

Workshop Title: *Are My Innovations Improving Student Learning?*

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The law professors attending this conference are either engaging in innovative teaching and assessment methods or are interested in doing so because they believe that the innovations help their students learn. The unanswered question is whether that subjective belief has objective support. Although many teaching and assessment innovations have been studied in other disciplines, law faculty generally has not systematically studied whether innovations improve law student learning, and, if so, which students derive the most benefit. This workshop is designed for law professors who want to begin examining whether their innovative teaching or assessment methods help their students learn, with an eye toward using the information discovered to further refine and re-design the innovations so that they are as effective as possible. It seeks to help law faculty interested in improving their teaching and assessment and also those who want to lay the groundwork for complying with the forthcoming outcome measures standards likely to be adopted by the ABA's Council on Legal Education as an accreditation standard.

Workshop Design: The workshop will begin with a brief introductory presentation of key components of designing a basic study. Participants then will work through an example of developing a study that seeks to measure the effectiveness of an innovation. We could use an innovation that has been written about in *The Law Teacher* [e.g. using clickers, having students summarize key concepts before exams], or we could solicit innovations that participants would like to study. Together, workshop participants will walk through a basic study design, addressing questions such as: 1. Narrowing the question to one which can be measured; 2. Deciding how to measure it; 3. Basic design issues [control group; gathering data; finding literature from other disciplines]; 4. Implementation issues [IRB approval; student consents; avoiding common problems such as differences between control group and intervention group; isolating the effect of one teaching innovation if many are used; dealing with the "Hawthorne effect" – i.e. students do better because they know their performance is being studied].

DEVELOPING AN EMPIRICAL STUDY

A. Identify the Research Question

Identify what you want to know

Determine how to observe and measure what you want to know

Define a research question as narrowly and precisely as possible [e.g. rather than a question such as “did students’ listening skills improve” consider asking “is the student a better active listener, consider whether you can measure specific aspect of active listening such as whether a student allows his/her partners to finish their thoughts before responding, or whether the student clarifies his/her understanding of the point made by re-stating or summarizing it].

B. Good Study Design Requirements:

Plan study in advance of data collection [including a review of the literature]

Collect data systematically

C. Choose a Study Method¹

1. Experiment/Quasi-Experiment [giving students different treatments while controlling as many variables as possible to allow for an examination of the impact of a particular teaching or assessment method]

When developing an experimental/quasi-experimental study, consider these factors:

A. Control groups [do you have a way to show what happens when a group of students gets the treatment as opposed to doesn’t get the treatment and, if so, are the control and treatment group of students similar in terms of learning characteristics]

B. Control versus Independent variables [what variables will be the same and what will be different]

C. Other variables potentially affecting the results [e.g. teacher experience, events in other classes, data collection at different points in time, Hawthorn effect, etc]

1. This is not an exhaustive list. For example, there are also ethnographies, quantitative descriptive studies, discourse and text analysis and prediction and classification studies. For a description of those, see generally JANICE M. LAUER & J. WILLIAM ASHER, COMPOSITION RESEARCH/EMPIRICAL DESIGNS (1988); see also Robert C. Calfee and Marilyn Chambliss, *The Design of Empirical Research*, in METHODS OF RESEARCH ON TEACHING THE ENGLISH LANGUAGE ARTS 43-70 (James Flood et. Al., eds., 2005) (discussing the design of empirical studies); Richard K. Neumann, Jr. & Stefan H. Krieger, *Empirical Inquiry Twenty-Five Years After the Lawyering Process*, 10 CLINICAL L. REV. 349, 353-54 (2003) (discussing numerous methods of empirical research).

2. Surveys

When developing surveys, consider these factors:

- A. Question wording [should be clear and unambiguous]
- B. Question sequencing [general to specific]
- C. Mode of administration [self-completion versus interview administration]
- D. Response rates [how to maximize; is there bias in who is responding]

D. Get Institutional Review Board Approval

All studies should be approved by your institution's Institutional Review Board before you begin collecting data.

Determine if you need student consent and, if so, obtain consent.

E. Analyzing and Interpreting the Research Data – Mistakes to Avoid

Performing the analysis on your own if you are untrained in social science [get a collaborator – see attached pages for suggestions on finding a collaborator]

Insufficient rater reliability [control to ensure that the person scoring the student's performance applies the rubric in the same way over the course of grading]

Isolating the effect of one innovation if many are used.

Over-stating the significance of a particular finding or using the methodology to prove, rather than explore, a particular point or point of view. [Don't be afraid of finding no statistical significance between the groups – often this is a valuable insight in itself]

Failing to acknowledge all weaknesses in the interpretation of the data, including uncontrolled variables and the study's limitations.

Assessing Student Learning – Questions to Ask/Study

What is the impact of . . . [looking at the impact of a teaching method or assessment – e.g. clickers; group work; powerpoints, etc]

Study via:

Randomized experimental/controls [e.g. some students get clickers; others don't]

Historic controls with experimental group [e.g. use exams/data from same course taught in past years before you began the new teaching or assessment method]

Pre-post assessments [administer a test before the treatment and after]

What is the status of . . . [gathering factual information – e.g., how much do students study; what kind of study skills are they using]

Study via:

Surveys/interviews that help you get a snapshot of learning/skills/dispositions

Why do students . . . [discovering information about student performance –e.g. doing an item analysis and then follow up surveys/interviews – how did you get to that answer to identify common misconceptions or danger points in a course]

Study via:

Error analysis

Diagnostic rubrics

To use these methods to develop a study, you need evidence that is:

Accurate – reliable and replicable

Authentic – valid, real life, meaningful

Aligned – do assessments match learning outcomes

View ¹	Direct Evidence
Big picture	grades, licensing exam, common exams between courses
Course embedded	Course tests, projects, papers
Key items/deep learning	Item analysis [items that tie to the intervention]; diagnostic rubrics
Metacognition/independent learners	self assessments [evaluate change over time]
Generalization – transfer to other settings	Application in other settings/courses

Corroborating Data: student surveys, interviews, reflections, journals

¹ How you design the study and structure your measurement instrument depends upon what you are looking at and what you are looking for.

Examples of Study with Corroborating Evidence [Have students complete the survey pre and post course; administer instruments that allow professor to measure pre/post course achievement]

Study question: Did students learn statutory interpretation

Method: Objective data – pre and post test that required students to interpret and apply a statute to a given fact situation. Subjective/corroborating data – student survey of their skills and knowledge level pre and post-course [see chart below]

	Understand well enough to teach others	Am competent	Understand the basics	Know a little about	Have only heard about it	Not a clue
Breaking a statute into its component pieces						
Identifying statutory ambiguity						
Understanding the “plain meaning” rule						
Using legislative intent as interpretive tool						
Using precedent and purpose as interpretive tools						
Using policy as an interpretive tool						

FINDING A SOCIAL SCIENCE COLLABORATOR

Social science collaborators may be found in various places. For example, you could do a literature search and find someone who has done a similar experiment in another field. Additional sources include university Centers for Teaching and Learning, business schools and education or psychology departments, and even graduate students seeking a GRA.

Additionally, the Society of American Law Teachers has developed the following list of potential social science collaborators. Feel free to contact any one listed to see if he or she is interested in collaborating with you on an empirical study involving law student learning or assessment.

Claudia J. Stanny, Ph.D.
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RESOURCES FOR BEGINNING EMPIRICAL RESEARCH OF TEACHING AND ASSESSMENT

Basic Explanatory Books About Designing an Empirical Research Study

Mary Sue MacNealy, *STRATEGIES FOR EMPIRICAL RESEARCH IN WRITING* (1999)

John W. Creswell, *RESEARCH DESIGN, QUALITATIVE, QUANTITATIVE AND MIXED METHODS APPROACH* (2008)

Marguerite G. Lodico, et al, *METHODS IN EDUCATIONAL RESEARCH – FROM THEORY TO PRACTICE* (2006)

On Line Textbook: Research Methods Knowledge Base,
<http://www.socialresearchmethods.net/kb/contents.php>

Basic Explanatory Law Review Articles About Designing an Empirical Research Study

Richard K. Neumann, Jr. & Stefan H. Krieger, *Empirical Inquiry Twenty-Five Years After the Lawyering Process*, 10 *CLINICAL L. REV.* 349, 356 (2003)

Andrea A. Curcio, *Assessing Differently and Using Empirical Studies to See If It Makes a Difference: Can Law Schools Do It Better?*, forthcoming *Quinnipiac L. Rev.* Vol. 27 (Summer 2009)

Literature Review of Various Studies on Formative Assessment

Valerie J. Shute, *Focus on Formative Feedback*, Educational Testing Service Research Report (March 2007)

Literature Review of Various Studies on Self and Peer Assessment

F. Dochy, et al, *The Use of Self, Peer and Co-Assessment in Higher Education: A Review*, *Studies in Higher Education*, Vol. 24, Issue 3, pp. 331-350 (1999)

David Boud & Nancy Flachikov, *Quantitative Studies of Student Self-Assessment in Higher Education: A Critical Analysis of Findings*, *Studies in Higher Education* Vol. 18, Issue 5, pp. 529-49 (1989)

To get an idea of the range of studies and the format for scholarly articles resulting from empirical studies on a wide range of teaching, assessment and learning issues, the list below provides some sample studies from other disciplines as well as studies dealing with legal education.

Other Disciplines

Assessment of the Effects of Student Response Systems on Student Learning and Attitudes over a Broad Range of Biology Courses, Ralph W. Preszler, Angus Dawe, Charles B. Shuster, and Michèle Shuster, *CBE Life Sci Educ* 6(1) 29-31 2007 [Studying the impact of clickers]

Business Simulation to Stage Critical Thinking In Introductory Accounting: Rationale, Design and Implementation, Carol W. Springer and A. Faye Bothrick, *Issues in Accounting Education*, August 2004, [studying the impact of using a simulation as a way to develop students' critical thinking]

An Exploration of the Psychology of the Examinee: Can Examinee Self-regulation and Test-taking Motivation Predict Consequential and Non-consequential Test Performance?, Donna L. Sundre and Anastasia Kitsantas, *Contemporary Educational Psychology* 6 (2004) [studying impact of self-regulation and motivation on graded and un-graded tests]

Legal Education

The Power of Skills: An Empirical Study of Lawyering Skills Grades As the Strongest Predictor of Law School Success, Leah M. Christensen, *83 St. John's L. Rev.* 795 (2009)

The Effect of Clinical Education on Law Student Reasoning: An Empirical Study, Stefan H. Kreiger, *35 William Mitchell L. Rev.* 359 (2008)

Does Practice Make Perfect? An Empirical Examination of the Impact of Practice Essays on Essay Exam Performance, Andrea A. Curcio, Gregory Todd Jones, Tanya M. Washington, *35 Fl. St. Univ.* 271 (2008).

Does Law School Curriculum Affect Bar Examination Passage? An Empirical Analysis of Factors Related to Bar Examination Passage During the Years 2001 Through 2006 at a Midwestern Law School, Douglass K. Rush & Hisako Matsuo, *57 J. Legal Educ.* 224 (2007)

The LSAT, Law School Exams and Meritocracy: The Surprising and Undertheorized Role of Test-Taking Speed, William D. Henderson, *82 Tex. L. Rev.* 975 (2004)



Testing Assumptions about our Teaching and Assessment

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Caveat



Why Test Assumptions? or ***“How I Was Wrong”***

Andrea A. Curcio, Gregory T. Jones and Tanya Washington, *Does Practice Make Perfect? An Empirical Examination of the Impact of Practice Essays on Essay Exam Performance*, 35 Fl. St. Univ. L. Rev. 271 (2008)

Scholarship opportunities abound

- Wide open field



Three Characteristics of Good Empirical Research

- 1. Study is planned in advance of the data collection
- 2 The data is collected systematically;
and
- 3. The data collection produces evidence that can be examined by others.

Empirically Testing Assumptions Research Overview

- ID research question
- Find Social Science Collaborator
- Choose Research Method
- Design study
- Get Human Research Subject Approval
- Perform Study
- Data Analysis & Interpretation
- Write up study



Step 1

ID research question

- ***How to ID ?***



- Key:



- Develop your working title [My study is about]

After you ID the topic ask:

- **Can** and **Should** this topic be researched?
- Literature review
 - Law reviews
 - Google Scholar
 - ERIC (www.eric.ed.gov)
 - Ask law librarians for other relevant electronic data bases

Step 2

Find Social Science Collaborator

- What kind of collaborator[s]
- Where to find collaborators

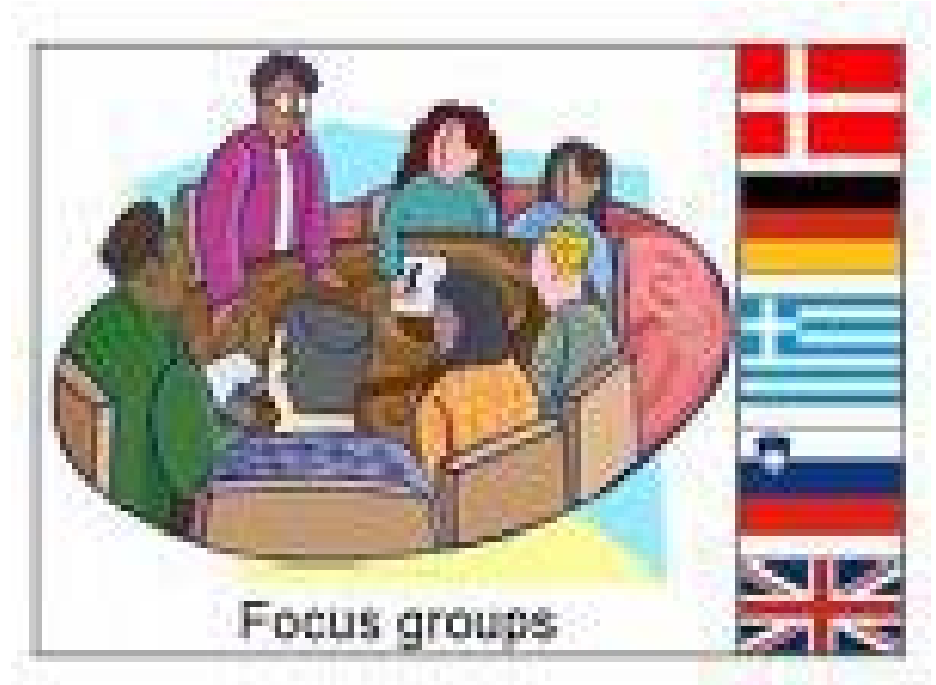


Step 3: Which Research Method

- **Method depends upon the ?**



Question: What is the status of . . .
[gathering factual information]



Question: What is the impact of . . . [Analytic Studies]

- ***Randomized experiments***

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CAUSE

EFFECT

Study design depends upon what you want to know

What do you want to know	Types of Evidence
Big picture [overall impact on learning]	Law school grades;[?Bar Exam ?]
Course embedded [improve performance within the course]	Course tests, projects, papers; exercises
Key Items/Deep Learning [have they learned a particular item or method of analysis]	Item analysis with diagnostic rubrics
Metacognition [ability to self-assess]	Self-assessments over time
Generalization – transfer to other settings	Application in other courses using same assessment methods

Study Design Resources

- Mary Sue MacNealy, **Empirical Research in Writing**
- John W. Creswell, **Research Design, Qualitative, Quantitative and Mixed Methods Approach**

Step 5: Get Human Research Subject Approval

- Need IRB Approval



Data Analysis & Interpretation

- Once you have data – apply same scholarly scrutiny to it as you do to other scholarly pursuits



Write Up Results

- General Formula

The image shows the equation $E=mc^2$ in a stylized, 3D font. The letters are red with a white outline and a slight shadow, giving them a metallic or embossed appearance. The equation is set against a light gray, slightly textured background.

- Avoid Temptation



Keep in mind



Workshop ideas

- What are you working on that you want to brainstorm how to conceptualize/design a study?

Steps

- ID the research ?
- ID research methods
- ID potential problems/issues [e.g. can you isolate cause/effect – what do you need to try and control for]

Idea: Have my students learned statutory interpretation

- Subdivide into measurable ?s [see chart]
- Study methodology?
- Add subjective data?
- **What potential issues may arise in terms of validity/reliability of study** [i.e. are you measuring what you say you are measuring & are the results are replicable]

Idea: Transferability of Learning

- Colleague has been giving students exercises designed to improve their metacognitive skills & ultimately their ability to answer essay questions. Has her work resulted in her students: a. performing better in her class; performing better than peers who didn't get the extra help? Let's design the study