



Cobblestone Applied Research & Evaluation, Inc.
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Flipped Classroom Conference
Harvey Mudd College
January 11 - 12, 2016 - Claremont, CA



Introductions

- Name
- Institution
- Discipline
- What do you want to get from this workshop?

Agenda

- Research/ Evaluation of Flipped Classrooms
- Evaluation Results from Harvey Mudd Study
- General Evaluation Concepts
- Logic Model Development
- Exercise in Developing Framework for Flipped Classroom Evaluation

Trends in Flipped Classroom Research

- Most research focused on student attitudes
 - Bruff, Fisher, McEwen, & Smith, 2013; Foertsch, Moses, Strikwerda, & Litzkow, 2002; Lage & Platte, 2000; Lage, Platt, & Treglia, 2000
- Examples of student attitudes assessed:
 - If students (dis)liked the flipped classroom format
 - Student opinions regarding self-paced learning
 - Course structure elements students found challenging
 - Ease of using technology
 - Perceived quality of lectures
 - Professor responsiveness

Trends in Flipped Classroom Research

- Day & Foley (2006) study demonstrated positive student outcomes for students in an inverted classroom
 - Grades, homework, exam scores, etc.
- Mason, Shuman, & Cook (2013) study showed positive effects on student learning in inverted classroom
 - Inverted class also covered more material than traditional
- Current HMC project: controlled study

Evaluation Questions

- Do students in inverted classrooms *spend additional time actively working with instructors on meaningful tasks* in comparison to those students in control classrooms?
- Do students in inverted classrooms *actively participate and prepare for class* through the videos and other materials?
- Do students in inverted classrooms show *higher learning gains* as compared to students in traditional classrooms?
- Do students in inverted classrooms demonstrate an increased ability to *apply material in new situations* as compared to students in traditional classrooms?
- Do students in inverted classrooms demonstrate increased *metacognitive gains* as compared to students in traditional classrooms?
- What are *faculty experiences* when teaching inverted course sections?

Methods & Measures

- Implementation measures
 - Student participation & preparation measures
- Outcome measures
 - Student learning/content measures
 - Transfer of knowledge measures
 - Metacognition measures
 - Student attitude & satisfaction measures
 - Faculty satisfaction measures

Evaluation Results

- No consistent significant differences between flipped and traditional classes
- Why?
 - Students are high achieving across groups
 - Indistinct condition groups
 - Importance of active learning
 - Students may benefit most from a strong hybrid model

Evaluation 101

- Evaluation is the “...*process of determining the merit, worth, or value of something, or the product of that process...*” (Scriven, 1991)
- Importance of Evaluation
- Difference between Research & Evaluation
- Basic Designs & Methods

The Importance of Evaluation

- Why include evaluation
 - Especially from the beginning of the program plan
- What should I expect to gain from evaluation
- Choosing an evaluator
- Stakeholders & audience
- Differentiating evaluation, assessment, measurement, etc.

Research

Evaluation

Seek to generate new knowledge

Information for decision-making

Researcher-focused

Stakeholder-focused

Hypotheses

Evaluation questions

METHODS

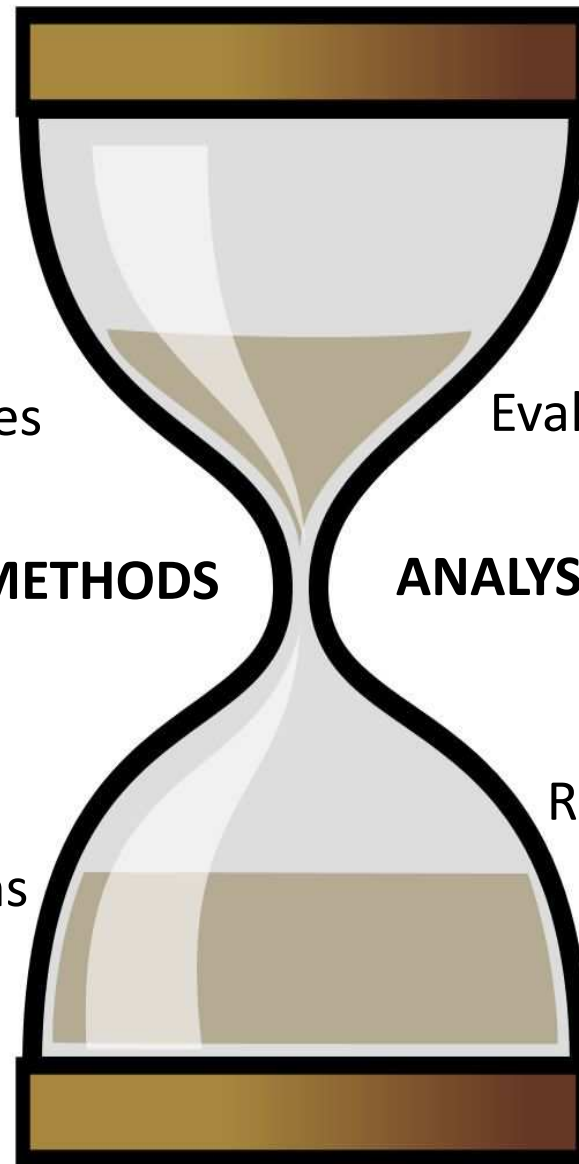
ANALYSIS

Make research Recommendations

Recommendations based on key questions

Publish Results

Report to Stakeholders



Defining Some Evaluation Terms: Evaluation 101

- Evaluation Designs
 - Experimental (e.g., RCT)
 - Quasi-experimental (e.g., Time Series)
 - Non-experimental (e.g., Case Studies)
- Evaluation Methods Examples
 - Quantitative: Surveys, Assessments
 - Qualitative: Observations, Focus Groups, Individual Interviews
 - Mixed methods

Types of Evaluation and Terms

- Formative
- Summative
- Process
- Outcome
- Impact

More information is available at the
American Evaluation Association website:
eval.org

Process for Designing an Evaluation

- Identify Need
- Base Planned Program / Intervention Activities on Need
- Develop Evaluation Questions
- Establish Evaluation Methods (Quant and/or Qual)
- Determine Evaluation Design (including timeline) and Level of Evidence Needed
- Estimate Analysis Plan
- Develop Logic Model

Logic Models

- One tool for assisting in development of program activities and evaluation of those activities

Using Logic Models in the Program Development Stage

- Help to communicate a program's theory of change and help determine evaluation focus
- Test the logical relationships between what you do and what you expect to see as a result of what you do
- Communicate how your program/ intervention operates to others
- Reveal data needs and provide a framework for interpreting results

Logic Models

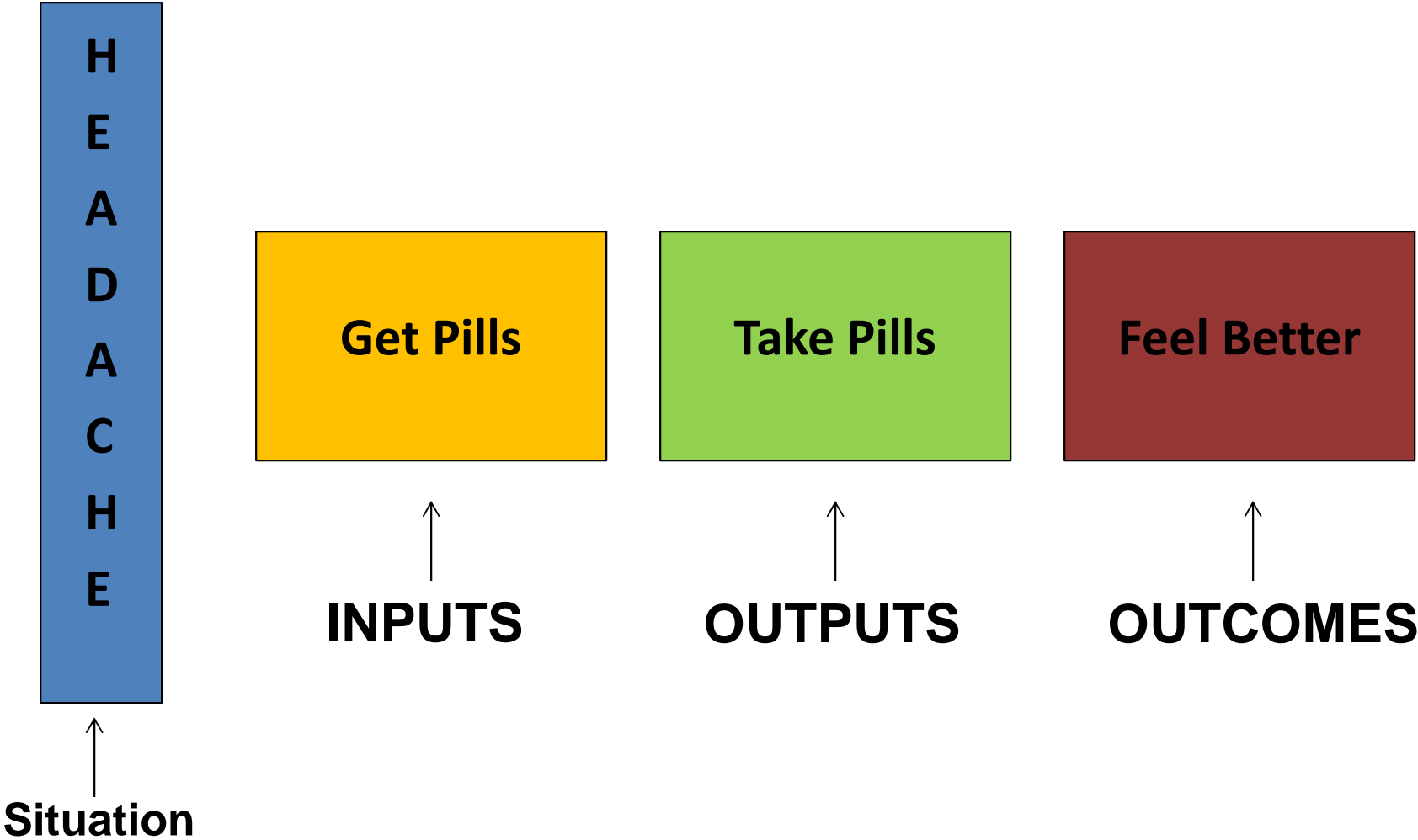
- What is a logic model?
- Common elements in a logic model:
 - Inputs
 - Activities
 - Outputs
 - Outcomes
 - Assumptions
 - External Factors

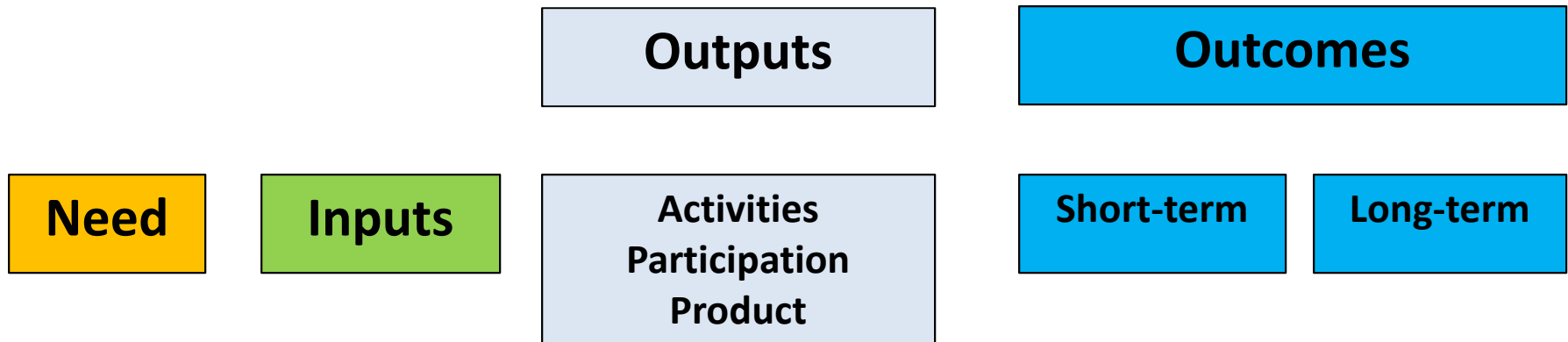
“Logic models help us plan, implement, evaluate, and communicate more effectively.” Taylor-Powell, E., & Henert, E. (2008)

Logic Model Resources

- University of Wisconsin – Extension: templates, examples
<http://www.uwex.edu/ces/pdande/evaluation/evallogicmodel.html>
- W. K. Kellogg Foundation: development guide
<http://www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide>

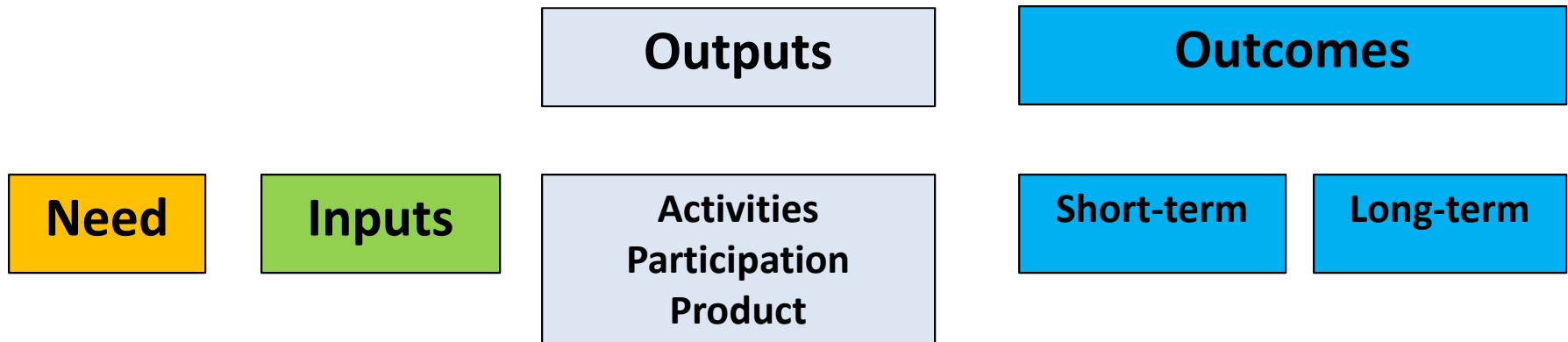
Logic Model: Simplest Form





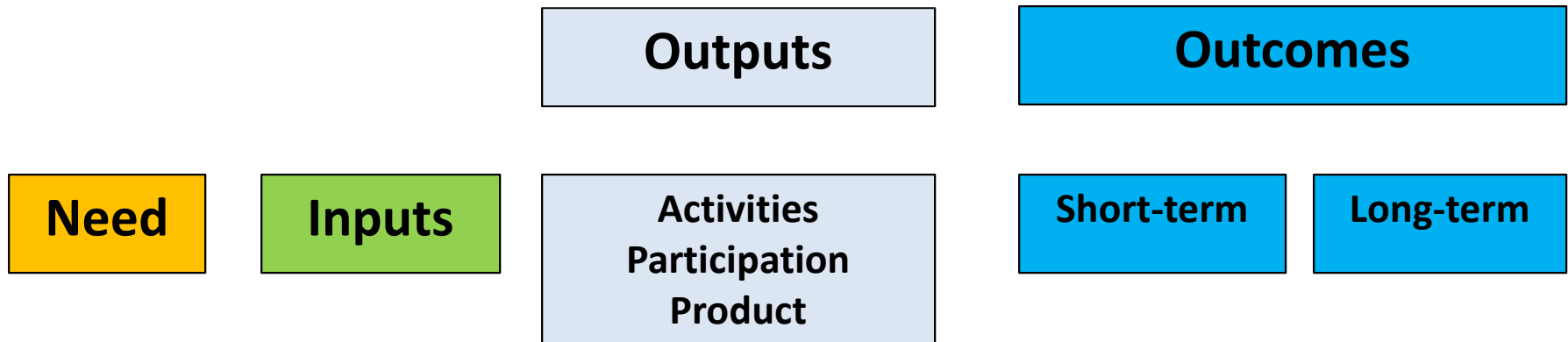
What needs are we addressing?

Students lack experiences outside the classroom that prepare them for the world of work



**What
resources do
we need for
the program?**

*Staff, building,
materials, etc.*

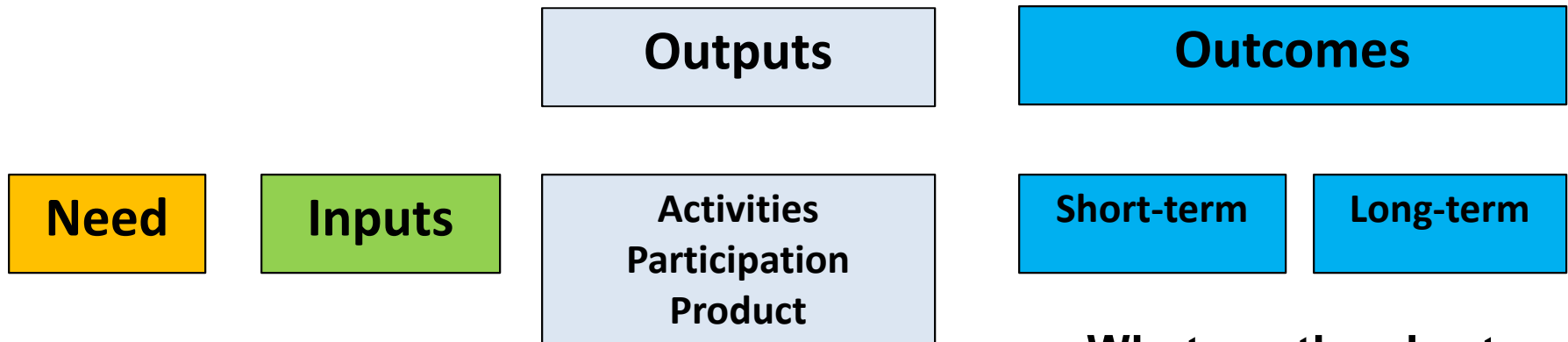


**Monitoring
Implementation** →

**What activities are
planned to address
the needs?**

**Who will
participate?**

*Students attend
internships 10 hours/
week for 12 weeks*



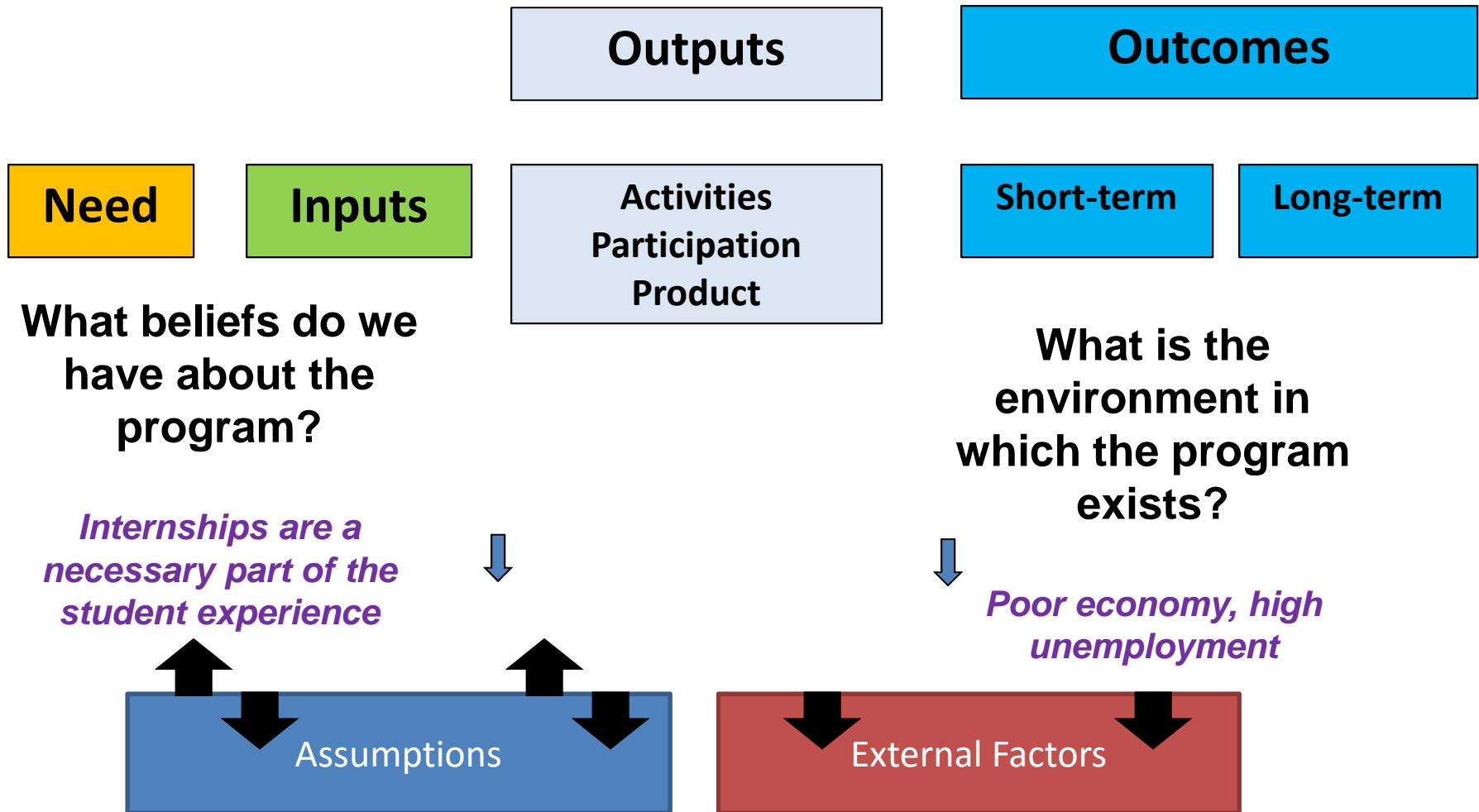
**Determining
Program Merit**



What are the short-term and long-term changes we expect to see in participants?

Students acquire technical skills & networking (short-term)

Students find employment (long-term)



Clarifying Outputs vs. Outcomes

- Number of patients discharged from state mental hospital is an **output**.
- Percentage of discharged who are capable of living independently is an **outcome**.



*Not how many worms
the bird feeds its young,
but how well the fledgling flies*
(United Way of America, 1999)

Outputs vs. outcomes examples

Crime
Control

- Hrs of patrol
- # responses to calls
- # crimes investigated
- Arrests made

- Reduction in crimes committed
- Reduction in deaths and injuries resulting from crime;
- Less property damaged or lost due to crime

Highway
Construction

- Project designs
- Highway miles constructed
- Highway miles reconstructed

- Capacity increases
- Improved traffic flow
- Reduced travel times
- Reduction in accidents and injuries

Creating a Logic Model for Your Evaluand

1. Start with a Need
2. List your Evaluand (e.g., Program) and provide a brief description
3. Identify one activity (Outputs)
 - Specify how much of that activity needs to happen to address the need (Activities)
 - Establish who will be reached by the activity and what is required of their participation (Participation)
4. What resources are required? (Inputs)
5. What is your goal for meeting the needs? (Outcomes)
 - List at least one short-term and one long-term outcome
6. List Assumptions & External Factors about your Evaluand

Evaluation Q & A



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