providing feedback as to the appropriateness of the students' learning activities and practice performance.

Acknowledging secondary sources

A primary source is defined as an original piece of work by an author. A secondary source refers to work cited by an author within the literature you are using.

Increased motivation has also been related to enhanced learner control (Cook, 1987 cited in Joiner, 1996).

or

Cook (1987) as cited by Joiner (1996) related increased motivation to enhanced learner control.

The full reference for Joiner (1996) is included in the list of references at the end of the dissertation/paper.

Creating a Bibliography

A bibliography containing the full details of all works cited in the text must be included at the end of the dissertation/paper. This list must be arranged in alphabetical order using the surname of the author(s).

Books

The details are arranged in the sequence:
Authors surname(s) plus initial(s).
Year of publication (in brackets)
Title, in italics, followed by a full stop
Place of publication
Publisher (in the format 'Place: Publisher')

Examples
One author
Fullan, M.G. (1991) *The New Meaning of Educational Change*. London: Cassell.

Two authors
Frazier, G. and Frazier, D. (1994) *Telecommunications and Education: Surfing and the Art of Change*. National School Boards Association: VA, USA.

Three or more authors
Gagne, R. M., Briggs L.J. and Wager W.W. (1988) *Principles of Instructional Design*. New York: Holt, Rinehart and Winston Inc.
Chapter in an edited book

The details are arranged in the sequence:
Author of chapter (surname plus initial(s)).
Year of publication (in brackets)

Chapter title
In:
Editor(s) of book, followed by (ed.) or (eds.)
Title of book, in italics, followed by a full stop
Place of publication
Publisher (in the format 'Place: Publisher')
Chapter page numbers

Example
Wilson, B.G. and Pedersen, K. (1995) Successful Technology Integration in an Elementary School: A Case Study. In: Lucas, C. and Larry, L. (eds.) *Practitioners Write the Book: What Works in Educational Technology*. Texas: The Texas Center for Educational Technology, pp. 201-267.
Journal Articles

The details are arranged in the sequence:
Author
Year of publication
Article title
Title of journal
Volume of journal
Issue number of journal
Article pages

Example
Harasim, L. (1987) Teaching and learning online: Issues in designing computer-mediated graduate course. *Canadian Journal of Educational Communications*, vol.16, no. 2, pp.117-135.

Conference Proceedings

The details of the name of the conference, place and date held, editors of the proceedings, place and date of publication should be included if available.

Example 1
Heidmann, W., Waldman, W.D. and Moretti, F.A. (1996) Using Multimedia in the Classroom. *Proceedings of the Thirteenth International Conference on Technology and Education*, New Orleans, Louisiana, March 17-20, pp.300-302.

Example 2
Johnston, K. and Bruen, C. (2004) Practice What You Preach: Initial Teacher Education In ICT. In: Cantoni, L. and McLoughlin, C. (eds). *Proceedings of the Ed-Media World Conference on Educational Multimedia, Hypermedia and Telecommunications,* Lugano, Switzerland, June 21-26. Norfolk, VA: Association for the Advancement for Computing in Education, pp.3095-3102.

Theses/dissertations

For unpublished works such as theses/dissertations, referencing within the text is the same as for books. The reference list entry is as follows:

Mackey, J. (1996) Teaching Methodology in the New Junior Certificate. University of Limerick: Unpublished Master's Thesis.

Newspaper Articles

The details are arranged in the sequence:
Author/writer
Date of paper by year
Title of article
Title of newspaper (in italics)
Date of publication
The number of the first and last pages on which the article appears

Example
Hogan, T. (2006) Plan to put driving on school syllabus shot down. *Irish Independent*, 14th July, p.10.

Government reports

When referencing a publication published by a government agency or organisation, and no individual is named as the author, the convention is to name the agency/organisation as the author in both text and the reference list.

Example – in text
The main issues identified include.....(Department of Education, 1995)

Example – reference list
Department of Education (1995) *Charting Our Education Future, The White Paper on Education*. Dublin: Stationery Office.

Online sources

Details are arranged in the sequence:
Author (if ascertainable)
Year of publication (if ascertainable)
Article/ Webpage title (if ascertainable)
Type of medium e.g. [Internet]
Place of publication (if ascertainable)
Publisher (if ascertainable)
'Available at' statement i.e. Available at: URL of article
Date accessed in square brackets

Example 1
Aue, J. (1998) *A Teacher's View on Student Motivation: Multimedia Teaching Strategies* [Internet]. Available at: http://www.cs.mun.ca/k12media/skills.ped.tv_motivation.html [Accessed 15 March 2000].

Example 2 - Web page no author
Educating America for the 21st century: Developing a strategic plan for educational leadership for Columbia University-1993-2000 (1994) [Internet]. Available at: http://www.ilt.columbia.edu/CONF/EdPlan.html [Accessed 19 May 1995].

Example 3 - Online Journal Article
Alavi, M. (1994) Computer-Mediated Collaborative Learning: An Empirical Evaluation. *MIS Quarterly*, vol.18, no.2, pp.159-174 [Internet]. Available at: http://www.mbs.umd.edu/is/faculty/alavipub.htm [Accessed 15 March 2000].

Example 4 - Online Conference Proceedings/Paper
Alexander, S. (1996) Teaching and Learning on the World Wide Web. Paper presented to *AusWeb 96*, Gold Coast, Queensland, July 7-9 [Internet]. Available at: http://elmo.scu.edu.au/sponsored/ausweb/ausweb95/papers/education2/alexander [Accessed 15 March 2000].

Using the World Wide Web as an Information Source

Evaluation of resources:
All information resources should be critically evaluated no matter what their format. This is especially important for electronic resources as there is no quality control on the Internet and it is essential to verify the authenticity and accuracy of World Wide Web sites if you are using them for research or academic purposes. Some questions to ask when evaluating Internet sites are:

- Is this site produced by a reputable organisation or individual?
- Has the content been recently updated?
- How does the content compare with what I already know?
- Is this site indexed or pointed to from other reputable Internet sites?

The internet is a useful starting point for quickly finding out key thinking and sources in a particular area or field. However it is likely that most of the references included in your dissertation will be of a more academic nature.

Structuring Keyword Searches:
The following search tips apply as a general rule. However, for specific help with structuring your search, look at the individual search engine homepages. You will find a variety of assistance from help files and information pages to FAQs and guides to searching.

- Try to use at least two or threes key words to make your searching more efficient. However if you need to search on a single term, make the term as specific as possible.
- Use exact phrases where possible. Generally you will need to enclose phrases in quotation marks " " to ensure that the search engine will treat the phrase as a single term.
- Think about synonyms that may be used as alternate search terms. Some search engines include a thesaurus that you can use to discover alternate terms.
- Other considerations include:
    - variations in spelling
    - searching for both the singular and plural of terms
    - use of upper and lower case
- Try using a meta search engine (a search engine that searches a number of search engines) to get an overview of the results matching your key words.
- Use of Boolean Operators: You can use connecting words, known as Boolean operators, such as **AND, OR, AND NOT** or **NOT** and **NEAR** to indicate the relationship between terms in a search statement. These operators can be very useful to help you structure a complicated search. For example, *health care* **NEAR** *policy* **AND** *aged* **OR** *elderly* **NOT** *united states*
- In general an **AND** statement will decrease the number of results found but will increase their relevance. An **OR** statement will increase the number of results found but will decrease their relevance.
- Most search engines interpret a space between keywords as being an **AND** operator.

Some Final Notes on Using the Harvard System

The list of references (Bibliography) is included at the end of the final chapter in alphabetical order.

It is **important to be consistent** in all referencing.

Submission Date

The submission date for the M.Ed. dissertation is the 31st August in the year following registration for the dissertation year.

An Investigation of Students' Use of IMS Software in Irish Second-Level Schools: A Case Study

John Williams

Master in Education

University of Dublin, Trinity College

Supervisor: Dr. John Murphy

Submitted to the University of Dublin, Trinity College, May 2008

Declaration

I hereby declare that this is entirely my own work and that it has not been submitted as an exercise for the award of a degree at this or any other University. I agree that the Library may lend or copy this dissertation on request.

John Williams 10/05/2008

Summary

Acknowledgments

Firstly I would like to thank my supervisor **Dr. John Murphy** for his advice and guidance throughout this study.

Thanks also to Dr. Teresa O'Brien, Dr. Jim Smith, Sean Lyons and Janet Ryan for their much appreciated advice and support over the course of the study.

A special thanks to Maureen Davidson for all her help and encouragement over the two years

To the principals, teachers and students of the participant schools who went out of their way to facilitate this study.

Table of Contents

List of Appendices

List of Abbreviations

ACOT	Apple Classrooms of Tomorrow
ASTI	Association of Secondary Teachers of Ireland
CAD	Computer Aided Design
CAI	Computer Aided Instruction
CAL	Computer Aided Learning
CAM	Computer Aided Manufacturing
CESI	Computer Education Society of Ireland
CHILD	Computers Helping Instruction and Learning Development
ICT	Information and Communication Technologies
IMS	Instructional Management Systems
ISDN	Integrated Services Digital Network
IT	Information technology
LAN	Local Area Network
LCA	Leaving Certificate Applied
LCVP	Leaving Certificate Vocational Programme
OECD	Organisation for Economic Co-operation and Development
WBT	Web Based Training
WWW	World Wide Web

ABSTRACT

John Williams

An Investigation of Students' Use of IMS Software in Irish Second-Level Schools: A Case Study

The 1990's has seen a second coming of expectation for computers in education, and the World Wide Web would seem to have considerable potential for delivering education programmes. New computer software programmes, called Instructional Management Systems, have been developed to facilitate the management of instruction and communication among students and teachers who are involved with the delivery of Web-based course materials.

The case study investigates the use of an Instructional Management System, called TopClass, by students in two second-level Irish schools. The research is mainly qualitative in nature, although a quantitative element is employed in assessing the frequency and regularity of students' use of the system. The research data was collected from the systems' log of student activity, focus group interviews and questionnaires.

The research findings indicate varying levels of use by the different students in each school and mixed reactions to, and use of, the various TopClass features (email, discussion group, testing feature, structure and content). The students' use of TopClass was constrained by a number of technical problems. Students were motivated by the use of TopClass given the novelty factor involved, the opportunity to use computers, and the chance to be in direct control of their own learning.

The factors that impacted on students' use of the system are explored. Students' overall use was influenced by their motivation, as characterised by their willingness to expand the time and effort to use the system, and the availability of access, both in school and outside the formal school environment. The teaching implications of the findings are outlined, and appropriate roles for TopClass in the second level setting are suggested.

The findings of the case study underline the need for technical support, and provision for student access outside the formal school environment, to aid the implementation process. A shift in students' learning culture, from passive receptors of information and content to active participants in the learning process, is also required to facilitate the implementation of Web based components such as TopClass into the second-level environment.

Dalin & Rust (1990, p.115) emphasise the role of the school in this respect, stating that "schools must help young people to learn how to take advantage of information media and new communications technologies for their own learning". To provide students with the best possible chance of being successful lifelong learners and future employees, students need to be information literate and skilled in the application of computer-based information tools (Rakes, 1996). In the words of Heinecke et al. (1999, [Internet]) "New learning outcomes must focus on the demands of the new world environment".

The new role of the computer was noted by Hollenbeck (1998 p.38), who observed that it is now been given a second chance, this time as an educational tool that has the capacity for the delivery of vast amounts of information;

> The internet driven curriculum is seen as a place for students to create meaningful knowledge on their own, using an environment full of experts waiting to be interviewed and vast amounts of information ready to be mined.

In Dwyer's (1994, p.9) terms, the advantages of the new technologies are two fold: serving to modify the learners' school experience and allowing students to develop the skills necessary for living in the information age. New technologies help students by providing;

> ...an array of tools for acquiring information and for thinking and expression [allowing] more children more ways to enter the learning enterprise successfully. These same experiences provide the skills that will enable students to live productive lives in the global, digital, information-based future they all face.

This was echoed by the US Office of Technology Assessment (1995, p.59) putting the emphasis on the relationship between the use of new technologies and preparation for a world in which such technologies will be commonplace.

> Not only do technologies allow access to a broader range of instructional resources, but they also offer students the opportunity to learn to use electronic tools to access information and develop research skills using the technologies they will face in the future.

Bibliography

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Guidelines on Ethical Research Practice for Students

Good research is not just about the quality or even the quantity of data that you gather, but also the way in which you undertake your work. As such these guidelines are intended to support you through this aspect of the research process and draw your attention to how you as a researcher, should interact with those who are participating in your study. The main point to note is that they are not meant to be *prescriptive*, as it is not possible to specify in detail what you should do in any given circumstance. In this sense, these guidelines should be used as a set of reference points to consider in discussion with your supervisor, during both the design and implementation stages of your study. Where appropriate, you should also be fully conversant with any ethical guidelines which are specific to your own discipline e.g. psychology, sociology, and so on.

In order to keep these guidelines as simple and clear as possible they are divided into two main sections. The first section *'responsibilities and relationships with your participants'* offers guidance on how you should conduct your interactions with those who are participating in your study. The second section *'ensuring anonymity and confidentiality'*, is concerned with guidance on the kind of assurances you offer your participants with regards to the information they impart to you, and the uses to which it may be put.

Responsibilities and relationships with your participants

It is important to be aware that as a researcher you are engaging in a social relationship with your participants whether they be individuals (such as teachers, lecturers parents, children, young adults, school or college governors, ancillary and support staff), social groups or entities (such as schools, colleges, social service departments). As such these guidelines are intended to help you navigate this part of the research process.

1. Research should be based on informed consent. That is, the information given by your participants should be done so freely on the basis that they know and understand 1) the purpose of your research, 2) who is undertaking it, 3) why it is being undertaken and 4) who is sponsoring it - if at all.

2. Your participants should be given anonymity. This requires you to ensure that any disclosure of your data or subsequent analysis does not refer directly to the participants in your study.

3. You should inform your participants that they are able to reject the use of data-gathering devices e.g. tape recorders.

4. If you are conducting field work, do not assume that once you have negotiated access and consent to work in a particular setting(s), that this will automatically granted each time you enter the setting(s). Treat this part of your work as on-going and be prepared to re-negotiate access at various junctures. This line of reasoning should be followed whether you are conducting research in your own work-place or a setting where you are already perceived as a member, and sites that are new to you.

5. All research is a mode of intervention into the lives of those who are being studied. Some participants may welcome such interest and others may not. It is important that you respect the wishes of those who do not want to participate in your study, as not everyone will see such a process as a positive experience. Also, it is important not to give the impression to your participants, that your research may provide immediate answers or solutions to problems that you are investigating.

6. If you plan to or anticipate that your research will be placed in the public domain e.g. publications, conferences, seminars etc., you should inform your participants of this is, along with the guarantees of anonymity.

7. Considerable care should be exercised when working with those participants who may be seen to be vulnerable due to such factors as their age, status within and institution or organisation, and powerlessness. In addition, researchers must avoid exploiting disadvantaged individuals or groups for their own academic/professional advantage. Where possible and/or appropriate, it is desirable that research in whatever context (home/international/development) should be collaborative, involving local participants.

8. You must be careful not to intrude on the personal space of your participants or their relationships with others who may or may not be directly involved in your study.

9. As with access, informed consent should not be taken for granted, but subject to re-negotiation as various junctures during your study. This is especially important when seeking to obtain sensitive information. Do not assume that once a participant has agreed to be part of your study i.e. given their consent, that this means that they will be willing to divulge any information that you ask for. This should equally hold when working within institutions. If access has been gained via a gatekeeper, then do not presume that all people within the organisation are willing participants by proxy. Each time you approach someone new for information in any form (interview, observations, documents etc), you must obtain their consent.

10. In the case of any transcripts that you make, you should always seriously consider showing and/or sharing this information with your participants as a way of ensuring accuracy.

11. It is essential that you do not engage in any activities or act in anyway which may have negative consequences for you participants or their relationship with others who may not be directly involved in your study.

12. It is important for the researcher to be sensitive to and to respect conventions/ cultural constraints when carrying out research in a cultural context with which he/she is not familiar or of which he/she is not a member. Consultation with a member or members of the cultural community regarding instruments and procedures is highly desirable before research commences, so that offence can be avoided.

13. The presentation of research findings should respect the sensitivities of the community in the context in which the research has been undertaken. Care must be taken not to humiliate or embarrass members of the community where research has been undertaken.

Ensuring Anonymity and Confidentiality

1. At the outset of your research you should offer where appropriate, guarantees of confidentially (i.e. non-disclosure of proffered information to others) and anonymity (i.e. information can not be traced back to individuals or specific organisations). If you are conducting 'one-off' interviews or observations, this must be made clear at the beginning of each encounter or session. This guarantee should also be given when asking for forms of documentation that are not already available within the public domain e.g. pupil records. In situations where you may intend to use part of even whole of your data set (for example direct quotations, images etc.) it is vital that you communicate this to your participants.

2. As a researcher you should respect the privacy and anonymity of your participants. What this means is that personal information and disclosures should be kept confidential. If need be, you may, depending on the situation choose not to record such information.

3. The identities and any related research records (e.g. interview transcripts, interviews tapes, video tapes, observation notes etc.) should be kept confidential.

4. You should always store your data in a secure manner. If practicable always try and break the link between the data and identifiable individuals. For example, use codes, pseudonyms and other forms of identifiers instead of your participants names, places of work and so on. Where you are using a mixture of information which is in the public domain and that which has been obtained by informed consent which concerns the same organisation, you must also ensure that there is no traceable link. In this situation it is best to remove from the public documents any identifiers which could be associated or linked to your participants.

5. Try and honour your guarantees of confidentiality and anonymity. If you need to or have to share data with others (e.g. your supervisor) it is important that you inform such people of the guarantees you have given and that they too, should abide by them.

6. As a researcher, you should avoid any actions or modes of behaviour which may produce consequences which make it difficult for other researchers who may follow you.

7. When placing your data, or the findings derived from your research into the public domain you must remove any identifier which could be traced back to the participants in your study e.g. names, specific locations etc.

8. You should be familiar with the requirements of the 1998 Data Protection Act.