



Finding STEM Programs that work: The Power of STEMworks

Scientific Management Review Board, NIH

July 7, 2014



Why Design Principles?

Many wanted better guidance



Why Design Principles?

A very crowded field



Design Principles Committee

- Accenture
- Carolina Biological
- Chevron
- Cisco
- Causecast
- Dupont
- ExxonMobil
- Freeport-McMoRan
- IBM
- Intel
- Merck
- Nature Publishing
- Oracle
- Procter & Gamble
- Teradata
- Texas Instruments

STEM Design Principles

Based in research and deep expertise

DESIGN PRINCIPLES RUBRIC

OVER ARCHING PRINCIPLES: Sections A - H

CHANGE THE EQUATION

A. Need: Does the program address a compelling need?

ACCOMPLISHED	DEVELOPING	UNDEVELOPED
Statement of need is clear, compelling, and supported by recent, valid and targeted data.	Statement of need is clear, compelling, and supported by recent, valid and targeted data.	Statement of need is clear, compelling, and supported by recent, valid and targeted data.
Program makes clear that it adds unique value in addressing the need.	Program makes clear that it adds unique value in addressing the need.	Program makes clear that it adds unique value in addressing the need.
Target audiences are well defined and closely tied to statement of need.	Target audiences are well defined and closely tied to statement of need.	Target audiences are well defined and closely tied to statement of need.
Program can demonstrate that it is reaching the audience in greatest need of its services.	Program can demonstrate that it is reaching the audience in greatest need of its services.	Program can demonstrate that it is reaching the audience in greatest need of its services.

B. Evaluation: Does the program have a plan to evaluate its impact?

ACCOMPLISHED	DEVELOPING	UNDEVELOPED
Goals are ambitious but feasible and directly tied to the statement of need. A clear description of how progress will be measured is provided.	Goals are ambitious but feasible and directly tied to the statement of need. A clear description of how progress will be measured is provided.	Goals are ambitious but feasible and directly tied to the statement of need. A clear description of how progress will be measured is provided.
Clear milestones with viable timelines are presented.	Clear milestones with viable timelines are presented.	Clear milestones with viable timelines are presented.
Program regularly uses data from internal evaluations to identify and address areas for improvement.	Program regularly uses data from internal evaluations to identify and address areas for improvement.	Program regularly uses data from internal evaluations to identify and address areas for improvement.
Current third-party evaluation strategy is in place that the program is using to evaluate its impact.	Current third-party evaluation strategy is in place that the program is using to evaluate its impact.	Current third-party evaluation strategy is in place that the program is using to evaluate its impact.

C. Sustainability: Does the program ensure that the work is sustainable?

ACCOMPLISHED	DEVELOPING	UNDEVELOPED
Plans are clear for sustaining the program with public funds or ongoing support from other partners after philanthropic support ends. There is an approved plan to sustain local costs and/or administrative leadership.	Plans are clear for sustaining the program with public funds or ongoing support from other partners after philanthropic support ends. There is an approved plan to sustain local costs and/or administrative leadership.	Plans are clear for sustaining the program with public funds or ongoing support from other partners after philanthropic support ends. There is an approved plan to sustain local costs and/or administrative leadership.
All stakeholder organizations actively support the program and communicate that support to their members or employees.	All stakeholder organizations actively support the program and communicate that support to their members or employees.	All stakeholder organizations actively support the program and communicate that support to their members or employees.
Projected benefits to teaching and/or learning justify the cost per participant.	Projected benefits to teaching and/or learning justify the cost per participant.	Projected benefits to teaching and/or learning justify the cost per participant.

D. Replication and Scalability: Does the program promote replication and scalability?

ACCOMPLISHED	DEVELOPING	UNDEVELOPED
Program documents how it can be scaled or replicated and offers tools to support such scaling or replication.	Program documents how it can be scaled or replicated and offers tools to support such scaling or replication.	Program documents how it can be scaled or replicated and offers tools to support such scaling or replication.
Program regularly communicates results to new sites and works with local sites to adapt to local conditions.	Program regularly communicates results to new sites and works with local sites to adapt to local conditions.	Program regularly communicates results to new sites and works with local sites to adapt to local conditions.
Program demonstrates that it is adaptable to many local conditions.	Program demonstrates that it is adaptable to many local conditions.	Program demonstrates that it is adaptable to many local conditions.

CHANGE THE EQUATION

www.changetheequation.org



STEM Design Principles

A. NEED

B. EVALUATION

C. SUSTAINABILITY

D. REPLICABILITY

E. PARTNERSHIPS

F. CAPACITY

G. STEM CONTENT

H. STEM PRACTICES

I. STEM INTEREST

**J. UNDERREPRESENTED
GROUPS**



STEM Rubric

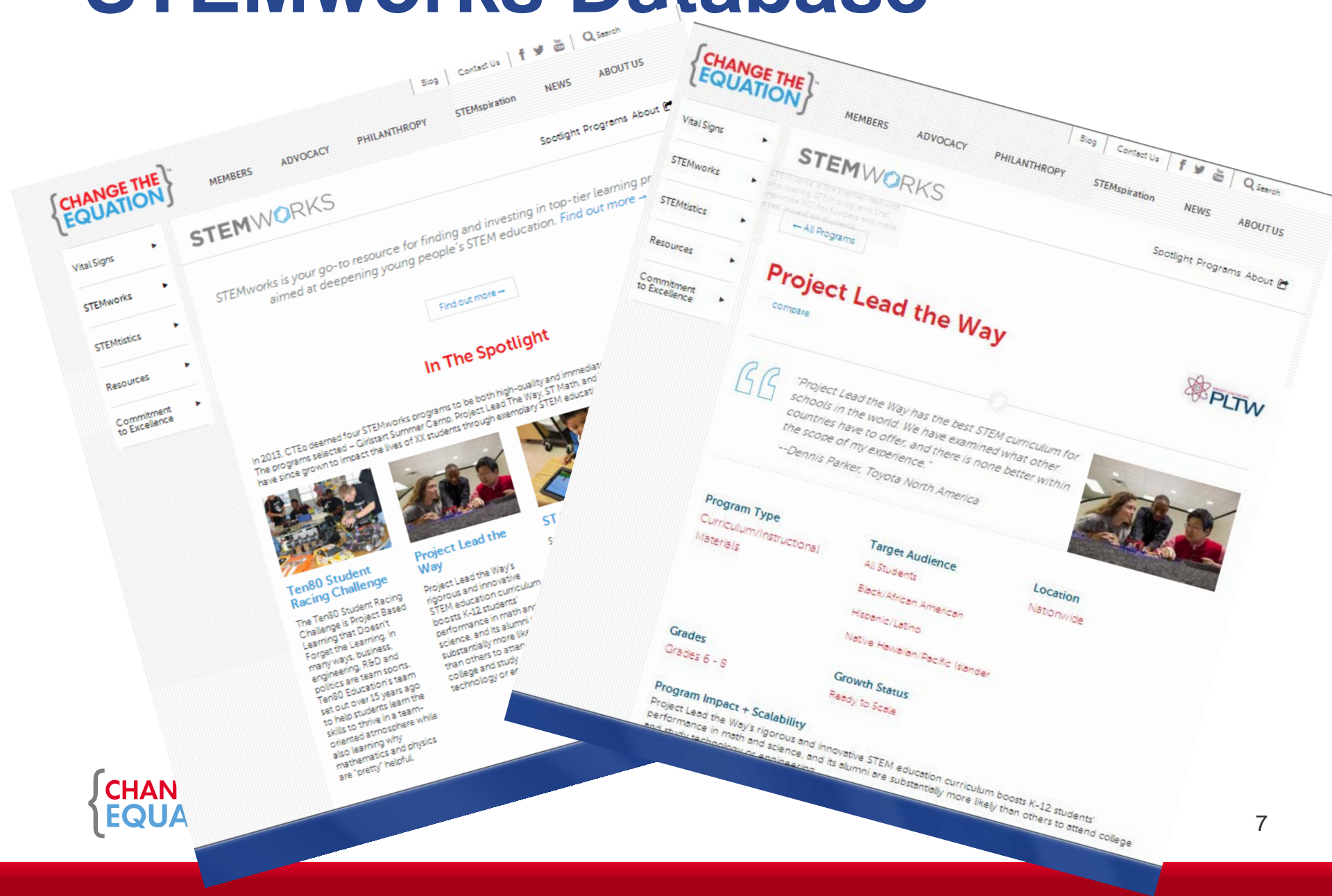
A. Need: Does the program address a compelling and well-defined need?

ACCOMPLISHED	DEVELOPING	UNDEVELOPED
Statement of need is clear, compelling, and supported by recent, valid, and targeted data.	Statement of need is clear and compelling but cites only general data.	Description of need is vague or unconvincing and cites little or no data.
Program makes clear that it adds unique value in addressing the need.	Program identifies other past or present programs that address the same need, but does not fully demonstrate how it adds to those programs.	Program makes no attempt to identify or evaluate other past or present programs that address the same need.
Target audiences are well defined and closely tied to statement of need.	Program defines target audiences but does not clearly tie them to statement of need.	Program does not make clear what audiences it is targeting.
Program can demonstrate that it is reaching the target audience.	Program makes clear efforts to reach target audience but cannot demonstrate what proportion of those audiences it is reaching.	Program makes little effort to reach intended audience.

Sample evidence:

- Program description
- Literature review with cited, research-based data
- Mission/vision or goal statement for program (includes the target population for the program)
- Existing needs assessment data that was used for planning and/or program development
- Logic model
- Evaluation reports that define the need, the target audience, and/or recent data from the research base
- Student/participant demographic data
- Documents that reflect where the program fits into the landscape of existing efforts

STEMworks Database



Rigorous Application Process

Home	Program Profile	Program Ratings	Reviewer Ratings
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Program self-evaluation:

Program: Test Program - use this program to test user interface.

FILES UPLOADED: Uploaded supporting files for all sections

Below are the documents you have uploaded, with descriptions

[Show Uploaded Documents »](#)

OVERARCHING PRINCIPLES : Sections A-H

A. NEED Does the program address a compelling and well-defined need?	Undeveloped
Show Additional Details »	
B. EVALUATION Does the program use rigorous evaluation to continuously measure and inform progress toward ambitious but measurable goals?	Accomplished
Show Additional Details »	
C. SUSTAINABILITY Does the program ensure that the work is sustainable?	Accomplished
Show Additional Details »	
D. REPLICATION AND SCALABILITY Does the program promote replication and scalability?	Developing
Show Additional Details »	
E. OUTSIDE FACTORS Have outside factors or conditions that can accelerate or thwart the progress been identified and addressed?	Undeveloped

Rigorous Application Process

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OVERARCHING PRINCIPLES : Sections A-H

A. NEED Undeveloped

Does the program address a compelling and well-defined need?

[Show Additional Details »](#)

B. EVALUATION Accomplished

Does the program use rigorous evaluation to continuously measure and inform progress toward ambitious but measurable goals?

[Hide Additional Details »](#)

Your explanation for this rating:

some words need to go here.

Documents that support your rating for this principle:

[\[view \] CTE_Design_Principles.pdf](#)

[\[view \] CTE_Design_Principles_Rubric.pdf](#)

Accomplished	Developing	Undeveloped
Goals are ambitious but feasible and directly linked to the statement of need. A clear description is provided on how progress will be measured.	Program goals are ambitious and feasible but difficult to measure.	Goals are too ambitious for this program alone to fulfill-or too unambitious to be worthwhile.
Clear milestones with viable timelines are presented.	Scope of work is included, but the timeline is vague or nonexistent.	Program lacks clear milestones or timeline.
Program regularly uses data from external or internal evaluations to identify and act on opportunities for improvement.	Program only sporadically uses evaluation data to identify and act on opportunities for improvement.	Program has no plans for using evaluation data to improve itself.
Current -third party evaluation data demonstrate that the program is reaching its goals. If the program is new, it is based on high quality research and has a plan for a	Program is based on research that does not directly apply to the program's circumstances. Program designers conduct their own evaluation in lieu of	There is no research cited or a plan to evaluate the program's progress to reach goals

A High Bar

- Only **29%** of applicants admitted thus far
- Strong commitment to the **TRANSPARENCY** of the process
- **FIREWALL** between Change the Equation and WestEd reviewers

Scalable Programs

- Girlstart Summer Camp
- Project Lead the Way
- ST Math
- TEN80 Student Racing Challenge



Thank you

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STEMworks: