Measuring the Impact of Global Preparedness and Competency in Students

Session V: Tracking the Outcomes of International Research Experiences

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Collaborative Research: Assessing the Spectrum of International Undergraduate Engineering Educational Experiences

My Task for the Next 18 Minutes

1. Explain the research our collaborative team is conducting
   - To measure the impact of global preparedness and competency in undergraduate engineering students

2. Determine how one might measure and track outcomes of international research experiences
   - Provide the framework for our approach

3. Determine a process and discuss available assessment tools

Task 1 –

Explain the research our collaborative team is conducting to measure the impact of global preparedness and competency in undergraduate engineering students

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Multi-University Research Team

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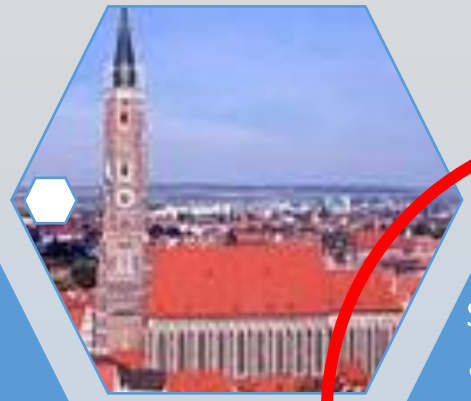
Our Research Focus:

To enhance engineering students' global preparedness…

<u>We must:</u>

- *Better **identify the various ways** that global preparedness can be developed both in and out of formal curricula*
- *Better understand how **each approach enhances students' global awareness and preparedness***

we needed a framework to define and operationalize global preparedness and how this may be achieved



Need to measure global preparedness in engineers

- It's expensive!
- Anecdotal methods

Background

Research Focus

- Identify experiences
- Determine impact

Study 1 –

- Delphi study with SMEs
- Useable Framework

Study 2 –

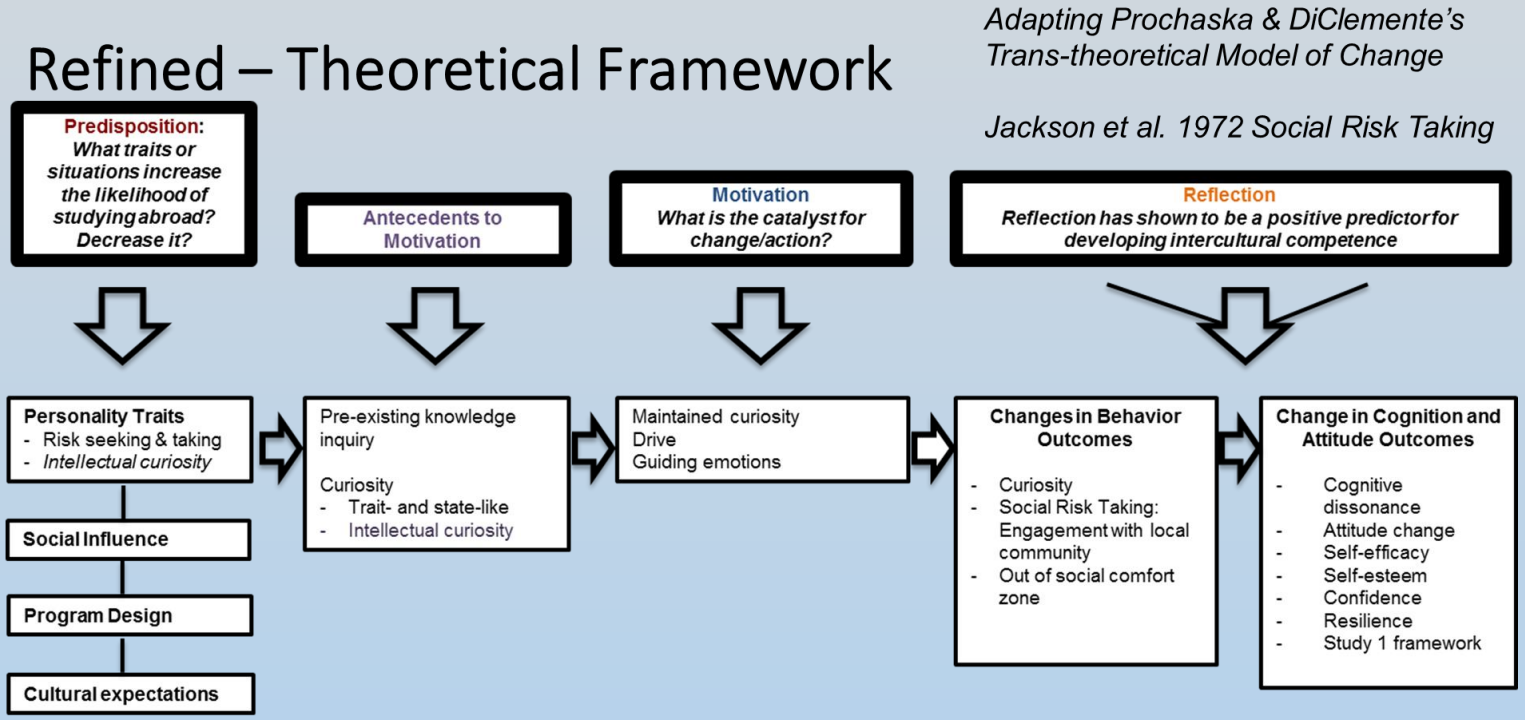
- 4 school mixed methods study
- Specific experiences & contribution

Study 3 –

- Large 15 school study with single instrument
- Catalog impacts and accessible database

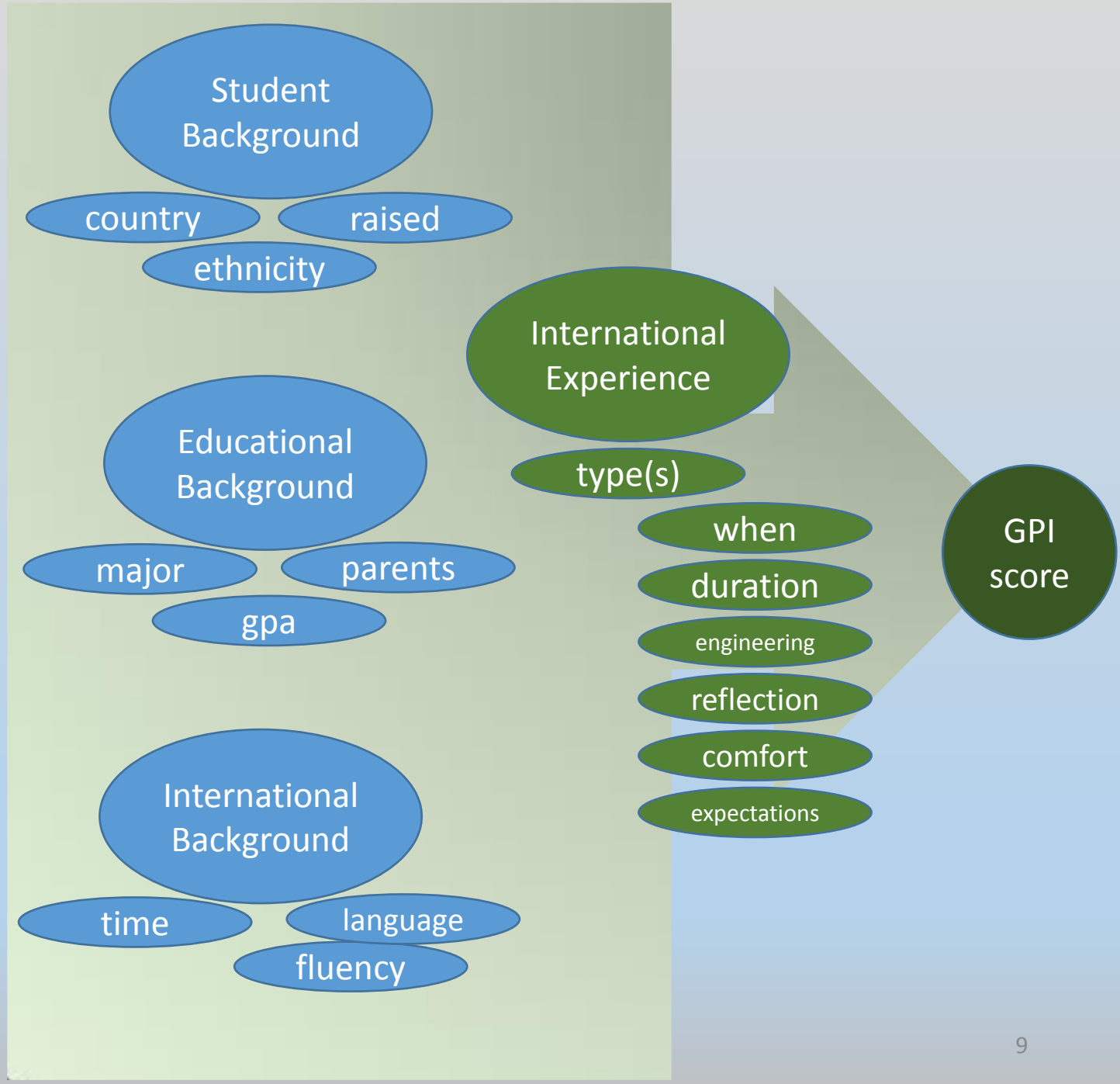
Study 2 – Mix Methods

- Quantitative
  - Survey instrument
    - Experiences
    - Background information
    - EGPI and GPI
  - Freshmen & seniors
- Qualitative
  - Individuals who scored high on one or both instruments
  - On-on-one interviews



Study 3 – Cross-Institutional

- Instrument
  - 7 background
  - 3 educational
  - 35 GPI
  - 3 international
  - 7 international/ intercultural experience
- 7-9 minutes to complete
- Currently 13 U.S. engineering schools & potentially 17

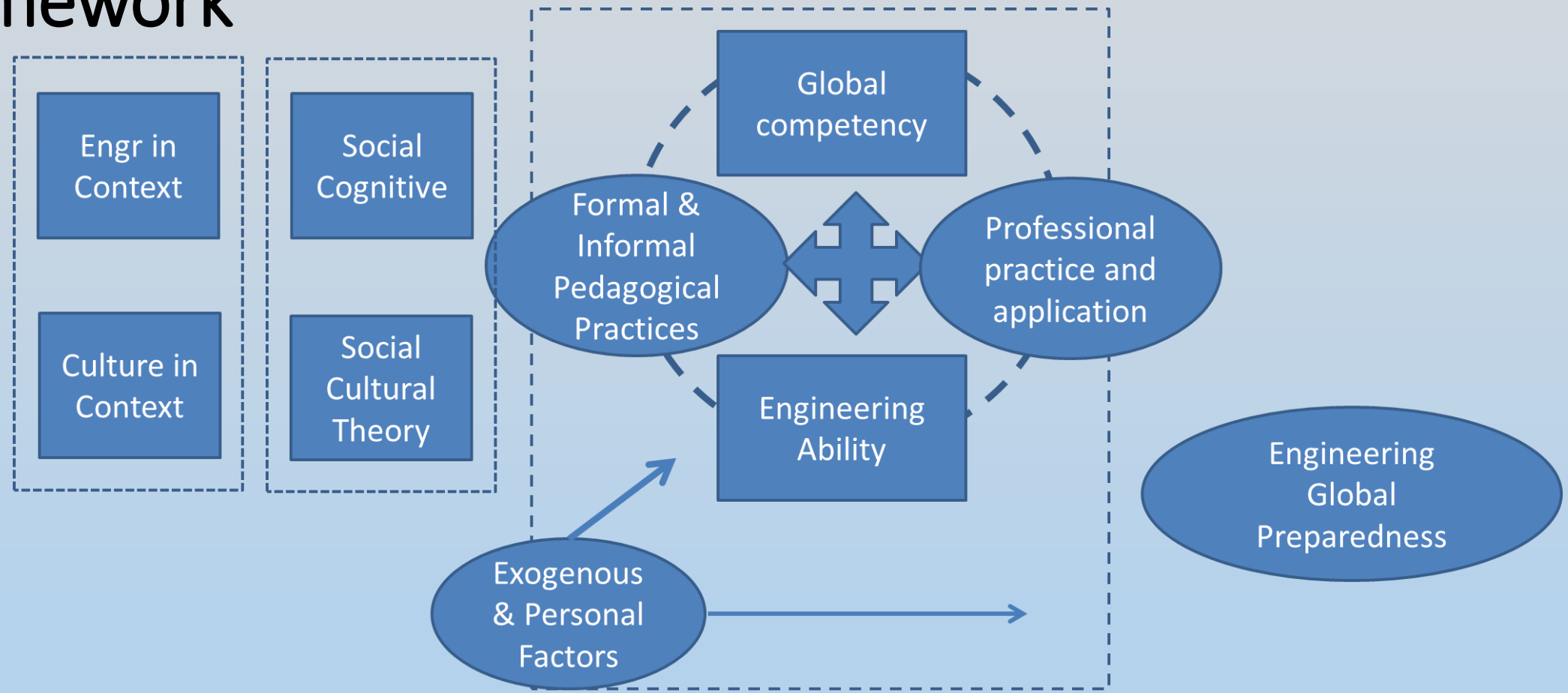


Task 2 –

Determine how one might measure and track outcomes of international research experiences

START WITH THE END IN MIND

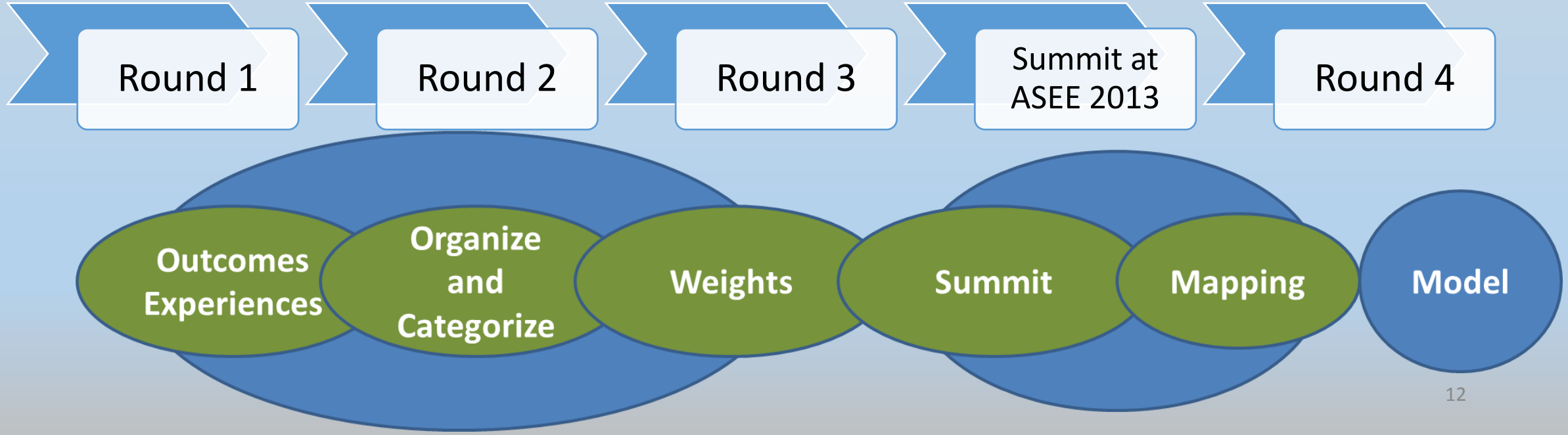
Theoretical Framework



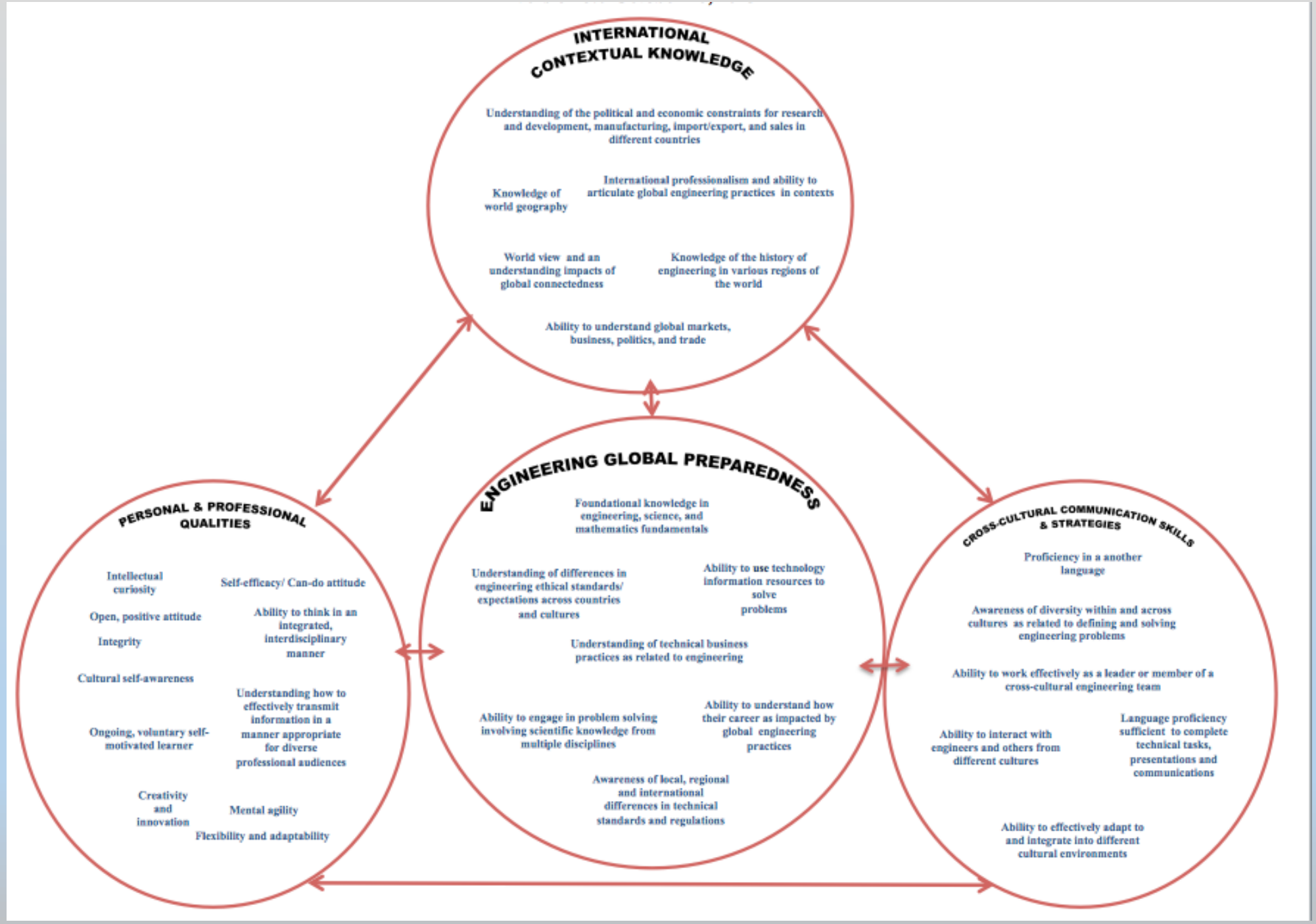
Context Factors **Precursor Theories** **Mediating Experiences** **“Maturation”**

Study 1 - Delphi Study

…reach consensus about **constructs** of engineering global preparedness and essential **components** of learning experiences to obtain preparedness



Conceptual Model

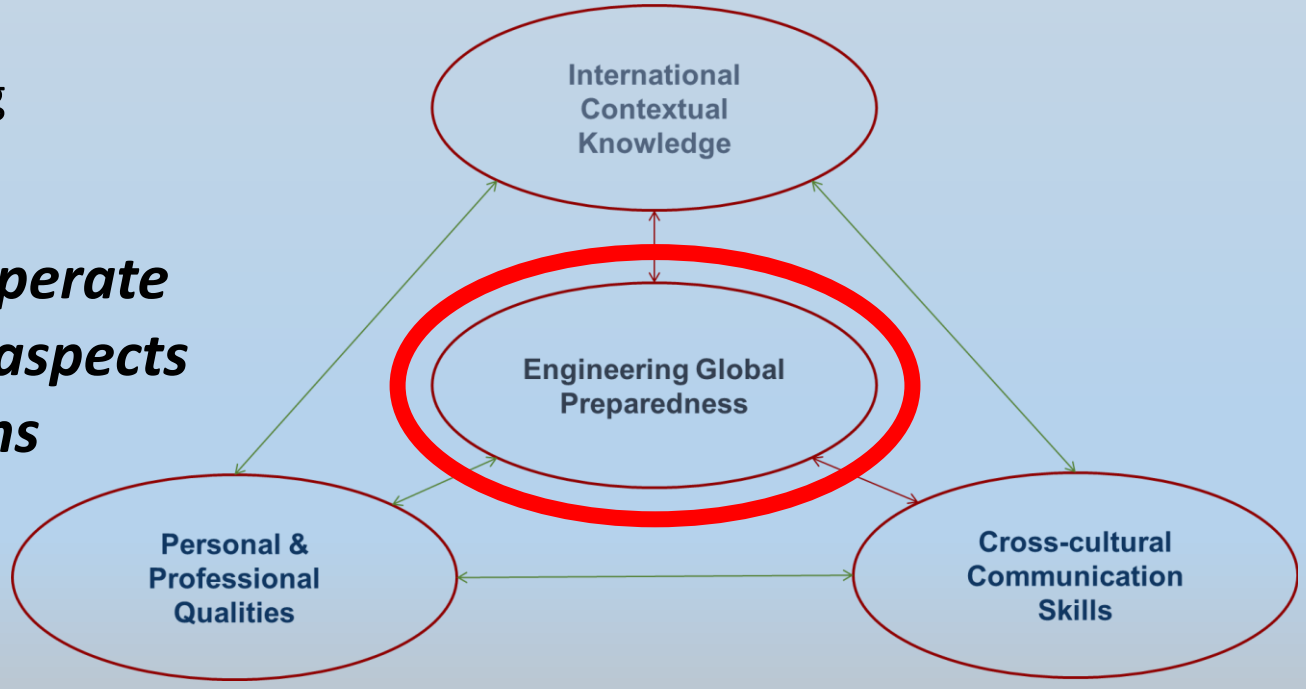


Attributes of ***Preparedness***

- Foundational knowledge
- Differences in engineering ethical standards/expectations
- Use technology
- Technical business practices
- Career is impacted by global engineering

- Engage in problem solving
- Awareness of local, regional and international differences in technical standards and regulations

Readiness to engage and effectively operate under uncertainty in different cultural aspects and address engineering problems



Task 3 –

Determine a process and discuss available assessment tools

Start with the end in mind…

- Determine measurable outcomes, attributes, and objectives
- Then determine the instrument that best meets
- Darla Deardorff
  - The SAGE Handbook of Intercultural Competence
  - “Tools” – Assessment instruments

- Head spin time…

Area Measured	Instrument
Intercultural competence Self-assessed cross-cultural competence Cross-cultural competence	INCA project TMS EP CCSAQ AIC
Intercultural sensitivity Cross cultural sensitivity	ICSI CCSS
Individual global perspective	GPI EGPI
Global literacy World knowledge	Intercultural competence questionnaire GAP Global literacy survey
Intercultural skills	ILWI IRC
Personality analysis	IOR ICE
Global teams	GTPQ GlobalSmart TMS

Area Measured	Instrument
Multicultural counseling competencies Cross-cultural counseling aspects	MCI Cross-cultural counseling inventory
Unconscious prejudices	Tests for Hidden Bias
Orientation to cultural differences Cross-cultural awareness and effectiveness Compatible cross-cultural values orientation Individual understanding of self and others	IDI PCAT/PCSI SVS CCA
Effects of study abroad on student global mindedness	GMS
Communication quality and accuracy Language proficiency	Development Communication Index BASIC ASLPR ALD AIC ACTFL Proficiency Scale
Cultural preferences Personal disposition toward transformational experiences	COI BEVI

Caveat –groupings are based on my convenience!

Area Measured	Instrument
Potential success for an international assignment	IAP
Readiness for international work	IMA
Cross-cultural adjustment	Living and Working Overseas Inventory
Cross-cultural employee performance	OJQ
Cross-cultural workplace adaptation	OAI
	POI
	FAST
	Culture in the Workplace Questionnaire
	CCAI

- Knowing desired attributes is a critical first step
- Determine why you need to measure
- Other factors
  - Reliability and validity
    - Comparison with others
  - How will it be used
    - Formative or summative
- Develop only where necessary

Our “old” IGERT

Sustainability and Engineering

- Research semester in Brazil
- Course in Brazil culture
- Portuguese language training

Evaluation

- Goal – value of the international experience
  - Self
  - Research
- Pre and post departure
  - IDI
- Focus groups post departure
  - On experiences abroad
  - Integration of research across international boundaries

Current Work - Global Perspectives Inventory

Larry Braskamp and colleagues

- Covered many attributes of interest
- Useful to our study
  - Quantitative modeling
  - Concise
  - Validity & reliability
- Perspective of measure
  - Individual global perspective
  - Not evaluating the student
- Many schools interested in its use

COGNITIVE	**KNOWING**	Degree of complexity of one's view of the importance of cultural context in judging what is important to know and value
	KNOWLEDGE	Degree of understanding and awareness of various cultures and their impact on our global society and level of proficiency in more than one language
INTRA-PERSONAL	**IDENTITY**	Level of awareness of one's unique identity and degree of acceptance of one's ethnic, racial, and gender dimensions of one's identity
	AFFECT	Level of respect for and acceptance of cultural perspectives different from one's own and degree of emotional confidence when living in complex situations, which reflects an "emotional intelligence" that is important in one's processing encounters with other cultures
INTER-PERSONAL	**SOCIAL RESPONSIBILITY**	Level of interdependence and social concern for others
	SOCIAL INTERACTION	Degree of engagement with others who are different from oneself and degree of cultural sensitivity in living in pluralistic settings

More questions than answers

- What should we ask?
  - What are the desired outcomes or attributes of the student?, of the program?
  - What is the impact we want to measure?
- Where and when in the program?
  - Formative versus summative
- Are there models to adapt or adopt that we can leverage our work?