Successful Project Expansion and Dissemination (SPrEaD) Projects

Why ITEST has chosen to not use the label *Scale-up Research?*

From the *Common Guidelines for Education Research and Development*: *Scale-up research examines effectiveness in a <mark>wide range of populations, contexts, and circumstances,</mark> without substantial developer involvement in implementation or evaluation.*

ITEST is more interested in effectiveness with particular populations, particular contexts, and situationally relevant circumstances.

Our hope as the ITEST research community matures is that we will gain evidence for strategies that are effective with particular participant populations in various settings (learning ecosystems) and under conditions familiar to those participants.

Some common concerns with SPrEaD proposals:
- ✓ Few SPrEaD proposals.
- ✓ Insufficient or lack of evidence of potential from prior research or design and development project.
- ✓ Lack of clarity or specificity about the model or intervention being examined or the contexts and conditions for broadening and scaling.

✓ Most SPrEaD proposals seem more like replication studies with some new participants added, or new venues used. Same as before, only bigger.

So, what about the Common Guidelines for Education Research and Development?

There are no explicit guidelines for SPrEaD projects, but it would be profitable to review the guidelines to gain a sense of what to consider when moving from a Design & Development project to an effectiveness or efficacy study, keeping in mind the typical contexts and conditions associated with the populations being served.

Research and Evaluation in
NSF ITEST SPrEaD Projects

Kirk Knestis, PhD

Differences

Strategies	SPrEaD
$1.2 million	**$2.0 million**

Differences: Purpose

Strategies

"…initial **design, development, and implementation** of innovative, technology-related interventions."

SPrEaD

"…further examination and broader implementation of interventions that have **demonstrated evidence of impact**."

Differences: Research Design

Strategies

"…appropriate for **Early Stage or Exploratory**, or **Design and Development studies**"

SPrEaD

"…appropriate for further **Design and Development** or **studies of impact**"

Efficacy, effectiveness, or scale-up research

Differences: Research Design

Strategies

- Develops theory
- Develops an innovation
- Grounded in an innovative idea
- Does not require true impact analysis

SPrEaD

- Tests theory
- Determines if an innovation works
- Grounded in previous research
- Requires true impact analysis

Research vs. Evaluation

Research
& Development

~~Evaluation~~
Independent Review

Study the innovation to test and improve its promise of effectiveness

Study implementation and results of the project's R&D activities

Internal to the project; working with designers

External to the project; third-party perspective

Research and Evaluation

Research
& Development

6. Scale-up

5. Effectiveness

4. Efficacy

3. Design & Development

2. Early-Stage/Exploratory

1. Foundational

(IES & NSF, 2013)

~~Evaluation~~
Independent Review

- Implementation-Results

- Process-Product

- Monitoring & Reporting

- Formative Feedback

- *Examines **research** & **development** activities!*

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References

Institute of Education Sciences, U.S. Department of Education and the National Science Foundation. (2013). Common Guidelines for Education Research and Development. Retrieved from http://www.nsf.gov/pubs/2013/nsf13126/nsf13126.pdf.

Scaling the GEAR-Tec 21 Project

ITEST SUMMIT

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Overview

How did it come about?

Our thought process for scaling

Consideration

Results

Lessons learned

How did it come about?

Initial grant was from 2006 to develop robotics + geospatial project and served about 250 youth.

Initial grant was project staff centric with faculty teaching participants during summer programs.

Developed and refined survey instruments specific for the project.

Encouraging results were achieved in research (attitudes, self-efficacy & knowledge towards STEM content areas) with effective dissemination results in conferences and peer-reviewed journals.

Our thought process for scaling

Initial thoughts were that we had initial success with the core idea (combining two technologies) to teach STEM with a focus on agriculture.

In addition, over the three years of the initial project we had developed a strong research and evaluation methodology.

Initial considerations were to how to take a regional project to scale for a national audience:

- Project design – focus on train-the-trainer PD model with lead trainers in various regions of the country.
- Research design – how to inform participants of research protocol. Also, we had synergistic research and evaluation strategies (Neal).
- Curriculum model – how to develop a curricular model that largely supports camps, clubs, and afterschool programs.
- How to market and recruit sites across the country.

Took ideas to NSF PO for review – he gave us the scaling framework (Dede, 2005).

See: Dede, C., Honan, J., & Peters. L., (Eds). (2005). *Scaling Up Success: Lessons Learned from Technology-Based Educational Improvement*. New York: Jossey-Bass.

Results

◦ Project design – Hosted annual PD train-the-trainer programs in Lincoln, paid trainers stipends half up front and half when they completed a number of trainings.

◦ Research design – Embedded methodology as a specific part of PD programs, expanded questions:

  ◦ Fidelity of implementation – what works, under what conditions.

  ◦ Impact on facilitators

◦ Curriculum model – Developed student workbooks, facilitators guide and downloadable exe file as well as a website with curriculum and printable PDFs.

◦ How to market and recruit sites across the country – used LGUs network of extension to recruit sites. Overall had roughly 5,000 participants over 5 years in 25 + states.

Results

Sites in 2011-12
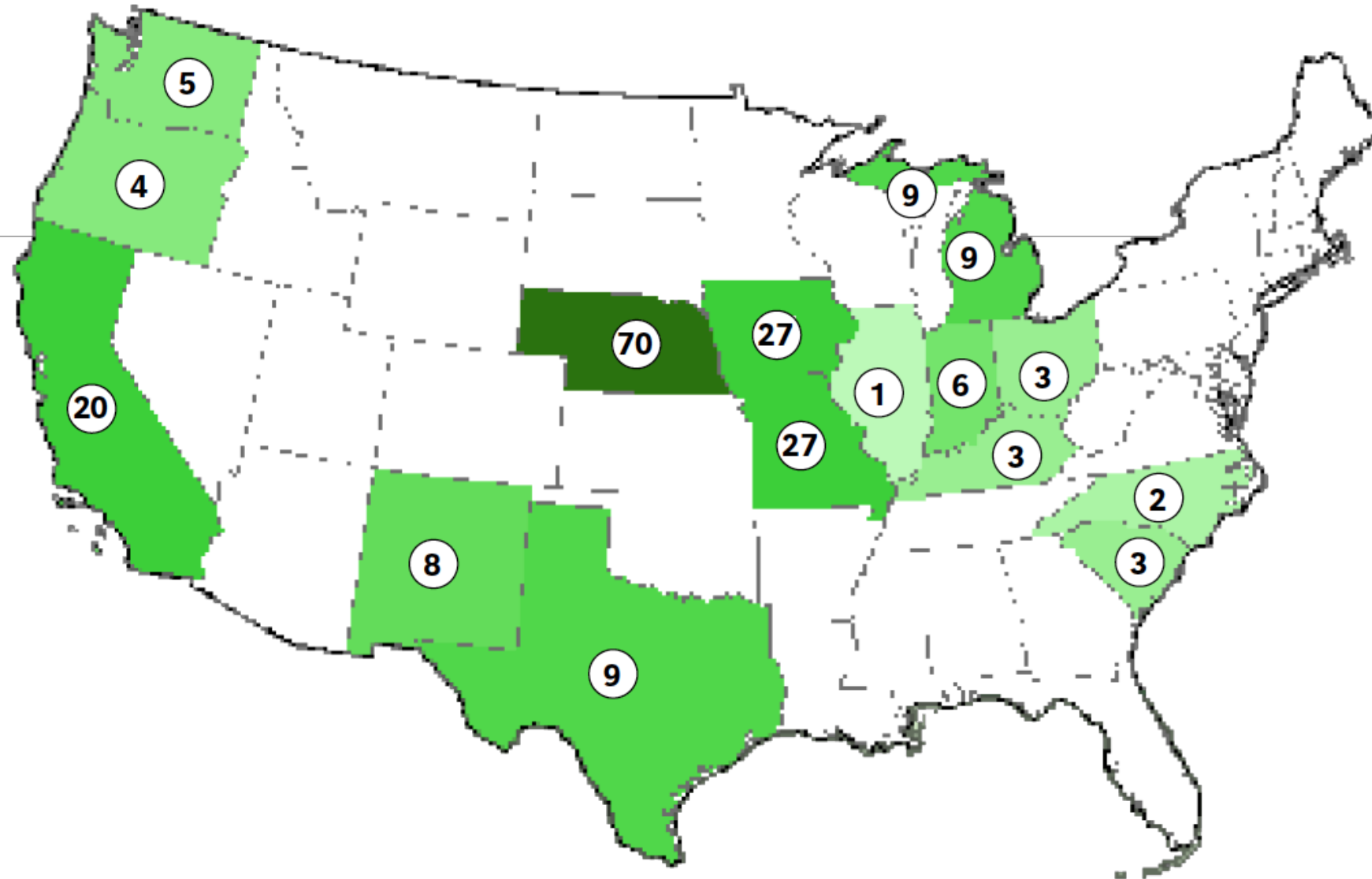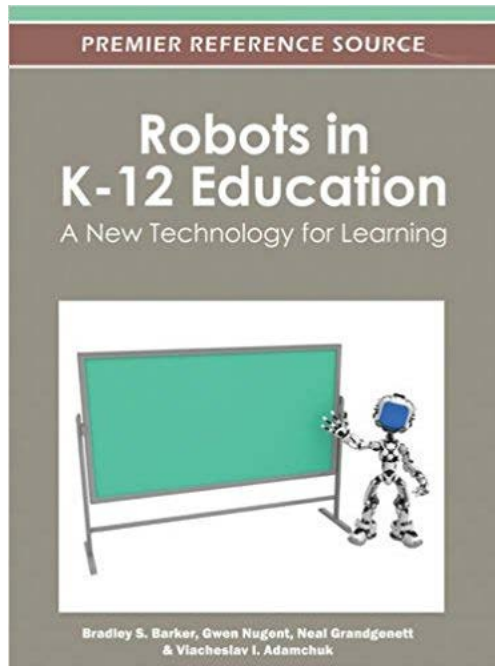
Scale Up Evaluation Lessons Learned

- Monitor fidelity carefully, due to scale and site diversity (addressed chapters covered)

- Try to engage more deeply in some contexts (focused camps facilitated strong data)

- Use control/comparison group as viable option (incentives used to help participation)

- Validate assessments early (at project level if possible before scaling)

- Start IRB process early and update protocols periodically (some IRB's may not accept others)

- Use mix methods when possible (for example our programming test then youth interviews)

- Strive to maintain objectivity as an evaluator but work closely with team

- Strive for innovation in evaluation (integrate embedded assessments when possible)

Project Lessons Learned

◦ Sustainability – We could not get a consistent revenue stream to support staff and additional equipment beyond the grant period.

◦ Project was open sourced from the beginning and sites were allowed to modify.

◦ Outdated technology was a challenge - New sensors and robotic platform released after curriculum developed.

◦ The program was adopted by new audiences – i.e. public schools (districts), large informal educational organizations adopt and use in unanticipated ways.

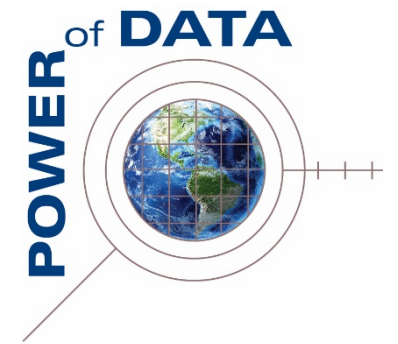◦ Massively published results – 13 articles plus one book.

Thank you

Questions?

Lori Rubino-Hare and Brooke Whitworth

Joan Pasley, Evaluator, Horizon Research, Inc.

The Power of Data Project

- A 35 hour professional development program that helps secondary teachers enhance existing lessons with Geospatial Inquiry and expose students to geospatial technology careers

- SPREAD – "train the trainers" model
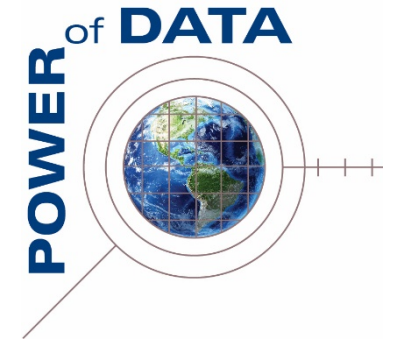
History – Evidence of Transferability

- **2009 Science Foundation Arizona statewide**
  - Secondary CTE and STEM teachers (academic year PD)

- **2009 ITEST Strategies regional – DRL 0929846**
  - Secondary CTE and STEM teachers (summer PD)

- **2013 NSF Advanced Technological Education (ATE) statewide - DUE 1304872**
  - High School STEM teachers and College Faculty (summer and AY PD)

Research Model and Associated Questions
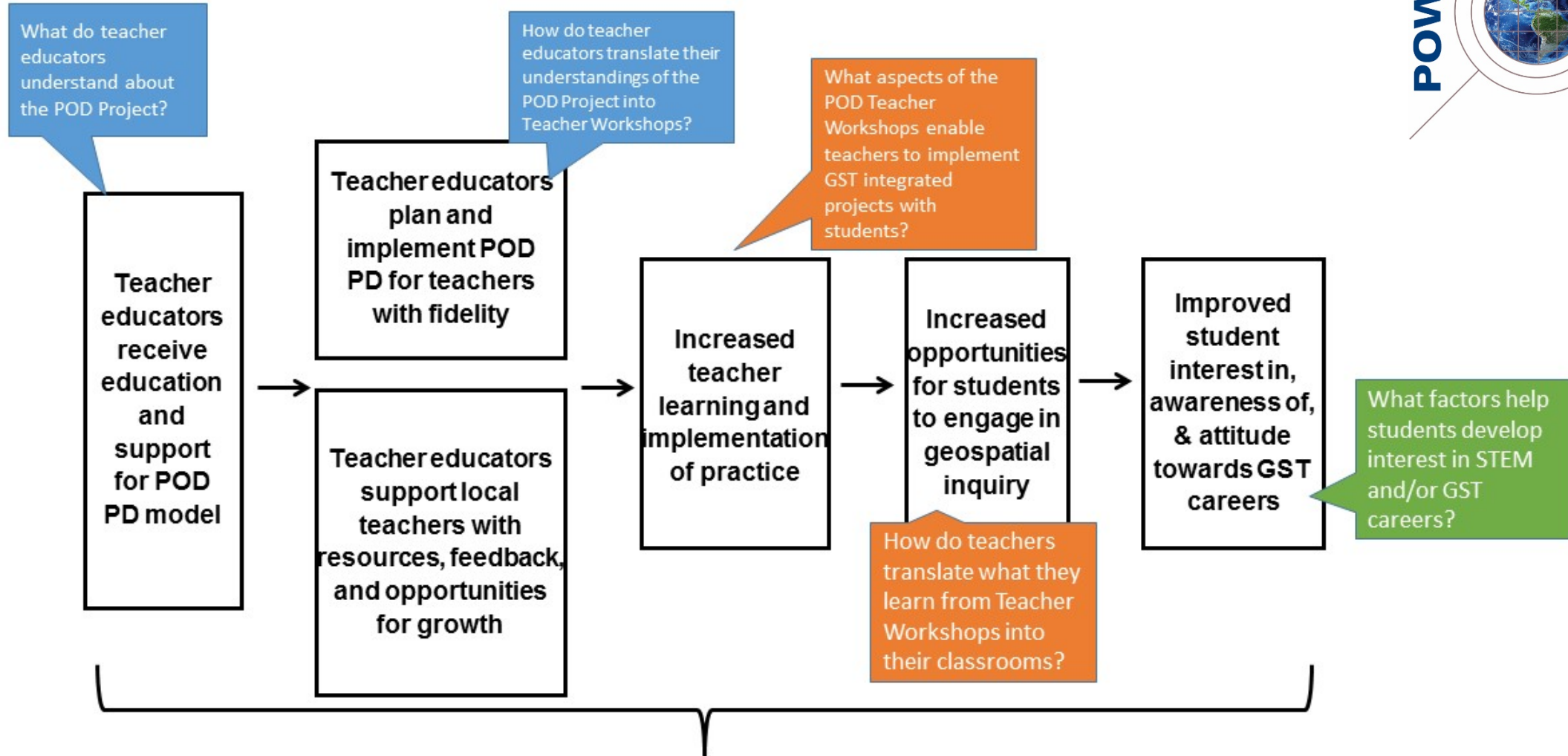
www.pod-stem.org
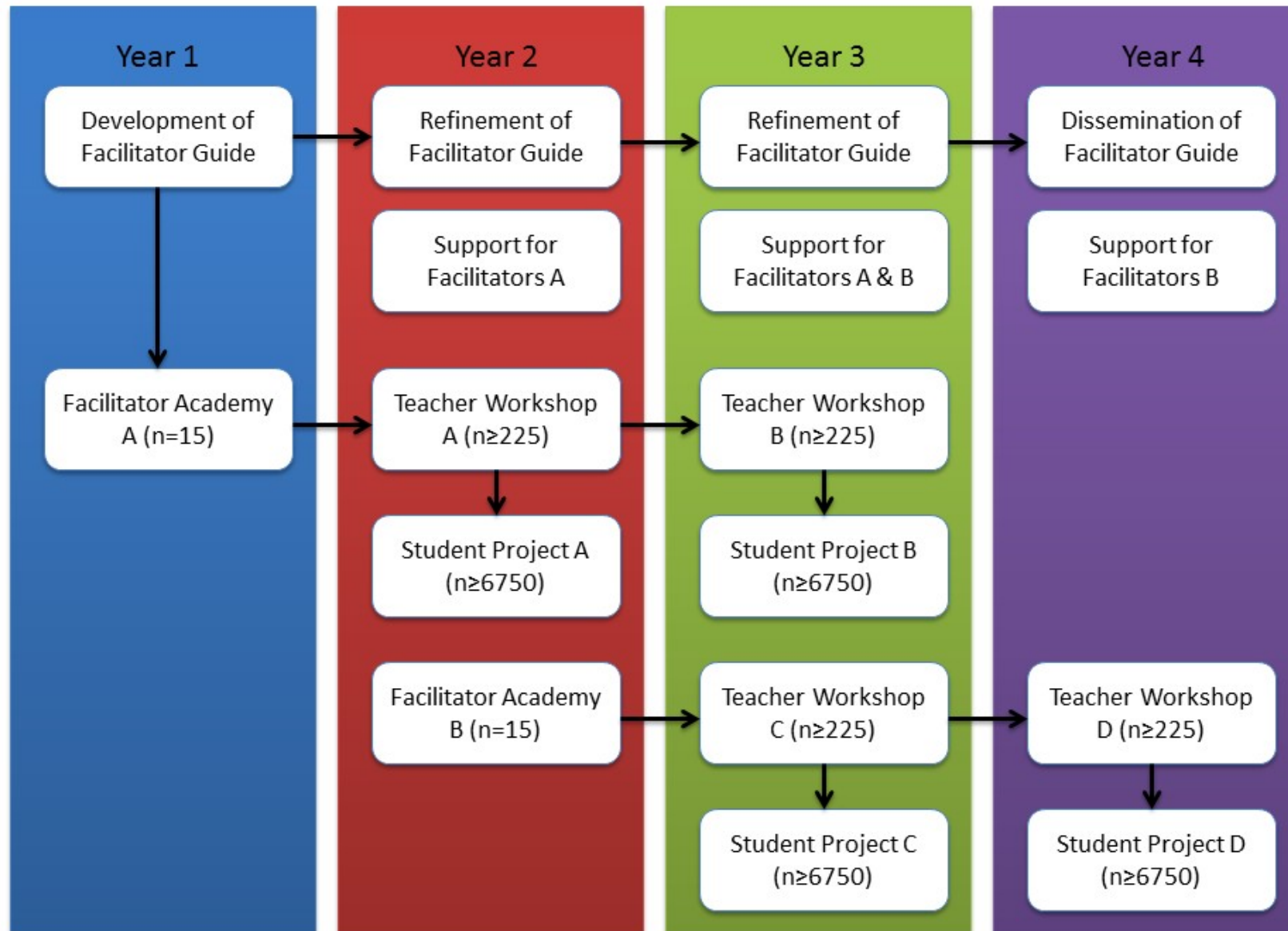
Taking POD Project to Scale

- Depth – Define the "it" you want to scale

- Spread – Scale back expectations

- Sustainability – Expect adaptations

- Shift – Let go

- Evolution – Focus on integrity vs. fidelity of implementation

(Coburn, 2003; Dede, 2006)

Challenges

- Determining level of integrity
- Collecting data when so far removed/Local IRB
- Sustainability challenges
  - Online model – collecting data is different
  - Rural – funding/travel/recruitment
  - Timelines for implementation
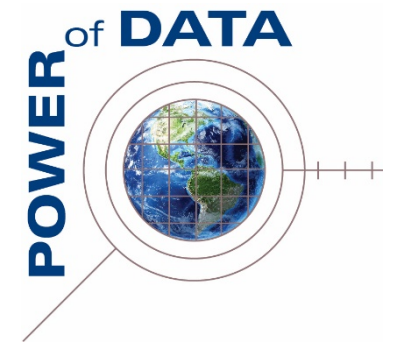
Advice for NOW

- Key principles – define the "it"

- Collaborate – find expertise, solicit advice

- Collect data – efficacy but also needs for scaling

- Be Realistic
  - Funds
  - Capacity for data collection and analysis
  - Tradeoffs might be necessary

Collaborate

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