Abstract

1967 was also an important year in the history of educational technology. In this talk, I plan to use three reference points in order to characterise a few significant developments in this history: 50 years ago, the present day and a midpoint around 1992. The early 90s were a particularly fertile time for educational technology research and development – at Lancaster and more generally.

R&D projects at Lancaster in the early 90s forged connections between novel conceptions of learning – as participation in communities of practice – and rudimentary digital technologies for sharing and co-creating knowledge. This laid foundations for new ways of working in higher education that are important in the department’s operations today. It anticipated technological developments and social practices that have transformed people’s expectations and experiences of communication, community formation, learning and work.

More recently, research on networked learning has broadened its scope to acknowledge the complex meshworks of people, materials, tools, places, ideas and activities that constitute knowing and coming to know. I will draw upon lessons learned in Lancaster in that pivotal early 90’s period, as well as on contemporary research, to speak about the growing importance of design and of ways in which research can be oriented so that it creates useful knowledge for vernacular
educational design.

I’m using this slide merely to mark the fact.
The photo is open to many readings.

Is the man marvelling (encouraging us to marvel) at the machine, while the women who make it function look on?
1967±2

1966 – UCLA runs first grad course for CAI programmers
1967 – Paul Tenczar creates TUTOR authoring language for PLATO CAI system
1967 – Wally Feurzeig, Seymour Papert & Cynthia Solomon create Logo
1967 – Launch of NCET (National Council for Educational Technology; Dir: Tony Becher)
1969 – SSRC funds first two research projects on CAI/CAL

Foundations being laid in the late 60s

The UCLA course is described in Silvern & Silvern (1967) A Graduate Level University Course in Methods of Computer-Assisted Instruction, *IEEE Trans on Human Factors in Electronics.*

It’s a forerunner of Lancaster’s MSc IT & Learning (which began in 1989)

TUTOR was intended to allow university instructors/professors to write their own CAI

Logo powered the first ‘coding’ craze in the early 1980s, esp. after the publication of Papert’s book *Mindstorms.* Logo and Prolog programming constituted one leg of the ‘AI & Education’ field from around 1980; Intelligent Tutorings systems comprising the other.

NCET went through several changes of identity (eg CET) eventually becoming BECTA (chaired for a while by David Hargreaves), which was closed in 2010 as a ‘cost-saving’ measure. A false economy.

NDPCAL was a very substantial R&D program; it shaped the landscape of CAL in the 70s. Its evaluation – by the UAE CARE team - was particularly insightful
1992 ±2

First international Conference of the Learning Sciences (1992)

Substantial increase in EU funding for R&D in educational technology

NATO Science Committee Special Programme on Advanced Educational Technology (1988-93)


Allan Collins (1990) & Ann Brown (1992) – papers on design experiments -> Design Based Research


This period also saw the first academic program in the Learning Sciences, at Northwestern University; Journal of the Learning Sciences first appeared in 1991)

The NATO AET program funded a very large number of workshops and advanced study institutes; many of the proceedings published in a Springer series; made a substantial contribution to R&D capacity building in Europe.

The Ed Tech high ground was also beginning to shift – from dominance by AI/Cog Sci computational modelling paradigms towards a greater openness to ideas from sociology and anthropology. Lucy Suchman’s 1987 book marked the beginning of the end of a period of social naivete in AI (and Ed).


I selected two (of several possible) lines of development that had origins in our work on JITOL, tracing them forward into more recent projects.

The first centres on relations between knowledge and action in professional practice; varieties of working knowledge etc.

For educational researchers who don’t know Tim Ingold’s work, the following are good introductions:


A small follow up project, building on JITOL, was SHARP – ‘Shareable Representations of Practice’. Papers from it include:


The second theme concerned understanding learning as taking place within heterogeneous networks of people and things.

It’s informed by the ‘socio-material’ and network turns in social and educational theorising, and draws on work by people such as Orlikowski, Barad, Ingold, Knappett, Schatzki, Shove.

For intros see opening and closing chapters of:


Analysis of bush rescue training for paramedics: meshworks of people and things

Slide source: Goodyear 2011.

There’s a treatment of this case in:

Successful participation in the exercise involves:

1. learning to use each tool, at least with sufficient fluency to be able to act according to the established protocols, but ideally with a level of automaticity that binds tool and action in a smooth flow

2. integrating the use of the tools into a web of activity, involving smooth effective action, co-ordination with others, focus on the priority goals, etc.

3. turning the individual and aggregate experiences of the exercise into learning that lasts

The point of the exercise is not to master the individual tools but to participate in the construction of a co-ordinated web of activity that can result in a successful rescue, minimising danger to participants, and leaving traces (in some kinds of memory) that mean doing something like this again will not feel entirely new....
These next four slides are from photographs taken by Gilbert Importante. Gilbert was awarded his PhD in 2017, for a study titled:

*Learning through techno-human entwinement: implications for the adoption of technologies drawn from agricultural and ICT interventions in the Philippines*

This photo comes from a project where farmers are using GIS mapping for soil fertility categorization – data are immediately reported to the Department of Agriculture database.
Source: Gilbert Importante

Farmer with technician doing interview for soil characterization
Use of GIS mapping by farmers for soil fertility categorization

Map, GPS, notepad, car – entangled in activities of farmers & technicians – as are databases, communications infrastructure, categorisation systems, the soil, varieties of rice, farming practices for improving soil fertility, etc.
Source: Gilbert Importante

Philippine Rice Information System (PRISM)
I may not dwell on this slide, but included it because (a) it was written by Tony Becher soon after he became director of the NCET, (b) it gives a nice link to Brett Bligh’s work, 50 years later, (c) of the typography.

— Tony Becher and Richard Lyne

“It should not be overlooked, for example, that the physical design or re-design of schools and other institutions to accommodate the products of fresh thinking about learning systems are an important element in any technological approach to education.”

Becher & Lyne (1968) Education + Training, Vol. 10 Issue: 12, pp.494-495
Photo from Tina Hinton

The X-Lab in the Charles Perkins Centre Hub building at Sydney Uni. The CPC is a very large research and education centre, a home for interdisciplinary research focussed on Obesity, Diabetes & Cardiovascular disease. The X-lab opened three years ago.

Research site for Tina Hinton, who is studying for her second PhD. She’s an academic who teaches in this space and played a substantial role in its design.

Mounted, moveable desktop computers in the X Lab which allow access to multiple modes of communication, including multiple concurrent high definition digital video inputs to each student computer from the instructor’s PC, a face camera and a digital visualizer located above the instructors’ work area, alongside access to digital and online resources.

Participating in the communication of science: identifying relationships between laboratory space designs and students’ activities

Tina Hinton, University of Sydney, PhD, ongoing
Learning in small and large groups, with cohorts from multiple disciplines (including biomedical, veterinary and health sciences, and molecular biosciences), different years of study, as well as a range of units of study and degree programs. They allow academic, technical and support staff to work side by side.

Published studies:


We have some (incomplete but nevertheless useful) bodies of knowledge on which to draw in reasoning about some of these key relationships.

For example, what goes on when students interpret task requirements and improvise their own learning activities is a territory that has been studied by researchers interested in ‘students approaches to learning’ or SAL. This has a long history in HE (deep & surface etc).

One important claim in this diagram is that relationships between ‘things’ (artefacts, features of learning/work places etc) and activities (H-T) are not pedagogical relationships. Areas of R&D like ergonomics may be more appropriate. I conjecture that this could prove useful in convincing campus infrastructure managers, architects, builders & others of the necessity of some design elements – offering sharper arguments than we typically find with pedagogical argumentation.

“Students need x to do the job/complete the task”
A few poss take away points

The Ed Tech/TEL field has changed from focussing on research objects that were esoteric – when students’ access to technology depended on provision by researchers/innovators – to understanding digital/media practices that are very widespread (at least among richer students in the richer countries). ‘Digital native’ does not mean digitally capable – AND unis need to be more ambitious/thoughtful with respect to digital capabilities that enhance students’ epistemic (knowledge creating) capacities as well as their capacities to collectively shape worthwhile action in the world.

Helping students learn to create appropriate epistemic & productive environments is key here. See closing chapters of:

Pasteur’s Quadrant – idea developed in Donald Stokes’ book on academic R&D; brought into ed res debate by Alan Schoenfeld in his 1999 AERA Pres address.


My main point here was about the department’s success (over the years) of doing work in ‘Pasteur’s Quadrant’ – where utility and fundamental understanding can be combined and where funds intended for specific application-oriented R&D or evaluation can also be used to create more broadly valuable outcomes/outputs.

My contention is that the Department of Ed Res at Lancaster learnt to do this well in the 1990s & that this takes an unusual combination of research leadership, strategy & culture. I still think this is a rare talent – not found in many educational research departments. It allowed us to sustain a large research community at Lancaster and do well in RAE etc. It helps one see research excellence and practical impact as complementary rather than in competition.
Thanks

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