

A multidisciplinary approach to improving university student motivation and interest

Kathryn Bartimote-Aufflick, Richard Walker, Lorraine Smith,
Manjula Sharma, Melanie Collier, Adrian George

EARLI Conference, August 2009, Amsterdam



The University of Sydney
Australia

AIMS

- Describe university student motivation and interest (M&I) via students' self reports and teachers' perceptions
- Explore and discover the possibilities for teachers to foster student motivation and cultivate interest
- Collegial development of teachers, including the researchers

IDEAS INFORMING OUR WORK

Professional learning through:

■ Investigating your students' learning, a component of the **scholarship of teaching and learning** (SoTL). See Hutchings & Schulman (1999), Kreber (2005). Also an approach to **research-led teaching**. See Bartimote-Aufflick (2007), Brew (2006), Zamorski (2002).

■ Collaborative research – learning from each other's disciplinary experiences of research.

IDEAS INFORMING OUR WORK

Researching *with* colleagues *in* situations rather than doing research *on* colleagues or situations.

Participatory research (Park, 1999).

Co-operative inquiry: “a... participatory form of inquiry in which all those involved are both co-researchers and co-subjects” (Reason, 1999).

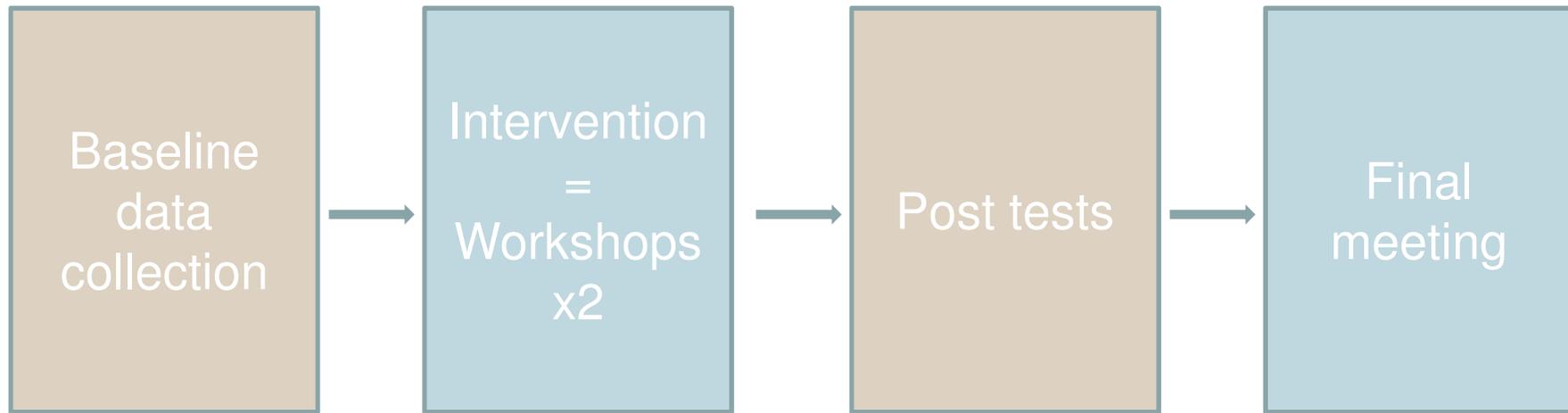
RESEARCH QUESTIONS

1. Does student M&I differ across: discipline, year level, gender, achievement
2. Does a professional learning intervention for academic staff consisting of collegial workshops and inquiry influence student M&I?
3. What specific teaching strategies are associated with enhanced student M&I?

METHODS

Study Timeline

	Baseline	Workshops	Post tests
Semester 1, 2008	A		
Semester 2, 2008	B	A	
Semester 1, 2009	C	B	A
Semester 2, 2009	D	C	B
Semester 1, 2010		D	C
Semester 2, 2010			D



- 1. Student M&I survey**
2. Student evaluation survey item
3. Teacher interview
- 4. Student demographic info**

Student M&I survey, 37 items

LPQ **interest** items (Kember, Biggs, & Leung, 2004)

ILS **profession oriented** scale (Vermunt, 1998)

Learning environment scale (Tuan, Chin, & Shieh, 2005)

MSLQ **intrinsic** and **extrinsic** goal orientations, **self efficacy**, and **task value** scales (Garcia Duncan & McKeachie, 2005)

Workshops

Workshop 1 – teachers are introduced to the motivation constructs under consideration in this study, examine survey results for their own unit, and brainstorm ideas for enhancing student M&I in their context.

Workshop 2 – participants plan implementation of their chosen strategies with colleagues, and facilitators interweave relevant research findings into discussions.

RESULTS TO DATE

BASELINE factor analysis

Groups A & B: $n_{\text{students}} = 897$, $n_{\text{units of study}} = 9$

(A) Sports Mechanics (Physics)	1
(A) Chemistry for Veterinary Science	1
(B) Social Pharmacy	1
(B) Human Development in Education	1
(B) Foundations in Glass Studio	1
(A) Educational Psychology	2
(A) Animal Anatomy	2
(A) Animal Nutrition	2
(A) Veterinary Parasitology	3

Separate EFAs performed on Group A only and then Groups A & B combined produced consistent results.

Groups A & B combined:

With a Varimax rotation retaining factors with eigenvalues > 1 , 6 factors which cumulatively explained 54.8% of the variance were extracted.

CFA performed via SEM in AMOS v17

The final model contains 3 factors (16 items):

■ **'content interest'** 5 items, $\alpha = 0.823$

the material, content, subject matter

■ **'self efficacy'** 6 items, $\alpha = 0.826$

■ **'profession orientation'** 5 items, $\alpha = 0.686$

work, career, after graduating

$X^2 = 297.2$, $df = 101$, $P = 0.000$.

CFI = 0.952, PRATIO = 0.743, RMSEA = 0.047,

PCLOSE = 0.815.

BASELINE factor relations with variables

Groups A & B

Potential predictor variables:

final mark (0-100), gender (M/F), year (1/2/3),
discipline (health/science/humanities)

Outcome variable: mode score

Ordinal logistic regression in GenStat v12

Model determined via forward selection

Ordinal logistic regression model:

$$\log\left(\frac{\gamma_{ik}}{1-\gamma_{ik}}\right) = \theta_k - \mathbf{x}'_i\boldsymbol{\beta}.$$

Achievement (final mark out of 100) is the only significant predictor for:

Content Interest: $b = 0.0289$

Self Efficacy: $b = 0.0310$

No sig. predictors for Profession Oriented.

A positive regression coefficient implies an increase in the ratings, with increasing x .

COMPARING pre & post intervention

Group A only, $n_{\text{students}} = 523$

Overall – MANOVA in GenStat v12 indicates post intervention scores are higher on average than pre scores i.e. that the professional development intervention & subsequent changes by teachers is having an effect on student M&I

Wilk's lambda = 0.9715, Rao F = 1.63, $F_{16,889} = 0.056$,
Pillai-Bartlett trace = 0.02847,
Roy's maximum root test = 0.02847,
Lawley-Hotelling trace = 0.02930

COMPARING pre and post for each factor, for each unit of study Group A only

	Content Interest	Self Efficacy	Profession Orientation
Animal Nutrition	higher (p=0.088)	same (p=0.885)	same (p=0.685)
Chemistry (for Vet Sci)	higher (p=0.322)	same (p=0.881)	higher (p=0.207)
Educational Psychology	higher (p<0.001)	higher (p=0.003)	same (p=0.100)
Sports Mechanics (Physics for Ed)	same (p=0.857)	lower (p=0.005)	higher (p=0.148)
Animal Anatomy	higher (p=0.014)	same (p=0.983)	same (p=0.456)

Changes made to (improved) units

Animal Nutrition

TBC

Educational Psychology

Students asked to create a mind map at the very beginning of the unit, encouraging students to write whatever it is they know at this stage. These maps kept, and 6 weeks later reviewed.

Changes made to (improved) units

Animal Anatomy

Allocating 10% of unit of study marks to students' preparation and participation in tutorials. The tutor looks at students' books at the beginning of the tutorial to gauge their attempts at answering questions before coming to class. If students make attempts weekly, and also participate in class, they will receive the full 10% allocation.

Returning to... the RESEARCH QUESTIONS

1. Does student M&I differ across: discipline, year level, gender, achievement
2. Does a professional learning intervention for academic staff consisting of collegial workshops and inquiry influence student M&I?
3. What specific teaching strategies are associated with enhanced student M&I?

■ Motivation increases with achievement (or vice versa)

■ The workshops incorporating collaborative, inquiry-style learning seem to be influencing student M&I positively (particularly content interest)

To be continued...

Implications of the Work

- Improve motivation of students in higher education
- Professional learning of university teachers
- Further information about the success of the use of existing survey instruments in higher education
- Curriculum design ideas developed through teacher interactions during this project could be adopted by others

References

- Agresti, A. (2002). *Categorical Data Analysis* (2nd ed.). Hoboken, NJ: John Wiley & Sons.
- Bartimote-Aufflick, K. M. (2007). The Constructive Power of Research: In Student Learning, and in Our Learning. *Synergy*, 25.
- Brew, A. (2006). *Research and Teaching: Beyond the Divide*. Basingstoke, UK: Palgrave Macmillan.
- Garcia Duncan, T., & McKeachie, W. J. (2005). The making of the Motivated Strategies for Learning Questionnaire. *Educational Psychologist*, 40(2), 117-128.
- Hutchings, P., & Schulman, L. S. (1999). The scholarship of teaching: New elaborations, new developments. *Change*, 31(5), 10-15.
- Kember, D., Biggs, J., & Leung, D. Y. P. (2004). Examining the multidimensionality of approaches to learning through the development of a revised version of the Learning Process Questionnaire. *British Journal of Educational Psychology*, 74, 261-280.
- Kreber, C. (2005). Charting a critical course on the scholarship of university teaching movement. *Studies in Higher Education*, 30(4), 389-405.
- Park, P. (1999). People, knowledge, and change in participatory research. *Management Learning*, 30(2), 141-157.

- Reason, P. (1999). Integrating action and reflection through co-operative inquiry. *Management Learning*, 30(2), 207-226.
- Simons, J., Dewitte, S., & Lens, W. (2004). The role of different types of instrumentality in motivation, study strategies, and performance: Know why you learn, so you'll know what you learn! *British Journal of Educational Psychology*, 74, 343-360.
- The University of Sydney. (2008). Unit of Study Evaluation (USE). Retrieved 7 November, 2008, from <http://www.itl.usyd.edu.au/use/>
- Tuan, H.-L., Chin, C.-C., & Shieh, S.-H. (2005). The development of a questionnaire to measure students' motivation towards science learning. *International Journal of Science Education*, 27(6), 639-654.
- Vermunt, J. D. (1998). The regulation of constructive learning processes. *British Journal of Educational Psychology*, 68, 149-171.
- Zamorski, B. (2002). Research-led teaching and learning in higher education: A case. *Teaching in Higher Education*, 7(4), 411-427.

Thank You for Attending

E-mail:

k.aufflick@usyd.edu.au



The University of Sydney
Australia