Institutional practices and strategies to develop undergraduate research and inquiry

While you are waiting for the session to begin please sit on a table with others from DIFFERENT institutions

Considering your institutions and your undergraduate curriculum discuss the extent to which undergraduate research and inquiry are 'mainstreamed' in the curriculum?

Institutional practices and strategies to develop undergraduate research and inquiry

Mick Healey

University of Gloucestershire, UK

We need to encourage universities and colleges to *explore new models of curriculum*. …They should all: …*Incorporate research-based study for undergraduates (to cultivate awareness of research careers, to train students in research skills for employment, and to sustain the advantages of a research-teaching connection in a mass or universal system*)…"

(Ramsden, 2008, 10-11, emphasis added)

ISSoTL 2010

Come to Liverpool for October 2010:

- October 19-22nd - ISSoTL
- October 19th - International Perspectives on Undergraduate Research and Inquiry: A Scholarly Discussion
- October 24-26th - 3rd biennial PRHE conference: Research-teaching linkages to enhance student learning
- The preceding week - SEDA Annual Conference, Manchester

Student research at ANU

http://www.youtube.com/watch?v=9wHreVKgOT4

Linking research and teaching

"… universities should treat learning as not yet wholly solved problems and hence always in research mode"

(Humboldt 1810, translated 1970, quoted by Elton 2005, 110)

Linking research and teaching

"We want all students to access the benefits exposure to teaching informed by research can bring. ... We believe an understanding of the research process – asking the right questions in the right way; conducting experiments; and collating and evaluating information – must be a key part of any undergraduate curriculum."

Bill Rammell, UK Minister for Higher Education (2006, 3)

Linking research and teaching

"For the students who are the professionals of the future, developing the ability to investigate problems, make judgments on the basis of sound evidence, take decisions on a rational basis, and understand what they are doing and why is vital. Research and inquiry is not just for those who choose to pursue an academic career. It is central to professional life in the twenty-first century."

Brew (2007, 7)

Linking research and teaching

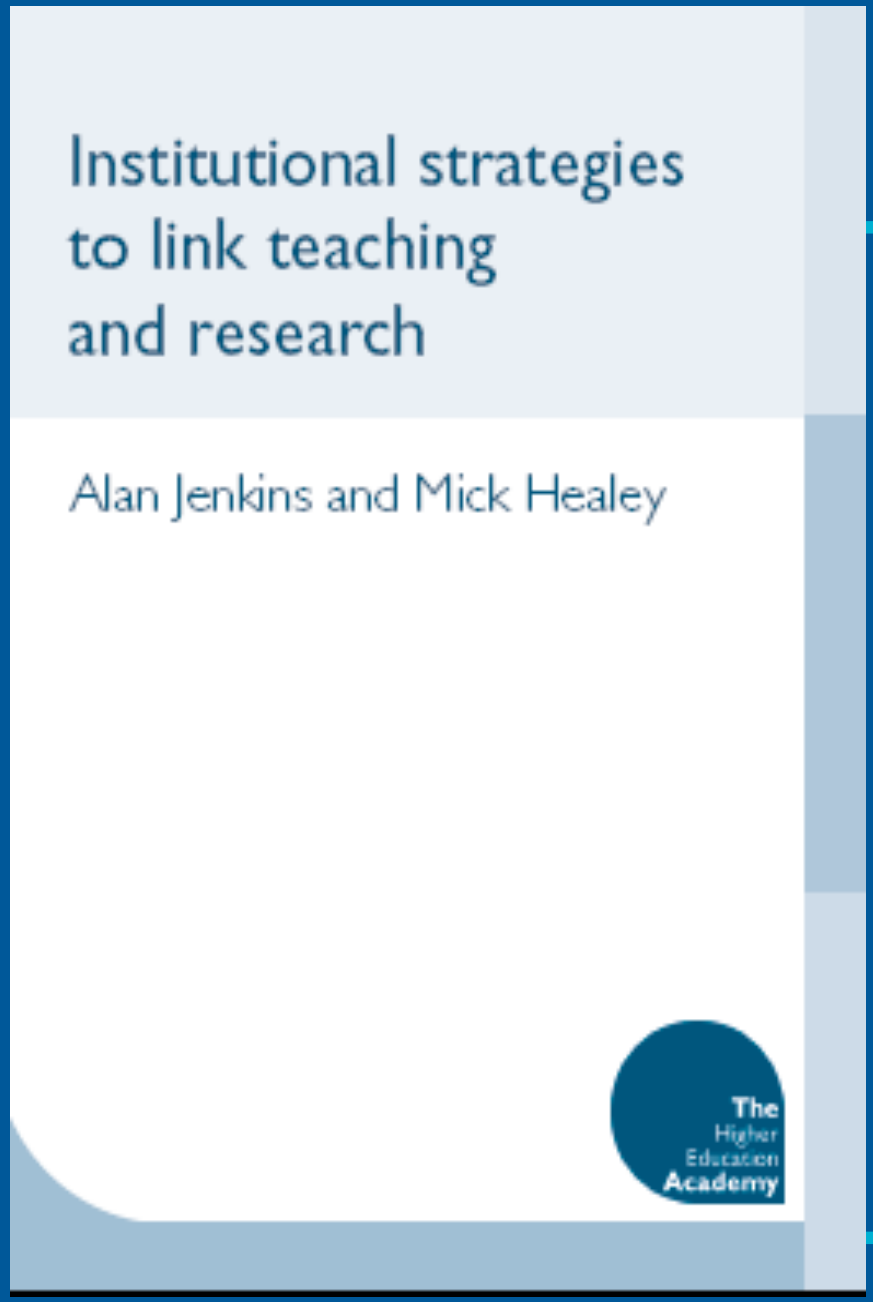
"Developing the Student as Scholar Model requires a fundamental shift in how we structure and imagine the whole undergraduate experience. It requires, as a minimum, the adoption of the Learning Paradigm in everything from the first introductory course through the final capstone experience. It requires a culture of inquiry-based learning infused throughout the ... curriculum that starts with the very first day of college and is reinforced in every classroom and program."

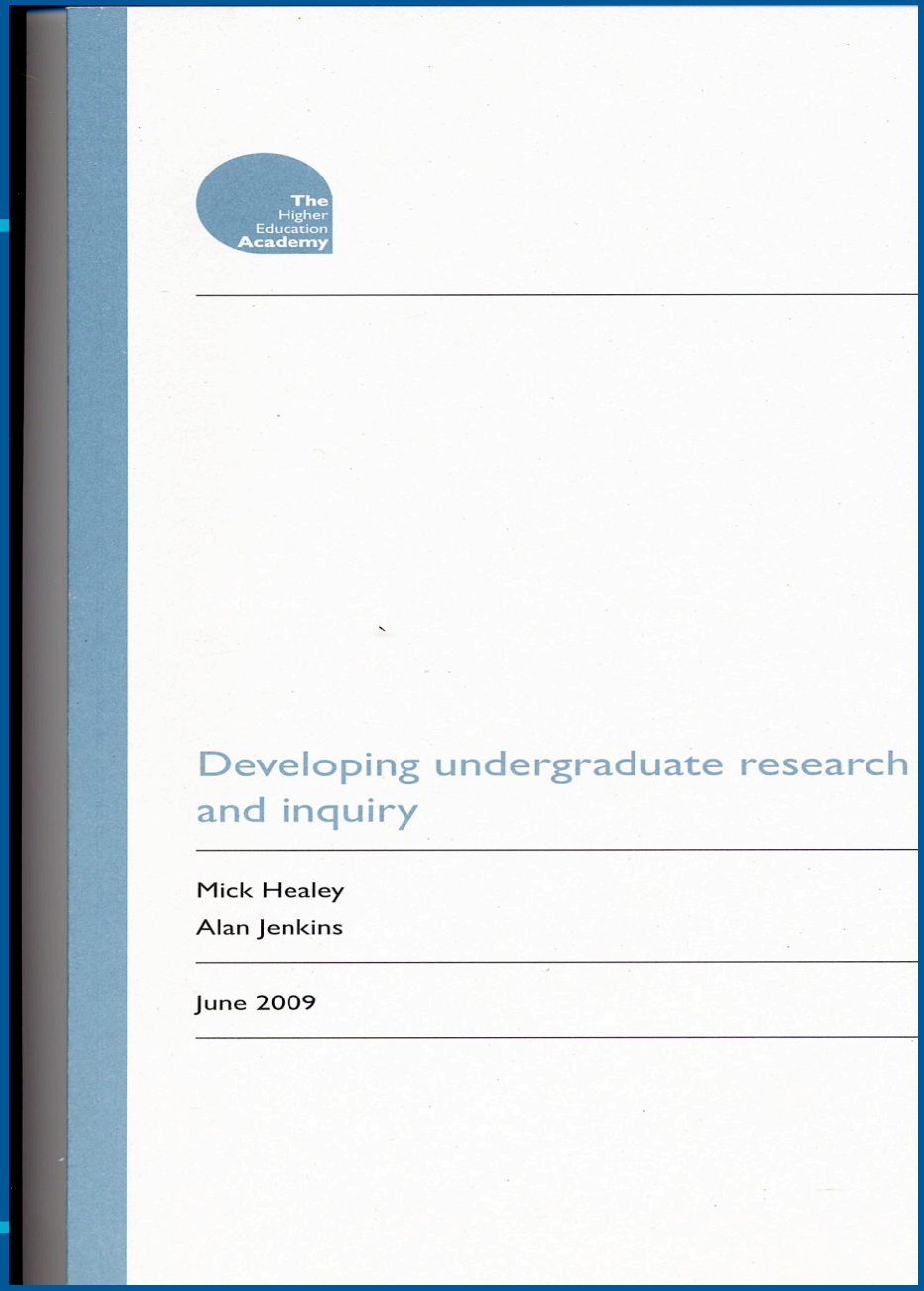
Hodge *et al*. (2007, 1)

Changing paradigms in the student as scholar model

Paradigm	Approach
Teaching	Telling students what they need to know
Learning	Engaging students in learning how to learn; emphasis on learning what they need to know
Discovery	Encouraging students to seek and discover new knowledge

Source: Hodge *et al.* (2007, 3)


Institutional strategies to link teaching and research
Alan Jenkins and Mick Healey
The Higher Education Academy


The Higher Education Academy
Developing undergraduate research and inquiry
Mick Healey
Alan Jenkins
June 2009

Session structure

1. Exploring your views
2. Undergraduate research and inquiry ‘revisited’
3. Case studies of mainstreaming undergraduate research and inquiry in institutions
4. Action planning
5. Conclusion

Undergraduate research and inquiry: line-up

‘Undergraduate research is for ALL undergraduates’

Strongly Agree ---------- Strongly Disagree

Undergraduate research and inquiry: line-up

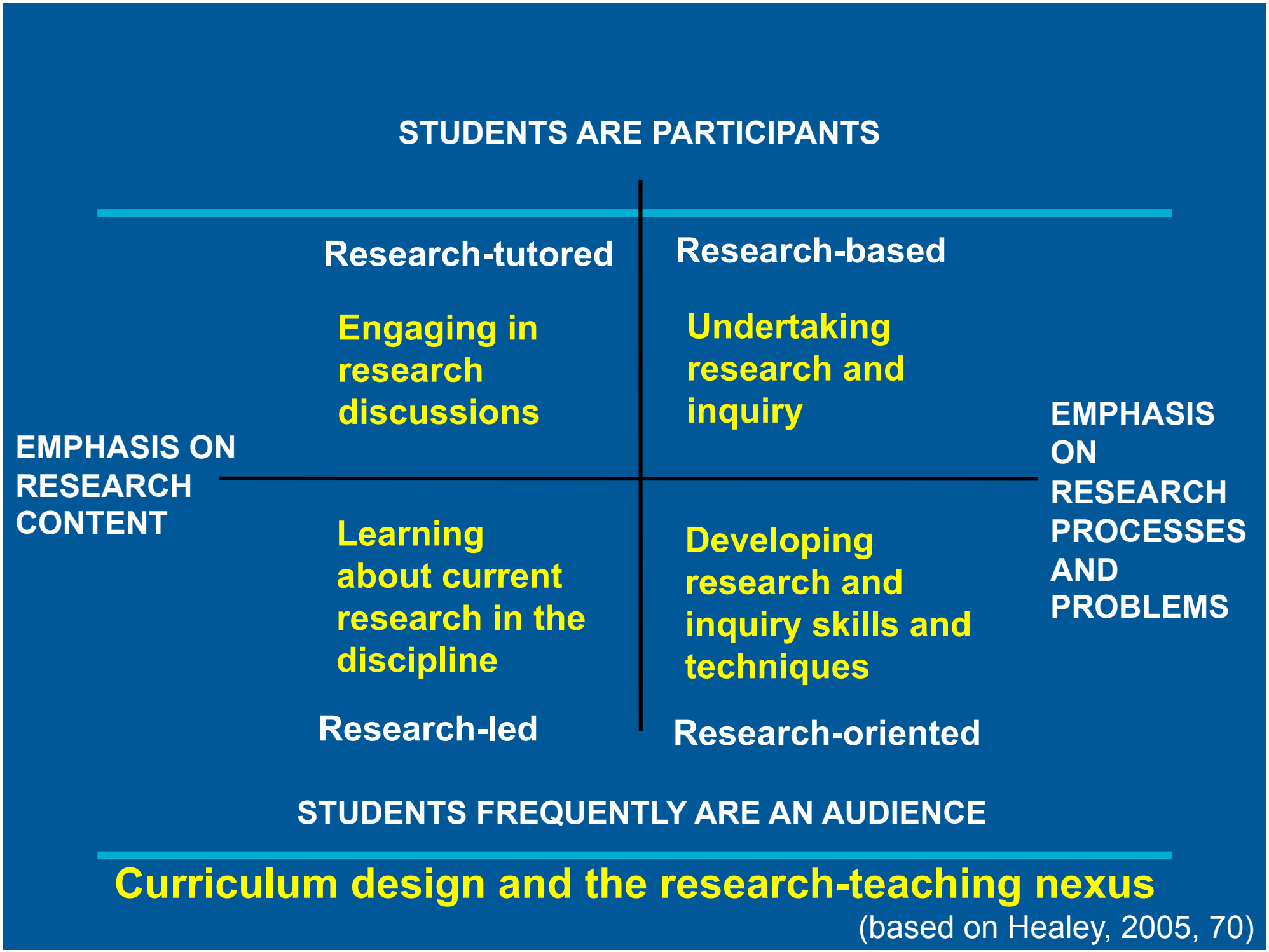
"It would be easy to 'mainstream' undergraduate research and inquiry for all students in my institution"

Strongly ---------- Strongly
Agree Disagree

Developing a 'research active curriculum'

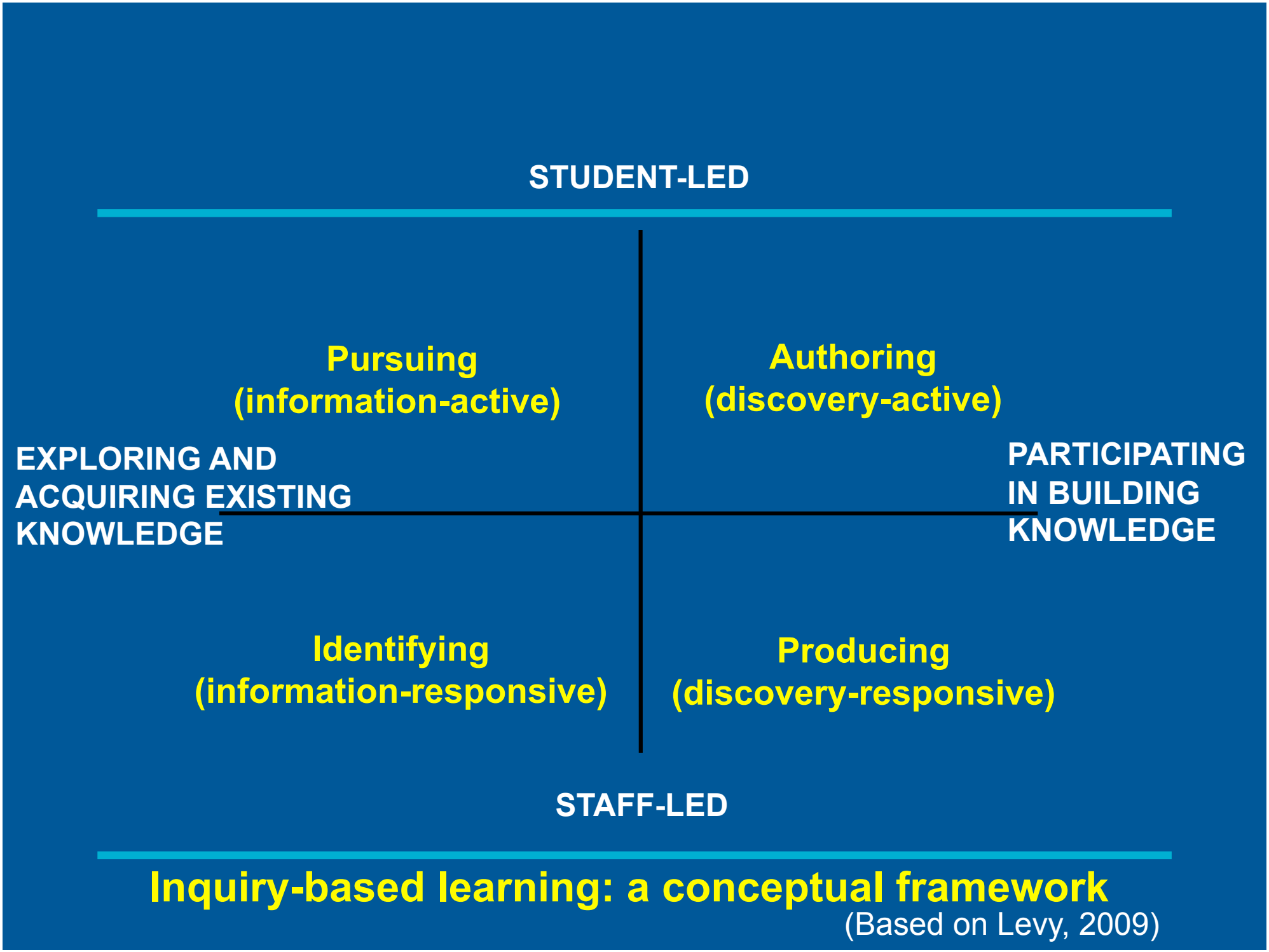
"The United States undergraduate research movement … started by offering research opportunities for selected students in selected institutions. We argue, as does much recent US experience that such curricula experience should be mainstreamed for all students through a research active curriculum. We argue this can be achieved through structured interventions at course team, departmental and institutional level."

Healey and Jenkins (2009, 3)



Curriculum design and the research-teaching nexus

(based on Healey, 2005, 70)



Inquiry-based learning: a conceptual framework

(Based on Levy, 2009)

What is undergraduate research and inquiry?

"An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline"

(US) Council On Undergraduate Research

Adopts a broad definition of the undergraduate as researcher to describe student engagement at all levels in research and inquiry into disciplinary, professional and community-based problems and issues

University of Gloucestershire

Dimensions of undergraduate research and inquiry

Student, process centred	Outcome, product centred
Student initiated	Faculty initiated
All students	Honors students
Curriculum based	Co-curricular fellowships
Collaborative	Individual
Original to the student	Original to the discipline
Multi-or interdisciplinary	Discipline based
Campus/community audience	Professional audience
Starting year one	Capstone/final year
Pervades the curriculum	Focussed

(Source: Adapted from Beckham and Hensel, 2009)

Mainstreaming undergraduate research and inquiry: Institutional strategies

In pairs consider Table 6.1 and decide on TWO of the 19 strategies that seem most relevant to your institutions

Skim read the case studies associated with these strategies and consider how / whether they might be adapted to your institution

10 mins

The developmental journey of the student

University curricula need to support student and citizen development from:

"*absolute knowing* [where] students view knowledge as certain; their role is to obtain it from authorities … (to) *contextual knowing* [where] students believe that knowledge is constructed in a context based on judgement of evidence; their role is to exchange and compare perspectives, think through problems, and integrate and apply knowledge" (Baxter Magolda, 1992, 75).

The developmental journey of the student

Developmental Level	Student traits
Reliance on external references [*Foundations*]	Knowledge viewed as certain Reliance on authorities as source of knowledge Externally defined value system and identity
At the crossroads [*Intermediate Learning*]	Evolving awareness of multiple perspectives and uncertainty Evolving awareness of own values and identity and of limitations of dependent relationships
Self-authorship [*Capstone*]	Awareness of knowledge as contextual Development of internal belief system and sense of self capacity to engage in authentic, interdependent relationships

Source: Hodge *et al.* (2008)

Students' perceptions of research

A comparison of over 500 final year students' perceptions of research in three universities CanRI; UKRI; and UKLRI (Table 5):

- **Students agreed that being involved in research activities is beneficial**
- **Students do not perceive the development of their research skills**
- **Communication is one of the issues that we need to address – language used can exclude**

Students' perceptions of research:

- About three-quarters of the items followed our hypothesis (particularly about the *awareness* of research)
- Those where the hypothesis did not hold up were mainly in the *experiences* with doing research, where there were no significant differences
- Regardless of institution, there is the perception amongst students that learning in an inquiry or research-based mode is beneficial

Questionnaire available at: www.trnexus.edu.au/

Students' awareness of research

	U of A History Faculty	U of A Student Data
Research seminars	46%	75%
Books, articles or other research output	46%	68%
Notice boards advertising research opportunities	23%	59%
Existence of Research Centre or Institute	18%	72%
Areas with national or international reputations	18%	60%
Faculty are writing for publication	73%	79%
Faculty are supervising research students	46%	81%
Faculty are undertaking funded research	36%	77%
Faculty are supervising UG research assistants	18%	60%

Students' experiences with research

	U of A History Faculty	U of A Student Data
Staff discuss research	96%	85%
Reading research paper by staff	86%	60%
Undertaking independent project as part of course	77%	43%
Undertaking undergraduate dissertations	59%*	7%
Being subject of research	23%	47%
Development of research techniques	59%	27%
Attending research seminar	32%	27%
Contributing to research project outside of class	14%	17%
Attending research conference	27%	19%

Action planning

In pairs, drawing on ideas discussed during this session and the rest of the summit you should come up with a recommendation for ONE STRATEGY EACH which you think should be developed at your institution for mainstreaming undergraduate research and inquiry

10 minutes

Mainstreaming undergraduate research and inquiry: your conclusions

What conclusions / observations do YOU now make about the view that all undergraduate students should:

> **"experience the process of artistic and scientific productivity'** (Hattie and Marsh, 1966, 544)

and in particular that this should be achieved by 'mainstreaming' undergraduate research and inquiry

YOUR observations are …

Mainstreaming undergraduate research and inquiry: conclusions

- Getting students to learn through doing research is a powerful way to re-link teaching and research
- Key institutional challenges include introducing inquiry / research in year one; balancing opportunities for all and for selected students
- Adopting a broader definition of undergraduate *research* than is currently common is a way forward (Boyer *et al.*), which should benefit the learning of students in institutions with a range of different missions
- For some people though this may dilute what is *research*
- Institutional and national *research* policies could more effectively support undergraduate research and inquiry