

Appendix E: Funded Research Projects & Partnerships

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Note

This is a listing of all my funded research projects since I started as a Lecturer at Lancaster University (UK) in January 1986. The projects are listed in reverse chronological order. Some project summaries are reproduced from official documents and haven't been updated.

Since moving to Sydney in 2003, I have focused efforts on securing Australian Research Council (ARC) funding, primarily through Discovery and Linkage projects. Most of my ARC-funded projects involve more junior researchers as co-PIs.

Many of the Lancaster-based projects funded under the European Union's Framework Research Programmes were consortial projects involving academic and industrial partners from three or more European countries. In such cases the main partners to the project are listed and the figure shown for funding represents the amount received by my Lancaster University team alone. The total volume of funding for such consortial projects was usually considerably greater. Only projects in which I am or was formally designated as a grant holder/CI are included.

34. Modelling complex learning spaces

\$520,000 (ARC contribution) over 5 years (2015-2019) ARC Discovery grant held jointly with Ass Prof Rob Ellis and with PIs Kenn Fisher (Melbourne Uni) and Alexi Marmot (University College London).

ARC DP150104163

This project aims to identify productive ways of modelling the characteristics and uses of complex learning spaces in higher education. Evidence and models generated by the project will strengthen the logic connecting the use, management and design of learning spaces. A better understanding of the relations between pedagogy, activity and space will improve the work of architects and other designers, campus managers, university teachers and students themselves.

33. Enhancing Workplace Learning Through Mobile Technology

\$224,000 (Office of Learning and Teaching contribution; most funds held by Charles Sturt University; 24 months; 2015-16) also involves Dr Lina Markauskaite (Sydney) and colleagues from Monash and UWS

This project will develop and test a set of resources that will be integrated into a "mobile technology capacity-building framework" for workplace learning. The project will explore how students can make better use of personal digital devices in workplace learning situations to bridge different learning spaces (classroom, workplace and virtual), connect learning and work, and strengthen networked, collaborative, integrative communication processes between students, academics and workplace educators. This will help all participants clarify their understandings of the main issues and opportunities, and improve their technology-mediated learning, practice and teaching skills.

32. Anticipation and decision making skill: from testing to training.

\$326,696 (ARC contribution) over 36 months (2012-2015) ARC Linkage grant held jointly with Donna O'Connor, Michael Jacobson, Mark Williams (Brunel University, UK).

ARC Linkage project: LP120100243

This project examines how experts anticipate and make decisions in dynamic, time constrained environments. The project will identify factors that contribute to the development of expertise and develop simulation-based training programs to facilitate the more rapid acquisition of the skills underpinning anticipation and decision making.

31. Learning, technology and design: architectures for productive networked learning

\$2,744,129 (ARC contribution) over five years (2010-2015)

Australian Laureate Fellowship. Award FL100100203

Human beings learn a great deal from each other: through direct contact, through what they write and through other traces left by their action. In a networked world, learning from others is often mediated by digital technology. It is situated in learning networks. This project aims to: explain successful learning networks, improve our ability to analyse the complex mix of people, tools and tasks involved in networked learning, and equip teachers and educational designers to meet the challenges and opportunities of learning in a networked world. The project will make it possible to connect the best new evidence from research in the learning sciences with the design decisions and learning outcomes of everyone involved in networked learning.

30. Learning through inquiry in higher education

\$425,000 (ARC contribution) over 36 months (Jan 2009 – Dec 2011); Award DP0988334

Australian Research Council Discovery Grant held jointly with Assoc Professor Rob Ellis (University of Sydney) and with Professor Mike Prosser (Hong Kong University) as a partner investigator. *NB I relinquished my role as a CI in this project, 31-12-10: a requirement of taking up the ARC Laureate Fellowship (above).*

Inquiry-based learning is widely used in higher education. It involves students in researching information and taking greater control of their learning activity. Recently it has been criticised as inefficient, particularly when students are given insufficient support and guidance. The project examines the kinds of support and guidance given to students who are engaged in inquiry-based learning across a range of disciplines. It focuses on students' and teachers' perspectives on inquiry-based learning and how it is supported. It examines relationships between learning outcomes and the ways students and teachers conceive of, and approach, inquiry-based learning. Project outcomes will improve the design of inquiry-based learning tasks.

29. Professional learning for knowledgeable action and innovation: The development of epistemic fluency in higher education

\$220,000 (ARC contribution) over 36 months (Jan 2009 – Dec 2011); Award DP0988307

Australian Research Council Discovery Grant held jointly with Dr Lina Markauskaite (University of Sydney).

Finding innovative solutions to real-world problems needs a combination of different kinds of knowledge, drawn from several disciplines and professional fields. Effective members of multidisciplinary teams are flexible and adept with respect to different kinds of knowledge and ways of knowing. The project investigates the qualities that help individuals and professional teams and communities achieve this fluency with complex knowledge. It integrates two perspectives: researching (i) ways that professional communities create and organise their shared knowledge, and (ii) the personal mental resources that individuals need to participate in such activity. The outcomes will be useful in improving professional education and graduate recruitment

28. Teaching, technology and educational design: the architecture of productive learning environments

\$291,250 (Australian Learning & Teaching Council) over 12 months (Feb 2008 to Jan 2009)

The award of a Senior Fellowship of the ALTC (formerly Carrick). The program of work associated with this fellowship included the development of tools and methods for analyzing and designing productive learning environments at the HE level. The project drew on ideas about 'Teaching-as-Design', taking inspiration from architecture as a source of insights into educational design.

27. Blended learning in schools, TAFE and universities: experience, principles, patterns and practices

\$270,000 (ARC contribution) over 36 months (March 2006 to March 2009): LP0562146

Australian Research Council Linkage Grant, held jointly with Assoc Prof Mike Prosser & Dr Rob Ellis. Industry partner: NSW DET.

Capturing and represent successful examples of 'blended learning' in these three education sectors, taking a design patterns approach.

26. Analyzing and supporting cooperation management in online learning communities

\$200,000 over 36 months (January 2005 to December 2007): DP0560014

Australian Research Council Discovery Grant, held jointly with Prof Peter Reimann, Assoc Prof Judy Kay, Dr Kalina Yacef.

An investigation of the collaboration behaviours of learners who are involved in long-term learning partnerships; the role of group-support technology in helping groups monitor and improve their collaborative work.

25. Learning through online and co-present discussion in higher education: expectations, experiences and outcomes

\$228,000 over 36 months (January 2005 to December 2007): DP0559282

Australian Research Council Discovery Grant, held jointly with Assoc Prof Mike Prosser and Dr Rob Ellis

A study linking phenomenographic and socio-cultural interpretations of how students learn through co-present and online discussions.

24. ICT and pedagogy review

\$20,000 over 6 months (April 2004 – September 2004)

MCEETYA ICT in Education Task Force, held jointly with Prof Peter Reimann

A thematic review of the literature on pedagogy and ICT

23. A pattern language for networked learning

\$25,000 over 12 months (January 2004 to December 2004)

University of Sydney Sesqui R&D fund

A seed funding grant for work on educational design patterns, based on the work of the architect Christopher Alexander.

22. TELL: towards effective network supported collaborative learning activities

£40,014 over 24 months (January 2004 to December 2005)

Analysis of successful examples of collaborative online learning; development of design patterns and a pattern language for collaborative networked learning. Funding from the European Commission.

21. ELEN: a network of e-learning centers

£20,719 over 24 months (October 2002 to September 2004)

A grant from the EU to support the establishment of a European network of excellence in e-learning. Held jointly with Christine Steeples.

20. LinkER

£19,250 over 10 months (October 2002 to July 2003)

Formative evaluation of a set of projects funded by the UK Joint Information Systems Committee to investigate issues concerned with linking digital libraries and virtual learning environments at the HE/FE level. Held jointly with Dr Chris Jones.

19. Formative evaluation of the UK Learning and Teaching Support Network (LTSN)

£201,156 over 21 months (April 2001 to December 2002)

The LTSN is a major network of 24 subject centres based in higher education institutions throughout the UK and a single Generic Centre. It aims to promote high quality learning and teaching through the development and transfer of good practices in all subject disciplines, and to provide a 'one-stop shop' of learning and teaching resources and information for the HE community. (See <http://www.ltsn.ac.uk/>) I am leading a project team whose goal is to provide a formative evaluation of LTSN. The project offers substantial opportunities to examine aspects of organisational change with respect to learning and teaching practices in the UK higher education system. As well as managing the project, I have specific responsibility for issues concerned with the use of learning technologies. The other grant holders in this project are Professor Oliver Fulton, Professor Murray Saunders, Dr Peter Knight and Dr Paul Trowler - all of the Department of Educational Research at Lancaster University.

18. Pedagogical evaluation of the DNER (Distributed National Electronic Resource)

£199,344 over 28 months (April 2001 to July 2003)

The Distributed National Electronic Resource (DNER) is a managed environment for accessing quality assured information resources on the Internet which are available from many sources. These resources include scholarly journals, monographs, textbooks, abstracts, manuscripts, maps, music scores, still images, geospatial images and other kinds of vector and numeric data, as well as moving picture and sound collections. The DNER is primarily a service to the UK higher education and further education community and is intended to support both learning and teaching and research. I am leading the strand of the formative evaluation of the DNER which is concerned with its use in learning and teaching. The project offers opportunities to gather evidence about current practice in the use of Internet resources in learning and teaching in UK HE and to explore the role of pedagogical intentions in designing, planning and managing complex national e-learning resources. My co-director is Dr Chris Jones and the evaluation project as a whole is directed and managed by Dr Shelagh Fisher and Professor Peter Brophy of Manchester Metropolitan University,

17. Interactive lecturing on the net: improving teaching knowledge

£36,101 over 18 months (Mar 2001 to Aug 2002)

This was a small-scale project funded by the Economic and Social Research Council (ESRC). The project had two main aims: 1. To assess the potential of interactive web-based lecturing as a site for (a) researching teachers' pedagogical thinking, beliefs and knowledge and (b) helping teachers improve their practice through more frequent and more sophisticated forms of reflection, 2. To examine how teachers make use of intrinsic and extrinsic feedback, from students' collaborative seminar activities, in thinking about and improving their own teaching. The project made use of internet-based streamed video lectures coupled with face-to-face discussion within learner groups.

16. Student experiences of networked learning in Higher Education

£159,173 over two years (Jan 1999 to December 2000)

The main aims of this project were to survey students' experiences of networked learning in UK higher education and to provide an analysis of relationships between (i) students' approaches to networked learning, (ii) salient features of networked learning environments and (iii) learning outcomes. In addition the project team has created a national advice and information service on networked learning in higher education. This service will continue after the end of the project, funded by revenues from accredited courses, workshops and consultancy. The project grant was held jointly with Christine Steeples and Vivien Hodgson. I drafted the proposal and was the project manager. The project was funded by the Joint Information Systems Committee (JISC) of the UK university funding councils, through its Committee for Awareness, Liaison and Training (JCALT).

15. ETOILE (Environment for Team, Organisational and Individual Learning in Emergencies)

£204,350 over two and a half years (Sept 1998 to March 2001)

An EU Esprit grant under the *IT for Learning and Training in Industry* theme, held jointly with Dr Julie-Ann Sime. The project is particularly concerned with team training for emergency response and is using distributed simulation-based training methods, virtual reality and intelligent agent technology to substitute for selected agencies in team training situations. The research focus for the Lancaster-based work is on the acquisition and use of shared mental models in team training and subsequent performance. The users are (a) organisations responsible for training and security in the Spanish nuclear power industry, (b) Metro Bilbao (the underground railway operators for Bilbao in Northern Spain). Other main partners: Fraunhofer IDG, Labein, Iberdrola, STN Atlas, Tecnatom.

14. Teaching with interactive multimedia in the corporate sector

£14,251 over one year (Sept 1998 to August 1999)

This grant was held jointly with Christine Steeples. The funding was managed by Technologies for Training Ltd on behalf of the Department for Education and Employment. The purpose of the project was to identify the various roles tutors can play in teaching, developing and otherwise supporting learners, where the primary learning method is CBT/interactive multimedia. The focus was on tutoring in the corporate sector, though relevant information from other adult learning contexts, including FE & HE, was also used. The project aimed to describe current tutoring practices, identify best practice and the competences associated with best practice, and to disseminate findings in a form useful to training managers, tutors and other key personnel involved in corporate training.

13. Shareable representations of practice: the use of asynchronous multimedia computer conferencing (SHARP)

£224,450 over two years (Sept 1997 - August 1999)

I was the project manager for this consortial EU project, funded as part of the Open and Distance Learning strand of the Socrates Programme. The project was concerned with the use of asynchronous multimedia conferencing technology to help communities of experienced practitioners document, discuss and improve their working practices. The practitioners in our user trials were from the software engineering and information systems industry. Partners in the consortium include Agder and Stord College (Norway), the Regional Technical College Limerick (Ireland), A Priori Ltd (UK) and the National Technical University, Athens. SHARP can be seen, in part, as a follow on project from MECPOL and JITOL (see below).

12. Models for European Collaboration and Pedagogy in Open Learning (MECPOL)

£40,000 over three years (Oct 1995 - Sept 1998)

MECPOL addressed two main issues arising from the idea of inter-university European partnerships in open and distance learning (ODL):

- models of collaboration, exchanges and joint efforts between institutions in higher education.
- models for pedagogy, structure, distribution and design of course modules and learning material for ODL

The Lancaster work concentrated on (i) elaborating the concept of a Virtual Learning Institute (an entity formed through collaboration between three or more universities, offering a programme of courses via networked learning methods), (ii) producing organisational and pedagogical guidelines for networked learning in a VLI.

11. Computer-mediated communications in higher education (CMC in HE)

£100,000 over two years (July 1994 to June 1996)

A British Telecom funded project under their University Development Award scheme, to create a network of universities using CMC technology to improve the flexibility of teaching and learning. The project was 'action research' in style, with a strong focus on questions of co-ordinating top-down and bottom-up change processes, as well as with substantive concerns in the area of computer-mediated learning at a distance.

10. JITOL ('Just-in-time IT-based Open Learning')

£450,000 over three years (Jan 92 - Dec 94)

An EU DELTA project, the goal of which was to set in place and evaluate three versions of a model for IT-based Open Learning. The project created a communications infrastructure for three groups of professionals, distributed throughout Europe. The project allowed us to examine more closely the ways in which communications technology could support continuing professional development, and especially with its use in building and sustaining distributed communities of practice. Partners include Digital Equipment, Credit Agricole, Logica, Neuropelab, Dida*el, University of Namur, Norwegian Ministry of Education. I was the Lancaster project manager for JITOL and played a leading role in shaping the proposal and the subsequent programme of work for the whole project. Other members of the Lancaster team included Viv Hodgson, David McConnell, David Hutchison, Murray Saunders, Chris Steeples and Chris Paice.

9. DISCOURSE

£256,896 over three years (Jan 92 to Dec 94)

An EU DELTA project, concerned with the development of tools to support the design and production of computer-based learning materials. The project was an extension of the research we carried out in TOSKA (see below) and included fundamental work on courseware engineering. Partners included Deutsche Aerospace, Siemens, ADV, Knowledge Technologies. Lancaster project work was managed jointly with Robin Johnson.

8. OSCAR

£44,040 over one year (Feb 92 to Feb 93)

Our work on this project focused on the elicitation of user requirements and specification of a project management toolset for distributed courseware engineering teams. The project provided an opportunity for clarifying the nature of project management activities and especially the communications needs of instructional systems design teams. Partners included TecnoPolis, Triumph Adler, Telespazio SpA, CNR/ITDGenova. Funding was from the EU DELTA programme.

7. KISSE

£4,000 over three years (1993 to 1996)

This was a small British Council funded project which had the aim of developing a link with a research team at the University of Freiburg, Germany, led by Peter Reimann and Hans Spada. Work on the project focused on approaches to simulation based learning. In addition to bilateral visits and seminars, the joint project teams gave a workshop at the AI in Education Conference in Edinburgh (August 1993). Among other things, the project formed an intellectual and developmental bridge between the SIMULATE and ETOILE projects.

6. TOSKA

£113,555 over two years, (March 1989-March 1991)

The aim of this project was to create a prototype knowledge-based authoring system for the generation of intelligently adaptive courseware in the domain of technical training. The Lancaster-based research on this project focused on ways in which instructional systems designers conceptualised learning styles and ways in which the features of instructional design support tools could afford alternative conceptualisations of learner attributes. This was an E.C. DELTA exploratory action project, partners in our consortium being the Dornier Knowledge Based Systems and Training Group (W. Germany), University of Leeds Computer-Based Learning Unit, CTC (Greece), Dida*el (Italy) and IMS (Ireland).

5. SIMULATE

£35,000 over 2 years. (April 1989-April 1991)

The Lancaster work on this project was managed jointly with Dr John Self (then of Lancaster's Computing Dept.). The main aim was to create an integrated toolset for producing intelligent embedded simulations for training purposes. The Lancaster work on this project involved two research topics: (i) studying the tutorial strategies and teaching knowledge used in providing interactive non-directive guidance to learners using exploratory learning programs and (ii) synthesising findings on the interactions between learning processes, learner characteristics and learning with simulations. The project also involved Philips, Courseware Europe and the Universities of Eindhoven and Amsterdam (all Netherlands), Leeds University, and the Technical Training Research Laboratory of Spanish Railways (TIFSA).

4. Simulation-based training with interactive videodisc in SMEs (RIE)

£20,000 over 2 years (October 1990 -September 1992)

The design, production and evaluation of an interactive videodisc on the applications of interactive media for training in small and medium sized enterprises: a COMETT project with 7 European partners. While mainly a production project, RIE allowed us to investigate methodology for the design of interactive multimedia simulations, which subsequently fed into our MSc programme and other EC/EU projects.

3. A review of cost-benefit analysis methods and feasibility study for a computer-based training analyst's toolset

£12,500 over 4 months (Jan 1990 - April 1990)

This was an applied research project for Ferranti Training Systems Division, Manchester. Ferranti TSD were heavily involved in the construction of multi-million pound training simulators, particularly for pilot training. The aim of the project was to help TSD management identify ways of changing their business approach from engineering-led to training-led methods. The project provided a review of tools and methods for high risk training and proposals for the development of a training analyst's toolset.

2. Electronic mail systems for supporting school-based INSET and curriculum development

£12,800 over 5 months (Jan 1987 - May 1987)

This project was funded by the Manpower Services Commission, and was a relatively early experiment in using email and computer-conferencing to support a community of practitioners working on a common task - an approach later developed in the JITOL project and its successors. The practitioners concerned were Advanced level maths teachers who were working together on innovations in the Joint Matriculation Board's A level Maths curriculum. Associated with this project was a separate investigation of the usability of electronic mail for teaching at secondary level, funded through two ESRC/DES teacher fellowships (Sept 1986 to August 1987).

1. Teaching expertise and decision-making in intelligent tutoring systems

£3,500 over 18 months (1986 to 1988)

This was a joint project with Stellan Ohlsson at the Learning Research & Development Center, University of Pittsburgh and was funded by the British Council. The funding paid for a programme of participation in seminars and conferences in Lancaster and Pittsburgh, culminating in the workshop which produced my book on *Teaching Knowledge and Intelligent Tutoring*.

Research partnerships

The following organizations have been research partners in various projects over the last 20 years. In each case, the organizations concerned have co-funded the research, usually with a view to eventual commercial exploitation of research outcomes and/or to improvement of their own internal processes. (Names of the organisations reflect titles at time of project.)

New South Wales Dept for Education & Training/Community
Northern Territory Dept for Employment, Education and Training
Optus Singtel (Telco)
The Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA)

ADV (large Paris-based software house)
BT (British Telecom)
Credit Agricole (Major French bank)
Deutsche Aerospace (Daimler/Chrysler)
Dida*el (leading Italian courseware production company)
Digital Equipment (US computer manufacturer & consulting company)
Ferranti Training Systems Division (UK manufacturer of flight simulators)
Iberdrola (responsible for safety-training in the Spanish nuclear power industry)
IMS (leading Irish software house)
Knowledge Technologies (Belgian knowledge-based systems production company)
Logica (large UK software house)
Metro Bilbao (the underground railway operators for Bilbao in Northern Spain)
Neuropelab (Swiss/French clearing house and R&D centre for the knowledge economy)
Philips (major Dutch IT and electrical manufacturing company)
Siemens (major German IT company)
STN Atlas (one of the largest German manufacturers of virtual reality training simulators)
Tecnatom (Spanish nuclear power generation company)
Telespazio SpA (Italian aerospace company)
TIFSA (Technical Training Research Laboratory of Spanish Railways).
Triumph Adler (leading German IT/media company)