



# INCLUDES: Achieving Scale for Inclusion in STEM

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*France Córdoba, Director, NSF*

*Richard Ladner, Professor, Computer Science & Engineering, University of Washington*

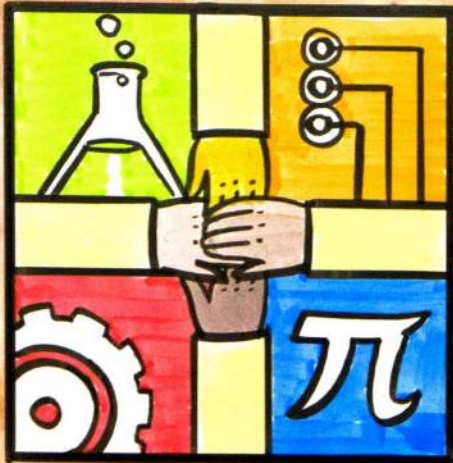
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**INCLUDES**

Achieving  
Scale for  
Inclusion in



**STEM**

**Welcome!**

You represent a **WIDE ARRAY**  
of **EXPERTISE!**

Translating  
**PASSION**  
into



**ACTION!**

**THE REASON WE'RE HERE:**

**INCREASE**

& broaden their **DIVERSITY**

**DISCOVERERS**

When we  
all **THINK**  
alike,  
no one  
**THINKS**  
**VERY**  
**MUCH**



The **BUSH**  
**REPORT**  
ANNIVERSARY

We're still  
being true  
to it

**EVERYONE** is  
**TALKING** about

**BUILD** a  
**NETWORK**

**INCLUSION**



Going  
from  
just  
**UNDER-**  
**STANDING**

AND  
move  
into

**SCALABLE**  
PROGRAMS

Social Change  
Economies  
Employees

**BENEFITS**

Reaching  
beyond  
**STEREOTYPES**



Reach across our  
**SILOS**



**INCLUDES**  
is an initiative  
**IMPORTANT**  
to the  
**PRESIDENT**

Push aside  
**COMPETITION**



Better  
Faster  
Smarter

UNIVERSITY  
INNOVATION  
ALLIANCE



ABOUT SYSTEMS CHANGE  
SHIFT FROM Isolated impact

Collective impact

5 CONDITIONS

1 COMMON AGENDA

3 MUTUALLY REINFORCING ACTIVITIES

Mental Shifts

Adaptive vs Technical thinking

COLLECTIVE IMPACT Strategies

PROBLEMS  
SIMPLE like baking  
COMPLICATED predictable like rocket to moon  
COMPLEX like health care  
Raising a CHILD... each intervention is UNIQUE

2 SHARED MEASUREMENT  
4 CONTINUOUS COMMUNICATION  
5 BACKBONE ORGANIZATION

Think about Strive  
Shape Up Somerville  
Workforce Development

Think Ecosystem  
Three RULES of FLOCKS  
Need all THREE

OUR STEM ISSUES are due to our DESIGN  
Academic Culture  
Intellectual Structure

OUTCOMES  
We're Working with LOCAL SCHOOLS  
We have new METRICS  
Diversity 8,000 to 15,000 Students  
4X the Diversity  
LEARNING BY DOING

How have the non-STEM areas been affected?  
What about PATHWAYS?  
Nested Collective Impact?  
Ecosystems... like trade to career.  
Technology involved?  
Yes... Use it to get to the CORE  
ED@ASU  
150 TECH PARTNERS  
What rules are being used?  
Look at WHO'S SUCCEEDING  
EMPOWER FACULTY  
EMPOWER UNITS  
HIGH TRANSPARENCY

RE-DESIGN GATEWAY  
Easier to ACCESS  
COURSES  
MIDDLE SCHOOL GAME-BASED prep  
Redesigned to SCHOOL OF EARTH & SPACE EXPLORATION  
SCHOOL of SUSTAINABILITY  
Widened diversity!  
No Weed-out approach  
We want

There are no MINOR Tweaks...  
It's an Issue of Design!

Q&A

GET RIGHT PEOPLE IN THE ROOM  
CHUNK UP PROBLEM

Has there been PUSH-BACK?  
We don't order people, but one group can't SLOW DOWN another  
NO SUCH THING AS UNANIMOUS CONSENSUS

ELIMINATE PREDICTABILITY based on ETHNICITY  
Community Colleges?  
Built 150 Pathways... WORKING with CC's in BIG WAY

Not Replacing PROFS... but AUGMENTING!  
MATH teaching Changed!  
Like to

Linda Katehi  
**ecosystem**

**What did we need to change?**

The changes we made helped the whole institution.



Measure Consistently | Callout success & failure



**Integration of Life & Work**



**Out Success**

25% faculty were women → 50%

11% minorities → close to 20%

BY 2019 major increase of **HISPANIC STUDENTS!**



# HEADLINE

We achieved goal of 50% Women & diversity in faculty in 2 YEARS!

INTERNS

ILLINOIS

Raising Awareness of Diversity

Working with businesses

ALLIANCE

Led to Center for RESEARCH

DIALOGUES

With other entities

MUST BE READY to Adapt

to change CULTURE MEASURE

LEVERS

Understand the CLIMATE

lack of diversity Silicon Valley

BE OPPORTUNISTIC!

We can HELP!

GOV BUDGETS being CUT!

No more just LIMBS LEFT

Students needing to WORK

# PARTNERSHIPS

NEW MEXICO

Colleges Also the INFORMAL SCIENCE COMMUNITY

COMPUTING ALLIANCE



Working with programs globally

Rising tides raises all BOATS

K12 PREP

LOCAL SUCCESS

in Broadening Participation

# CHALLENGES

What are the MEASURES?

CHANGING PROFESSOR DIVERSITY

FACULTY BUY-IN

LOOKING LONGITUDINALLY

SUSTAINABLE FUNDING

IMPLICIT BIAS

PERCEPTION of inferiority!

Are we preparing STUDENTS?

You don't belong!

# CULTURE CHANGE

The POWER OF ONE

Not just \$ but IMPACT!



MEASURING CULTURE MUST BE DEFINED

Sub-cultures When faculty sees these programs as the way the university works,

CULTURE has CHANGED!

# RESEARCH

Invest in the APPLICATION and SHARING of Research

My isolation:

Computer science Friends social science

HELPED me DEVELOP PROGRAM

only African American grad student

# FRAMING the NARRATIVE

Rising the Tide



BETTER for EVERYONE!

UNDERSTAND THE BIAS

Minority Faculty talk to STUDENTS

you BELONG!

THINK ABOUT INTERNATIONAL STUDENTS...

Help them understand the MULTIDIMENSIONAL PROBLEMS in the U.S.

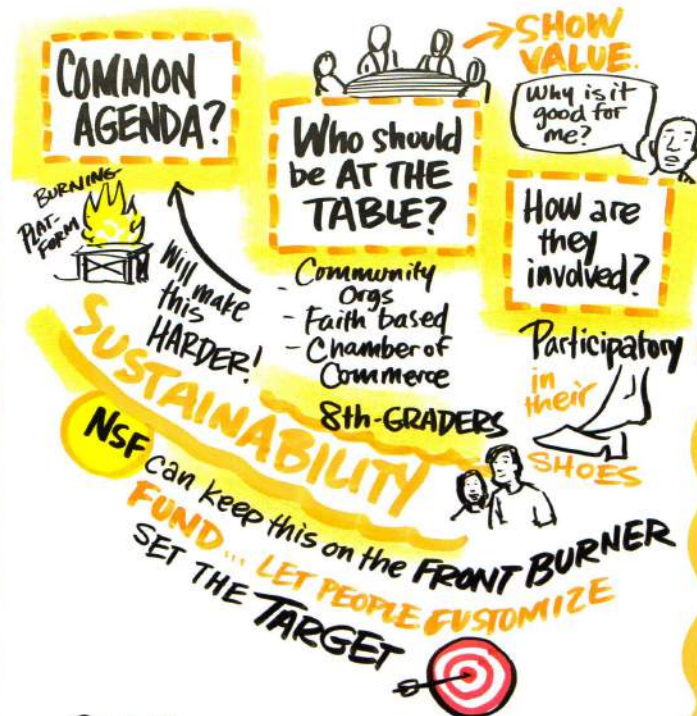


# REPORT OUT



SEE the EXAMPLES WITHIN NSF of what's WORKING!

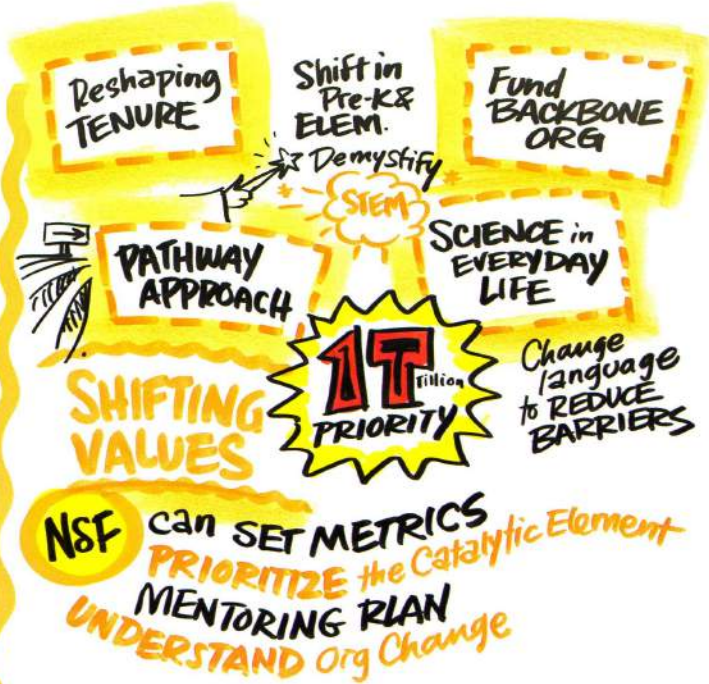
CROSS-DIRECTIVE cooperation



SMALL GROUP of CHAMPIONS

FIND & SUPPORT THOSE ALREADY OUT THERE

LET'S GET ORGANIZATIONS to WORK TOGETHER



NOT JUST ABOUT the NUMBERS, BUT THE IMPACT OF INDIVIDUALS!

SCALING LOCAL SUCCESS

COLLECTIVE IMPACT STRATEGIES

CATALYTIC INNOVATIONS

SHOULD ALSO MEAN  
INCORPORATING  
new CULTURES



JFK  
Go to the moon  
in ten years  
NOT  
Let's do cool  
stuff in  
SPACE

NEED A  
NATIONAL  
TARGET

Do we know what a  
**BROADENING PARTICIPATION**  
will look like?

**NISE NETWORK**  
Based on GRANT  
Hugely Successful

**QUESTION:** Some  
NEW  
FUNDING  
SYSTEM

Need a  
**ROAD  
MAP**



NIH  
Let's get  
**ORGANIZATIONS**  
to work TOGETHER

TALK ABOUT the  
RESULT of this  
MEETING.

To go to areas of  
the **MOST NEED**

CSIOK Computer Science  
into HIGH SCHOOL  
**WHAT'S WORKING**

**MOVING FORWARD**

WE NEED to  
HEAR the VOICES of:

LARGE  
URBAN  
SCHOOL  
DISTRICTS

COMMUNITY  
ORGES

FAMILIES  
&  
PARENTS

RURAL  
SCHOOL  
DISTRICTS

SMALL  
URBAN  
COMMUNITIES



The people  
we're  
SERVING

**HOW DO WE  
TAKE ACTION?**

**GALLERY  
WALK**  
Discussion

# CLOSING REMARKS

Thanks for giving your TIME!

We're after TRANSFORMATIVE CHANGE

Move the NATIONAL NEEDLE

We have NEW PEOPLE... NEW TECHNOLOGIES!

We are all Change Agents!

France Cordova

## REFLECTIONS: Dr Richard Ladner

TODAY: STARTED ABSTRACTLY... but I realized I'm doing some already.

THE PANEL } Grounded it for ME } Funding \$15M } Grow through PARTNERSHIPS

BREAK-OUT GROUPS } SUMMARIES were HARD. } WE NEED LEADERS } And Younger!

I COLLECTED THEMES

Ecosystem

Need more CONNECTORS

Nilanjana Dasgupta

DIFFERENT Definitions

Some: NUMBERS  
Some: CULTURE

SCALING Definitions

USE WHAT WORKS

Attach RESEARCH to it.

FUNDING Mechanism

Longer, more COLLABORATIVE

Explicit FOR Thought Money FOR STRATEGY

