Educational Quality: Can We Measure It? Can We Improve It?

Presentation to Mount Royal University

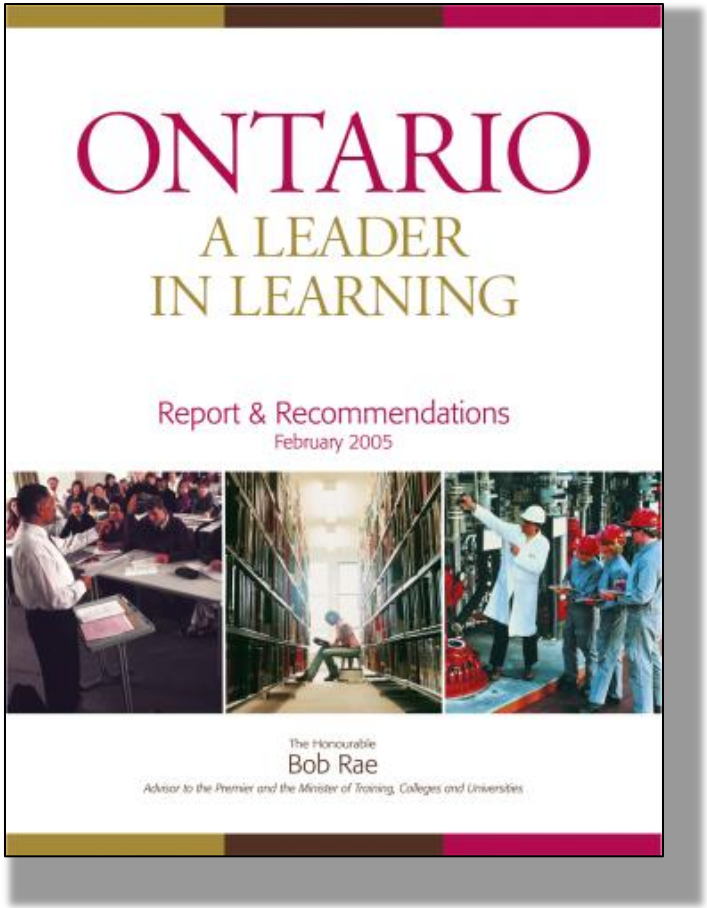
May 21, 2010

Higher Education Quality Council of Ontario
Conseil ontarien de la qualité de l'enseignement supérieur
An agency of the Government of Ontario

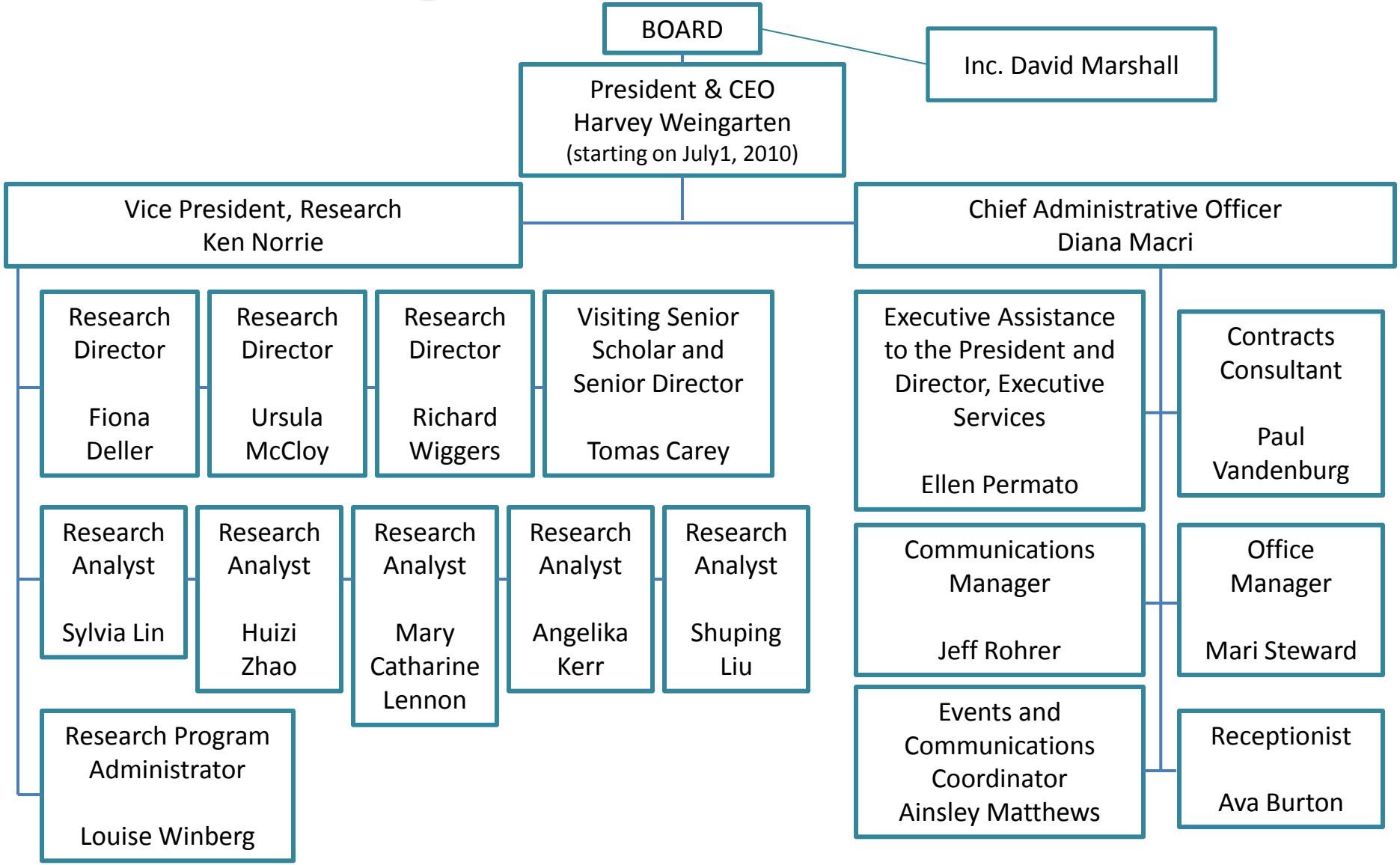
INTRODUCING HEQCO

Genesis and mandate

- HEQCO's creation was recommended in *Ontario: A Leader in Learning* (Rae Review, 2005) and launched in Ontario's 2005-06 Budget as part of the 5-year *Reaching Higher* initiative
- HEQCO is an <u>independent</u> agency with a mandate to conduct research and give policy advice to the Minister of Training, Colleges and Universities (MTCU) on <u>all aspects</u> of post-secondary education in Ontario

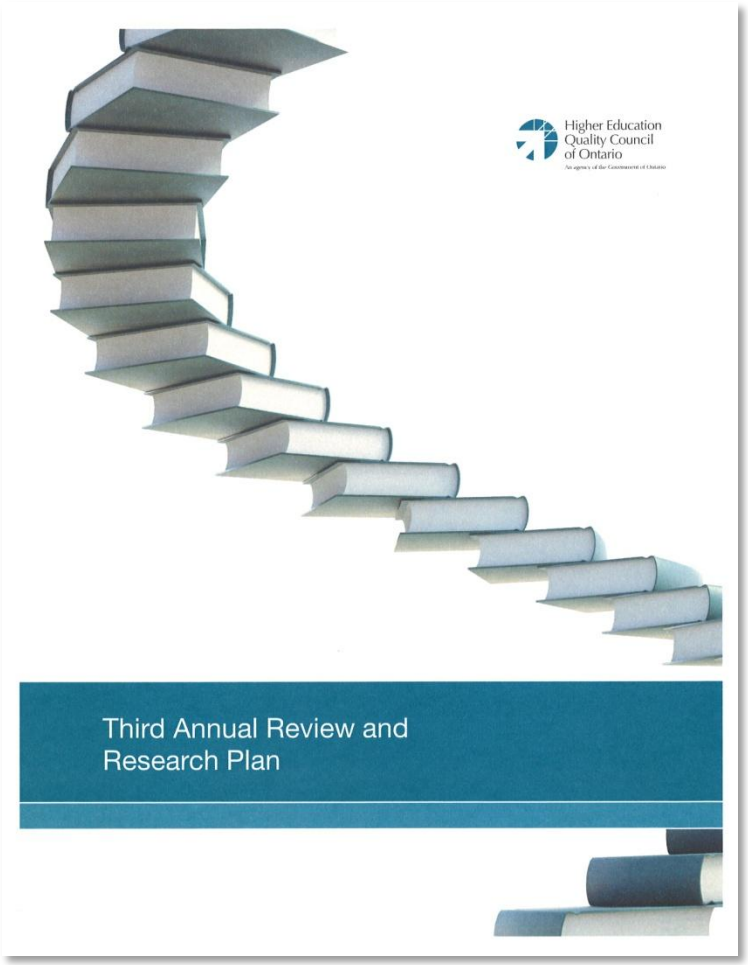


Organizational Structure



Research Mission

- The bulk of research activity is conducted via external contracts
- All research will be made public; authors are encouraged to present their findings to conferences and peer-reviewed venues
- *Third Annual Review and Research Plan* released on March 18, 2010



Research Priority Areas

- Participation (including Accessibility)
- **Educational Quality**
- System Design
- Accountability

Research Projects as of April, 2010

	Total # of Projects	# Published
Accessibility/ Participation	**31**	5
Accountability	**12**	2
Learning Quality	**44**	6
System Design	**5**	4
Total #	**92**	**17**

* Projects may overlap into more than one mandate area

DEFINING EDUCATIONAL QUALITY

Our working definition

- *Second Annual Review and Research Plan* (February, 2009) [channeling Rae and *Reaching Higher]*
  - Programs that achieve clearly-defined learning outcomes
  - High graduation rates and reasonable times to completion
  - Appropriate alignment with current and emerging labour market needs
- Consistent with Lumina Foundation definition (October, 2009)
  - "Lumina defines high-quality credentials as degrees and certificates that have well-defined learning outcomes which provide clear pathways to further education and employment."
  - Higher education's true purpose is "equipping students for success in life".

Will focus today on learning outcomes

- Can we measure, track and compare learning outcomes?
- Do we know how to improve learning outcomes?

Ontario has clearly-defined learning outcomes

- Ontario Qualifications Framework (OQF)
  - Sets out expected learning outcomes for all PSE programs
  - Uses categories in common use internationally
    - Depth and breadth of knowledge, communication skills, etc
- All universities have endorsed and are pursuing undergraduate degree level expectations (UDLEs)

And a suite of quality assurance processes

- Basic premise of quality assurance approach
  - Good processes produce good outcomes
- Number of processes in place
  - Colleges
    - Program and institution levels
  - Universities
    - Undergraduate and graduate programs
  - Professional accreditation processes
  - PEQAB
    - College degrees and out-of-province providers
- All, apparently, with internationally-recognized features

- **But, are the learning outcomes being realized?**

CAN WE MEASURE, TRACK AND COMPARE LEARNING OUTCOMES?

Measuring learning outcomes is a tricky business

- The gold standard: value added
  - Expensive (so far)
- In the meantime
  - Student engagement surveys
    - Universities and colleges
  - College satisfaction surveys
- ***Not*** input measures
  - Inputs are necessary but not sufficient conditions for educational quality

HEQCO is analyzing four sets of indicators

- National Survey of Student Engagement (NSSE)
  - Beginning College Survey of Student Engagement (BCSSE)
  - Faculty Survey of Student Engagement (FSSE)
  - Classroom Survey of Student Engagement (CLASSE)
- Canadian Graduate and Professional Student Survey (CGPSS)
- Community College Survey of Student Engagement (CCSSE)
- College satisfaction surveys
  - Student
  - Graduate
  - Employer
- Will focus today on NSSE

What is NSSE?

- Survey of 1st & 4th year students in first-entry undergrad programs
- Measures student behaviours and institutional practices associated with good learning outcomes (knowledge, skills, growth)
- 100+ questions; 42 comprise 5 benchmarks (active & collaborative learning, level of academic challenge, student-faculty interaction, enriching educational experiences, supportive campus environment)
- 1,400 participants in US and Canada
- Visit: nsse.indiana.edu

Why is NSSE so widespread?

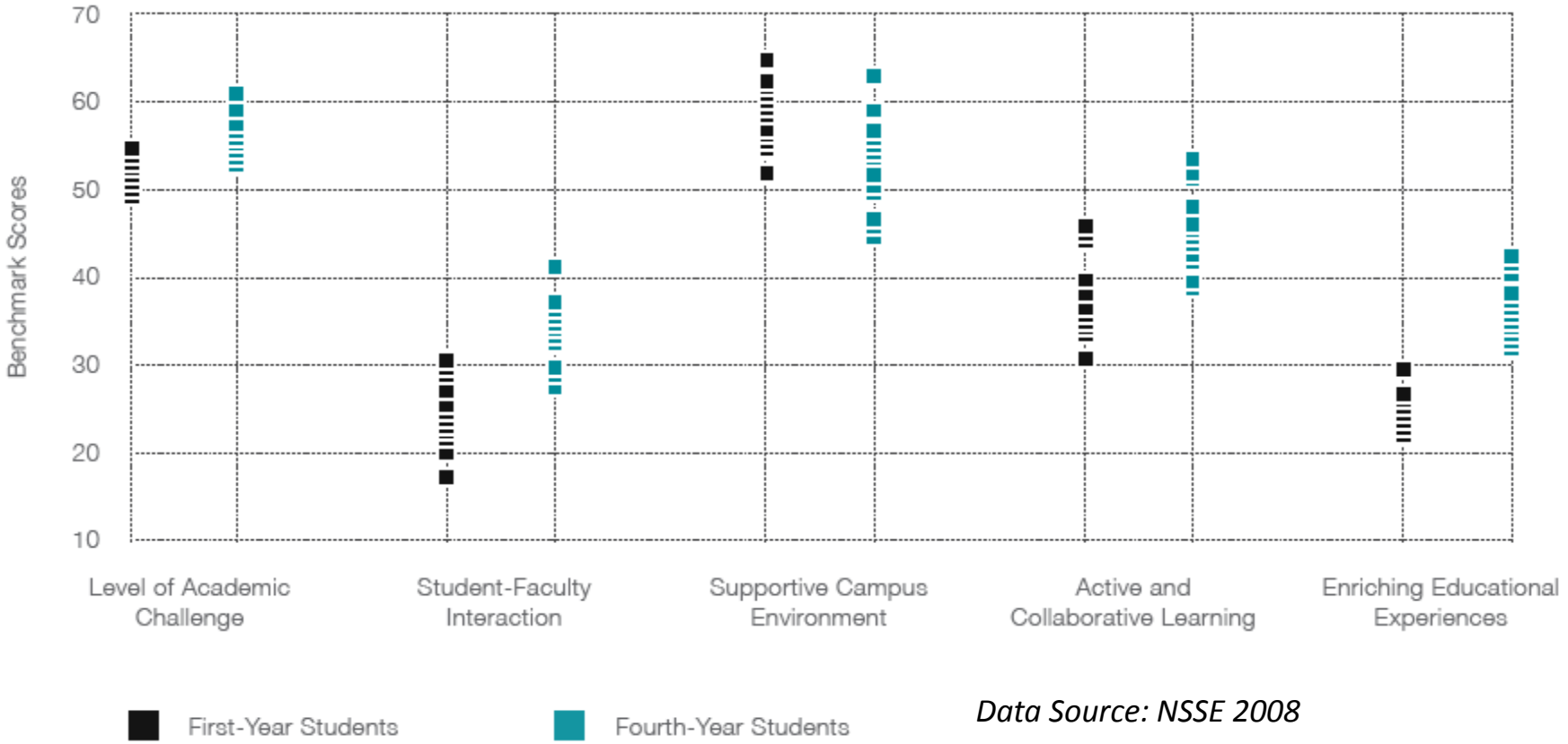
- Extensive research in the literature consistently suggests that student engagement is associated with positive learning outcomes such as increased persistence, better academic performance and increased graduation
- NSSE instrument has proven to be statistically valid and reliable

NSSE in Ontario

- As of the 2008 administration, all Ontario universities have administered NSSE at least twice as a component of the ministry's MYAA framework
- The challenge
  - NSSE can be a vey useful tool for internal academic planning and for accountability purposes
  - But only if used appropriately
- Thus work on NSSE figures prominently in our current work plan

There is much interesting information in the means and spreads of the 5 benchmarks if one resists the urge to treat them as rankings

FIGURE 3.8
2008 NSSE Results for Ontario Universities on Five Benchmarks, First-and Fourth-Year Students
Source: NSSE 2008



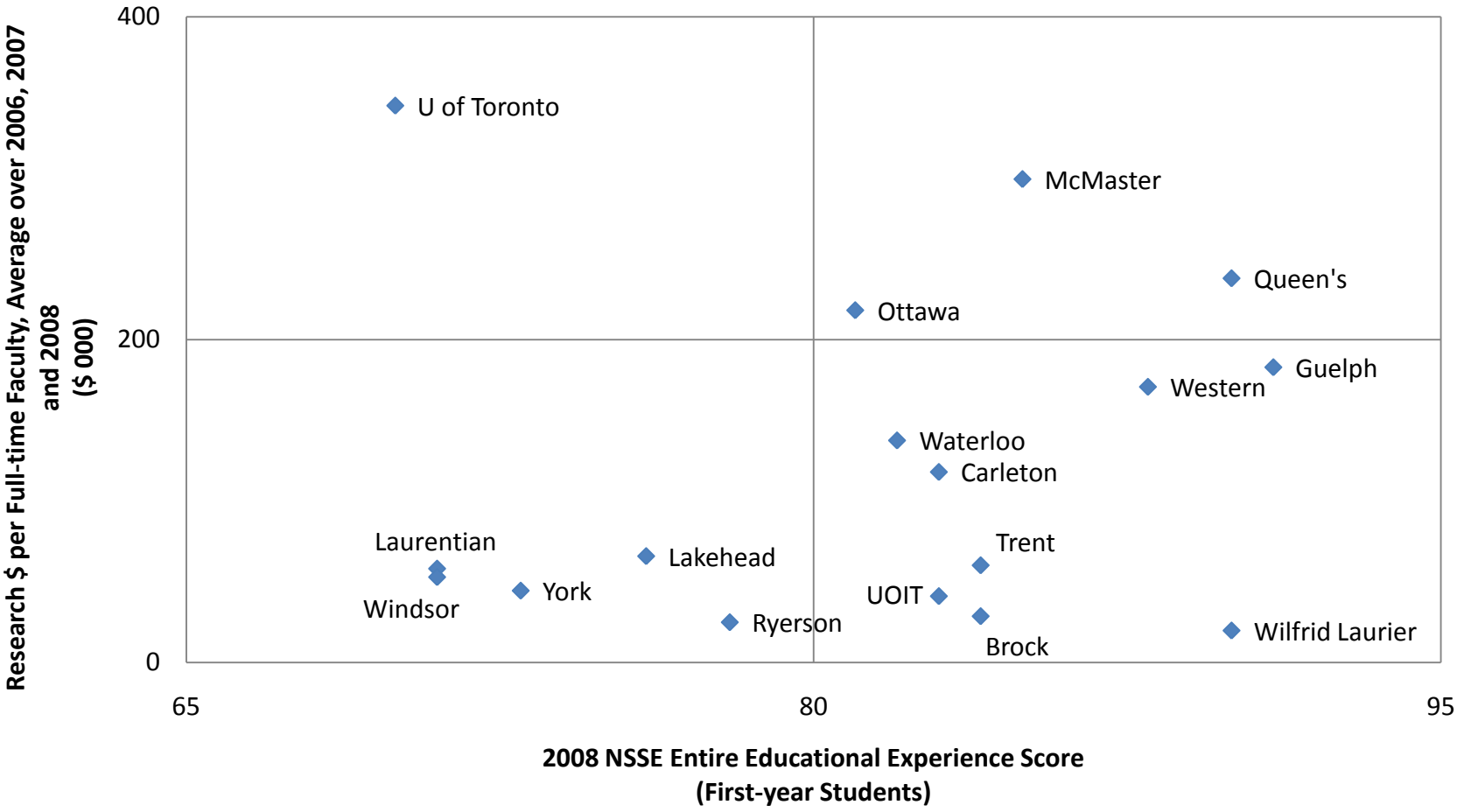
Data Source: NSSE 2008

It is also interesting to track changes in institutional benchmark scores over time

Student-Faculty Interaction, First Year Results
NSSE 2006 and 2008, Ontario Universities

Source: NSSE 2006, 2008

NSSE offers an interesting look at the link between teaching and research
(a David Marshall-inspired diagram)



HEQCO has three NSSE-related projects

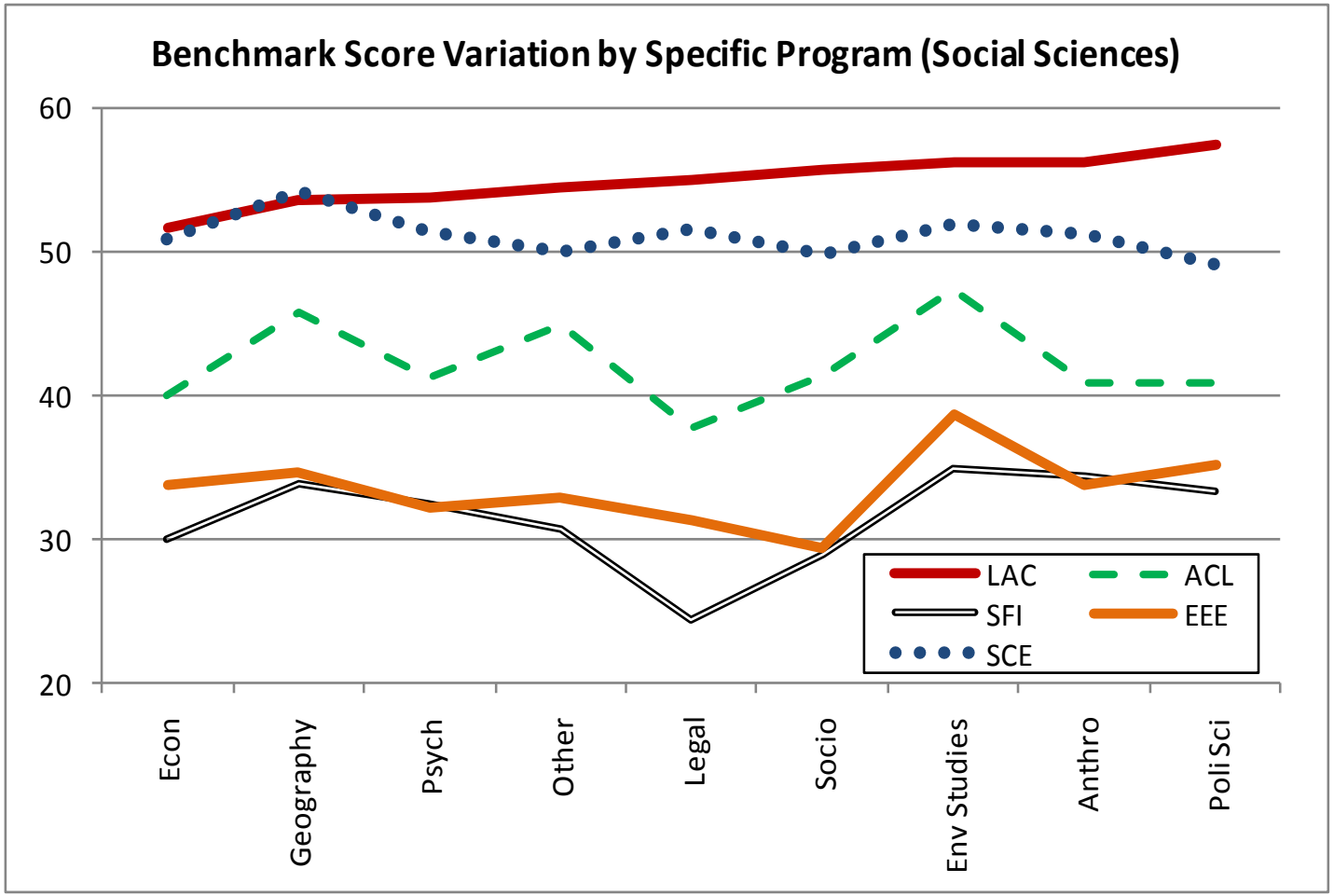
- NSSE national
- NSSE interventions
- BCSSE/NSSE/FSSE

- All directed at exploring what NSSE can tell us about learning outcomes
  - For use by universities in academic planning
  - For accountability purposes

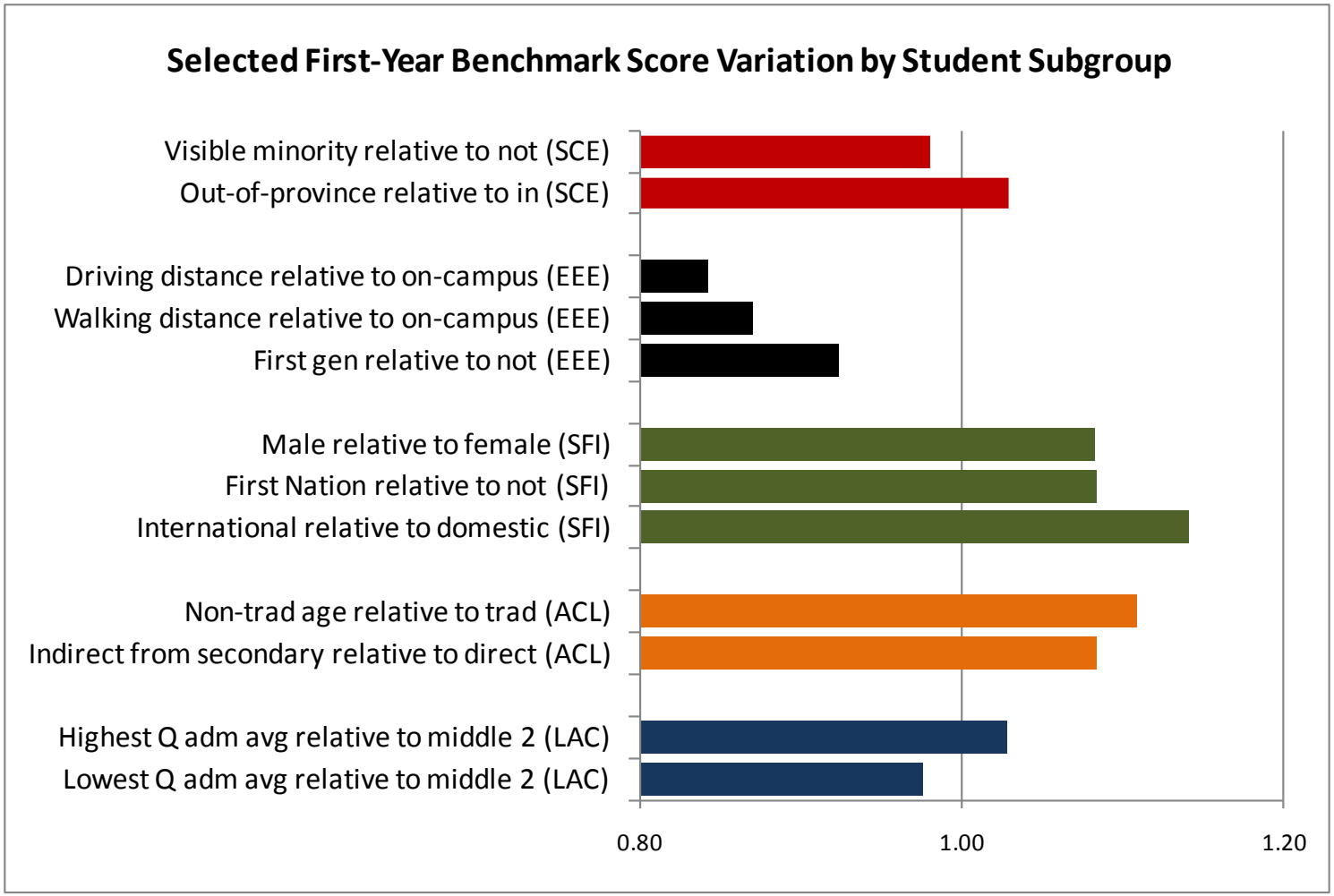
NSSE national project: objectives

- Pool NSSE response data across Canada to
  - Produce university-by-university program-level engagement reports to support tailored program-level response
  - Produce numerous student-subgroup engagement reports to identify engagement differences and corresponding service and academic issues
  - Identify and quantify factors contributing to engagement variation (students, programs and institutions) to focus effort on meaningful activities
- NSSE data and linked administrative records received from 44 universities

Why drilling down to program-level data is important



Why drilling down to student sub-group data is important



Variations among institutions are mostly captured by a few variables

- Student characteristics, program mix, and institution size explain over 80% of the benchmark variations among institutions

- Important caution for those who would use NSSE for ranking purposes

Variations in benchmark scores among students are much more difficult to explain

	Model 1 Student characteristics only	Model 2 Student characteristics + program + university size	Model 3 Student characteristics + program + university size+ university dummies
AC	1.7%	2.2%	4.2%
ACL	4.9%	10.3%	13.4%
EEE	2.3%	3.2%	4.9%
SCE	2.4%	4.4%	6.9%
SFI	1.9%	4.5%	5.8%

Summary of findings from student level analysis Program and NSSE Benchmarks, 1st year results

	AC	ACL	EEE	SCE	SFI	Summary
Note: Social Sciences is the reference program						
Business & Commerce	(+)	(+)	(+)	(+)	NS	(+) 4
Education	(+)	(+)	(+)	(+)	(+)	(+) 5
Engineering	(+)	(+)	NS	(+)	(-)	Mix
General Social Sciences, Liberal Arts & Humanities	NS	(-)	NS	NS	NS	(-) 1
Humanities	(+)	NS	NS	NS	(+)	(+) 2
Fine Arts	NS	(+)	NS	(+)	(+)	(+) 3
First-Entry Professional	(+)	(+)	(+)	(+)	(+)	(+) 5
Sciences	NS	NS	(-)	NS	(-)	(-) 2
Health Sciences	(+)	(+)	(+)	(+)	NS	(+) 4

(+) Positive and Significant; **(-)** Negative and Significant; **(NS)** Effect is Not Significant

Summary of findings from student level analysis
Student characteristics and NSSE Benchmarks, 1st year results

	AC	ACL	EEE	SCE	SFI	Summary
male	(-)	(+)	NS	NS	(+)	Mix
first generation	(-)	(-)	(-)	(-)	(-)	(-) 5
Note: "On Campus" is the reference group for Housing						
Housing: walk	NS	(+)	(-)	(-)	NS	Mix
Housing: drive	(-)	(-)	(-)	(-)	(-)	(-) 5
Note: "term average = middle 2 quartiles" is the reference group for term average						
term average=lowest quartile within own institution	(-)	(-)	NS	(-)	NS	(-) 3
term average=highest quartile within own institution	(+)	(+)	NS	(+)	(+)	(+) 4
full time	(+)	NS	(+)	(+)	NS	(+) 3
previous college education	NS	(+)	NS	NS	(+)	(+) 2
previous university education	NS	(+)	(+)	NS	(+)	(+) 3

(+) Positive and Significant; **(-)** Negative and Significant; **(NS)** Effect is Not Significant

NSSE interventions project: objectives

- Identify effective field practices (data requirements, survey administration, intervention design, assessment design, analysis methodology)
- Document and share intervention experiences locally and more widely to support improved implementation
- Perform formal statistical analysis to assess the ability of various measurement tools (NSSE and others) to detect intervention effects on engagement
- Inform policy regarding the internal planning/ management and external reporting/accountability applications of NSSE and other tools

Intervention Projects

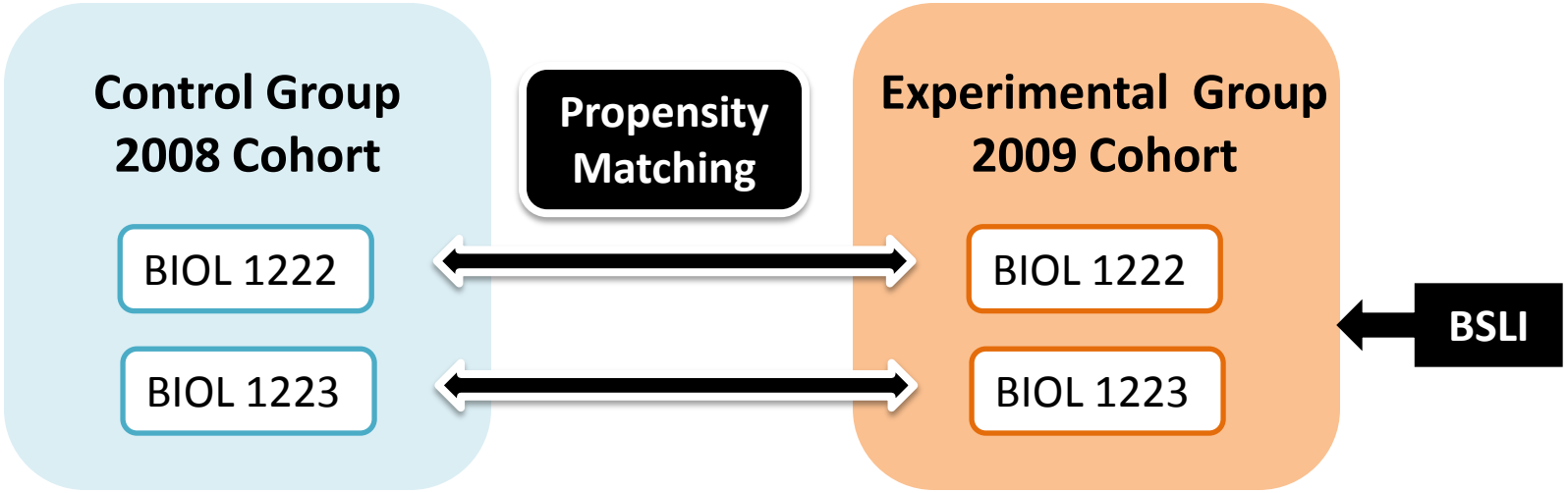
- **Carleton** TA training & mentoring program across first-year
- **Guelph** Supported learning groups in high-risk courses
- **Ottawa** Faculty-wide orientation/integration learning community
- **Queen's(1)** Small group enrichment (research & prof'l practice)
- **Western** Science literacy in first-year Biology
- **Ryerson** Faculty-wide writing skills across the first-year curriculum
- **Laurier** Information/research literacy & writing skills in first year
- **Waterloo** Course redesign through Teaching Excellence Academy
- **Windsor** Intrusive Faculty-wide advising program
- **Queen's(2)** Enhanced online tutorial support over multiple courses

- 3 additional interventions terminated

NSSE interventions: UWO example

- **Intervention:** Biology Science Literacy Initiative(BSLI) aims to fully integrate the development of science literacy skills into the 1st year undergraduate biology students
- **Target courses:**
  - BIOL 1222, for students who have completed high school Biology course
  - BIOL 1223, for students without high school Biology grades or sufficiently high grades
- **Assessment tools:**
  - NSSE
  - CLASSE
  - Literacy Assessment

NSSE interventions: UWO example



- Experimental effect of BSLI participation is not reliably captured in NSSE item scores, but is detected by CLASSE items
- Engagement level of BSLI participants increased for some CLASSE items, but decreased for others
- Experimental group achieved a higher level of self-assessed science literacy scores, but the results do not appear to have translated into final course grades

Summary of overall project findings

- NSSE did not detect experimental effects (participation or intensity of participation) due to dilution/low intervention intensity and survey robustness
- CLASSE, custom surveys and objective test measures did detect experimental effects (participation and intensity of participation) by eliminating measurement dilution
- Obvious need for a 2nd tier of standardized engagement surveys under the NSSE umbrella for services, peer interactions, enriching experiences, etc.

There is much to learn from linking engagement surveys

Report: Disappointment, Misunderstanding and Expectations: A Gap Analysis of NSSE, BCSSE and FSSE at the University of Guelph

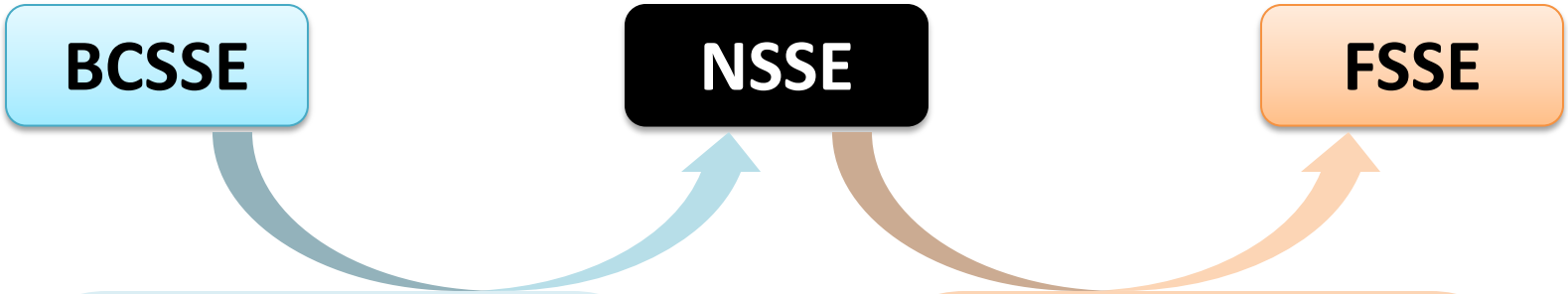
Objectives: In order to explore the link between student engagement and student success, evaluate the gaps between:

- student expectations of PSE (BCSSE)
- faculty impressions of student experience (FSSE)
- and the actual student PSE experience (NSSE)

Method: Quantitative gap analysis using Pike's scalelets and outcome measures:

- BCSSE (n=798) NSSE (n=798) FSSE (n=401)

Disappointment Gap and Misunderstanding Gap



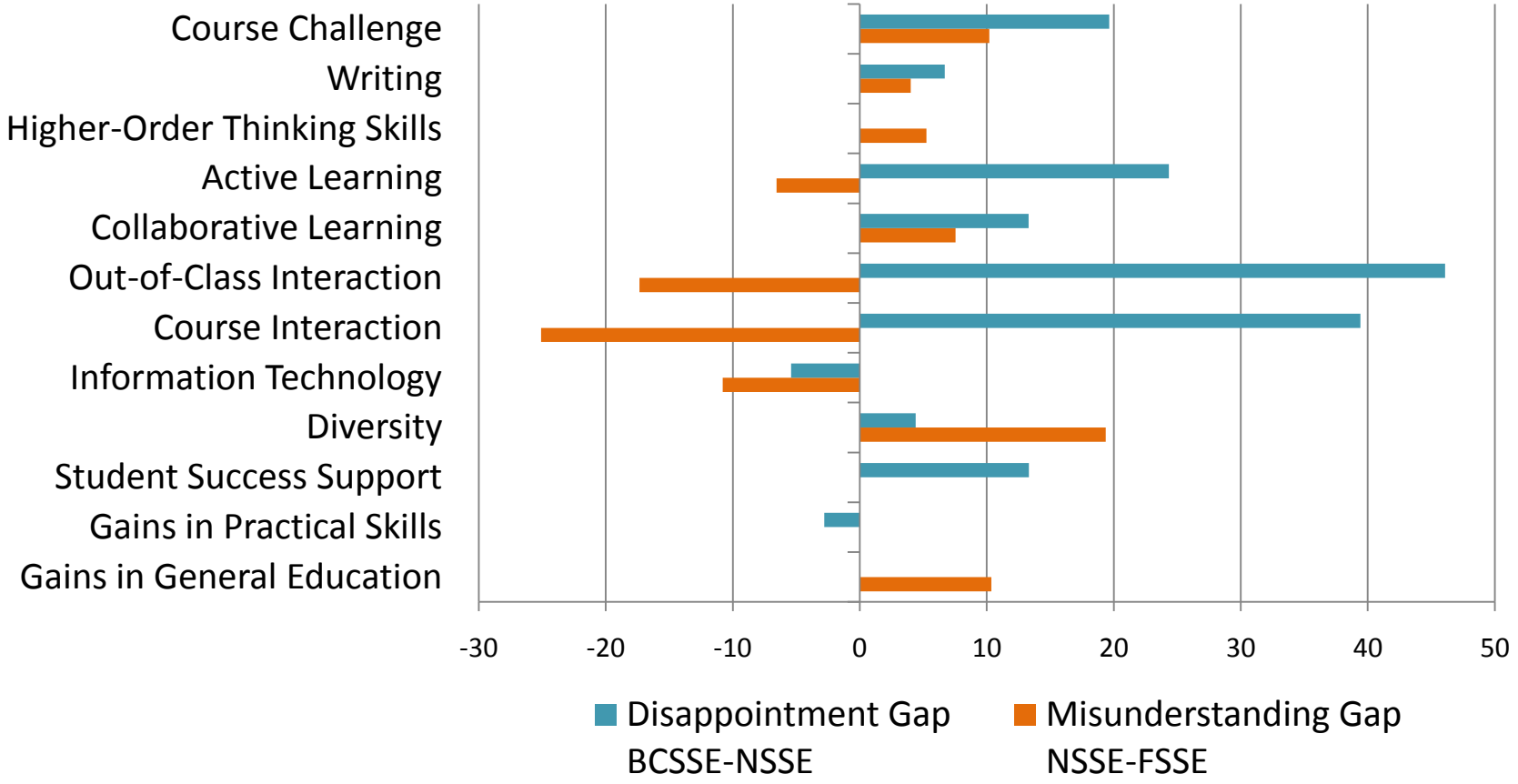
Disappointment Gap

A measure of how far student's actual experiences differ from their original expectations

Misunderstanding Gap

A measure of the distance between what instructors think students are, or should be, accomplishing and what students believe they have accomplished or will accomplish

Some Gaps Exist between Expectations and Experience



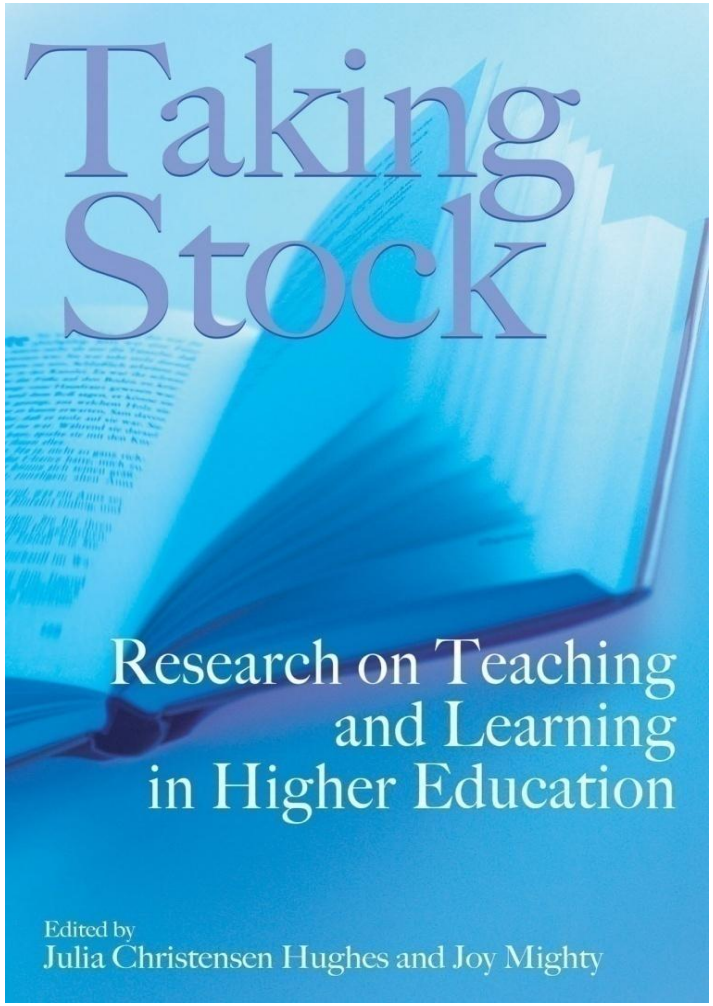
A negative DG value indicates that experience exceeds expectations

DO WE KNOW HOW TO IMPROVE LEARNING OUTCOMES?

HEQCO projects

- What is the SoTL literature saying?
- Mobilizing knowledge about teaching and learning
- The role of student services
- Work-integrated learning
- Technology-assisted learning

"Much is known about effective pedagogical practice in higher education, yet many faculty members continue to use methods that are at odds with this evidence. It is time to identify the forces behind these practices of convenience and work collectively to transform our students' learning experiences." (p. 3)



Results of a conference at the University of Guelph in April, 2008

Published March, 2010

A word from our sponsor

- MRU's Academic Development Centre (ADC) will hold a book study series on *Taking Stock* this coming fall
- Flyers available now
- Further information in August

Knowledge Mobilization for Exemplary Teaching and Learning (KMETL)

- Led by Tom Carey, Visiting Senior Scholar at HEQCO
- Origin: *Research Study on a Knowledge Exchange Network for Exemplary Teaching in Ontario Higher Education* (April 2008)
- The primary purpose of these collaborative projects is to:
  - promote best practices in teaching and learning
  - identify challenges to implementing better practices
  - improve the learning experience and student success
- A secondary goal is to develop ways for groups of faculty to:
  - produce and share knowledge collaboratively
  - create a legacy of knowledge products to inform/inspire colleagues
  - foster ongoing knowledge exchange networks for teaching

http://kmetl.heqco.ca/

KMETL example: undergraduate degree level expectations (UDLEs)

- A Pilot Study of Collaborative Research and Knowledge Mobilization for curriculum review and renewal to support student achievement of University degree learning objectives
- Faculty are working collaboratively with educational researchers and instructional design experts to adapt and apply leading-edge knowledge about the development, demonstration and documentation of student capabilities

UDLEs pilot projects 2009-2010

Partners:

- ***3 Languages and Literatures departments***

LAURIER Canadian Excellence

UNIVERSITY of GUELPH

UNIVERSITY OF TORONTO MISSISSAUGA

- UNIVERSITY OF TORONTO FACULTY OF ARTS & SCIENCE

  "quantitative reasoning"

UNIVERSITY OF TORONTO DEPARTMENT OF spanish and portuguese

The Role of Student Services

- 16 research projects (10 university, 5 college, 1 mixed)
- **Issue:** Evaluating the effectiveness of student services in promoting PSE persistence and educational quality
- Three clusters
  - First-year transition
  - Skills enhancement initiatives
  - Targeted populations
- **Methodology:** Mixture of qualitative and quantitative research methods

Example: Peer-Assisted Study Sessions (PASS)

Report: The Effectiveness of the Peer-Assisted Study Sessions (PASS) Program in Enhancing Student Academic Success at Carleton University

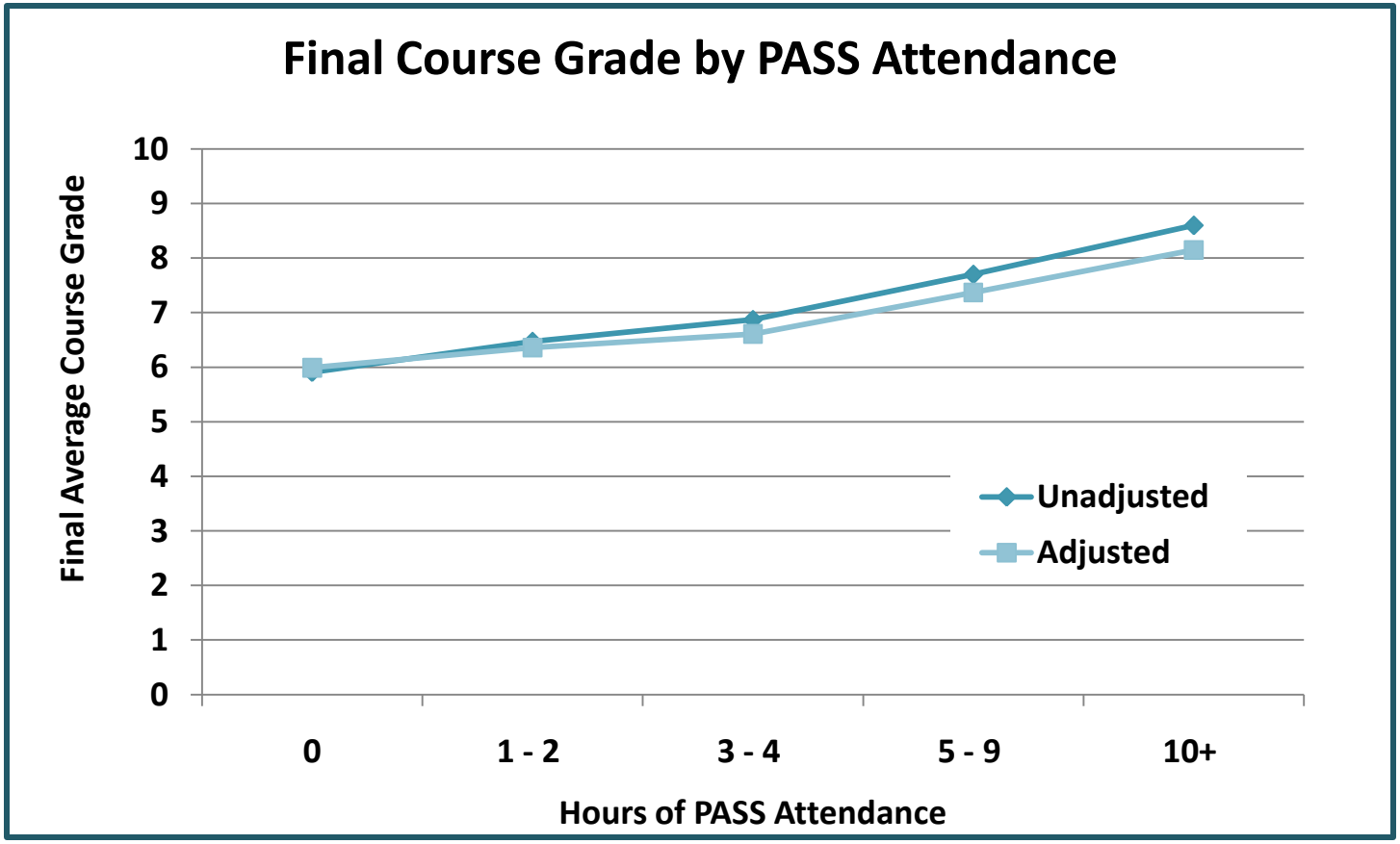
Objectives: To examine the impact of a peer-assisted study intervention on student success and facilitator development

Method: Administrative data from 2006-07 and 2007-08; focus groups and interviews

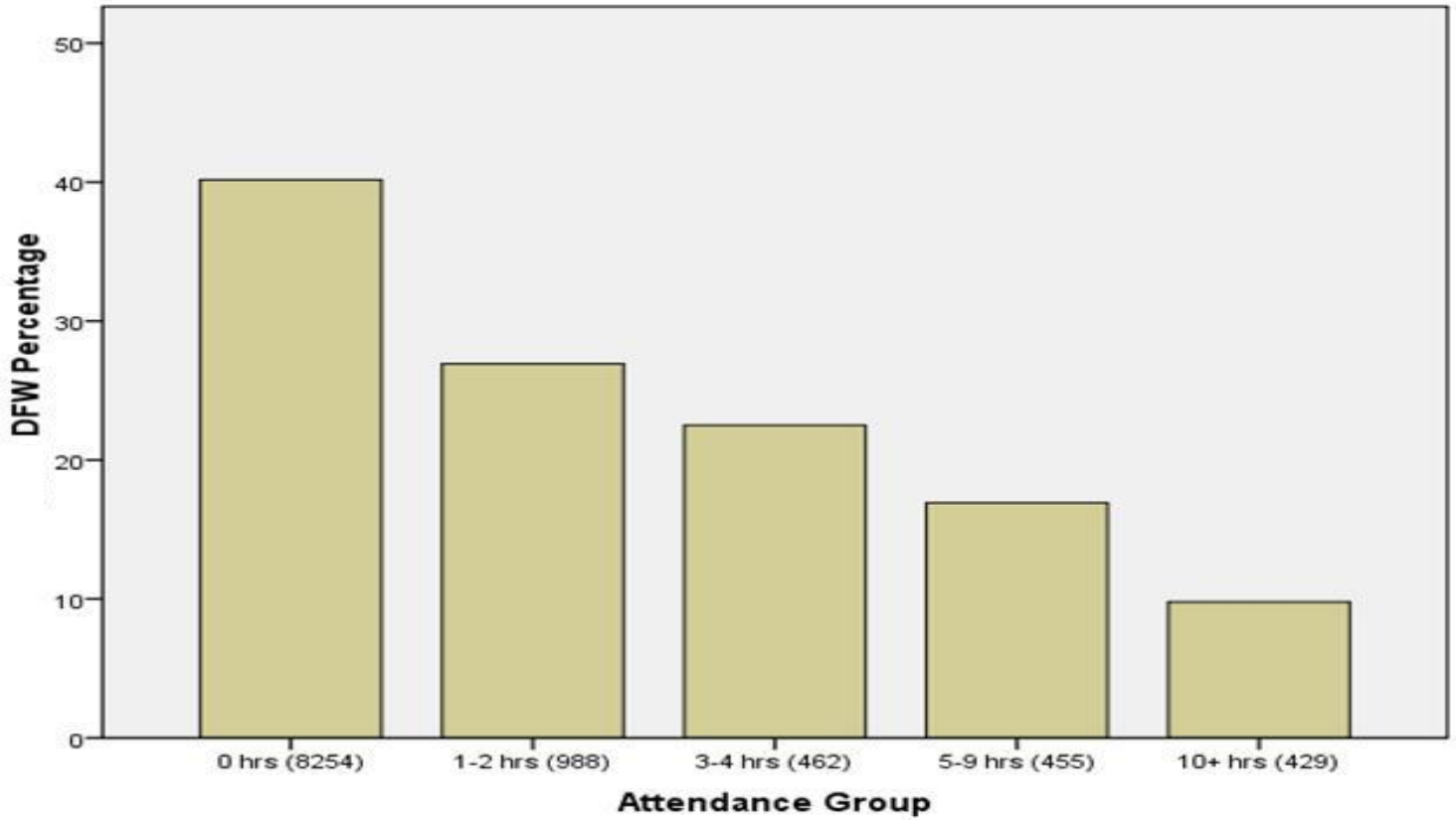
PASS: A peer-led form of academic assistance for students registered in traditionally difficult or high-attrition courses;

PASS helps students to integrate process ("how to learn") with content ("what to learn").

PASS is effective at increasing course grades even when controlling for overall admission average



DFW rates decline with increasing PASS participation



DFW: Grade of “D” or lower, Failure, Withdrawal

Work Integrated Learning

Exploring the broad spectrum of work integrated learning opportunities in Ontario and assessing the quality and outcomes of those programs

Phase 1:

Literature review
Interviews/focus groups with program coordinators and employers

Potential Phase 2:

Surveys/focus groups with students, faculty and/or employers

Technology-assisted learning

Enhancing learning, teaching and assessment through the use of technology

Potential Benefits:

- efficient (cost-effective, time-effective, sustainable or scalable)
- enhancing (improving existing processes and outcomes)
- transformative (changing existing processes or introducing new ones)

Ontario Online Institute: Four Possible Directions

Complementary	• Complement processes at existing institutions non-competitively, moving in directions that they are not pursuing • e.g. Western Governor's University
Collaborative	• Collaboration of institutions, each offering unique strengths, to create and provide shared knowledge, products & services • e.g. Great Plains Interactive Distance Education Alliance
Consortium	• Consortium of institutions sharing services through a common portal • e.g. Contact North, Canadian Virtual University
Catalyst	• Moving institutions forward in strategic and innovative directions • e.g. B.C. Campus

RETURNING TO THE QUESTIONS

Can we measure, track and compare learning outcomes?

- Yes, but the data must be presented and interpreted with a great deal of caution

Do we know how to improve learning outcomes?

- Yes, but that does not mean the changes are easy to implement

Questions and Comments?

Thank you!

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