Preparing Facilitators for Virtual Faculty Development Programs

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Lessons and Insights from the ASEE Leadership Virtual Community of Practice (LVCP)

ASEE Annual Conference.
June 16, 2014

Today's agenda

- Background and overview of the LVCP program (15 minutes)
- Design process (15 minutes)
- Panel of LVCP participants describing things that went well and suggestions for others (30 minutes)
- Reflection and dialogue (20 minutes)
- Wrap up (10 minutes)

Russell Pimmel

Ann McKenna

Amy Johnson

Brian Yoder

Rocio Chavela

FACULTY DEVELOPMENT USING VIRTUAL COMMUNITIES OF PRACTICE

NSF Award DUE-1224217

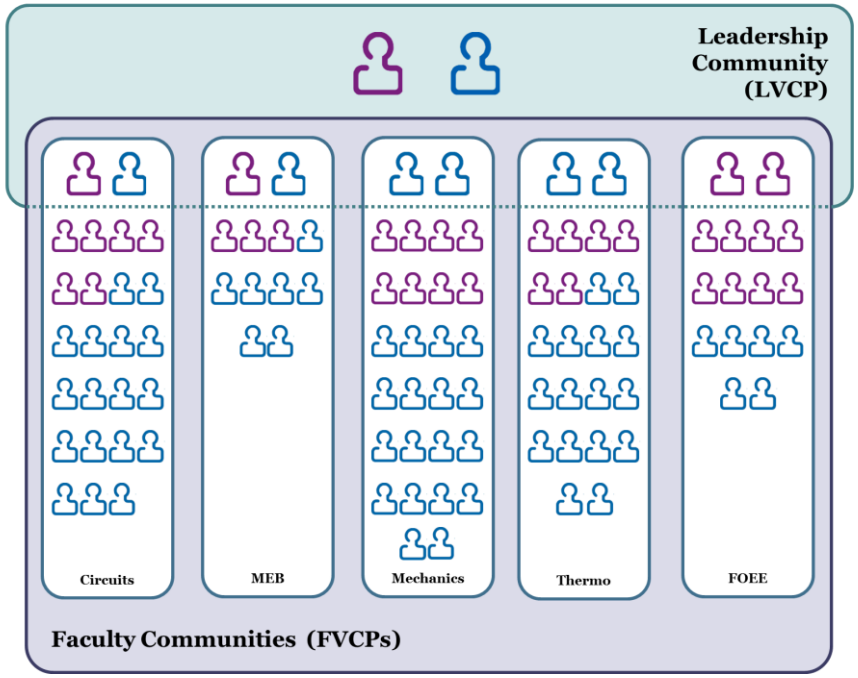
ASEE Annual Conference, June 16, 2014

Our VCP Model

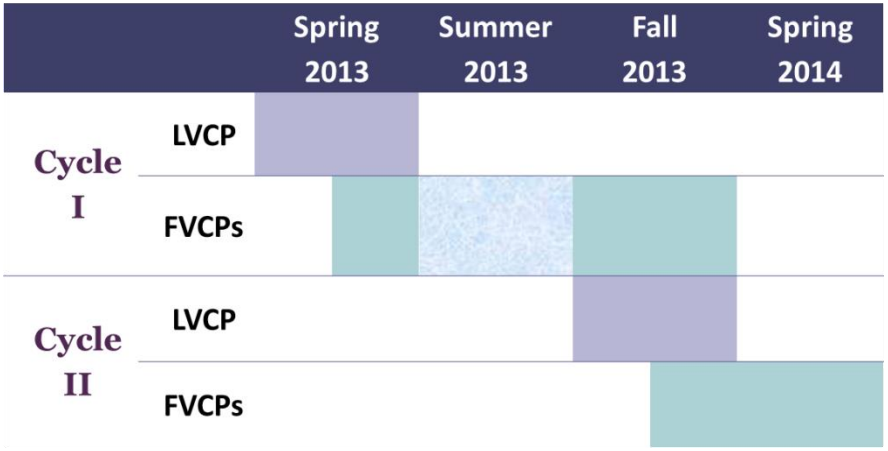
Seeks to enable faculty members to implement research-based educational practices in engineering courses

VCP Model for Faculty Development

- Two-tier structure
  - **First tier: Leadership VCP** – trains the leaders of the second tier
  - **Second tier: Faculty VCPs** – two leaders head each faculty VCP



- Two preparation cycles
  - Knowledge building phase and practical phase



Digital Habitat

Synchronous Communication
Adobe® Connect™

- Web conferencing platform
- Weekly meetings
- Features
  - Whiteboard and notes
  - Public and private chat
  - Breakout rooms
  - Participant gestures
  - Polls

Asynchronous Communication
Open Atrium Portal

- Open source collaboration platform
- Password-protected site
- Features
  - Blogs
  - Notebooks
  - Calendars
  - File management

Curriculum Example: LVCP

Goals

- Effectively and efficiently manage time and expectations
- Prepare VCP leaders with examples, strategies and resources to:
  - Effectively facilitate their VCP
  - Foster a LVCP that learns, problem solves and provides support

Session	Topic
1	Introduction to the LVCP
2	Creating an inclusive learning environment
3-4	Active learning
5	Student teams for active learning
6-7	Student motivation
8-9	Learning objectives & Bloom's taxonomy
10	Reflection on LVCP and identification of best practices for FVCPs

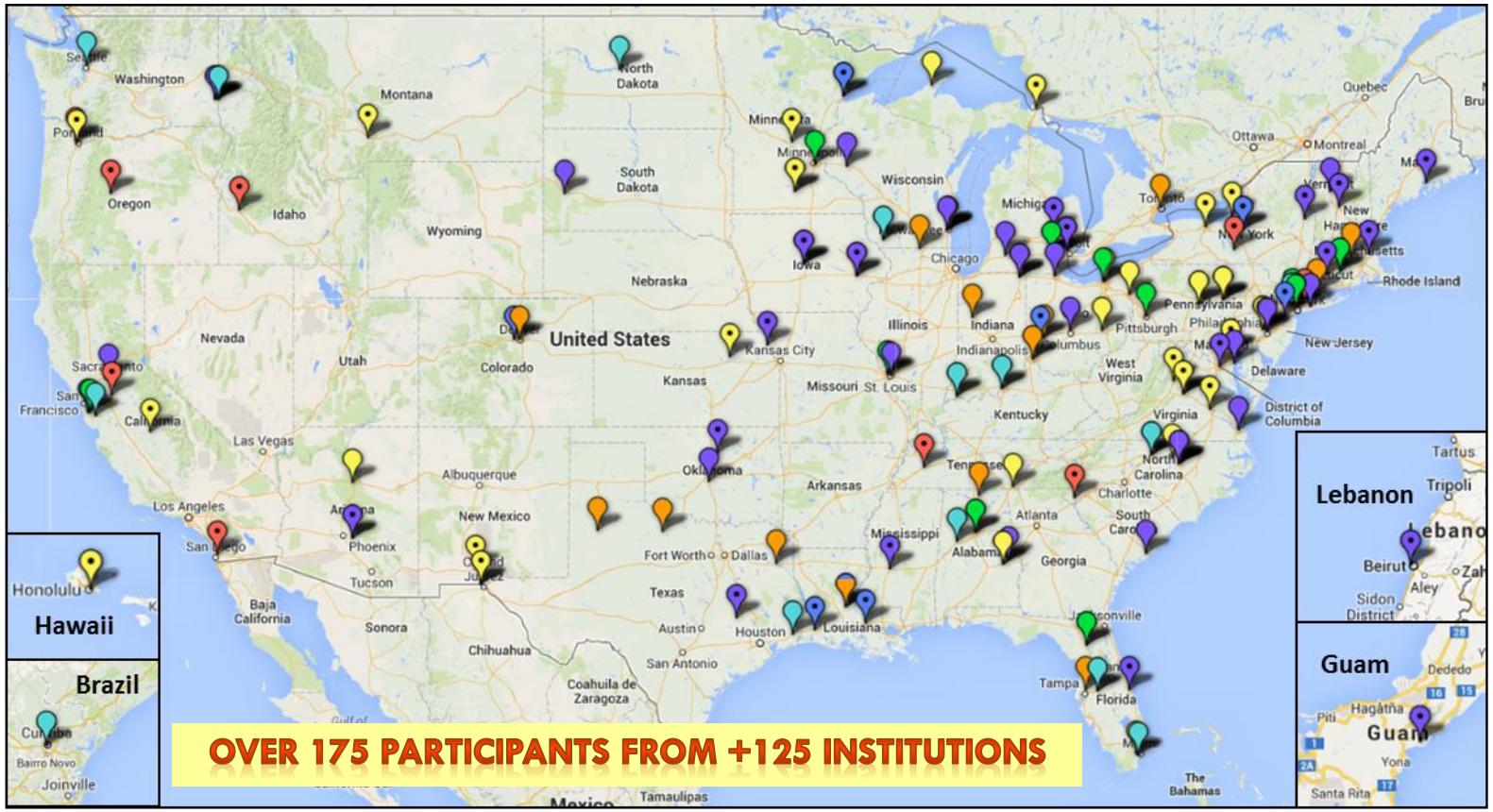
Community Leaders

Leadership (LVCP)	**Cindy Finelli** University of Michigan	**Karl Smith** University of Minnesota

CYCLE I		
Circuits (23 participants)	**Lisa Huettel** Duke University	**Kenneth Connor** Rensselaer Polytechnic Institute
Mass and Energy Balance (MEB) (10 participants)	**Lisa Bullard** North Carolina State University	**Richard Zollars** Washington State University
Mechanics (26 participants)	**Edward Berger** University of Virginia	**Brian Self** California Polytechnic State University
Thermodynamics (Thermo) (22 participants)	**John Chen** California Polytechnic State University	**Milo Koretsky** Oregon State University
NAE Frontiers of Engineering Education (FOEE) (14 participants)	**Mary Besterfield-Sacre** University of Pittsburgh	**Jennifer Turns** University of Washington

CYCLE II		
Electrical Engineering (13 participants)	**Susan Lord** University of San Diego	**Jill Nelson** George Mason University
Chemical Engineering (15 participants)	**Stephanie Farrell** Rowan University	**Stephen Krause** Arizona State University
Mechanical Engineering (21 participants)	**Julie Linsey** Georgia Institute of Technology	**Charles Krousgrill** Purdue University
Civil Engineering (20 participants)	**Chris Swan** Tufts University	**Chris Carroll** University of Louisiana at Lafayette
Computer Science and Engineering (24 participants)	**Scott Grissom** Grand Valley State University	**Joseph Tront** Virginia Tech

Community Members



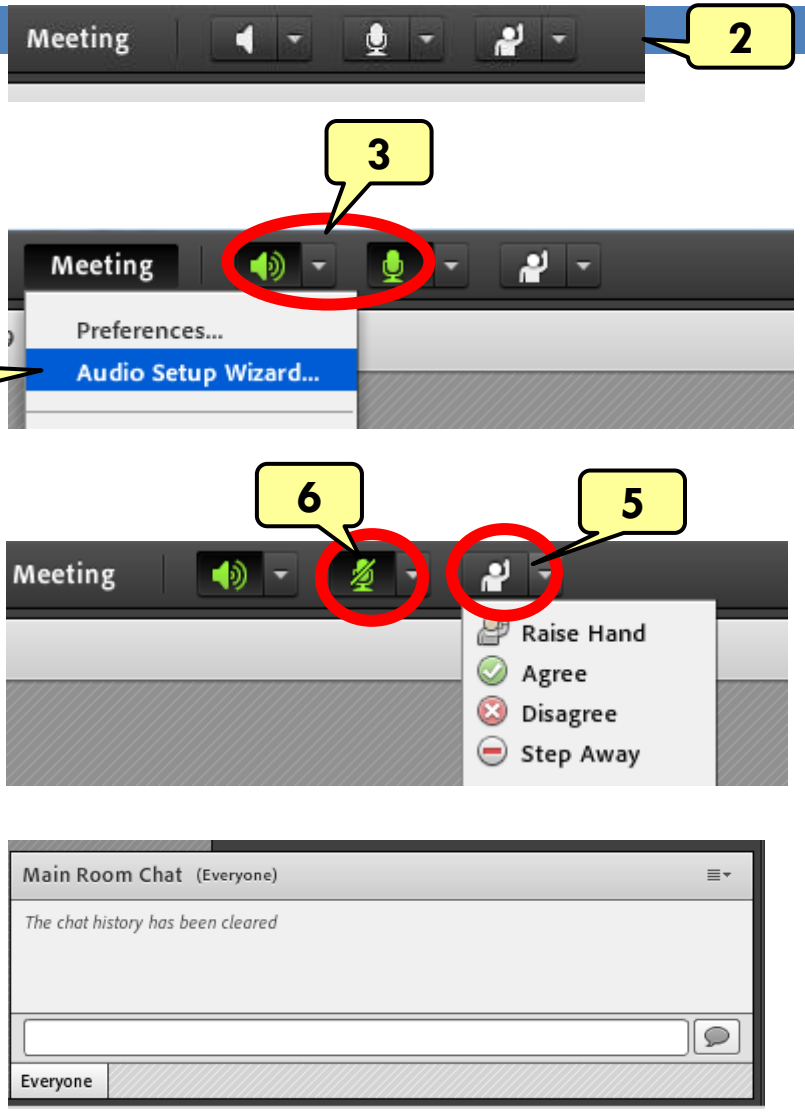
CYCLE I: Electric Circuits | Mass and Energy Balance | Mechanics | Thermodynamics

CYCLE II: Electrical Engineering | Computer Science and Engineering | Mechanical Engineering | Civil Engineering | Chemical Engineering

Welcome! As you enter the room, please…

- Plug in your headset (if available).
- Enable your speakers and mic (the icons on the top bar should be green).
- Run the audio setup wizard (see the "Meeting" menu on the left of the screen).
- "Raise your hand" by clicking the icon to let the hosts know you are ready to test your mic.
- After testing your mic, mute yourself by clicking the mic icon (to avoid background noise).

Feel free to use the chat at any time!



LVCP goals

- Effectively and efficiently manage time and expectations
- Prepare Faculty Virtual Community of Practice (FVCP) leaders with examples, strategies and resources to:
  - Effectively facilitate their FVCP
  - Foster a LVCP that learns, problem solves and provides support

Introductions – LVCP Cycle 1

- We assume you read the bios
- We need to familiarize ourselves with everyone's voice

http://www.asee.org/asee-vcp/communities

Introductions – LVCP Cycle 2

- What attracted you to participate in the LVCP-2?
- What do you hope to get out of participating?

ChE

CE

CSE

EE

ME

http://www.asee.org/asee-vcp/communities/cycle2

LVCP sessions overview

1. Intro to the LVCP
2. Creating a positive/ inclusive environment
3. Active learning. Part 1
4. Active learning. Part 2
5. Student teams for active learning
6. Virtual learning communities
7. Student motivation. Part 1
8. Student motivation. Part 2
9. Learning objectives and Bloom's taxonomy
10. The LVCP. Reflections and best practices

<u>FVCPs begin:</u>

- Follow up #1. Success stories and challenges
- Follow up #2. Activity sharing
- Follow up #3. Wrap up

Session 1: Learning objectives

- Explain and apply LVCP design features in your FVCP
- Describe key features of the *Rethinking and Redesigning*
  - Articulate an integrated approach to course design which aligns curriculum (or content or outcomes), assessment and instruction
- Summarize research on *How Learning Works* (HLW)
- Identify connections between effective, interactive learning strategies such as cooperative learning and desired outcomes of courses and programs

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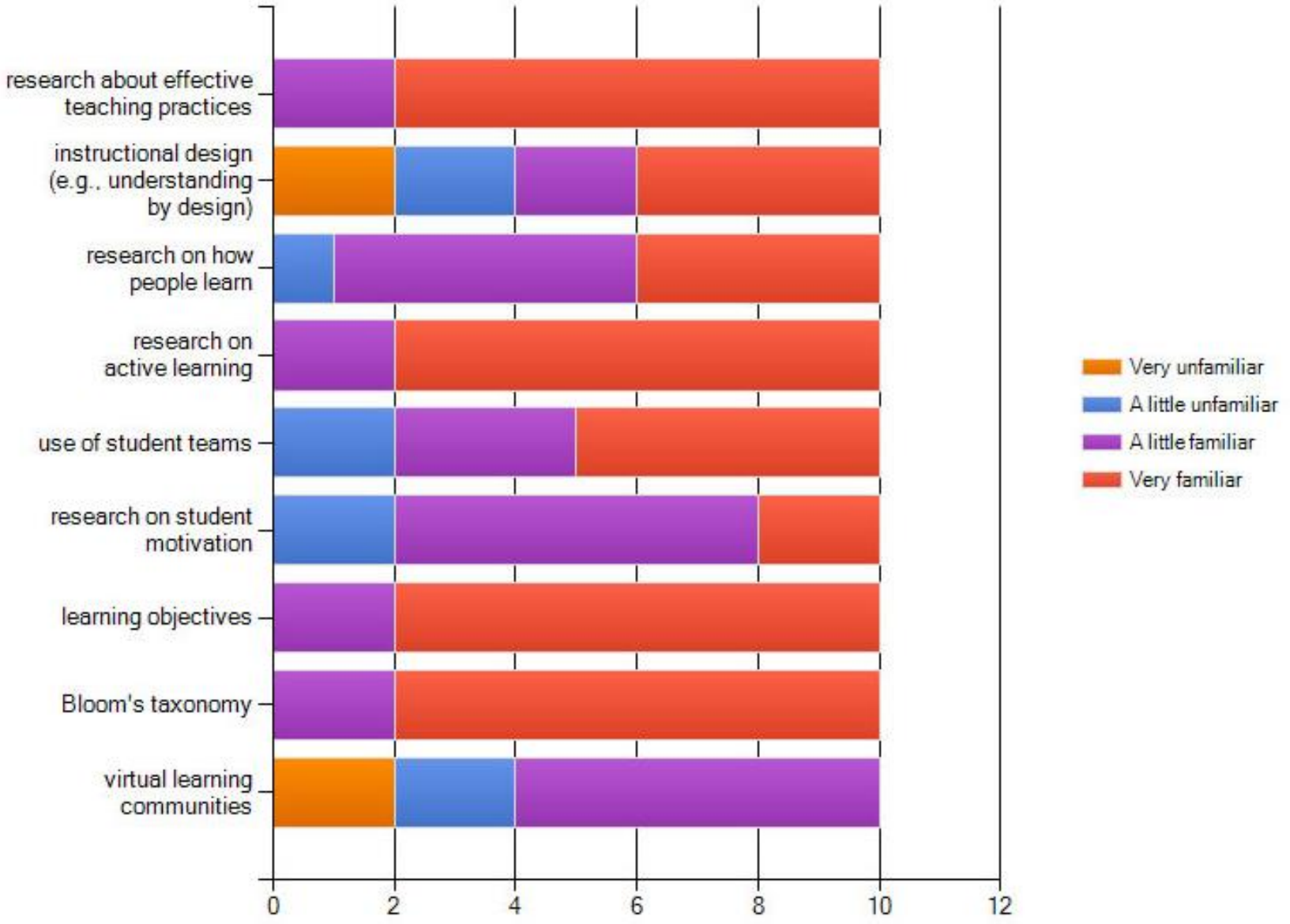
"It could well be that faculty members of the twenty-first century college or university will find it necessary to set aside their roles as teachers and instead become ***designers*** *of learning experiences, processes, and environments."*

James Duderstadt, 1999
Nuclear Engineering Professor, Dean, Provost & President of the University of Michigan

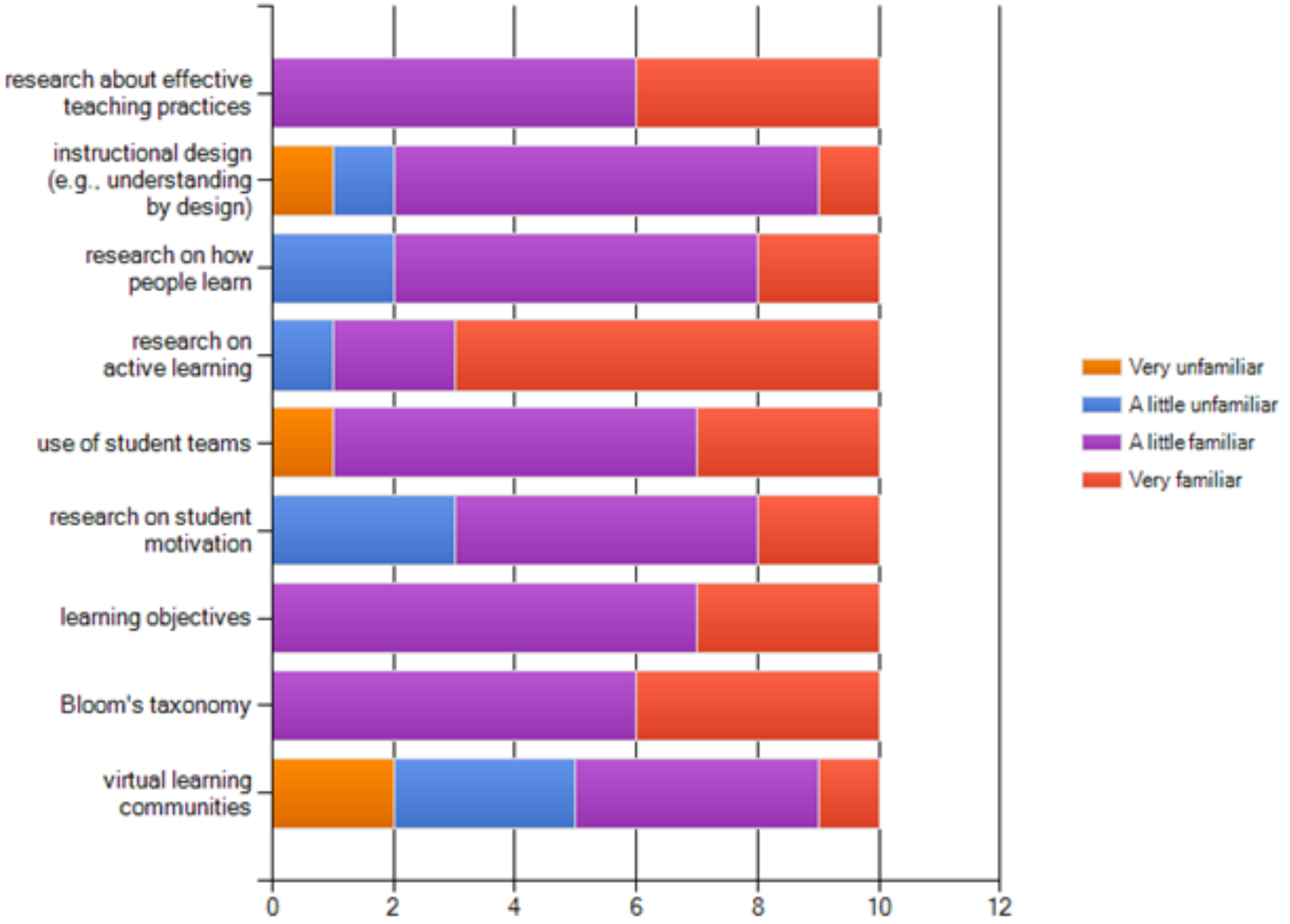
What do you already know about course design?

- [Background Knowledge Survey]

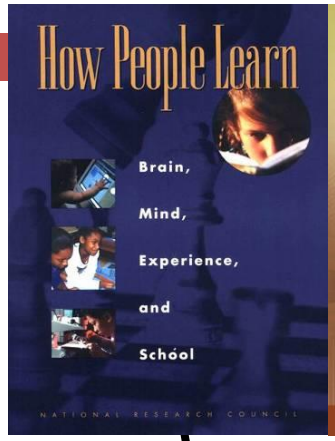
LVCP1: How familiar are you with the following topics?

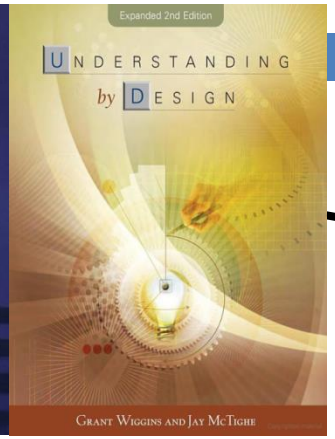


LVCP 2: How familiar are you with the following topics?



Course design foundations





Science of Learning (HPL)

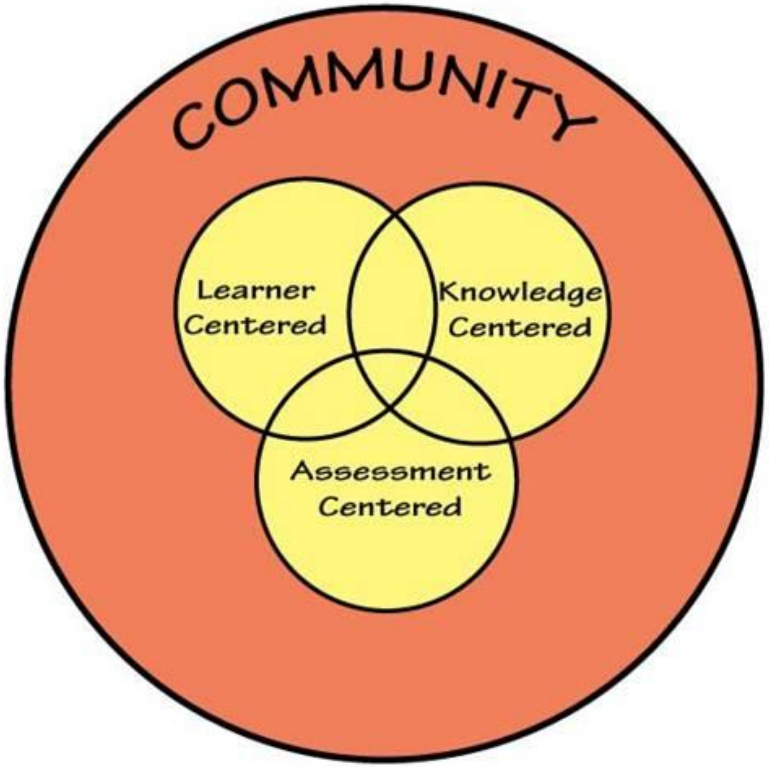
Science of Instruction (UbD)

	No	**Yes**
Yes	Good Theory/ Poor Practice	Good Theory & Good Practice
No		Good Practice/ Poor Theory

Bransford, Brown & Cocking. 1999. *How People Learn*. National Academy Press.
Wiggins & McTighe, 2005. *Understanding by Design, 2ed*. ASCD.

How People Learn (HPL)

HPL Framework



- Expertise implies (Ch. 2):
  - a set of cognitive and metacognitive skills
  - an organized body of knowledge that is deep and contextualized
  - an ability to notice patterns of information in a new situation
  - flexibility in retrieving and applying that knowledge to a new problem

Bransford, Brown & Cocking. 1999. *How people learn*. National Academy Press.

Three important principles about learning and understanding

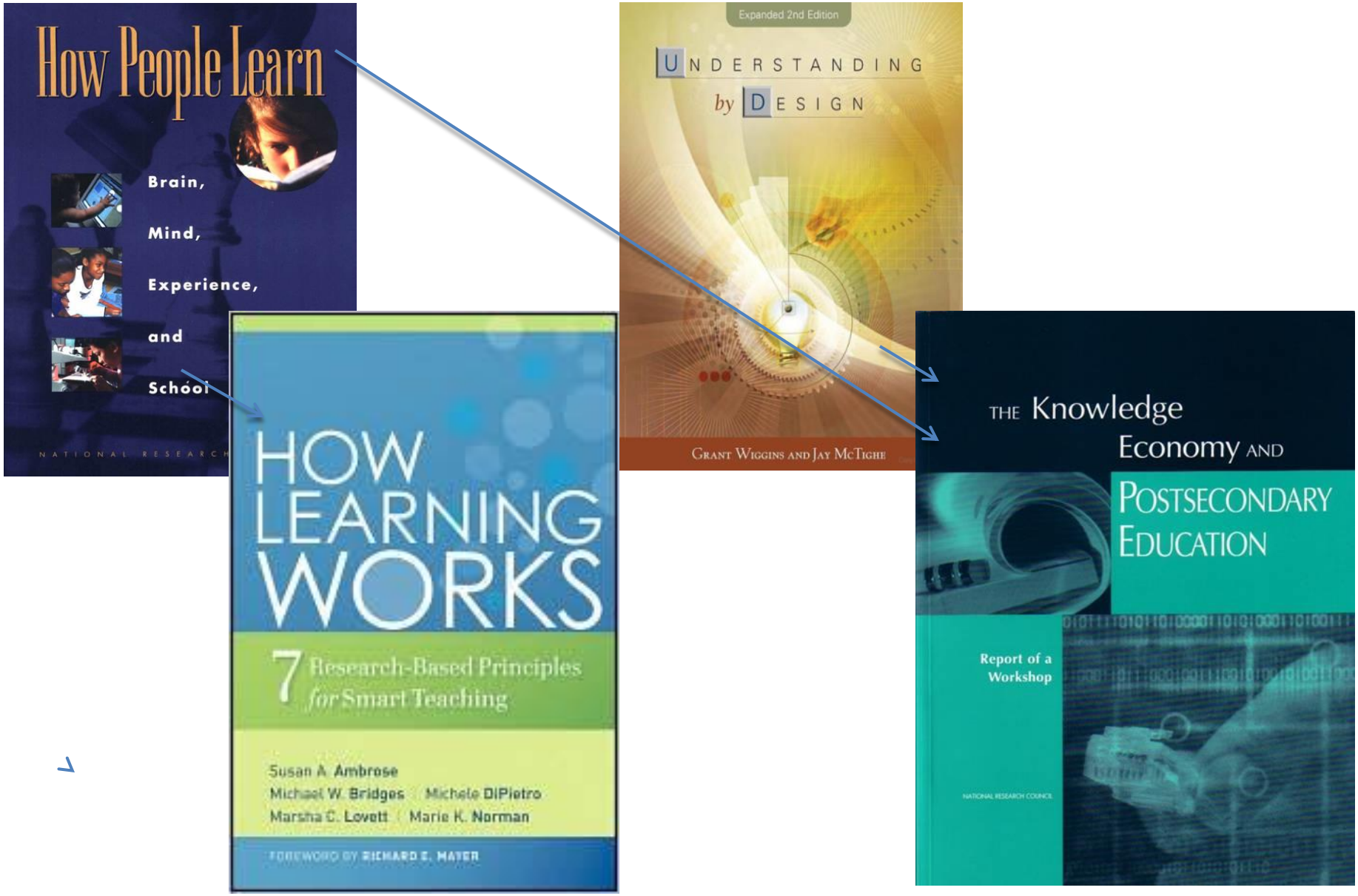
- **Students come to the classroom with preconceptions** about how the world works which include beliefs and prior knowledge acquired through various experiences.
- **To develop competence in an area of inquiry, students must:** (a) have a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate retrieval and application.
- A "**metacognitive" approach to instruction** can help students learn to take control of their own learning by defining learning goals and monitoring their progress in achieving them.

Pellegrino, 2006. *Rethinking and redesigning curriculum, instruction and assessment: What contemporary research and theory suggests*. www.skillscommission.org/commissioned.htm

Understanding by Design

- Stage 1. Identify desired results
  - Enduring understanding
  - Important to know and do
  - Worth being familiar with
- Stage 2. Determine acceptable evidence
- Stage 3. Plan learning experiences and instruction
- Overall: Are the desired results, assessments, and learning activities ALIGNED?

Wiggins & McTighe, 1997, 2005.*Understanding by Design*. Alexandria, VA: ASCD.



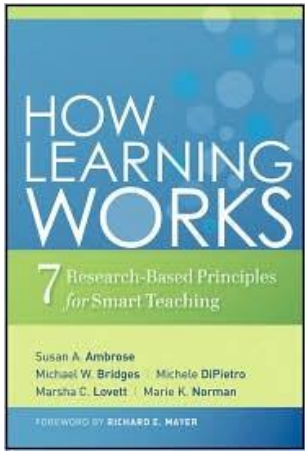
Bransford, Vye and Bateman. *Creating High Quality Learning Environments*

Seven Research-Based Principles for Smart Teaching

- Reflection and Discussion
  - Which of the 7 research-principles have you embraced and how?

Seven Research-Based Principles

1. Students' prior knowledge can help or hinder learning
2. How students organize knowledge influences how they learn and apply what they know
3. Students' motivation determines, directs, and sustains what they do to learn
4. To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned
5. Goal-directed practice coupled with targeted feedback enhances the quality of students' learning
6. Students' current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning
7. To become self-directed learners, students must learn to monitor & adjust their learning approach



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LVCP participant panel

- Reflection on
  - Things that went well
  - Suggestions for colleagues who are considering virtual faculty development programs

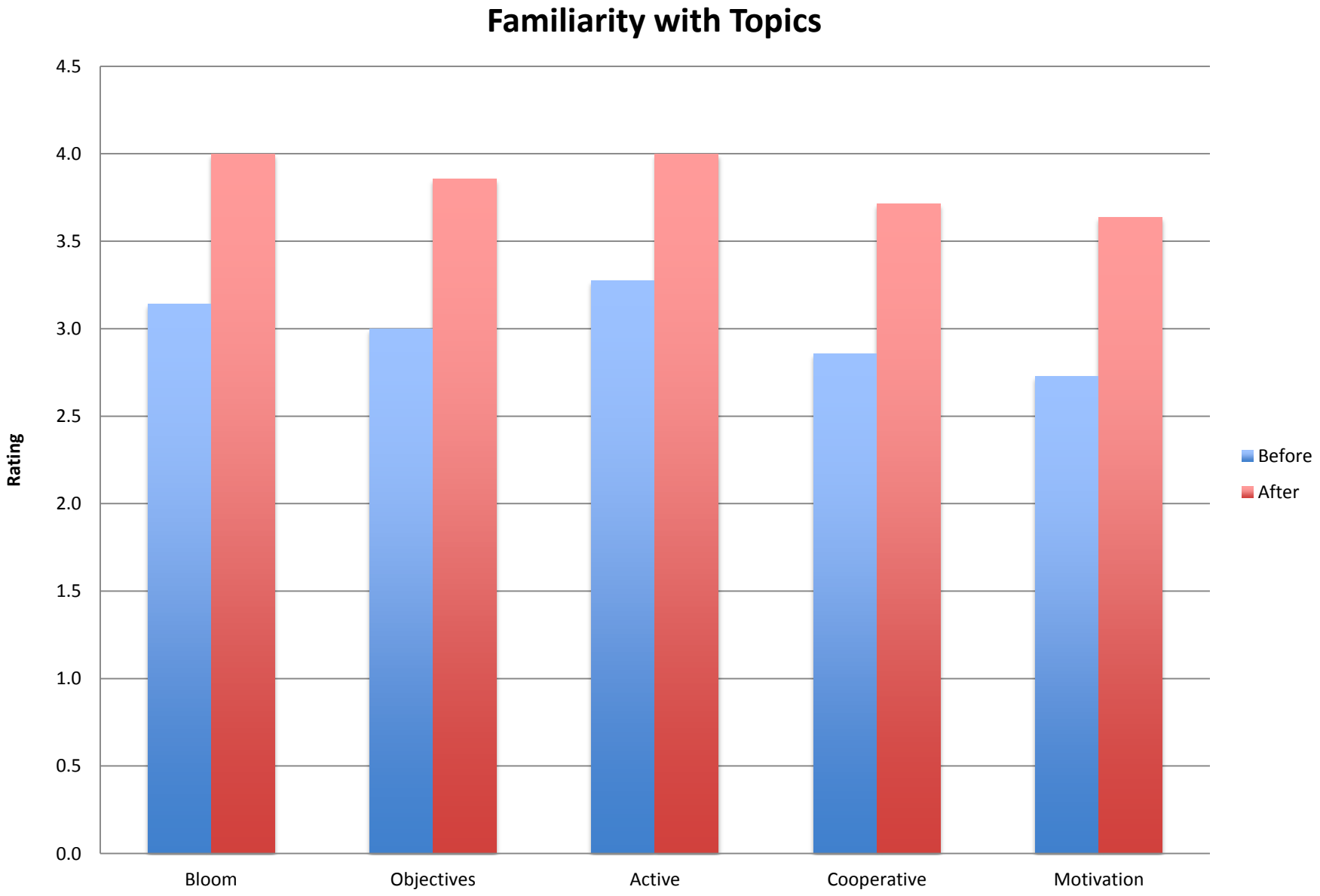
ChE & MatS VCP

- Stephanie Farrell, Rowan &
  Steve Krause, Arizona State

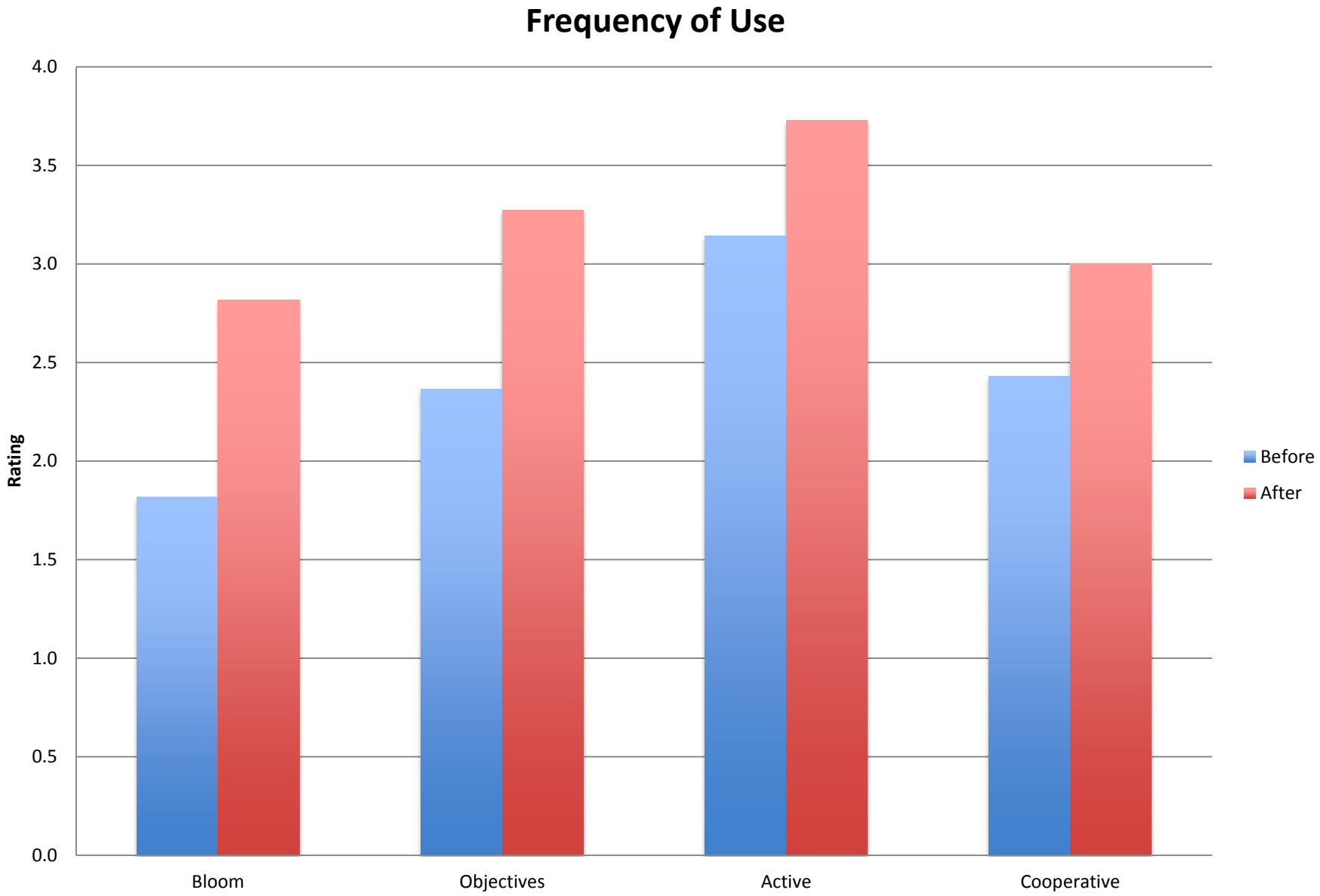
Stephanie Farrell, Rowan & Steve Krause, Arizona State
ChE & MatE VCP Things that Went Well & Suggestions for Others

- VCP training structure with paired VCP disciplinary leaders critical for negotiating understanding of topics and sharing responsibility for work in training & Faculty VCP
- Topics for training VCP leaders were very well chosen and the training provided an excellent model for VCP leader pairs to facilitate and train faculty cohort
- A critically important aspect of training of VCP leader pairs was interactions, suggestions and support of other leader pairs, as well as positive & continuing support of project leaders.
- Leader VCP readings were reasonable and well selected and VCP pair sharing of "homework" tasks was critical to understand and ability to take research to practice.
- The open-endedness of exposure to a variety of engagement pedagogies in VCP training transferred to Faculty VCP and promoted different approaches to implementing active learning like: interactive case histories, game-based instruction; flipped classes and more.
- Biweekly Faculty VCP sessions on Successes, Challenges and Suggestions provided much insight on significant change in practice, advice in overcoming barriers, and always strong support for all.
- The positive interactions of the ChE and MatE Faculty VCP has resulted in many participants joining an extend Community of Practice to present Fall teachig results at ASEE 2015 special session.

Stephanie Farrell, Rowan & Steve Krause, Arizona State ChE & MatE VCP Change in Active Learning Topic Familiarity



ChE & MatE VCP Change in Active Learning Frequency of Use



Effect of VCP on Change in Instructor and Change in Practice

- "I feel more confident implementing best practices in class *owing to supportive structure of VCP… just won a faculty excellence award in my first year…*"
- "Compared to the time before VCP, *more facilitating instruction as opposed to direct instruction*. This has built skill set owing to new techniques and methods *through interactions with other participants*."
- "major instructor view is that because doing problem based lectures *I feel more like a facilitator than instructor.*"
- "Liked the survey of topics, exposure to topics, *learned more about Bloom's and can engage in conversations about this*."
- "Good participation - *some students who would be asleep in a lecture are participating in the class now*."
- "want to try to *make in-class questions more thought provoking, higher level Bloom's Taxonomy, more synthesis*. Would like a screen cast that would help students discover these concepts on their own."

Civil E VCP

- Chris Swan, Tufts University &
  Chris Carroll, University of Louisiana

Circuits VCP

- Lisa Huettel, Duke University &
- Ken Connor, RPI

Circuits VCP

- Most participants were either in the process of implementing a significant innovation in their introductory-level Circuits course or planning to do so in the near future
- VCP interactions allowed participants to obtain feedback on their ideas and to explore new ideas
- Having at least one face-to-face meeting would likely have positively impacted virtual interactions
- Focused activities, like the ones that motivated the co-leaders' weekly meetings, were necessary to achieve maximum engagement
- Someone with the designated responsibility to organize activities is needed to coordinate the activities for such a diverse group
- Institutional barriers are real and difficult to overcome.

Mechanics VCP

- Ed Berger, University of Virginia &
  Brian Self, Cal Poly San Luis Obispo

MVCP Successes and Challenges

- Successes
  - Participants really enjoyed sharing with each other—ideas, wisdom, experiences, failures—and the solidarity of our shared passion
  - Having great diversity of institutions/students represents, but with similar interests (e.g., D/F/W issues) promoted interesting discussions of flexible, scalable pedagogies
  - Engagement and value were the key drivers of participation—create active, lively VCP sessions, and convey to participants small, concrete steps they can take in their own classes
- Challenges
  - Loop closing was a challenge—the MVCP ran in Spring 2013, with a few follow-up sessions in Fall 2013
  - Needed better Fall 2013 assessments and follow-up
    - Pedagogies deployed?
    - Measureable changes in D/F/W or course evaluations or other metrics?
    - Changes in course evaluation results?

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Reflection and Dialogue (Think-Pair-Share)

- Individually reflect on virtual faculty professional development. Think/write for about 1 minute:
  - How to apply these principles/strategies in your context
  - Questions for panel or LVCP co-facilitators
- Discuss with your neighbor for about 2 minutes
  - Formulate a suggestion, question, comment, etc. to share if you are randomly selected

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