Developing research capacity and personal research plans in the field of university learning and teaching

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This session is for people who are involved in educational innovation, enhancement of learning and teaching, curriculum and assessment reform, academic development, design for learning, scholarship of teaching and learning and associated areas. Its purpose is to offer an opportunity for people involved in these areas to think about, and discuss, ways of strengthening the research they do in this broad and complicated space. To guide discussion, I will touch on each of the following:

1. Framing research to be useful and to contribute to fundamental understanding
2. Expanding conceptions of the research space: including the 'what' and 'why' as well as the 'how' of university learning
3. Securing resources for research
4. Strengthening capacity to create and apply research-based knowledge
5. Connecting individual and collective endeavours.

1. Framing research to be useful *and* to contribute to fundamental understanding

2. Expanding conceptions of the research space: including the 'what' and 'why' as well as the 'how' of university learning

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ARC Grants relevant to learning, teaching, assessment curriculum in HE;
incl Sydney focus/research sites

Developing interdisciplinary expertise in universities: Learning to co-create knowledge across disciplinary boundaries in laboratories and courses
Markauskaite, Goodyear, Wrigley; 2020-2023 (may or not be awarded; couldn't possibly say)

Modeling complex learning spaces
Ellis, Goodyear; 2015-2019

Learning, technology and design: architectures for productive networked learning
Goodyear; LF, 2010-2015

Learning through inquiry in higher education
Goodyear, Ellis; 2009-2012

Professional learning for knowledgeable action and innovation: The development of epistemic fluency in higher education
Goodyear, Markauskaite, 2009-2011

Blended learning in schools, TAFE and universities: experience, principles, patterns and practices
Goodyear, Ellis, Prosser; LP, 2005-2009

Learning through online and co-present discussion in higher education: expectations, experiences and outcomes
Goodyear, Ellis, Prosser; 2005-2007

1. Framing research to be useful *and* to contribute to fundamental understanding

Pure basic research is experimental and theoretical work undertaken to acquire new knowledge without looking for long term benefits other than the advancement of knowledge.

Strategic basic research is experimental and theoretical work undertaken to acquire new knowledge directed into specified broad areas in the expectation of practical discoveries. It provides the broad base of knowledge necessary for the solution of recognised practical problems.

Applied research is original work undertaken primarily to acquire new knowledge with a specific application in view. It is undertaken either to determine possible uses for the findings of basic research or to determine new ways of achieving some specific and predetermined objectives.

Experimental development is systematic work, using existing knowledge gained from research or practical experience, which is directed to producing new materials, products, devices, policies, behaviours or outlooks; to installing new processes, systems and services; or to improving substantially those already produced or installed.

Definitions updated as per ABS current consultation on the ANZ standard research classification review. Still based on OECD Frascati manual.

Frascati BR = ANZSRC PBR and SBR

1. Framing research to be useful *and* to contribute to fundamental understanding

Basic/Pure ──────────────────────────────────→ Applied

Many fields/disciplines, esp in STEM and arts, experience and/or express this
as a tension, a zero-sum game

Resolving the tension between applied and pure research
Research in 'Pasteur's Quadrant' (Stokes, 1997)

Alan Schoenfeld
UC Berkeley (1999)

Considerations of use (practical application etc)?

		NO	YES
Quest for fundamental understanding (theoretical/ scientific advances, etc)?	YES	Pure basic research (Niels Bohr)	Use-inspired basic research (Louis Pasteur)
	NO	'Bird spotting' (Gilbert White)	Pure applied research (Thomas Edison)

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.
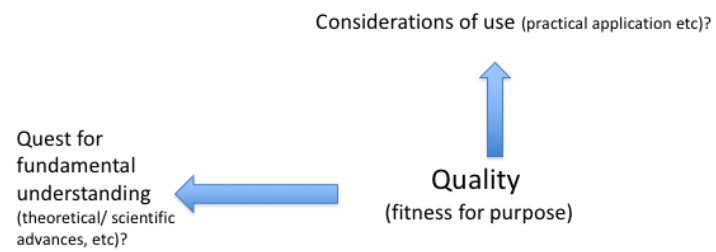
Schoenfeld, A. (1999). Looking toward the 21st century: challenges of educational theory and practice. *Educational Researcher, 28*(7), 4-14.
Stokes, D. (1997). *Pasteur's quadrant: basic science and technological innovation*. Washington: Brookings Institute.

My main point here is about doing work in 'Pasteur's Quadrant' – where utility and fundamental understanding can be combined and where funds/resources intended for specific application-oriented R&D or evaluation can also be used to create more *broadly* valuable outcomes/outputs.

Some centres/depts/units learn to do this well & that this takes an unusual combination of research leadership, strategy & culture. Still a rare talent – not found in many places. It helps one see research excellence and practical impact as complementary rather than in competition.

Improving the quality of research (in Pasteur's Quadrant)

Considerations of use (practical application etc)?

Quest for
fundamental
understanding
(theoretical/ scientific
advances, etc)?

Quality
(fitness for purpose)

Unpacking 'quality'

Considerations of use (practical application etc)?

    Use by whom?
    For what purposes?
    How do they work?
    What kinds of knowledge can make a difference to their work?
    Resolvable.

Lack of attention to these issues has undermined general perceptions of the usefulness of educational research

Quest for fundamental understanding (theoretical/ scientific advances, etc)?

    What needs explaining?
    What does an adequate explanation look like?
    What kinds of facts, principles, models, theories, etc are suitable for our
        domain(s) of study?
    Widely (and wildly) contested – make your choice.

2. Expanding conceptions of the research(able) space

Challenging the tension between teaching and research as competitors for time, resources, prestige etc
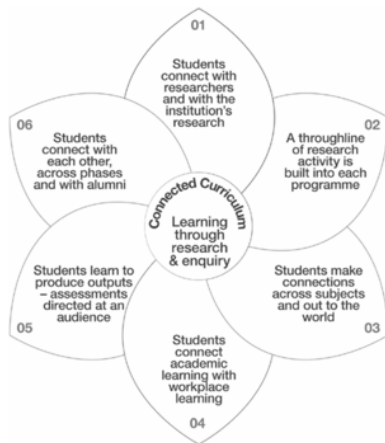
Connected curriculum; research-informed teaching etc

Researching local innovations in L&T practices ('how')

Researching professional and academic practices ('what' and 'why')

Research at the course:practice interface (practicum assessment etc)

Fig. 1.1   The Connected Curriculum framework

Fung, D. (2017). *A connected curriculum for higher education*. http://www.ucl.ac.uk/ucl-press/browse-books/a-connected-curriculum-for-higher-education, p5

Connectedness 2.0: Towards a theory of HE connectedness for the best chance for all

What if our sector took responsibility for pursuing inescapable opportunities for connectedness – with and between all staff, students, students' families and communities, curricula, learning environments, sectors, industries and professions – with good purpose and empathy?

By SALLY KIFT

1) Between disciplines
2) Between the academy and the wider world
3) Between research and teaching
4) Between theory and practice
5) Between the student and teacher/lecturer/professor
6) Between the student in her/his interior being – and in his/her being in the wider world
7) Between the student and other students
8) Between the student and her/his disciplines – that is, being authentically and intimately connected epistemologically and ontologically
9) Between the various components of the curriculum
10) Between the student's own multiple understandings of and perspectives on the world
11) Between different areas – or components – of the complex organisation that constitutes the university
12) Between different aspects of the wider society, especially those associated with society's learning processes.

12 Dimensions of Connectedness

from
Ron Barnett's preface to Dilly
Fung's *'Connected curriculum'*

Shaping/informing media coverage of fundamental HE L&T issues

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Universities' critical thinking is in a critical state 🔒

By Alex Wright 25 July

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By Daniel Hutto 13 February

There is no such thing as 'critical thinking' 🔒

By Stuart Wrigley 4 January

Do critical thinking skills give graduates the edge? 🔒

By David Matthews 3 August

3. Securing resources for research

ARC & other high status grants, esp. now ALTC/OLT is gone

Use value & exchange value of research grants

What do we need money for?

Developing new ideas

Research planning

Data-gathering

Analysis

Writing/Dissemination

4. Strengthening capacity to create and apply research based knowledge

Considerations of use (practical application etc)?

Use by whom?
For what purposes?
How do they work?
What kinds of knowledge can make a difference to their work?
Resolvable.

Lack of attention to these issues has undermined general perceptions of the usefulness of educational research

A *pragmatic* view of use-inspired research: better than guessing what research users need; avoids wishful thinking about 'trickle-down evidence'

Goodyear, P. (2019). Networked professional learning, design research and social innovation. In A. Littlejohn, J. Jaldemark, E. Vrieling, & F. Nijland (Eds.), *Networked professional learning: emerging and equitable discourses for professional development* (pp. 239-256): Springer.

Epistemic fluency

Being able to recognize and participate in a range of ways of creating and using knowledge

Knowing what kinds of knowledge are (most) appropriate in specific practices & situations (within HE)

Actionable knowledge and knowledgeable action

Seemingly endless contestation about knowledge undermines research-informed practice
Confusion in e.g. HE press/commentary and in HE leadership/debate

Research generating new/more productive ways of framing matters, rather than providing optimal answers to well-formed questions ('evidence-based practice').

Markauskaite, L., & Goodyear, P. (2017). *Epistemic fluency and professional education: innovation, knowledgeable action and actionable knowledge*. Dordrecht: Springer.

"One of the functions of close-up research with its emphasis on depth and understanding is an attempt to explain why things are as they are and, where we identify wrongs, *ceteris paribus* how we might change them… Making a difference inside a system inevitably involves a compromise whereby a bracket is effectively placed around the things that are not under the control of the particular actors in concrete situation"

(Clegg et al., 2016, 234-5)

Close-up (design) research aimed at explaining how local systems function – mechanisms in context

Identifying the space for action and the knowledge needs of the actors

Both inquiry and design often need special tools and methods.

Clegg, S., Stevenson, J., & Burke, P.-J. (2016). Translating close-up research into action: a critical reflection. *Reflective Practice, 17*(3), 233-244. doi:10.1080/14623943.2016.1145580
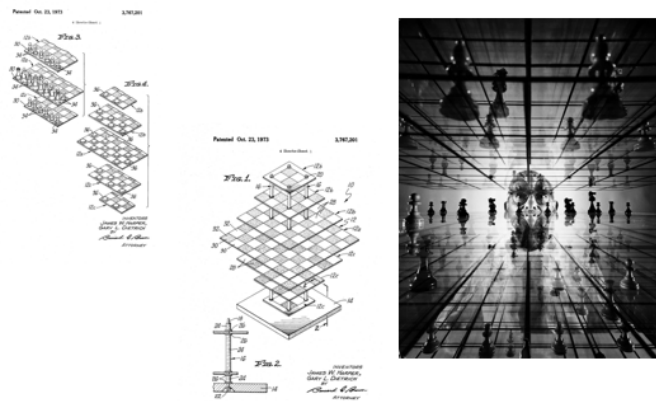
Working life in complex organisations
can be like playing multi-dimensional chess – while the number of boards is in flux

Dr. Ervand Kogbetliantz with his three-dimensional chessboard, New York City, 1952.
Yale Joel—The LIFE Picture Collection/Getty Images
And
https://patentimages.storage.googleapis.com/pages/US3767201-1.png

Each game space is a mix of epistemic and productive action (in which one searches for better understanding and tries to make things better)

Some of our sharper theoretical ideas about relations between people & technology, individual action and social issues, economy, politics, society, identity etc have been worked out on 'higher planes' – in which our professional agency is often quite limited.

Knowing which planes/games you can play (at any one time; for any one project) is key

Pulling ideas between games can be v useful; mapping connections between game spaces too; spotting moments when one can work in other spaces – all strategically important & part of 'moral know how'

Such fluency is important for ourselves as educational workers but also important as something we want to help our students develop.

But also bear in mind the limits of the metaphor – games spaces & their relations shift; they are undergoing dynamic construction, often by powers outside our control – but not always.
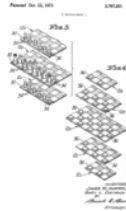
Epistemic fluency

The mix of kinds of useful knowledge and ways of knowing, and relations between knowledge and action varies between spaces

Spaces are dynamic and open to shaping

Epistemic & productive spaces

National/political – voting, participation in political parties, movements, campaigning organisations etc

Sectoral – shaping policy for HE

Institutional – shaping own university's mission, policies, strategies, etc

Broad curriculum – (re)shaping courses, curricula, assessment regimes etc

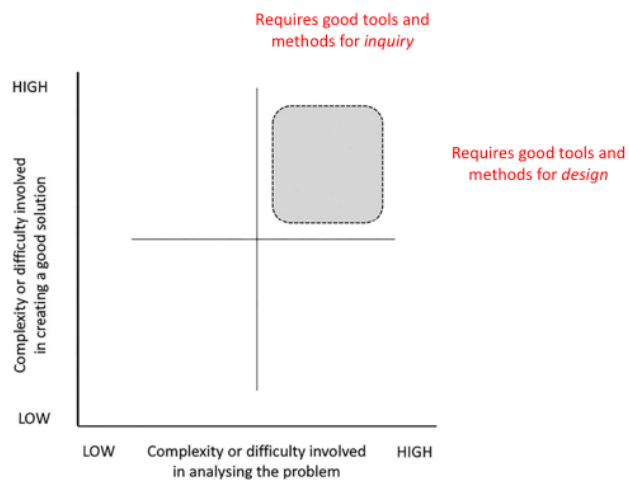Specific/local (re)design work on tools/spaces; tasks, etc.

Figure 9.1

Ellis, R., & Goodyear, P. (2019). *The education ecology of universities: integrating learning, strategy and the academy*. Abingdon: Routledge.

Table 9.1 'Insider' approaches to analysis & design

	Approach	Source
E	Action learning	Pedler, 2011
	Action research	Lewin, 1952
E	Community-based design research	Bang et al., 2016
	Creative communities	Manzini, 2005
	Design anthropology (emic; etic)	Gunn et al., 2013
E	Design-based implementation research	Fishman et al., 2013
E	Design-based research	Kelly et al., 2008
E	Expansive learning	Engeström & Sannino, 2010
E	Formative interventions	Engeström et al., 2014
	Formative/developmental evaluation	Patton, 2010
	Lean startup	Gong & Janssen, 2015
	Participatory design	Schuler & Namioka, 1993
E	Participatory design research	Bang & Vossoughi, 2016
	Participatory action research	Whyte, 1991
E	Practice-based research	Levy, 2003
	Rapid prototyping	Connell & Shafer, 1989
	Second order cybernetics;	Sweeting, 2016
E	Self-managing learning ecologies	Ellis & Goodyear, 2010
	Soft systems methods	Pries-Heje et al., 2014
E	Social design experiments	Gutiérrez & Vossoughi, 2010
	Theory-based/driven evaluation	Coryn et al., 2011
	Transformation design	Burns et al., 2006

Note: E in column 1 denotes an approach originating in, or best exemplified by, research and practice in education.

Soft systems

Formative evaluation

Formative interventions

Participatory design research

See also Carvalho, L., & Goodyear, P. (2018). Design, learning and service innovation. *Design Studies, 55*, 27-53. doi:https://doi.org/10.1016/j.destud.2017.09.003

5. Connecting individual and collective endeavours

Trying to cover all the bases in an R&D project lifecycle, as an individual, is a recipe for burnout

Sharing 'soft infrastructure' for research – esp. skilled people + dissemination channels & relationships

Research-practice partnerships

Networked improvement communities

Translational designers

Mapping and shaping the field – the ABS/ANZ Research classifications

New FoR Number	New FoR Name	Change
13	Education	
1301	Education Policy, Sociology and Philosophy	Renamed
130101	Continuing and Community Education	
130102	Early Childhood and Childhood Studies (excl. Māori)	
130103	Higher Education	
		Moved to 2343 Māori Education
130105	Primary Education (excl. Māori)	
130106	Secondary Education	
		Moved to 2343 Māori Education
130108	Technical, Further and Workplace Education	
130109	Education Policy	Moved from 1605 Policy and Administration (was 160506)
130110	History, Philosophy and Theory of Education	Moved from 2202 History and Philosophy of Specific Fields and renamed (was 220202 History and Philosophy of Engineering and Technology)
130111	Professional and Continuing Education and Training	New Field
130112	School System Research	New Field
130113	Systemic Approaches to Learning Outcomes	New Field
130114	Teacher and Student Wellbeing	New Field
130115	Teacher Education and Professional Development of Educators	Moved from 1303 Specialist Studies in Education (was 130313)
130199	Education Systems not elsewhere classified	
1302	Curriculum and Pedagogy	
130201	Creative Arts, Media and Communication Curriculum and Pedagogy	
130202	Curriculum and Pedagogy Theory and Development	
130203	Economics, Business and Management Curriculum and Pedagogy	
130204	English and Literacy Curriculum and Pedagogy (excl. LOTE, ESL and TESOL)	
130205	Humanities and Social Sciences Curriculum and Pedagogy (excl. Economics, Business and Management)	
		Moved to 2343 Māori Education and renamed Kōhanga Reo (Māori Curriculum and Pedagogy)
130207	LOTE, ESL and TESOL Curriculum and Pedagogy (excl. Māori)	
130208	Mathematics and Numeracy Curriculum and Pedagogy	
130209	Medicine, Nursing and Health Curriculum and Pedagogy	
130210	Physical Education and Development Curriculum and Pedagogy	
130211	Religion Curriculum and Pedagogy	
130212	Science, Technology and Engineering Curriculum and Pedagogy	
130213	Vocational Education and Training Curriculum and Pedagogy	
130214	Education for Sustainability Curriculum and Pedagogy	New Field
130215	Environmental Education Curriculum and Pedagogy	New Field
130216	Geography Education Curriculum and Pedagogy	New Field
130217	Science, Technology, Engineering and Maths (STEM) Education Curriculum and Pedagogy	New Field
130218	Work Integrated Learning (incl. Internships)	New Field
130299	Curriculum and Pedagogy not elsewhere classified	
1303	Specialist Studies in Education	
		Promoted to 2313 Aboriginal and Torres Strait Islander Education
130302	Comparative and Cross-Cultural Education	
130303	Education Assessment and Evaluation	
130304	Educational Administration, Management and Leadership	
130305	Educational Counselling	
130306	Educational Technology and Computing	
130307	Multicultural Education (excl. Aboriginal and Torres Strait Islander, Māori and Pacific Peoples)	Renamed
130308	Gender, Sexuality and Education	
		Moved to 1304 Technology and Innovation in Education
		Promoted to 2343 Māori Education
		Promoted to 2373 Pacific Peoples Education
130312	Inclusive Education	Renamed
		Moved to 1301 Education Policy, Sociology and Philosophy
130314	Sociology of Education	Moved from 1608 Sociology (was 160809)
130399	Specialist Studies in Education not elsewhere classified	
1304	Technology and Innovation in Education	New Group
130401	Digital Learning (inc Massive Online Open Courses, Flipped Classrooms and Distance Learning)	New Field
130402	Innovation and Entrepreneurial Education	New Field
130403	Learning Analytics	New Field
130404	Learning Sciences	Moved from 1303 Specialist Studies in Education (was 130309)
130499	Technology and Innovation in Education not elsewhere classified	New Field
1399	Other Education	
139999	Education not elsewhere classified	