

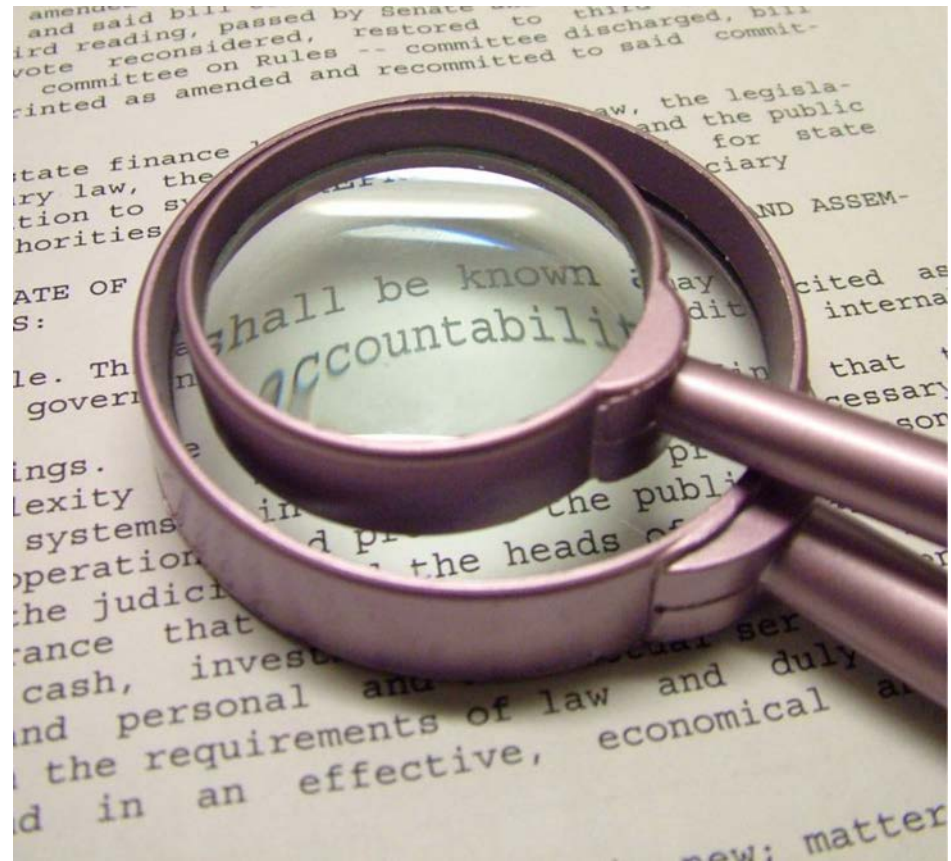
Aine Marie Kelly

Educational Outcomes

No Financial Disclosures

Background

- Medical Education a rapidly growing field of research
- Call for accountability and return on investment
- Evaluate connection between medical education and outcome



Background

- Quality of patient care determined to some extent by quality of medical education that students and residents receive
- Little funding medical education research



Challenges

- Insufficient resources, funding, training, experience
- Difficulty navigating institutional review boards
- Small sample sizes
- Difficulty defining outcomes that are relevant and measurable



Educational Research Outcomes

- Review of outcomes in medical education
 - Trainee assessment and satisfaction most frequently studied
 - Trainees (69%) > Faculty (19%)>> Providers (8%) >> Patients (4%)
 - Performance (49%) > Satisfaction (34%) >> Cost (2%)>> Patient outcomes (0.7%)



Prystowsky JB, Bordage G. An outcomes research perspective on medical education: the predominance of trainee assessment and satisfaction. *Med Educ.* 2001; 35:331–6.

Necessary Elements

- These include theoretical frameworks, the application of rigorous study design and the use of meaningful outcomes



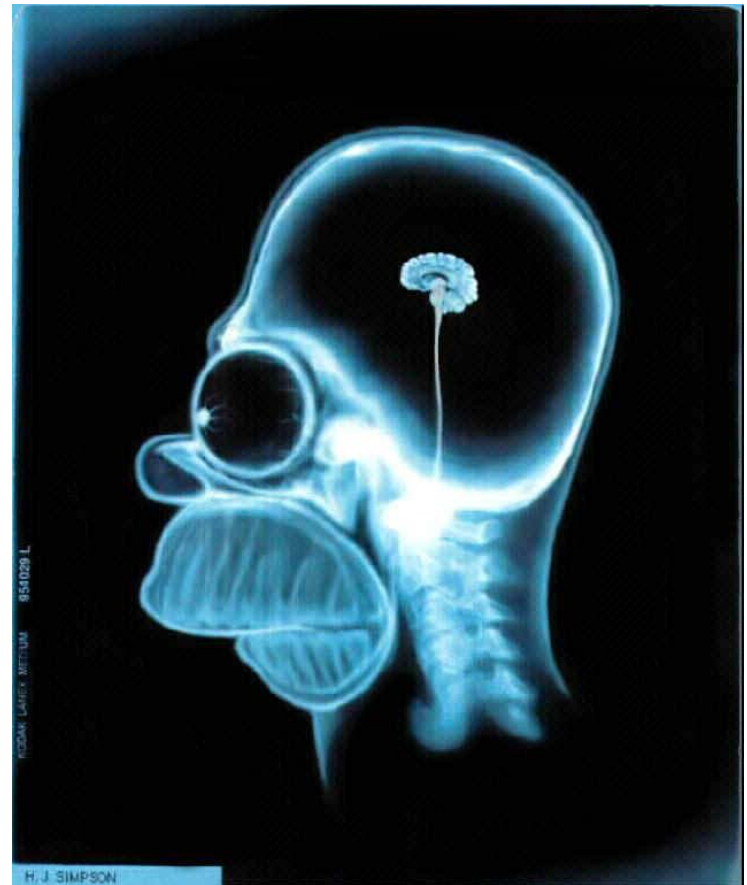
Steps to Educational Research

- Identify research problem or question
- Conceptual framework to guide study
- Craft research question
- Design study
- Define outcome



Research Problem or Question

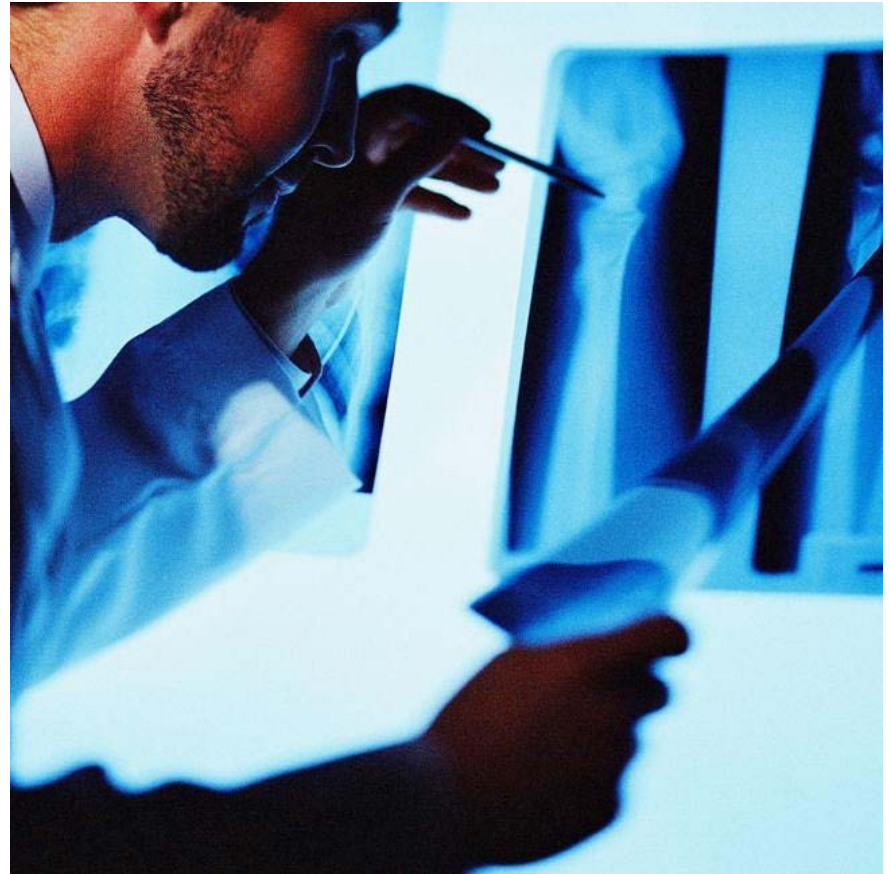
- Whose perspective?
 - Trainee
 - Faculty/educator
 - Patient
 - Provider/health care system
- What are we measuring?
 - Performance
 - Satisfaction
 - Professionalism
 - Quality of life
 - Cost



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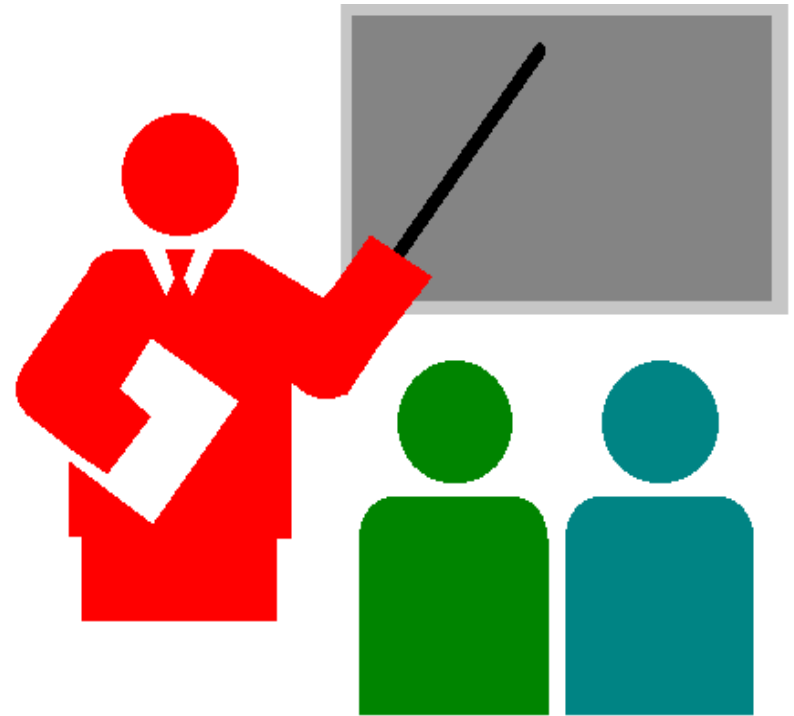
Trainee Outcomes

- Performance
 - Exam scores
 - Reporting
 - On call
- Satisfaction
 - Opinions, feelings, beliefs and attitudes
- Professional issues
 - Ethical, moral and career choices
- Cost
 - Financial outcomes or implications



Faculty Outcomes

- Performance
 - Noon conference
 - At the view box
 - Clinical/procedural
 - Assessment/feedback
- Satisfaction
 - Opinions, feelings, beliefs and attitudes
- Professional issues
 - Promotion, tenure, career choice
- Cost
 - Financial outcomes or implications



Prystowsky JB, Bordage G. An outcomes research perspective on medical education: the predominance of trainee assessment and satisfaction. *Med Educ.* 2001; 35:331–6.

Patient Outcomes

- Clinical
 - Morbidity, mortality, length of stay
- Satisfaction
 - Perceptions regarding health care
- Quality of Life
 - Abilities to care for themselves, activities of daily living
- Cost
 - Financial outcomes or implications



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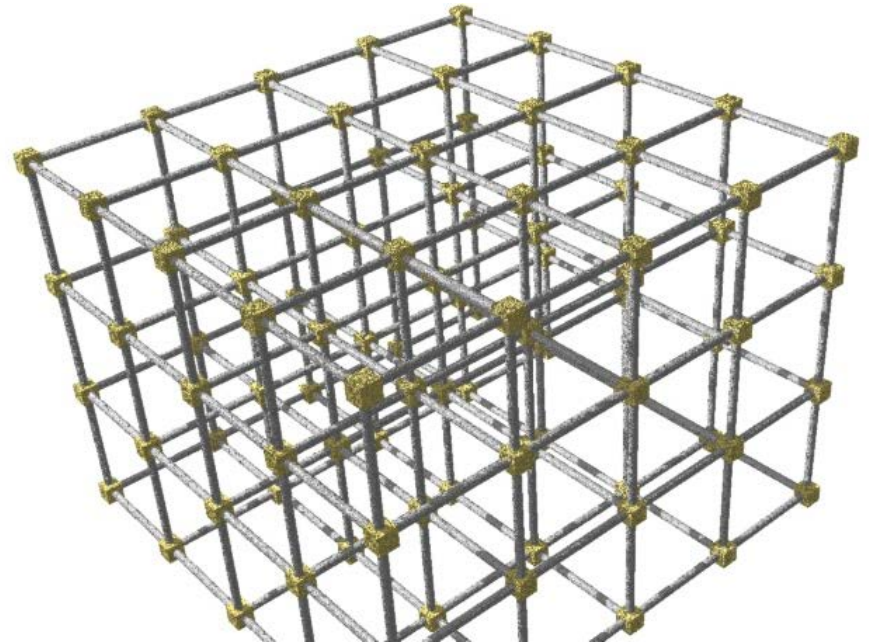
Provider / Health Care System Outcomes

- Performance
 - Practice patterns
 - Quality metrics
- Satisfaction
 - Opinions, feelings, beliefs and attitudes
- Professional issues
 - Ethics, morality, career choice, quality of care
- Cost
 - Financial outcomes or implications



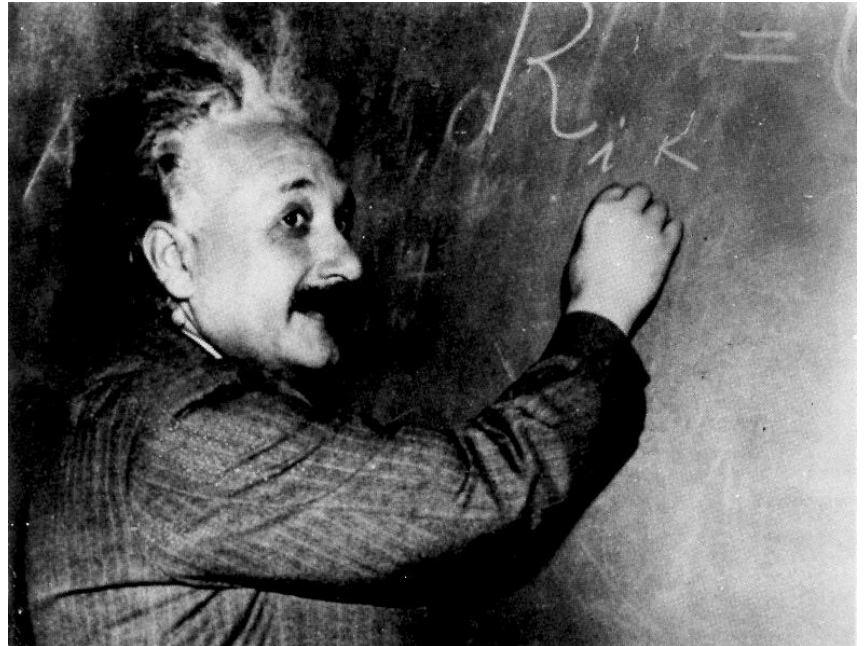
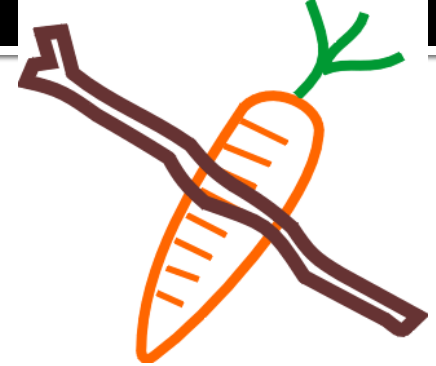
Conceptual Framework

- Way of thinking about research question or study
- Representing how complex systems work
- Framework used to guide study will determine which research aspects to focus on
- **Well designed studies will pose research question in the context of conceptual framework being used**



Educational Theories and Models

- Behaviorism
 - Classical conditioning
 - Operant conditioning
 - Goals operators methods model
 - Social learning theory
- Cognitivist
 - Assimilation
 - Attribution
 - Cognitive load
 - Component display
 - Elaboration
 - Gestalt
 - Mental models
 - Schema theory
 - Stage theory cognitive development [Piaget]



Educational Theories and Models

- Constructivism
 - Case based
 - Cognitive apprenticeship
 - Communities of practice
 - Discovery
 - Goal based scenarios
 - Social development theory
 - Problem based
 - Situational learning
- Humanism
 - ARCS model of motivational design
 - Experiential learning
 - Facilitative teaching
 - Invitational learning Perkey
 - Maslow hierarchy of needs
- Design based
 - Elaboration theory
 - ADDIE Model of instructional design
 - ARCS model of motivational design



Bordage G.
Conceptual frameworks to illuminate and magnify.
Med Educ. 2009; 43:312–9.

Evidence Based Guidelines

- Systematic reviews of teaching methods
 - Best Evidence Medical Education Guides
- Evidence based educational practice guidelines



Parachutes reduce the risk of injury after gravitational challenge, but their effectiveness has not been proved with randomised controlled trials

Craft the Research Question

- F-Feasible – enough subjects, technical expertise, affordable
- I-Interesting to investigator and audience
- N-Novel – confirm or refute prior findings, or provide new findings
- E-Ethical
- R-Relevant to science, policy, future directions

Yarris LM. Acad Emerg Med. 2011 Oct;18 Suppl 2:S27-35.

Chen FM. Acad Med. 2004; 79:955–60.

Study Design

- Curricular innovations
 - E.g. Kern six step process
- Consensus conference proceedings
 - identifying and addressing knowledge gaps
- Qualitative research studies
- Quantitative research studies
- Mixed methods research studies



Yarris LM. Acad Emerg Med. 2011 Oct;18 Suppl 2:
Chen FM. Acad Med. 2004; 79:955–60.

Curricular Innovations

- Problem / general need identification
- Target needs assessment of learners
- Educational goals and objectives
- Instructional strategies
- Implementation
- Evaluation and feedback

Kern DE, Thomas PA, Howard DM, Bass EB.

Curriculum Development for Medical Education: A Six-Step Approach.
Baltimore, MD: The Johns Hopkins University Press, 1998, P. 178.

Outcomes Curricular Innovations

- Subjective

- Learner satisfaction (Likert)
- Self reported confidence (Likert)

- Objective

- Knowledge (numerical, yes/no)
- Skills (procedural, reporting)
- Attitudes (open ended questions)
- Behaviors (steps)
- Performance (pass/fail, steps, numerical)



Consensus Proceedings

- Address a knowledge gap
- IRB approval
- Track and categorize attendees
- Plan agenda
- Formal process to achieve consensus [Delphi]
- Millennium conferences
 - Teaching patient safety 2009
 - Educational research 2007
 - Medical simulation 2005



Qualitative Studies

- Explore and understand phenomenology
- **Non numeric narrative and visual data**
- Extensive interaction
- Small sample size
- Interviews, focus groups and free text responses from surveys



Qualitative Studies

- Theory building
- Inductive reasoning; record observations, identify patterns or themes, form hypotheses, and inform theory



Quantitative Studies

- Direct observation
- **Numeric data with statistical analysis**
- Little interaction
- Larger sample size to demonstrate statistical significance
- Descriptive studies and analytical studies



Quantitative Studies

- Theory testing
- Deductive reasoning; start with theory, guide research hypothesis, tested using objective measures and confirmed with statistical analysis



Educational Studies

- Descriptive Studies
 - Case reports / series
 - Correlational ecological
 - Cross sectional
- Analytical studies
 - Case control
 - Cohort / prospective studies
 - Randomized controlled trial



Carney PA, Nierenberg DW, Pipas CF, Brooks WB, Stukel TA, Keller AM.
JAMA. 2004; 292:1044-50.

Educational Research Outcomes

- Who are we looking at?
 - Trainee [medical student/resident]
 - Faculty/educator
 - Patient
 - Provider [clinician / health care system]
- What are we measuring?
 - Performance [exams, procedures, reporting]
 - Satisfaction [opinions, feelings, beliefs, attitudes]
 - Professionalism [ethical, moral, and career choices, promotion, tenure]
 - Quality of life [activities of daily living]
 - Cost [financial implications]

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**Thank you for your time and
attention!**

Any questions or comments?

Aine Marie Kelly

Educational Outcomes
