



Edinburgh Napier
UNIVERSITY



**Pedagogy and learning
technology: a practical guide**

Keith Smyth and Christina Mainka

For further info about the work of Academic Development at Edinburgh Napier University, please contact ccr@napier.ac.uk or visit www.napier.ac.uk/ccr



Pedagogy and learning technology: a practical guide

Keith Smyth and Christina Mainka



Authors

Keith Smyth
Academic Development
Bevan Villa
Craighouse Campus
Craighouse Road
Edinburgh EH10 5LG

Christina Mainka
Academic Development
Bevan Villa
Craighouse Campus
Craighouse Road
Edinburgh EH10 5LG

Dr Keith Smyth is a Senior Teaching Fellow and Senior Lecturer in Higher Education at Edinburgh Napier University. Keith leads Edinburgh Napier's MSc Blended and Online Education, an applied and practice-based programme on which a diverse cohort of education professionals are supported in enhancing and transforming their learner's experiences through technology. Keith is research active in several areas relating to technology-enhanced education, and is involved in cross-institutional activities to disseminate good practice within the sector.

Dr Christina Mainka has been involved in online module design and teaching for over 15 years. As a research chemist by trade her activities started off in science education with the University of Maryland's University College (UMUC) in Germany, moving to staff development in online learning at Edinburgh Napier University in 2004. There she co-developed the fully online MSc Blended and Online Education programme and took on the role of lecturer in technology enhanced teaching and learning. Christina is back in Heidelberg, Germany again currently employed by UMUC's distance education department as adjunct Associate Professor for Physical and Environmental Sciences.

If you have any comments about this publication please e-mail: palt@napier.ac.uk

First published by Edinburgh Napier University, Edinburgh, Scotland © 2006. This updated edition published by Edinburgh Napier University, Edinburgh, Scotland © 2010. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise – without permission in writing from Edinburgh Napier University, 219 Colinton Road, Edinburgh EH14 1DJ, Scotland.

Microsoft[®], Windows[®], FrontPage[®] and PowerPoint[®] are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries

All websites indicated were last accessed May 2010 unless otherwise stated

ISBN 0-902703-84-6

Acknowledgements

Sincere thanks are extended to a number of people who have supported, in various ways, the development of this guide in original and updated form.

Professor Morag Gray (Chair) and the membership of the e-Pedagogy Sub Group were generous in the time they dedicated to agreeing the proposed general content of the guide, reviewing extended contents lists, and providing much needed comments on draft versions of the units.

Several colleagues kindly consented to activities, materials and other resources from their own courses being used as examples, and in many instances helped to prepare these examples for inclusion. Many thanks for their contributions therefore go to: Ms Angela Benzies; Dr Norrie Brown; Ms Kathy Buckner; Dr Christine Donnelly; the ESF Health Online Project (HOP) team; Dr Mark Gillham (QMUC); Dr Lynne Kilbride; Mr David Mitchell and Ms Kate Jones (Marie Curie); Mr Mark Meredith; and Ms Noreen Reid and Ms Jackie Husband (Marie Curie).

Professor Fred Percival and Ms Shirley Earl patiently supported this project from the outset, while Elaine Mowat and Panos Vlachopoulos frequently assumed more than a fair share of other key tasks undertaken by Academic Development's online learning team to ensure progress could continue to be made.

The development of this guide was greatly aided by the considerable thought and time that Stephen Bruce and Nicola Whitton devoted to helping scope the topics and issues that needed to be covered. Thanks also to Margaret Nairn, Academic Development, who worked with the authors to complete and publish this guide.

The development of the original version of this guide was supported through the Edinburgh Napier ePedagogy Online project. It is designed to meet needs of Edinburgh Napier University staff together with the ePedagogy Online objective to 'document best practice approaches to design and development and to enable further resources to be developed effectively after the completion of the project'.

The ePedagogy Online project was part-financed by the European Union.

The production of this 2010 updated version of Pedagogy and Learning Technology: A Practical Guide was undertaken within the Create2 project which was part-financed by the European Social Fund.

Thanks go to Rosemary Allford and Anna Drobczynska for their help and support in producing this updated version as part of Create2.

Table of contents

Unit 1 Introduction

	Page
1.0 So what can educational technology offer you?	1
2.0 About this guide	2
2.1 What is the purpose of this guide?	2
2.2 What does this guide cover?	3
2.3 Who is this guide for?	3
2.4 How to use this guide	3
3.0 Hit and myth! Some things to know right now... ..	4
4.0 What is educational technology?	6
4.1 The technologies...and where to find the answers!	6
4.2 Contexts for using technology	7
4.2.1 Stand alone self-study and classroom tools	7
4.2.2 Blended	7
4.2.3 Fully online	8
4.2.4 Mobile learning	8
5.0 Why is educational technology important?	9
5.1 The big picture	9
5.2 Advantages for students	10
5.3 Advantages for tutors.....	11
5.4 Advantages for institutions.....	12
5.5 It's not going to go away!	12
6.0 The key challenges...and making them smaller!	12
6.1 Shifts in teaching practice and responsibilities	13
6.2 Making the transition.....	13
6.3 Developing expertise	14
6.4 Finding the time!	15
6.5 Knowing where to find help and resources at Edinburgh Napier	15
6.6 Consult the Quality Framework	18
6.7 Consider the PGC/PGDip/MSc Blended and Online Education.....	18
7.0 So where do you go from here?	18
8.0 Further reading	19

Unit 2 Starting to use technology in teaching

	Page
1.0 Little blends, big benefits	21
1.1 Some real examples of 'little blends'	21
2.0 Enhancing lectures.....	22

3.0	Enhancing seminars	23
4.0	Supporting collaboration	24
5.0	Improving tutorial support	25
6.0	Taking it further	26
7.0	Further reading	26

Unit 3 Designing blended and online modules

	Page	
1.0	What is blended and online teaching...really?	28
2.0	Getting started	29
2.1	First: Get in touch with your ADA!	30
2.2	Next: Ready already?	30
2.3	Finally: Be prepared-not scared	30
3.0	Issues to consider in developing online learning	30
3.1	Your students	31
3.1.1	Technical orientation	31
3.1.2	Online learning orientation	31
3.2	Activities and assessment online	35
3.2.1	Activities online	35
3.2.2	Assessment online	39
3.3	The content and file formats	39
3.3.1	Hyperlinking	40
3.3.2	General guidance	40
3.4	Formats for publishing in the VLE	42
3.4.1	HTML	42
3.4.2	File formats other than HTML	43
4.0	Rethinking content	45
4.1	Alternatives to content	45
5.0	Online course design timeline of events	48
6.0	Further reading	49

Unit 4 The role of the tutor

	Page	
1.0	Why bother?	51

2.0	Teacher, moderator, facilitator, coach?	52
3.0	Things to do	52
3.1	The term begins.....	53
3.2	The term is underway	53
4.0	Supporting the learner community	54
4.1	Tutor online presence.....	54
4.1.1	Welcome.....	54
4.1.2	Additional communication spaces	54
4.2	Online discussion moderation.....	55
4.2.1	Managerial tips	55
4.2.2	Pedagogical tips	56
4.2.3	Supporting rich online discussion	56
4.2.4	Managing the challenging student	58
5.0	Managing conflicts	60
5.1	Strategies for avoiding conflict.....	60
5.1.1	Online discussion	60
5.1.2	Chat.....	61
5.1.3	Group work.....	61
5.2	Conflict handling tips.....	61
5.2.1	Flaming e-mails to the tutor	62
6.0	Further reading	63

Unit 5 Communication and collaboration

	Page	
1.0	Asynchronous discussion	66
1.1	Why would I use it?.....	67
1.2	Uses of the asynchronous discussion.....	67
1.2.1	Informal social space (eg Chatterbox, Teatime)	67
1.2.2	Problems forum	67
1.2.3	Directed discussion.....	68
1.2.4	Debate	68
1.2.5	Peer review.....	69
1.2.6	Student led discussion activity	69
2.0	Chat tool and whiteboard	69
2.1	Why would I use it?.....	70
2.2	Uses of the chat tool	70
2.2.1	Socialisation space	70
2.2.2	Virtual office hours	71
2.2.3	Group work activities	71
2.2.4	Online learning activity.....	71

3.0	E-mail	72
4.0	Online collaboration	72
4.1	Online myths	72
4.2	Teaching tips.....	74
5.0	Online collaboration tools	75
5.1	Desktop sharing applications	75
5.2	Audio conferencing	75
5.3	Video conferencing	76
5.4	Interaction 'rich' web collaboration tools.....	76
6.0	Social computing	76
6.1	Blogs	77
6.1.1	Why use blogs?	78
6.1.2	Teaching tips.....	79
6.2	Wiki	80
6.2.1	Why use wikis?	80
7.0	Further reading	82

Unit 6 Coursework and assessment for blended and online learning

	Page	
1.0	Why is a separate approach needed?	83
1.1	The reality of online student engagement	83
1.2	Exploiting the opportunities for realistic tasks	83
1.3	Engagement, collaboration and rich interactions	84
1.4	The problem with summative assessment	84
2.0	Key characteristics of good online coursework	86
3.0	Forms of coursework for online learning	87
3.1	Case-based learning	87
3.2	Problem-based learning	88
3.2.1	WebQuests	89
3.3	Student-led seminars and debates	90
3.4	Web-based presentations	91
3.5	Research and report	92
3.6	Design projects	92
3.7	Portfolios	92
3.8	Reflective journals.....	94
3.9	Critical essays	95
3.10	Objective self-tests and exams	95
4.0	Key issues in designing online coursework	95
4.1	Consider what is realistic and possible	95
4.2	Provide clear assessment criteria	97

4.3	Provide clear guidance	98
4.4	Make support options explicit	98
4.5	Think inclusively	98
5.0	Practicalities in submission and assessment.....	99
5.1	Electronic submission issues	99
5.2	Handling increased marking load	100
5.3	Assessing originality of coursework.....	102
5.4	Assessing online discussion participation.....	102
6.0	Further reading	104

Unit 7 Educational multimedia

	Page	
1.0	Why use multimedia?.....	105
1.1	When to use multimedia	106
2.0	Educational multimedia technology	107
2.1	Graphics	108
2.1.1	Benefits of graphics	108
2.1.2	Teaching example	108
2.1.3	Web resources for graphics.....	108
2.1.4	Implementation tips.....	108
2.2	Video	108
2.2.1	Benefits of video	108
2.2.2	Teaching example	108
2.2.3	Web resources for video.....	108
2.2.4	Implementation tips.....	109
2.3	Audio	109
2.3.1	Benefits of audio.....	109
2.3.2	Teaching example	109
2.3.3	Web resources for audio.....	110
2.4	Animations.....	110
2.4.1	Benefits of animations	110
2.4.2	Teaching example	110
2.4.3	Web resources for animations	110
3.0	Interactive technologies.....	110
3.1	Courseware	110
3.1.1	Benefits of courseware	110
3.1.2	Teaching example	111
3.1.3	Web resources for courseware.....	111
3.1.4	Implementation tip	111
3.2	Tutorials.....	111
3.2.1	Benefits of tutorials	111
3.2.2	Teaching example	112
3.2.3	Web resources for tutorials.....	112

3.3	Virtual worlds	112
3.3.1	Benefits of virtual worlds	112
3.3.2	Teaching example.....	112
3.3.3	Web resources for virtual worlds	112
3.4	Virtual labs	112
3.4.1	Benefits of virtual labs	112
3.4.2	Teaching example.....	113
3.4.3	Web resources for virtual labs.....	113
3.5	Virtual field trips	113
3.5.1	Benefits of virtual field trips	113
3.5.2	Teaching example.....	113
3.5.3	Web resources for virtual field trips	114
3.6	Simulations	114
3.6.1	Benefits of simulations	114
3.6.2	Teaching example.....	114
3.6.3	Web resources for simulations	114
4.0	Emerging technologies	114
4.1	Wireless and m-learning	114
4.1.1	Teaching examples for wireless and m-learning	115
4.1.2	Benefits of the use of mobile technologies	115
4.2	Podcasting	115
4.3	Augmented realities	116
4.3.1	Teaching example.....	116
4.4	Educational gaming.....	116
4.4.1	Teaching examples	116
5.0	Incorporating multimedia	117
5.1	Using third party material	117
5.2	User generated multimedia	117
5.2.1	The design pitfalls	118
5.2.2	Accessibility considerations for multimedia	118
5.3	Multimedia created by the student	119
6.0	Selection of multimedia development tools	119
6.1	Graphics and slideshows	119
6.2	Video.....	119
6.3	Audio.....	120
6.3.1	Narrated screencasts	120
6.3.2	Extras.....	120
6.4	Animations, interactive courseware, tutorials, simulations	121
7.0	Further reading	122

Unit 8 Issues in student support

	Page	
1.0	Individual differences	125
1.1	Getting to know your student	125
1.2	Welcoming and student bonding strategies	125

1.2.1	Create an Introduction (asynchronous) discussion	126
1.2.2	Create a fun discussion area	127
1.2.3	Create a virtual scavenger hunt.....	127
1.2.4	Other welcoming and bonding strategies.....	128
2.0	Online learning orientation	128
2.1	Technological support.....	130
2.2	Programme and module level guidance	131
3.0	Continuous facilitation	131
3.1	Key considerations	131
3.1.1	Clarity, depth and usability of course materials	131
3.1.2	Accessibility considerations	132
3.1.3	Just-in-time guidance.....	133
3.2	Supporting student flexibility in ways of working	134
4.0	Communication	135
4.1	The asynchronous discussion	136
4.1.1	Preparing for the online discussion.....	136
4.1.2	Stages of the asynchronous discussion.....	136
4.1.3	Online discussion assessment strategies	137
4.2	Synchronous chat.....	138
4.2.1	Preparing for a chat activity	138
4.3	E-mail	139
5.0	The international student.....	140
5.1	Online content and design	140
5.2	Online communication	141
5.3	Teaching style	141
5.4	Studying at a distance	142
5.5	Conclusion.....	142
6.0	Further reading	143

Unit 9 Evaluating technology-supported learning

	Page	
1.0	Why evaluate technology-supported learning?	145
2.0	Contexts for evaluation.....	145
3.0	Finding a focus for evaluation.....	146
3.1	Student experiences	146
3.2	Learning outcomes	147
3.3	Tutor experiences	147
3.4	Usability and accessibility	147
3.5	Course and resource development process	148
3.6	Widening access and retention.....	148
3.7	Infrastructure and support.....	148

4.0	Forms of evaluation	148
4.1	Diagnostic evaluation	149
4.2	Formative evaluation	149
4.3	Summative evaluation	149
5.0	Common data collection methods	150
5.1	Questionnaires	150
5.2	Interviews and focus groups	150
5.3	Tracking data	151
5.4	Observations	153
5.5	Peer review	153
5.6	Study diaries	154
5.7	Course grades	154
6.0	Practicalities in evaluation	154
6.1	Access to participants	154
6.2	Sampling	155
6.3	Ethical considerations	155
6.4	Piloting	156
7.0	Useful evaluation resources	156
7.1	General information on good evaluation practice	156
7.2	Rubrics	156
7.3	Toolkits	157
8.0	A note on quality assurance	158
9.0	Further reading	158

Unit 10 Issues in using third party material

	Page	
1.0	Copyright	159
1.1	Copyright infringement	159
1.2	Copyright myths	160
1.3	In the VLE	160
1.4	Copyright scenarios	162
1.5	Managing copyright risk	163
1.6	Further reading	163
2.0	Third party resource collections	164
2.1	Local resource collections	165
2.2	National resource collections	166
2.3	World wide web	167
2.3.1	Search engines	167
2.3.2	Hints for effective web searching	168
2.3.3	Evaluating web resources for use in your teaching	169

3.0	Plagiarism	170
3.1	For more information on Turnitin®UK.....	171
3.2	Be sure your students are aware of:.....	171
3.3	Be sure you are aware of:.....	172
4.0.	Further reading	173

Unit 11 Further books and resources related to educational technology

	Page	
1.0	Introduction	175
1.1	Further recommended readings	175
2.0	E-books and e-journals at Edinburgh Napier	176
3.0	Selected periodicals	177

Appendices

	Page	
Appendix 1	Sample text (online learning guidance for DE students)	179
Appendix 2	Case study	181
Appendix 3	Sample text (the successful online learner)	185
Appendix 4	Sample text (Module overview)	187
Appendix 5	Writing for online and distance learners	193
Appendix 6	Converting WORD docs to HTML in WebCT	197
Appendix 7	Module evaluation checklist	201
Appendix 8	Netiquette guidelines.....	207
Appendix 9	Online group work guidelines.....	211
Appendix 10	Flaming mail management	213
Appendix 11	Module email rules.....	215
Appendix 12	Example end of course survey for tailoring and re-use	217
Appendix 13	Online communications guidelines.....	221

Glossary

	Page
Glossary	222

Table of figures

	Page
Figure 1: A WebCT module homepage with relevant module information for students.....	32
Figure 2: Module Guide and Module Materials folders on WebCT homepage.....	32
Figure 3: Module Guide folder content in WebCT	33
Figure 4: Example Module Overview found in the Module Guide folder of a WebCT module.....	34
Figure 5: Example of Module Materials folder content in WebCT	34
Figure 6: Example of an opening text in the Problems Forum of a WebCT module.....	55
Figure 7: Example discussion thread.....	66
Figure 8: Problems Forum discussion icon and annotation in WebCT	68
Figure 9: WebCT Chat tool and whiteboard.....	70
Figure 10: Group sign up sheets in WebCT	71
Figure 11: Groups in WebCT module: Neuromuscular principles of movement and therapy	74
Figure 12: Example of a blog created to support an Online Taster course at Edinburgh Napier (blog provider: WordPress)	78
Figure 13: Example of a wiki created to support writing this guide (Wiki provider: wikispaces)	81
Figure 14: Waterman and Stanley's case-based learning tutorial at http://cstl-csm.semo.edu/waterman/CBL/	88
Figure 15: The Problem Based Learning website from Australia's Central Queensland University available at http://www.pbl.cqu.edu.au/	89
Figure 16: Searching for China WebQuest by Tom March available at http://www.kn.pacbell.com/wired/China/ChinaQuest.html	90

Figure 17: The ePortfolio Portal at http://www.hanwilton.com/eportfolios	93
Figure 18: Map of Europe from pics4learning repository at http://www.pics4learning.com/details.php?img=europe.jpg	107
Figure 19: Ball and stick model of methane, CH ₄ . Image from http://treefrog.fullerton.edu/chem/mog/ch4.htm	109
Figure 20: Example of a Flash animation from http://www.hhmi.org/biointeractive/dna/DNAi_pauling_triple_helix.html	111
Figure 21: A virtual biology lab from http://www.sciencecourseware.org/vcise/	113
Figure 22: Informal communications area for students in a WebCT module	128
Figure 23: A screen shot from WebCT showing the kind of general tracking data available for the tutor to view for each student.....	152
Figure 24: Screenshot from WebCT showing tracking data for chat and discussion board activity, including discussion messages read and posted.....	152
Figure 25: Excerpt from the CSU Chico Rubric for Online Instruction	157
Figure 26: Example of a request granted via e-mail to upload a video clip into a VLE	161
Figure 27: An example of a website link within a WebCT module set to open in a new browser window.....	163
Figure 28: Edinburgh Napier library Copyright website	164
Figure 29: JISC BioScience ImageBank at http://bio.ltsn.ac.uk/imagebank/ ...	166

Table of tables

	Page
Table 1: Real examples of activities that work well online	36-38