BMC Faculty Development Seminar

Turning Education into Scholarship

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- “When teaching moves beyond intuition and personal experience to incorporate best available evidence, it can be referred to as scholarly”

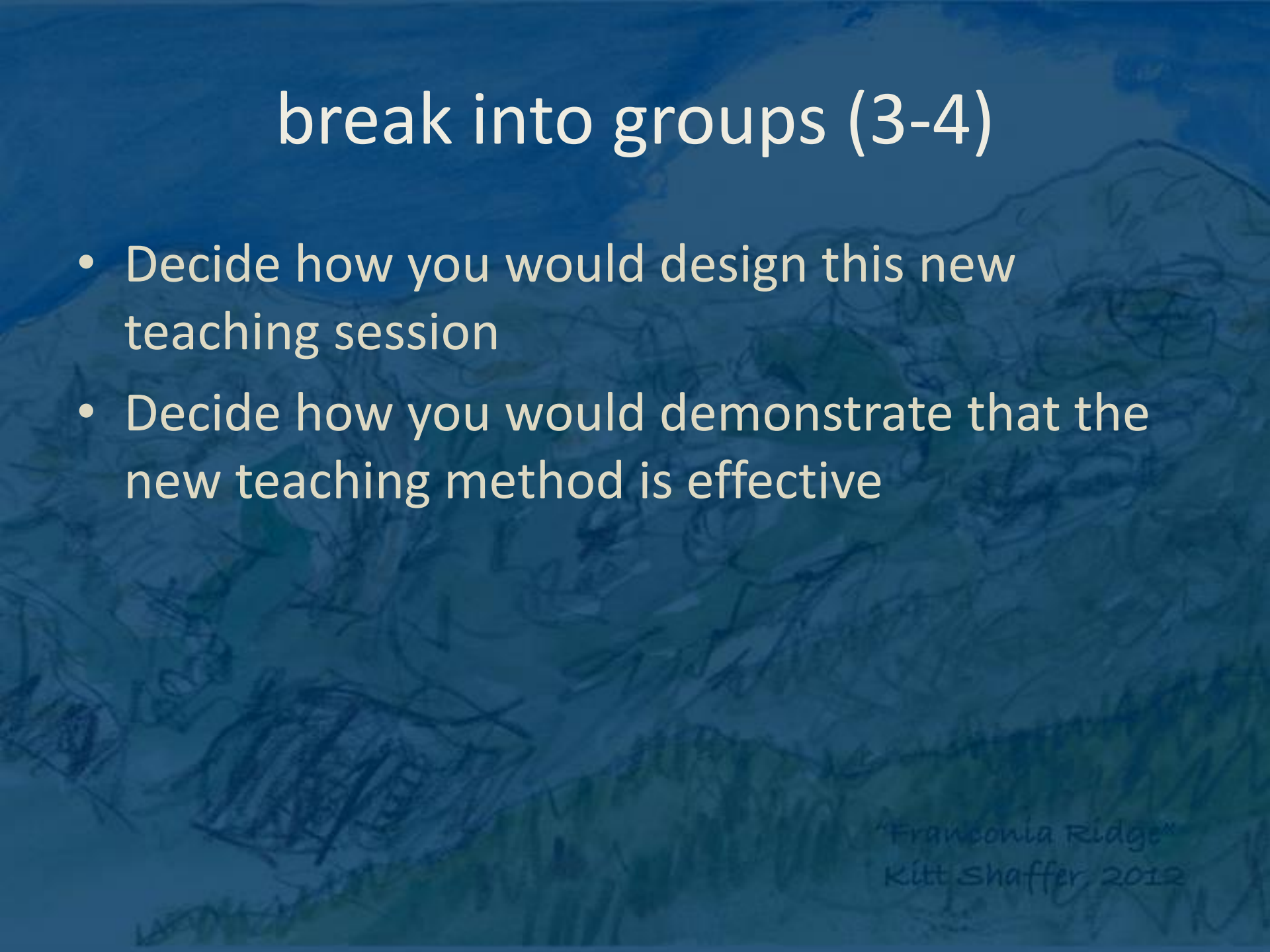
Bhani, et al, 2014

Case scenario:

You have been asked to develop a series of 3 interactive clinical sessions for the 1st-year Physiology course at your medical school, based on feedback from the most recent LCME visit (which suggested decreasing didactic teaching hours through more small group interactive teaching).

break into groups (3-4)

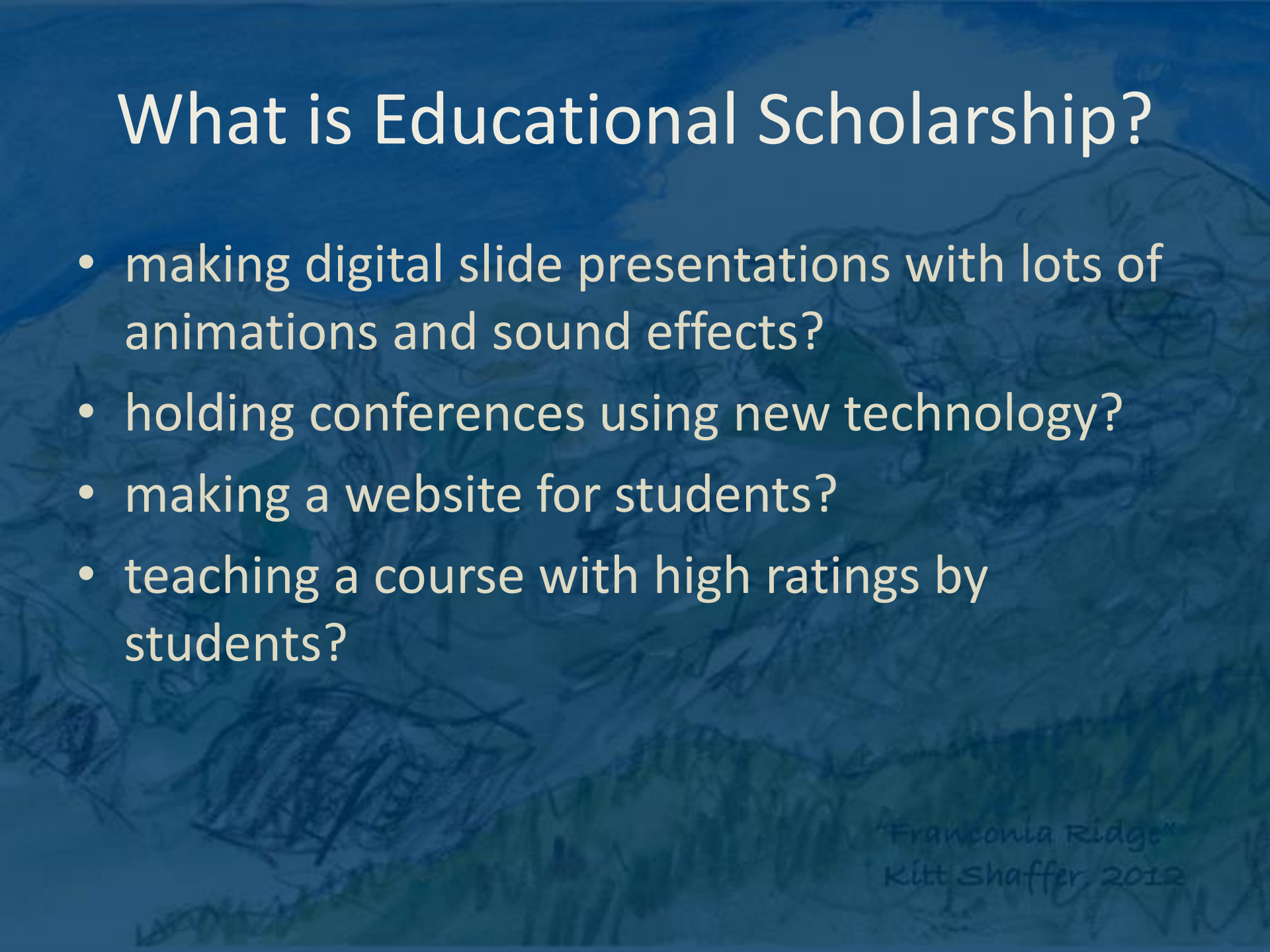
- Decide how you would design this new teaching session
- Decide how you would demonstrate that the new teaching method is effective




"Franconia Ridge"
Kitt Shaffer, 2012

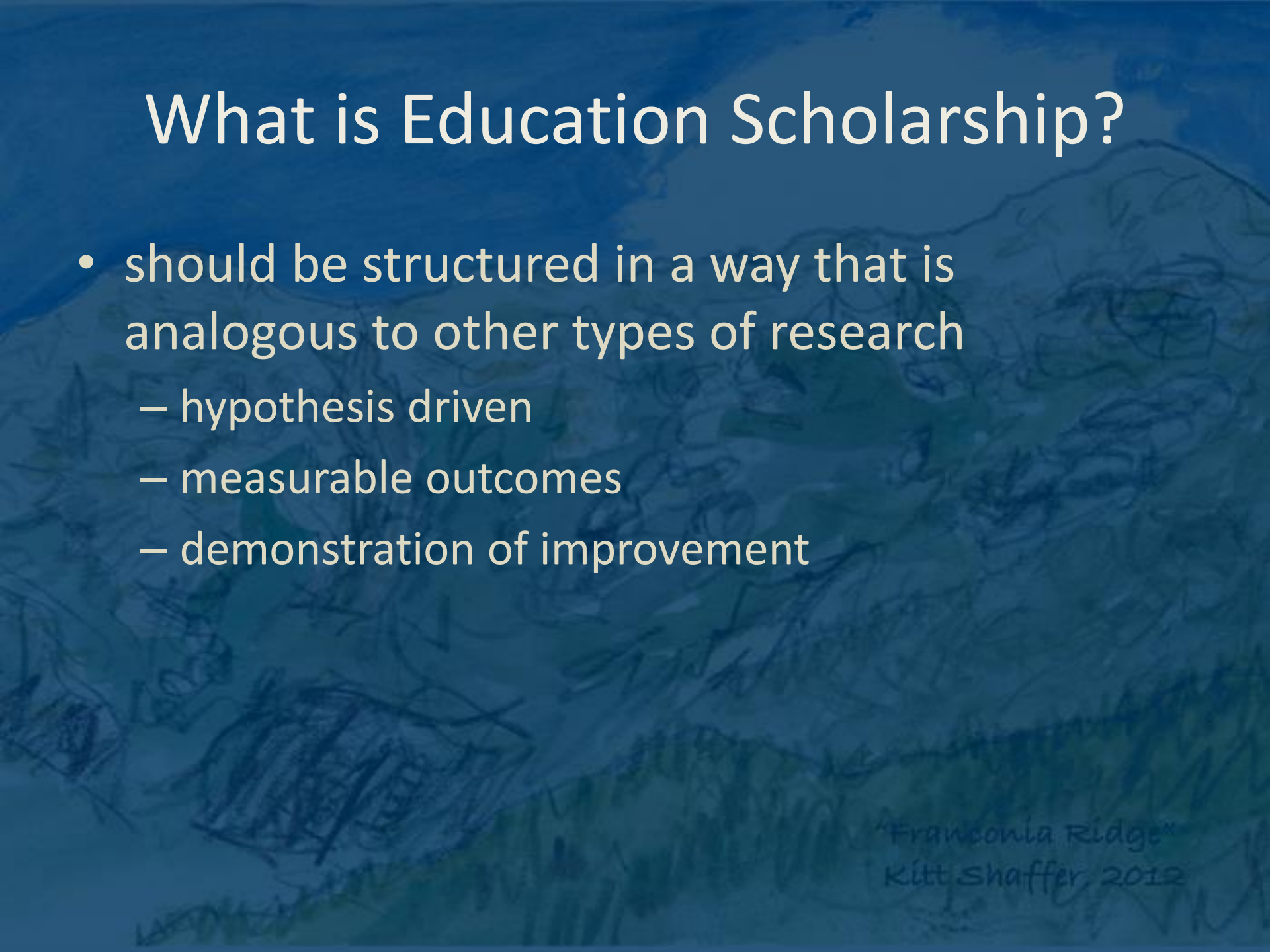
What is Educational Scholarship?

- making digital slide presentations with lots of animations and sound effects?
- holding conferences using new technology?
- making a website for students?
- teaching a course with high ratings by students?



What is Education Scholarship?

- should be structured in a way that is analogous to other types of research
  - hypothesis driven
  - measurable outcomes
  - demonstration of improvement



EM does annual review of education research publications

- excludes purely descriptive papers, 6th year
- for 2013, 43 met criteria for inclusion (of 251)
- 37 were quantitative and 6 qualitative
- 7 were exemplary in design (6 quant, 1 qual)
- 13 were funded, 22 involved technology
- 9 were experimental, 28 were observational

Farrell, et al, 2014

EM does annual review of education research publications

- 1/3 of articles that met criteria were funded (almost 90% of exemplary articles were funded)
- 20% of articles that met criteria were published in journals focusing on MedEd
- about half involved technology
- 74% concerned resident education
- 20% involved more than one institution

Farrell, et al, 2014

exclusion criteria

- opinions only, editorials
- commentaries
- literature reviews
- pure description
- single-site attitudinal surveys
- not generalizable

Farrell, et al, 2014

How can quality of education research be assessed?

- AAMC has resources for evaluation of educational research
  - MERC program (Med Ed Res Certificate)
  - MESRE section (Med Ed Scholarship Res and Eval)
  - annual RIME conference (Res in Med Ed)

MERC workshops-topics

- Data management and preparation for statistical consultation
- Formulating research questions
- Hypotheses, power, sample size
- Assessing reliability and validity
- Qualitative data collection

MERC workshops-topics

- Program evaluation
- Qualitative analysis
- Questionnaire design and surveys
- Searching and evaluating education literature
- Scholarly writing of education research

RIME topics 2013

- patient-centeredness as an organizing framework for education research
- decision making
- teaching for quality
- integration of basic and clinical science

RSNA R&E

- Many specialty societies have funds for educational research
- RSNA (Rad Soc NA), has a Research and Education (R&E) fund
- up to $150K for 2-year project

Examples of funded grants through RSNA R&E fund

- websites to teach effectiveness research, health economics, imaging economics
- leadership training course for radiologists
- computer game for teaching radiology to medical students
- curricula on communication, molecular imaging, CT dose reduction

Components of an education research project

- Need, Innovation, Planning

Need

- should be adequately documented
  - numbers, data
  - assume reviewers know NOTHING about your situation and country
  - focus on special issues, what makes your situation unique

Innovation

- use education literature
- find most appropriate approach
- use established principles
  - learner-centered
  - interactive
  - flexible
  - use digital/tech solutions when feasible

Innovation

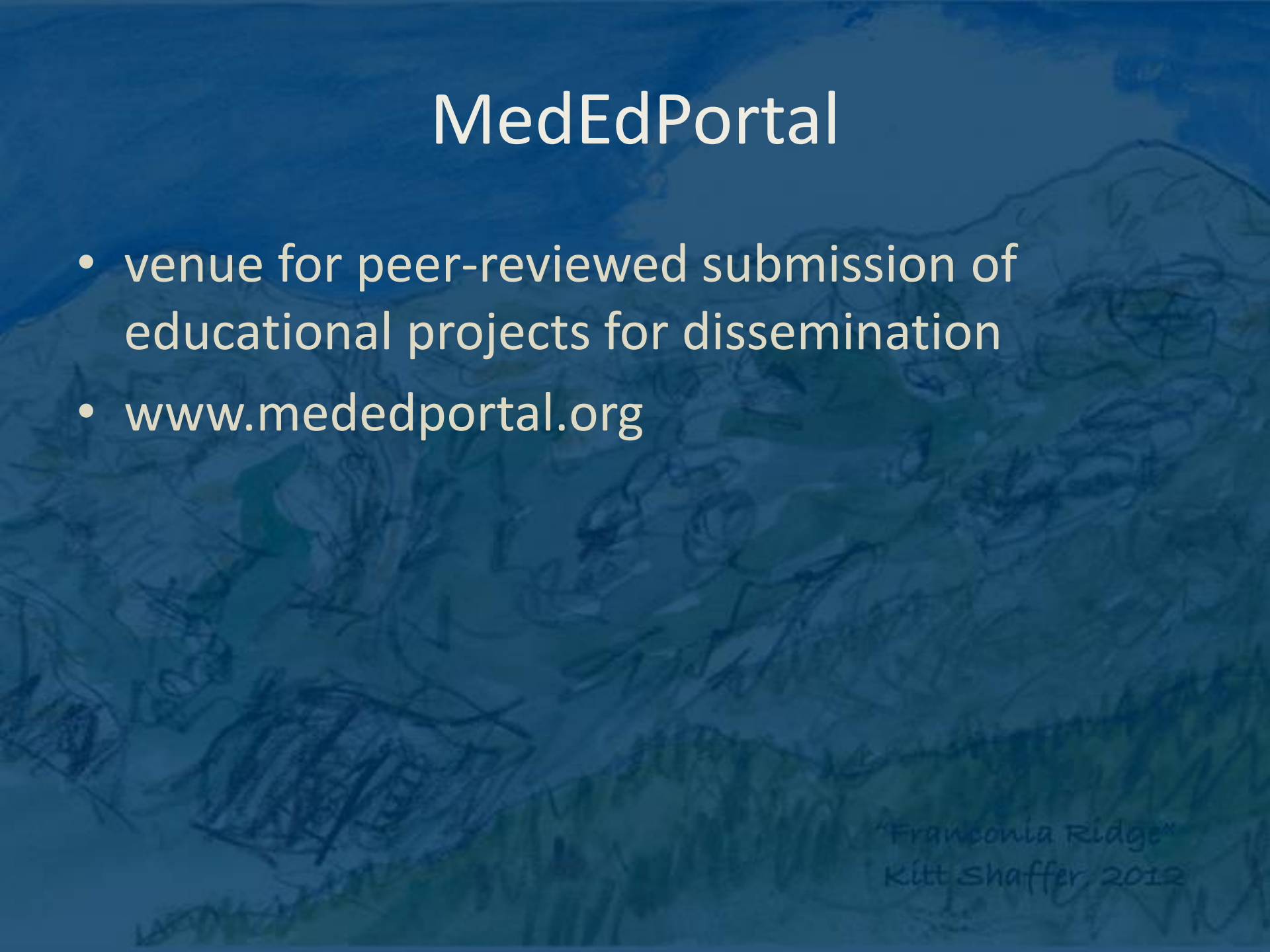
- digital/tech solutions need not be $$$
  - websites
  - distance learning
  - small groups with interaction
  - paper cases with online components
  - flipped classroom

Descriptive Research

- because of inherent limitations in setting up control groups, initial Ed Res is often descriptive
- details of how a project is designed and implemented
- thorough literature review to show evidence to support your approach

MedEdPortal

- venue for peer-reviewed submission of educational projects for dissemination
- www.mededportal.org



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Healthcare Disparities

This course is designed to increase awareness about racial and ethnic disparities across the spectrum of healthcare services, and examine the use of patient-centered communication skills to minimize these disparities.

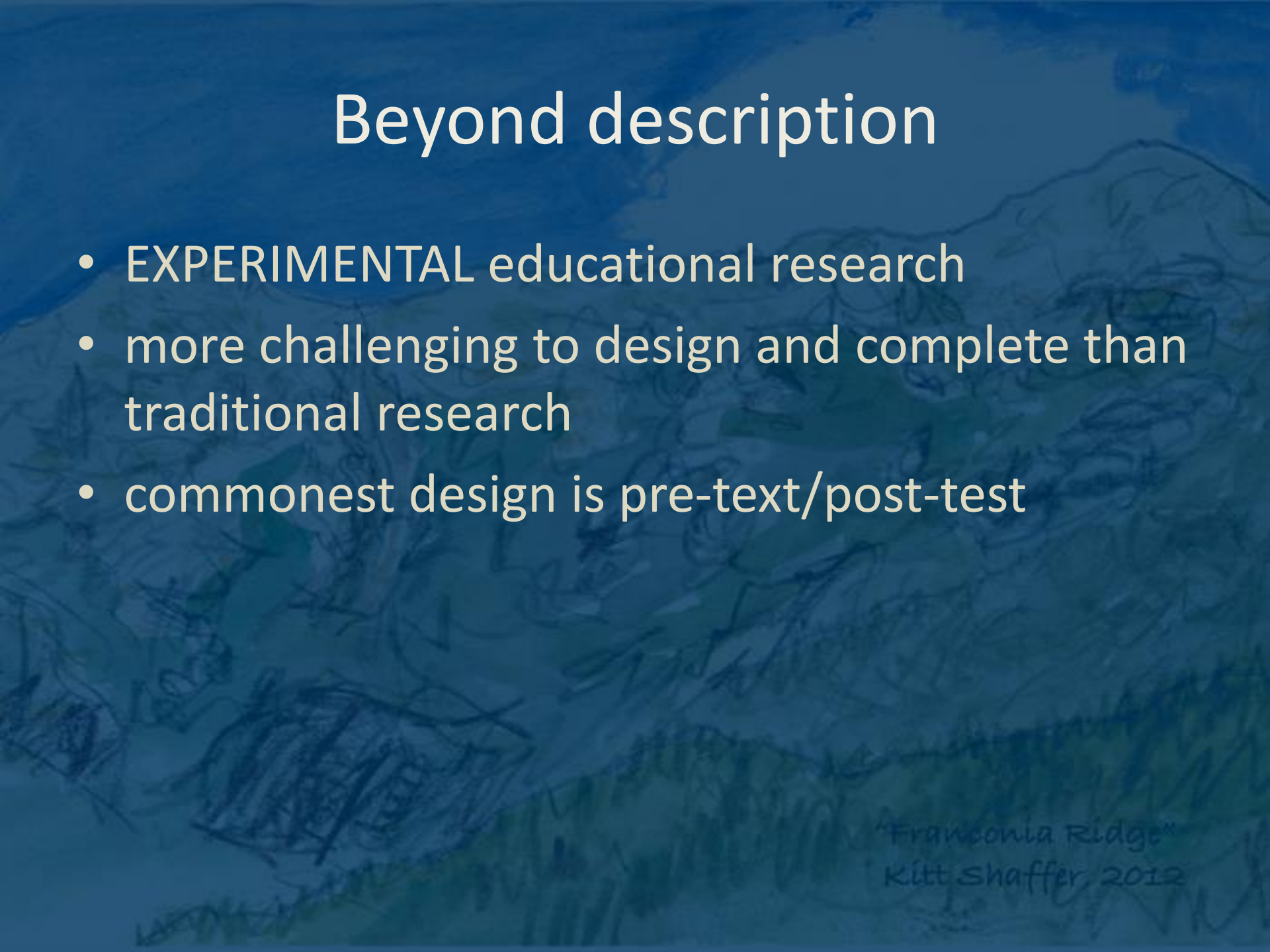
"Franconia Ridge"
Kitt Shaffer, 2012

other venues

- Academic Medicine
- Advances in Health Sciences Educational Theory and Practice
- BMC Medical Education
- Journal of Graduate Medical Education
- Medical Education
- Medical Teacher
- Teaching and Learning in Medicine

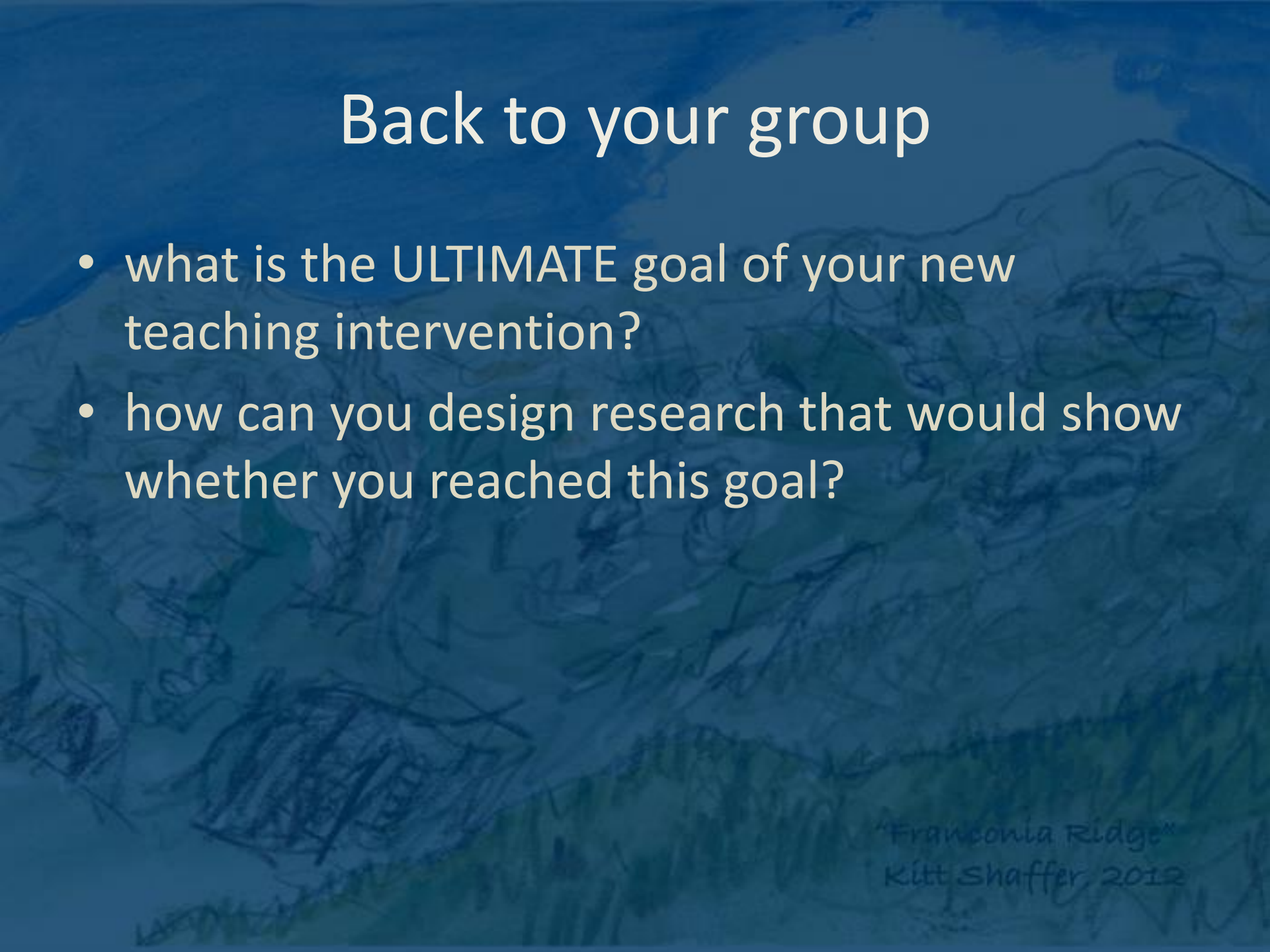
Beyond description

- EXPERIMENTAL educational research
- more challenging to design and complete than traditional research
- commonest design is pre-text/post-test



Back to your group

- what is the ULTIMATE goal of your new teaching intervention?
- how can you design research that would show whether you reached this goal?




"Franconia Ridge"
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levels of evaluation

- reaction (how much does learner like the approach)
- knowledge (how much did they learn immediately)
- application (do they use what they have learned)
- outcomes (does their learning affect patient care)

Planning

- Common mistakes in grant proposals
  - no hypothesis stated
    - no support of how the intervention meets needs
    - no explanation of alternatives
    - no theoretical support for approach
    - no testable ideas
    - no evidence of knowledge of education literature

Planning

- Common mistakes in grant proposals
  - vague plans for teaching interventions
    - no list of conference topics
    - no evidence that web-building skills exist
    - no indication of buy-in from participants
    - no detailed curriculum provided
    - no examples of prior success with methods

Planning

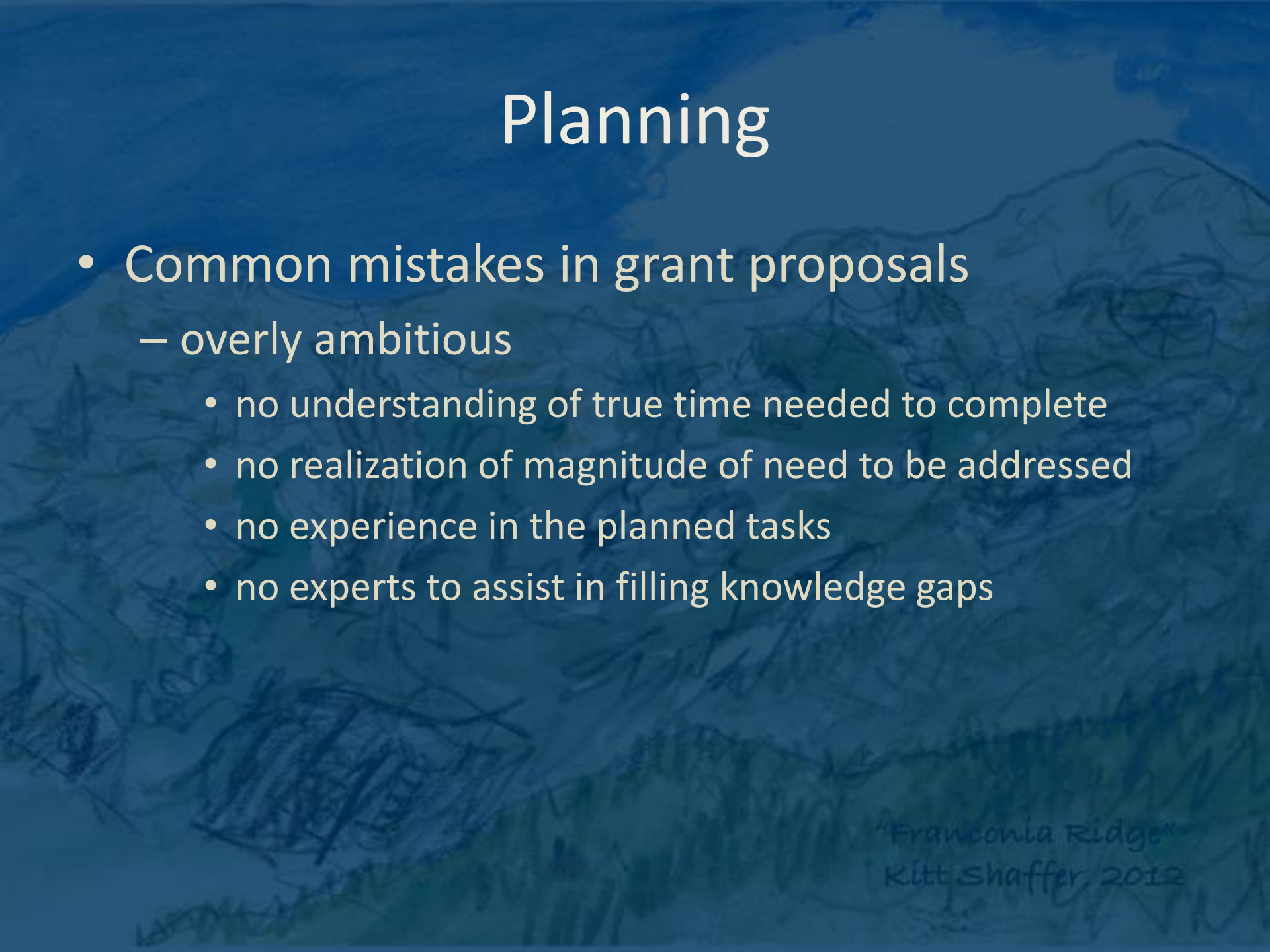
- Common mistakes in grant proposals
  - limited evaluation of success of intervention
    - no pre-testing
    - no post-testing
    - no long-term followup
    - no historic data for comparison
    - no qualitative evaluation instrument presented

Planning

- Common mistakes in grant proposals
  - limited justification for budget
    - no details of why equipment is needed
    - no indication of what existing equipment can be used
    - no justification for time commitment from participants

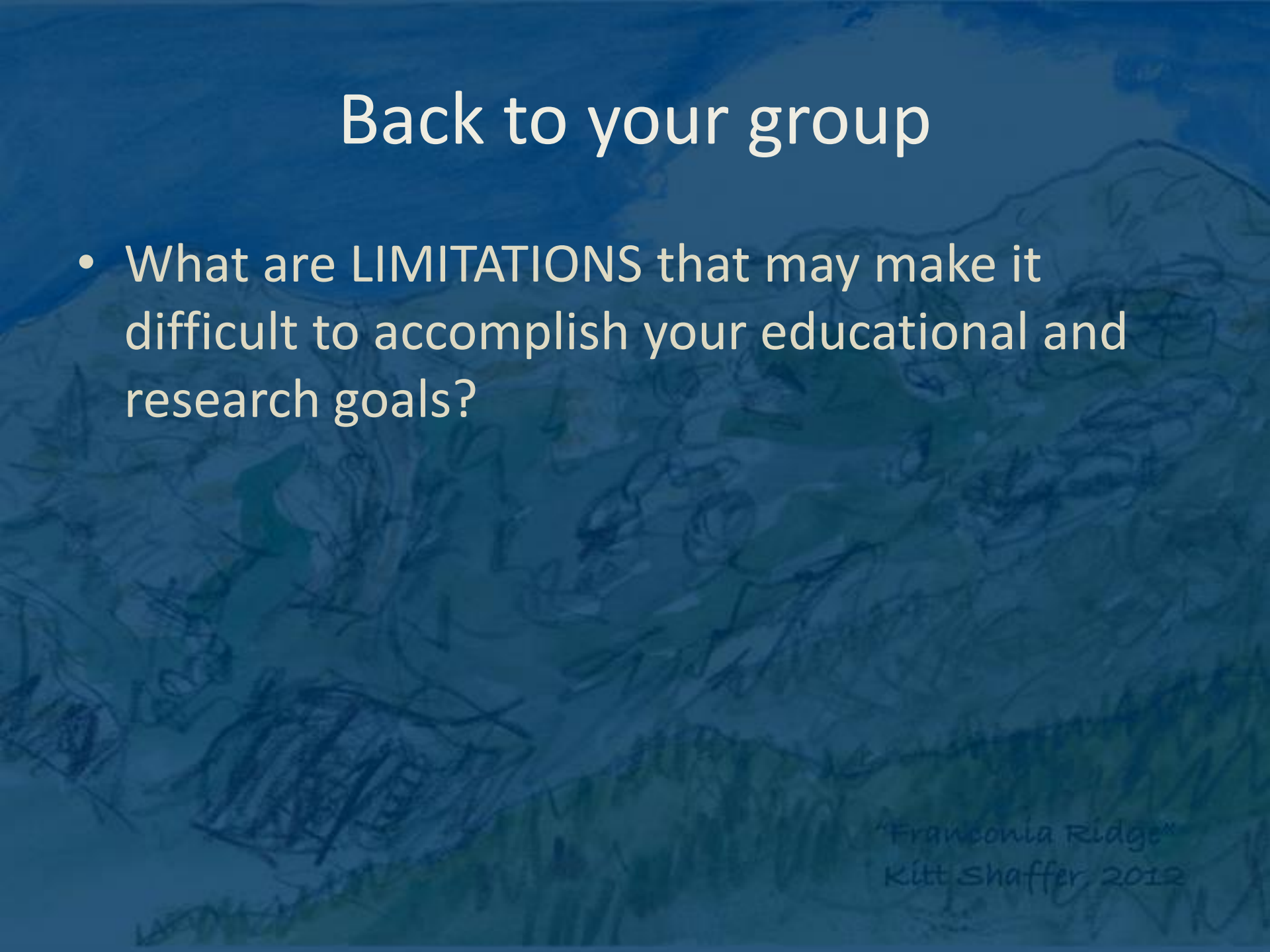
Planning

- Common mistakes in grant proposals
  - overly ambitious
    - no understanding of true time needed to complete
    - no realization of magnitude of need to be addressed
    - no experience in the planned tasks
    - no experts to assist in filling knowledge gaps



Back to your group

- What are LIMITATIONS that may make it difficult to accomplish your educational and research goals?

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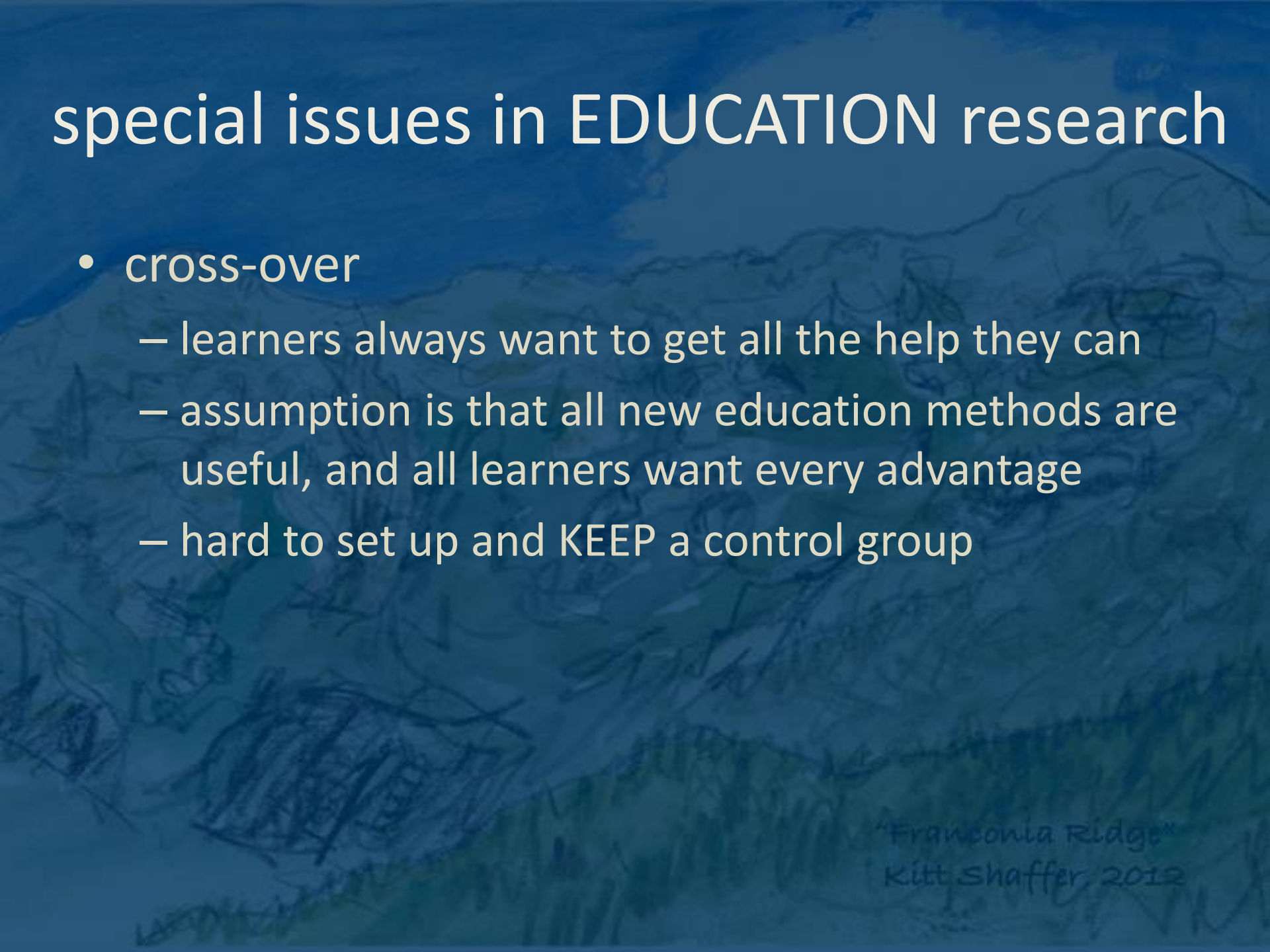
special issues in EDUCATION research

- lack of baseline data
  - there is often limited or unreliable information about how effective CURRENT teaching is
  - makes it difficult to prove that a new method is an improvement

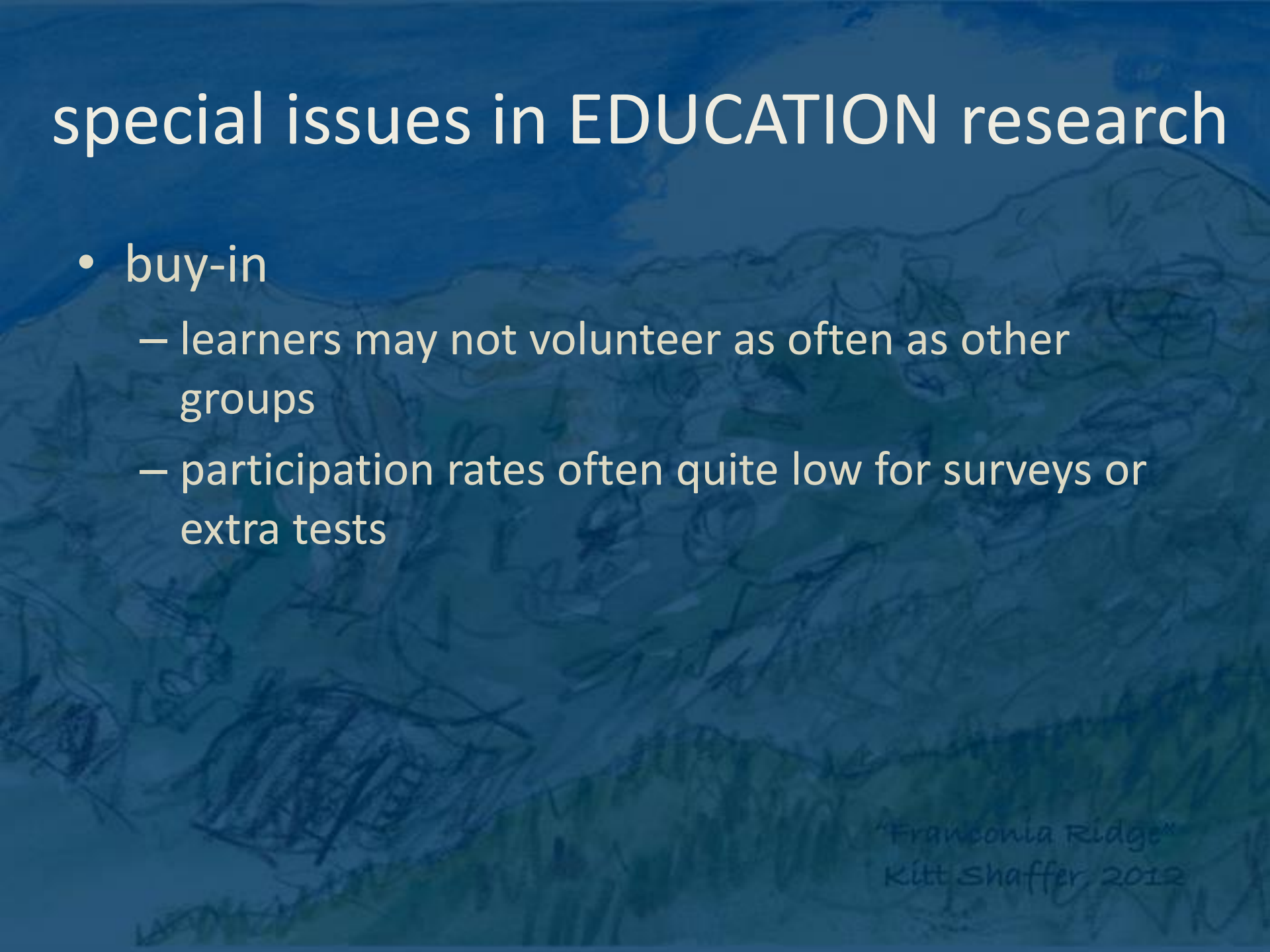
special issues in EDUCATION research

- cross-over
  - learners always want to get all the help they can
  - assumption is that all new education methods are useful, and all learners want every advantage
  - hard to set up and KEEP a control group



special issues in EDUCATION research

- buy-in
  - learners may not volunteer as often as other groups
  - participation rates often quite low for surveys or extra tests



special issues in EDUCATION research

- inability to blind
  - learners and teachers know what intervention is going on
  - can be difficult to single blind, impossible to double-blind

special issues in EDUCATION research

- inadequate evaluation methods
  - least biased method (MCQ) is probably the worst in evaluating complex knowledge and attitudes
  - most other methods are not well-validated and may be difficult to use, require training

special issues in EDUCATION research

- lack of practical and meaningful outcomes
  - long-term knowledge should be evaluated rather than short-term memorization
  - ability to apply knowledge is more important than fact regurgitation
  - ultimate outcomes are more difficult to assess and may involve job success, clinical effectiveness

Conclusions

- Descriptive studies are valid, often done first and can be rigorous and informative
- Pre-test/post-test designs are often used but are very limited, and do not address the real goals of education (improved patient outcomes)
- Common mistakes in experimental projects relate to lack of details, overly ambitious projects, and lack of adequate methods for determination of long-term outcomes
- By its very nature, education research poses challenges that are different from other types of research

References

- Critical appraisal of Emergency Medicine education research: the best publications of 2013. SE Farrell, GJ Kuhn, et al Acad EM 2014;21:1274.
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