

Fig. 6 Mary's maps before (a) and after (b) the course

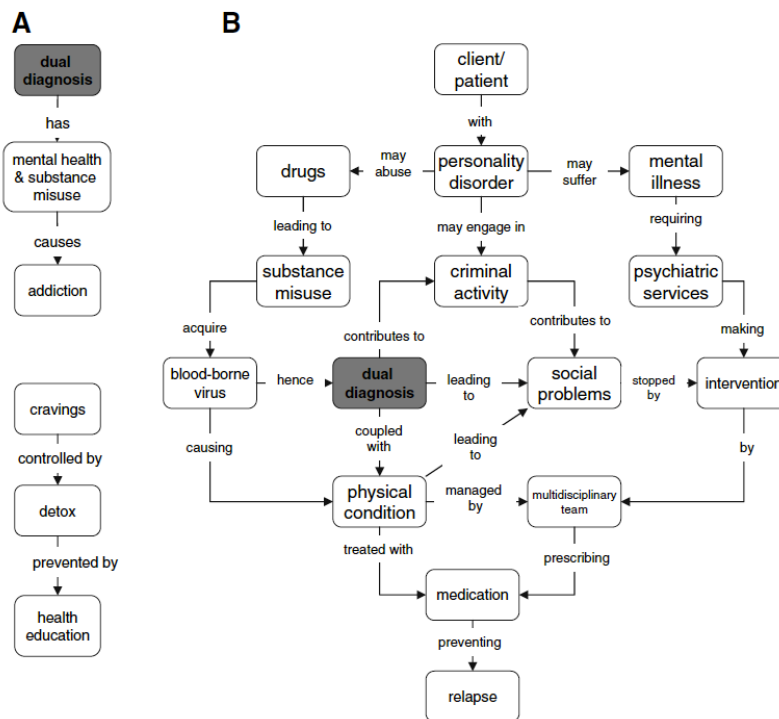
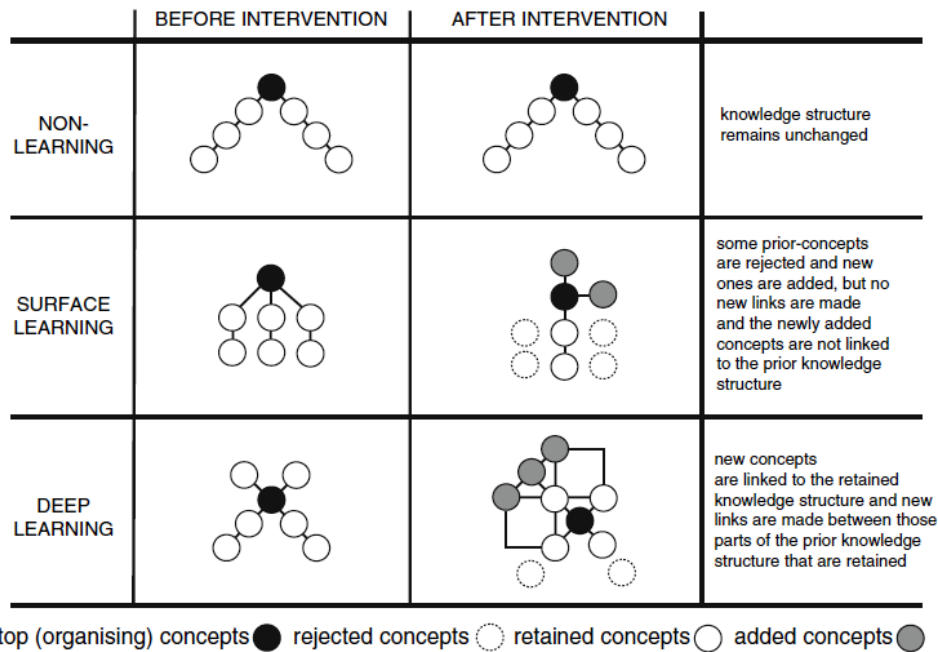


Fig. 9 Rose's maps before (a) and after (b) the course

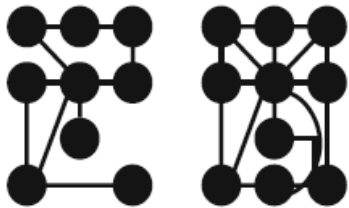
Hay, D.B., Wells, H., & Kinchin, I.M. (2008). Quantitative and qualitative measures of

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student learning at university level. *Higher Education*, 56: 211-239.



MARY

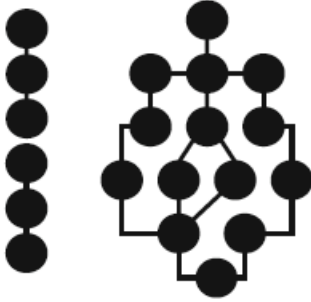


“The changes in Mary’s map provide evidence of learning but most of the changes are superficial and indicative of rote learning. This is because they constitute the simple addition of new concepts, linked one to another or to surface parts of extant prior knowledge.

They are not deeply integrated with what was known before. There is little structural reorganisation (the same concepts tend to appear in the second map in the same places that they did in the first) and there is little new development of linkage among persistent concepts. The prior knowledge structure has not been changed meaningfully and addition has been made without evaluation.” (p. 230)

ROSE

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“Rose started with a superficial prior knowledge. By the end of the module her knowledge of terms had been increased but she had clearly failed to understand what she had acquired. She had added numerous misconceptions of the subject and was more confused than she had been before the course began.”(p. 233)

Additional Resources on Evaluation of Postsecondary Student Learning

So You Want a Comparison/Control Group?

Some Examples

Qualitative comparison with class from a year ago, no examination of “inputs”

Venglar, M., & Theall, M. (2007). Case-based ethics education in physical therapy. *The Journal of the Scholarship of Teaching and Learning*, 7 (1), 64-76.

- *Focus:* “The purpose of this paper is to describe the outcomes of a teaching methodology change [lecture to cases] in an ethics class in a physical therapist education program, and the effects of that change on perceived value of ethics education following subsequent clinical education for master’s level students in a physical therapy program“(pp. 65-66).
- *Method:* Focus groups with students from lecture class (Year 1) and students from case-based class (Year 2) in the summer following Year 2. In discussions, both groups of students identified most valuable things they learned, perception of ability to integrate course content into practice, and value of course.

Statistical comparison between nine (simultaneous) sections, examining inputs for possible selection bias

Friedman, D.B., & Marsh, E.G. (2009). What type of first-year seminar is most effective? A comparison of thematic seminars and college transition/success seminars. *Journal of The First-Year Experience & Students in Transition*, 21(1): 29-42.

- *Focus:* “This study compared two approaches to a first-year seminar, special academic theme vs.college transition theme, to determine if one approach was more effective in terms of one-year retention rates, first-year grade point averages (GPAs), and student perceptions of the course experience and outcomes” (p. 29).
- *Method:* All students completed the College Student Expectations Questionnaire (<http://cseq.iub.edu/>), and no significant difference between student groups was found. There also was no significant difference by gender or predicted GPA (a calculation of high school GPA, class rank and SAT score). Output measures were first-year GPA retention rates, GPA, and responses to the First-Year Initiative survey (http://www.jngi.org/past_thefirstyearinitiative).

Random assignment & statistical comparison between groups

Miyake, A., Kost-Smith, L.E., Finkelstein, N.D., Pollock, S.J., Cohen, G.L., & Ito, T.A. (2010). Reducing the gender achievement gap in college science: A classroom study of values affirmation. *Science*, 330: 1234-1237.

Focus: “The current study tested the effectiveness of a psychological intervention, called values affirmation, in reducing the gender achievement gap in a college-level introductory physics class”(p. 1234).

Method: “In this randomized double-blind study, 399 students either wrote about their most important values or not, twice at the beginning of the 15-week course.” Outcome measures were final scores on exams and scores on the Force Concept Inventory (testing key concepts in physics).

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Resources

Where can I find more models of scholarship of teaching and learning projects in the disciplines?

- Includes examples of projects in psychology, chemistry, and English
Hutchings, P. Ed. (2000). *Opening lines: Approaches to the scholarship of teaching and learning*. Menlo Park, CA: The Carnegie Foundation for the Advancement of Teaching and Learning.
- Describes “exemplary” projects in the scholarship of teaching and learning, across disciplines and in several categories including: personal accounts of change, quantitative and qualitative studies, and descriptive research.
Weimer, M. (2006). *Enhancing scholarly work on teaching and learning: Professional literature that makes a difference*. San Francisco, CA: Jossey-Bass.
- Features annotated lists of pedagogical journals in the disciplines
<http://www.crlt.umich.edu/publinks/publinks.php>

What data are already collected by U-M offices?

- SEE: <http://www.crlt.umich.edu/assessment/largestudies.php>

Where can I find examples of survey, interview and focus group instruments?

- NSF resources for STEM educational research
(<http://oerl.sri.com/tech.html>)
- Knowledge surveys
<http://elixr.merlot.org/assessment-evaluation/knowledge-surveys/knowledge-surveys2>
- Rubrics created by expert teams (e.g., problem solving, written communication, quantitative literacy, ethical reasoning)
http://www.aacu.org/value/rubric_teams.cfm
- NC State University: Internet Resources for Higher Education Outcomes Assessment
<http://www2.acs.ncsu.edu/UPA/assmt/resource.htm>
- PsychInfo (available through U-M Library)
- Bringle, R.G., Phillips, M.A., & Hudson, M. (2004). *The measures of service learning: Research scales to assess student experiences*. Washington, D.C.: American Psychological Association.
- Student Assessment of Learning Gains (SALG) survey
<http://www.salgsite.org/>

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How can I learn more about statistical evaluation methods?

- Common basic problems with statistical analyses in educational research
Habing, B. (2003, August 4). Statistical methodology guidelines for the *Journal of The First Year Experience and Students in Transition*. Available as .pdf download at: <http://sc.edu/fye/journal/submission.htm>

- (Relatively) straightforward explanations of statistical approaches in educational assessment
“Statistical analyses of longitudinal data” in A.W. Astin, (1991). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. New York: American Council on Education and Macmillan Publishing, Appendix A.

How can I learn more about qualitative research methods?

- To get started with focus groups
Morgan, D.L., & Krueger, R. A. (1998). *The focus group kit*. Thousand Oaks, CA: SAGE.

What do I need to do to get human subjects approval at U-M?

- PEERRS (Program for Education and Evaluation in Responsible Research and Scholarship) training required of PIs, co-PIs, and faculty advisors
 - <http://www.umich.edu/~eresinfo/PEERRS.htm>
- Institutional Review Board (IRB)
 - Make an application at eResearch, Regulatory Management
<http://www.eresearch.umich.edu/>
- NOTE EXEMPTION #1 of the 45 CFR 46.101.(b):
Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (i) research on regular and special education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Looking for something else? Please feel free to contact me:
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