Creating & Using Logic Models: Examples from the Field

Space Grant Communications Working Group:
Promising Programs & Practices
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Program Evaluation

The application of systematic analytical (social science research) methods to address questions about program operations & results.

How was it implemented?

What was the effect?

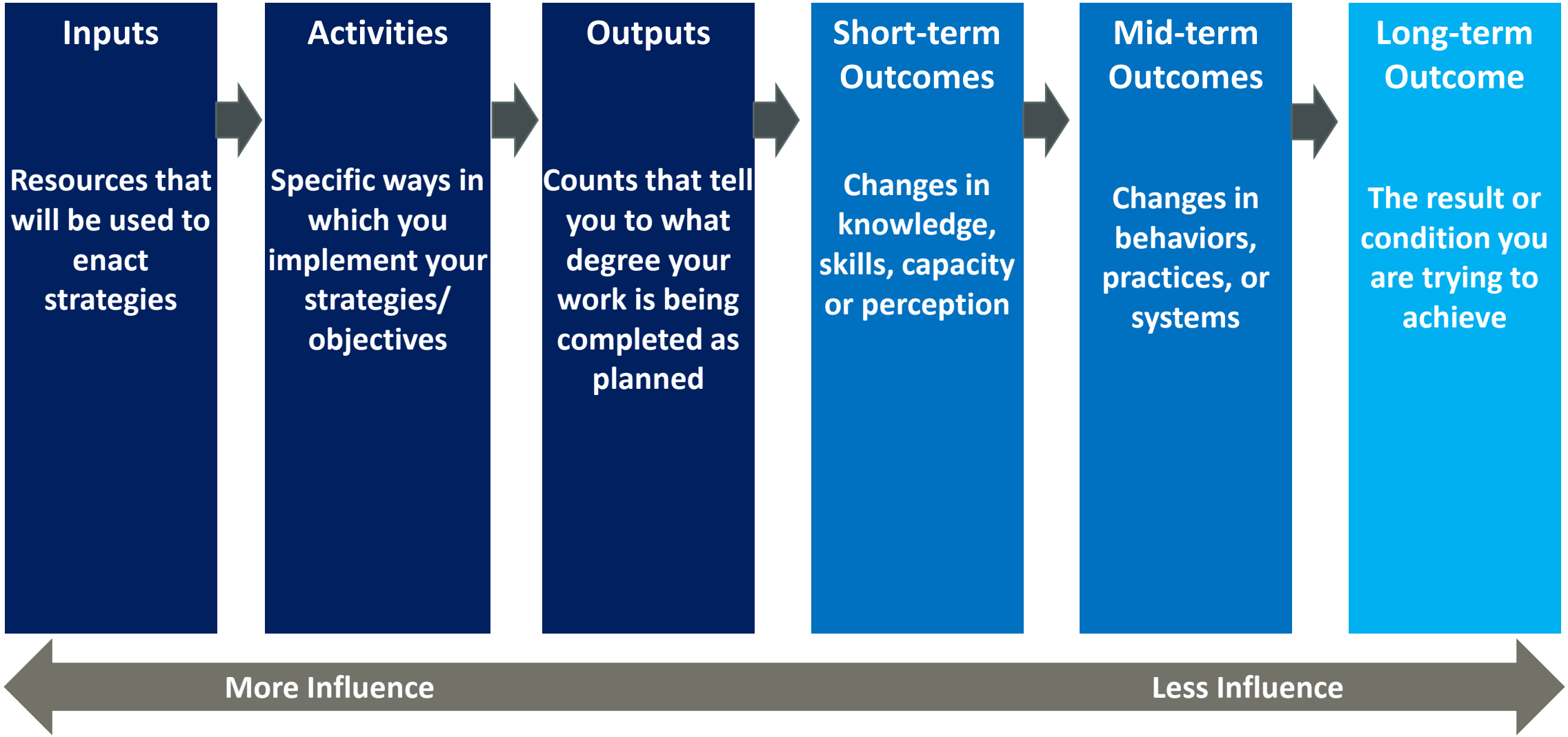
Why Evaluate?

Accountability to funders/sponsors

Demonstrate & celebrate success

Program improvement/ development

Logic Model

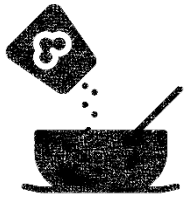

Inputs
Resources that will be used to enact strategies
Activities
Specific ways in which you implement your strategies/ objectives
Outputs
Counts that tell you to what degree your work is being completed as planned
Short-term Outcomes
Changes in knowledge, skills, capacity or perception
Mid-term Outcomes
Changes in behaviors, practices, or systems
Long-term Outcome
The result or condition you are trying to achieve
More Influence
Less Influence

Ingredients of the Logic Model

- **Inputs**
- *Activities*
- *Outputs*

- *Outcomes*
  - *Short-term*
  - *Mid-term*
  - *Long-term*
  - *Population*

What resources will we use to enact our strategies?



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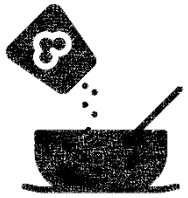
What are we doing to implement our strategies?



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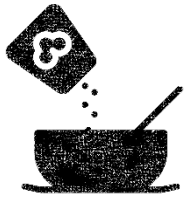
How do we know we are doing the work (how many, how much)?



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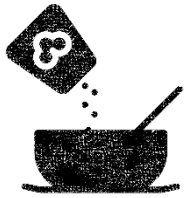
What knowledge, skills, capacity or perceptions will change?



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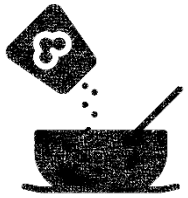
What behaviors, practices or systems will change?



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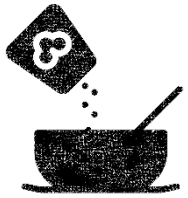
What long-term conditions will change for program participants?



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What/who is impacted by our work (to what do we contribute)?

Program

- Percent of participants ***graduating from high school.***

Population

- Percent of Mainers ***graduating from High School.***

Examples from the Field

Montana & South Dakota

Montana Space Grant Consortium Logic Model/Theory of Change

Goals

Develop and connect programs

Build a Montana aerospace workforce

Network institutions, industry, government

Expand NASA-related research

Assumptions

Students want to participate

Communication structure sufficient

Colleges and universities are supportive

Risks

Recruiting, selecting, and supporting students

Montana pay and housing challenges

Inputs

Participants:

Student participants

Affiliate Representatives

MSGC leadership

Faculty members

Evaluation team

MSGC Advisory Board

Research mentors

Organizations:

All MT institutions of higher education

Museum and industry partners

NASA OSTEM

US Hill leaders

MT Legislature

Lead institution: Montana State University

Outputs/Measures

Post activity surveys

Participant presentations, reports, and publications

Documentation of milestones and tasks, e.g. 12% of student participants are underrepresented, 50% are women, 90% indicate positive impact, 90% continue to STEM employment or an advance STEM degree.

Communications and interviews with leaders, participants, and partners

Advisory Board feedback

Outcomes and Impacts

Short Term

For student participants:

Improved knowledge of related STEM topics

Improved attitudes toward STEM

For all participants:

Increased engagement with peers

Increased engagement with diverse role models

Increased participation in equitable, accessible learner-centered experiences

Increased understanding of the research process

For Montana HE faculty:

Increased number of proposals submitted to NASA

Mid Term

For student participants:

Improved career skills

Improved development of STEM identities

Increased understanding STEM careers and access to SMEs

For all participants:

Increased understanding of the importance of diversity in education and the workplace

Improved understanding of diverse cultural perspectives of science

Increased ability to conduct research

Increased participation in community of STEM activities

Long Term

Student participants continue on to graduate school or STEM careers

Student participants feel prepared to lead future STEM research

Increased number of Montana professionals that engage learners in NASA-related research

Increased collaborations amongst MT NASA-related researchers

Increased capacities among participants, leaders, and SMEs to offer inclusive, equitable STEM education

Increased connections with other STEM networks

Major Activities

See SMART Objectives Document

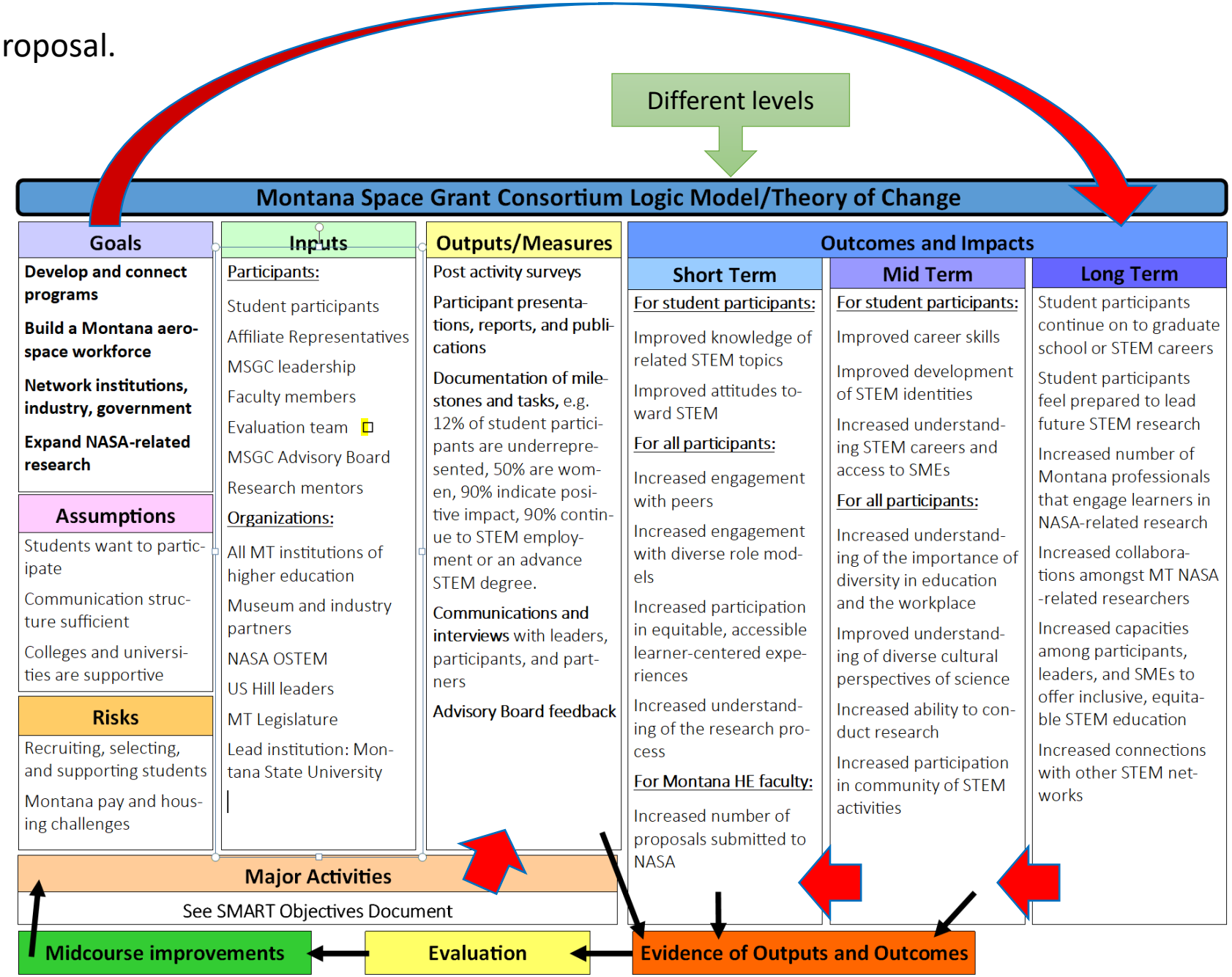
Midcourse improvements ← **Evaluation** ← **Evidence of Outputs and Outcomes**

Created *after* proposal.

Space Act Goals – Never changing, literally an act of congress!

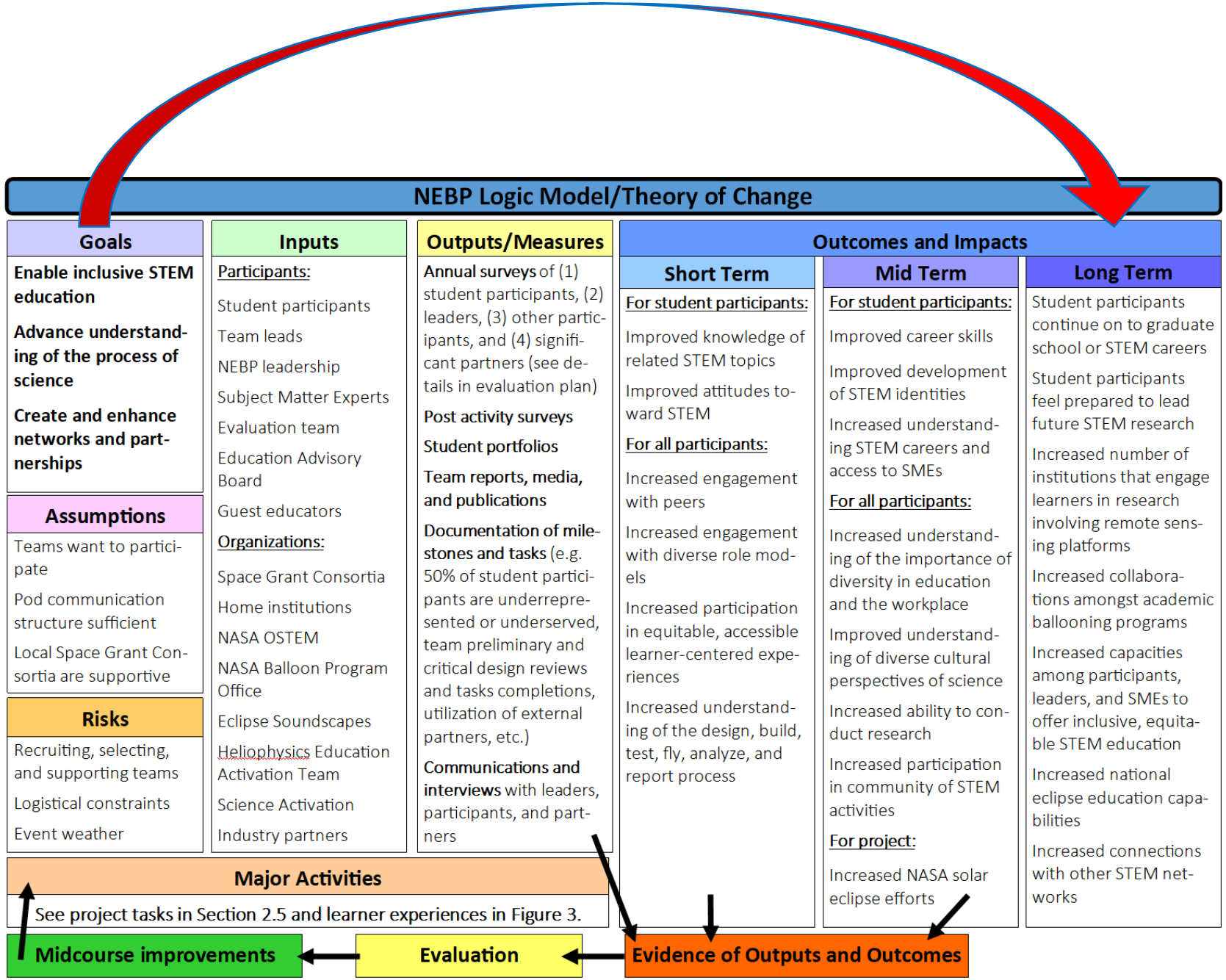
All SG (should) have SMART Objectives with metrics.

What is you SG want to see from the goals in your state?



Living document:
Look at what is the ROI. (Through evaluation)

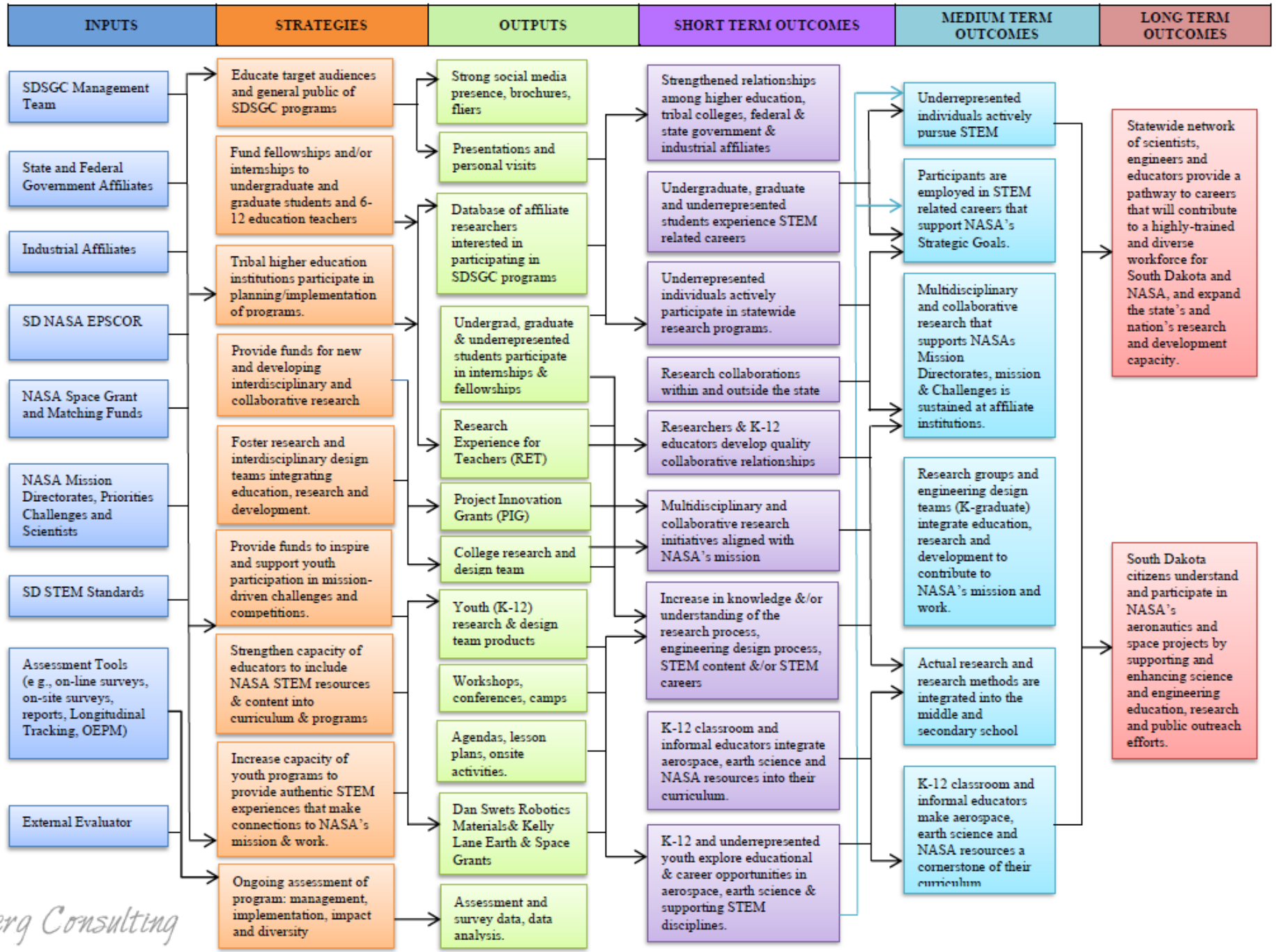
What areas need work (midcourse improvements).



A lot of overlap from MSGC's Logic Model.

SOUTH DAKOTA Space Grant Consortium

SDSGC Logic Model



Steckelberg Consulting

Skill Builder Exercise

For each item listed, decide if it is a:

1) resource/input
2) activity/strategy
3) output
4) goal

Logic Model Game

Educational Affiliates

Strengthen the capacity of educators to use NASA resources & content into their classroom & programs.

Workshops, conferences, camps

Educators integrate aerospace, earth science & NASA resources into their curriculum.

Academic Affiliates

Provide travel funds for student & faculty researchers

Faculty researchers visit NASA centers

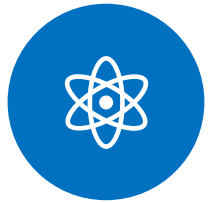
Direct research collaborations with NASA centers/personnel

Logic Model Game

NASA Space Grant & matching funds

Fund fellowships & internships to undergraduate & graduate students

Undergrad, graduate, & under-represented participate in internships & fellowships



Alumni are employed in STEM related careers that support NASA's Strategic Goals

Increase in knowledge &/or understanding of the research process

State Space Grant Consortium

Pilot/small-scale research projects

Students attend graduate school

Provide funds to inspire & support youth participation in mission-driven challenges & competitions.

NASA Mission Directorates, Priorities, Challenges, & Scientists

Underrepresented individuals pursue STEM careers creating a more diverse workforce

Evaluator

Provide funds for new & developing interdisciplinary & collaborative research

Research capacity & graduate programs are enhanced, enabling more competitive & diverse STEM research & education

Statewide network of scientists, engineers, & educators

Youth research & design teams

Logic Model Game

Logic Model Game

Tribal higher education institutions participate in planning & implementation of programs.

Researchers & K-12 educators develop quality collaborative relationships

Assessment & survey data, data analysis

Provide funds to inspire & support youth participation in mission-driven challenges & competitions.

Career fairs

STEM Standards