

Using a Networked Improvement Community Approach to Design and Scale up Social Psychological Interventions in Schools

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Two Approaches to School Reform

- One involves large-scale, comprehensive school initiatives.
- An alternative involves brief social psychological interventions.

Lazowski and Hulleman (in press) conducted a meta-analysis and found that social psychological interventions averaged moderate effects on student outcomes (Cohen's $d = .49$).

Social-Psychological Interventions in Education: They're Not Magic

David S. Yeager and Gregory M. Walton
Stanford University

Recent randomized experiments have found that seemingly “small” social-psychological interventions in education—that is, brief exercises that target students’ thoughts, feelings, and beliefs in and about school—can lead to large gains in student achievement and sharply reduce achievement gaps even months and years later. These interventions do not teach students academic content but instead target students’ psychology,

responses. It reviews the theoretical basis of several prominent social-psychological interventions and emphasizes that they have lasting effects because they target students’ subjective experiences in school, because they use persuasive yet stealthy methods for conveying psychological ideas, and because they tap into recursive processes present in educational environments. By understanding psychological interventions as powerful but context-dependent tools, educational researchers will be better equipped to take them to scale. This review concludes by discussing challenges to scaling psychological interventions and how these challenges may be overcome.

But...

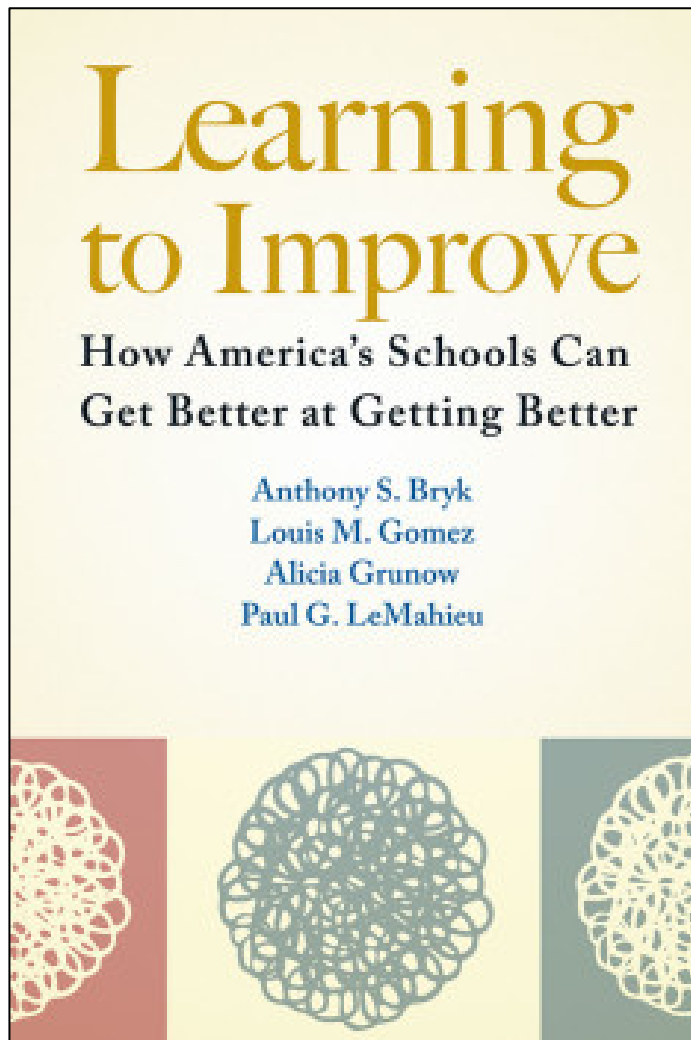
The process of translating promising research into practice can be slow

- Researchers often lack appreciation of factors that could limit the generalizability of their findings.
- Teachers often lack expertise to adapt emerging principles from the research literature.

Therefore, we sought another way by forming Researcher-Practitioner Partnerships

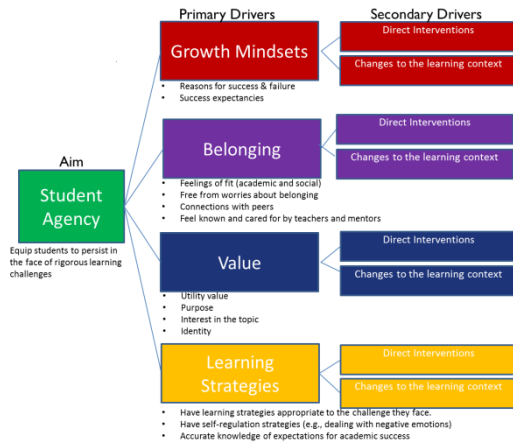


Network Improvement Community

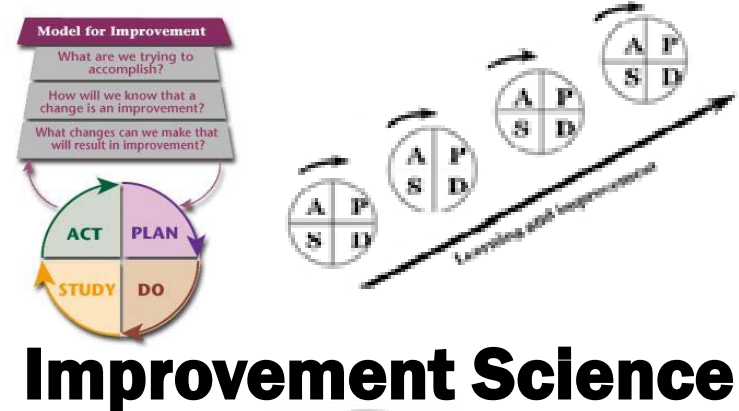


- 1) Focus on achieving a common aim.
- 2) Engage in careful analysis of the system producing the current outcomes, and develop a shared theory of how to improve that system.
- 3) Use improvement research methodology to design, test, and refine improvement ideas.
- 4) Accelerate the rate and spread of learning by working collaboratively to test and adapt ideas across students & contexts.

Student Agency Improvement Community

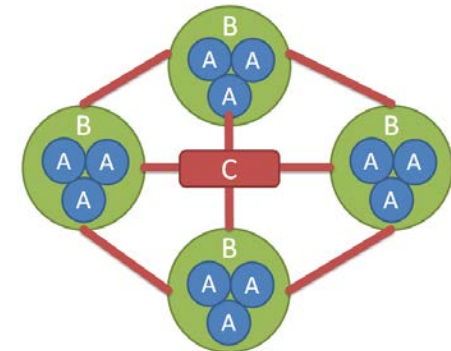


Psychology



Network Science

Expertise and Knowledge of Practitioners



Student Agency Improvement Community

Community
College
Network

Summit Public
Schools

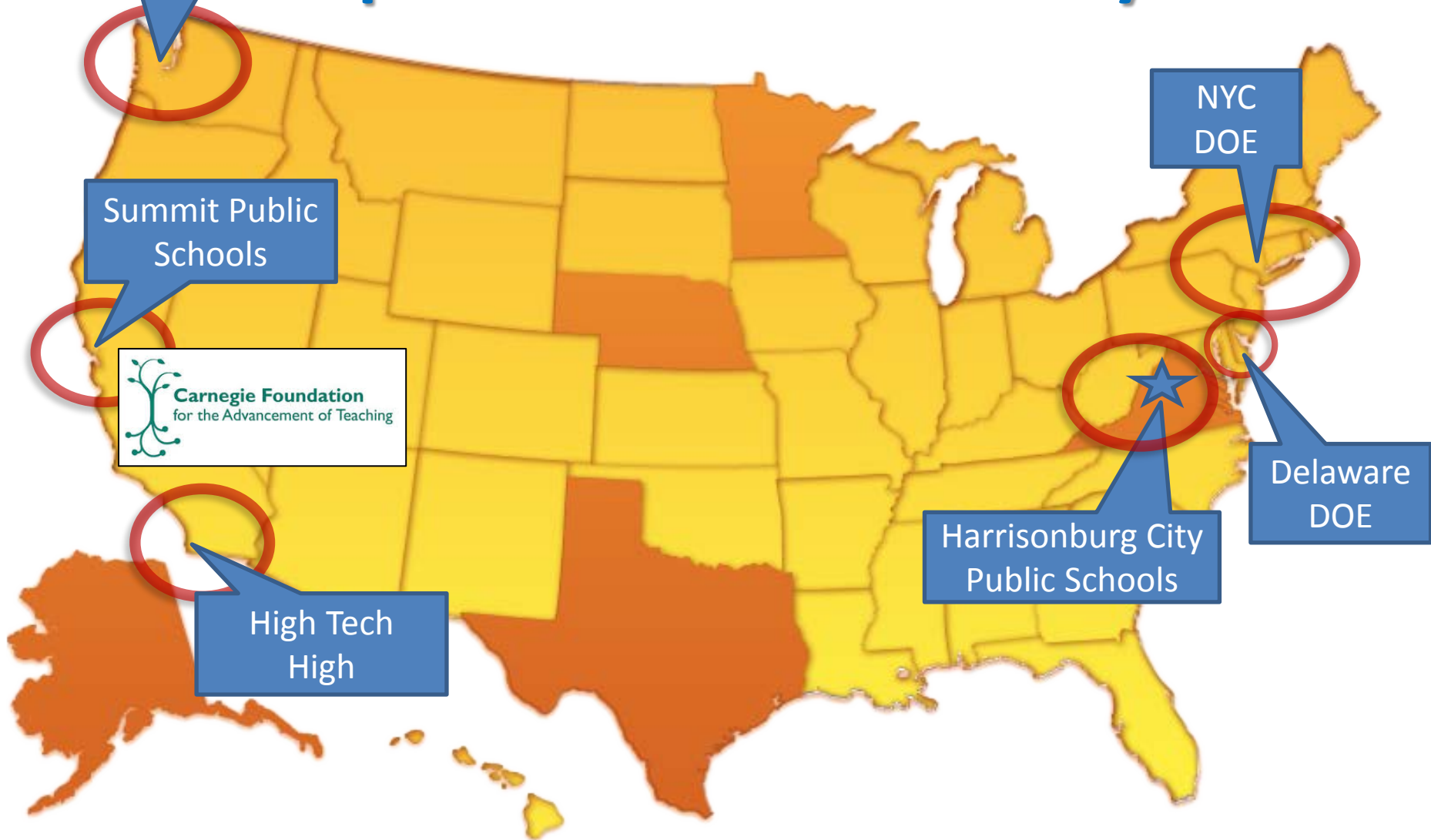


High Tech
High

NYC
DOE

Delaware
DOE

Harrisonburg City
Public Schools



An Example of Scaling Up a Social Psychological Intervention

Researchers



Kenn
Barron



Chris
Hulleman



Bryce
Inouye

Teachers



Leah
Brockman



Teresa
Jackson



Carol
Hall



Jackie
Funkhouser



Teresa
Keesling



Julie
Shiflet

Local Administrators



Don
Vale



Daniel
Kirwan

Top Motivational Challenges

#1	#2	#3
Students who do not believe in themselves and give up at anything that is not quick and easy for them.	Getting students to want to be engaged to want to learn something new.	Getting students to see the importance of learning.
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Negative attitudes.	Getting students to see the importance of learning.	Getting students to want to be engaged to want to learn something new.
Lack of expectations at home.	Negative attitudes.	Off-task issues.
Retention of information.	The idea that there are not expectations from home often enters the classroom	Students who do not believe in themselves and give up anything that is not quick and easy for them.

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Student Agency

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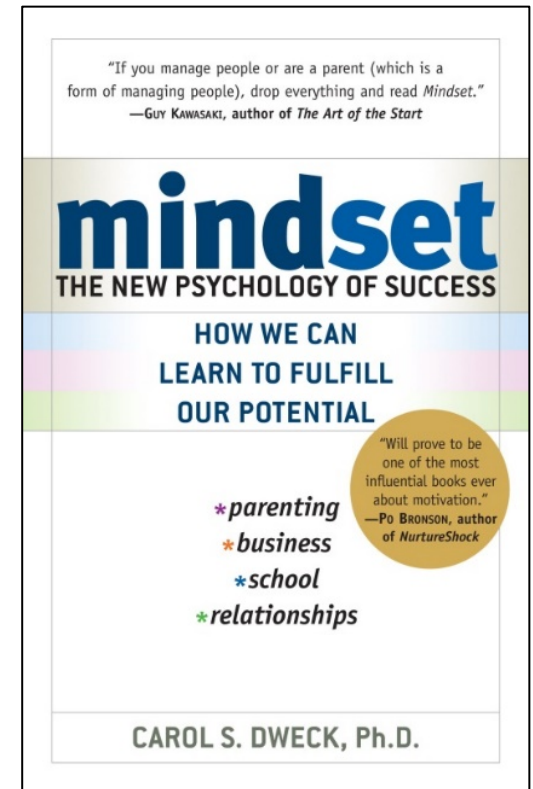
Students believe they can learn

Students value learning

Equip students to persist in the face of rigorous learning challenges.

Students feel they belong in the learning context.

Students use effective learning strategies



Designing our Growth Mindset Intervention

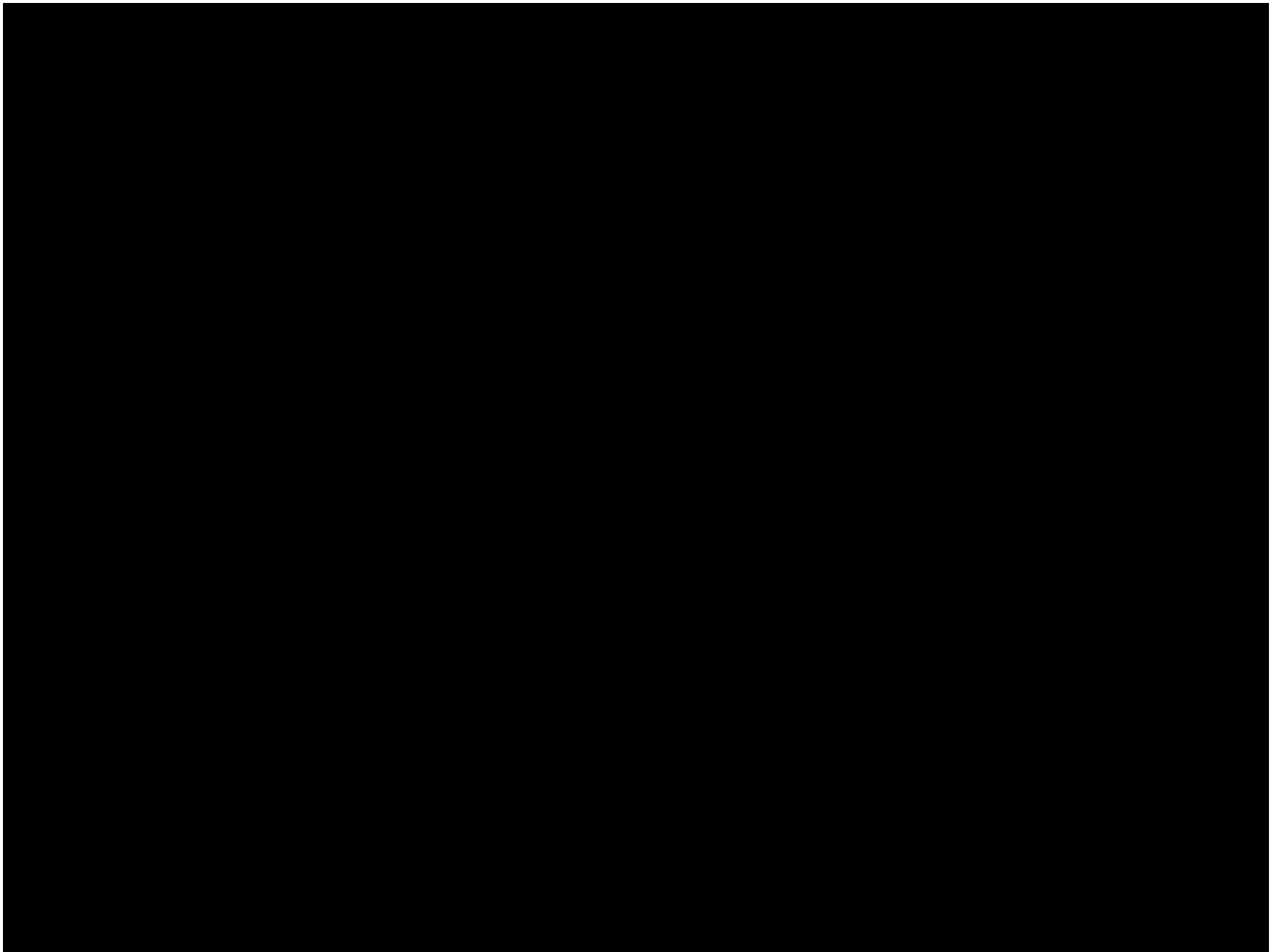
We adapted prior growth mindset interventions in three major ways:

- (1) making sure material was appropriate and engaging for our younger middle school student population with limited English proficiency
- (2) shortening the length of the intervention
- (3) delivering the intervention on hand-held tablets



Project for Education Research That Scales





Plan-Do-Study-Act (PDSA) Cycles

- A key tenet of improvement science is to engage in Plan-Do-Study-Act (PDSA) cycles to determine if a proposed change idea actually leads to improvement (Bryk et al., 2015).
- A cycle represents a test of a specific improvement idea, and the goal of any given PDSA cycle is to decide whether the idea should be adopted, adapted, or abandoned.

The Scale of a PDSA Cycle

- Another key tenant of improvement science is to consider the scale of a given PDSA test.
- Rather than going straight to large-scale scale up, improvement science highlights the power of conducted smaller scale tests before scaling.
- The goal is to learn fast in order to implement well, rather than to implement fast and learn slow.

Our Methodology

Participants and Setting

- 216 middle school students participated in our PDSA testing to develop our intervention.
- We recruited students from 5th through 8th grade.
- The student population is diverse (40% Hispanic, 15% African-American), limited in English proficiency (with students representing over 40 countries and speaking over 50 languages), and economically disadvantaged (70% free and reduced lunch).

Example of our PDSA cycles

- We started PDSA testing in **one classroom** with older 8th grade students to 1st establish that the oldest students could understand the information.
- Once we found that test to be successful, we moved to classrooms with younger 5th grade students.
- Our initial PDSAs also included key measures to track user-interface issues and students' initial reactions to the material.
- As a result of these initial PDSA cycles, a number of refinements were made before deploying the application more widely in the classrooms of our 6 participating teachers and shifting our focus to more traditional measures of change in pretest/post-test measures of students' growth mindset.

Results

Example Analyses focused on student engagement with the tablet intervention

- Students ranged from taking 4.95 to 34.88 minutes (with a mean average of 17.70 and standard deviation of 5.89 minutes).
- We coded students' responses to questions in the app to see (1) if they typed something and (2) the quality of what they typed. Response rates were 90%, 94%, 93%, and 90% respectively for each prompt and students' quality of responses were on-task and appropriate.
- In a follow up survey after the intervention, students shared overwhelmingly positive feedback about the app (over 90% with only 1% was negative).

Results (continued)

E.g.,

- *“I liked it because I learned new things and new ways of feeling confident in myself.”*
- *“I liked it because I never knew how smart the brain can get.”*
- *“Now I am going to study more and pay attention to my teacher so my brain can learn new things.”*
- *“In my opinion I thought it was cool and very kind for you to teach us this.”*

Results (continued)

Example analyses focused on changes in growth mindset thinking

- Overall, students increased over half of a standard deviation from pre-test to post-test ($d = .53$).
- 60% increased in growth mindset thinking.
- 20% of students who were initially fixed flipped to growth mindset based on the theoretical midpoint of the scale

Unexpected Results We “Learned Into”

- We quickly learned the importance of adding a follow up activity for students to work on while others finished.
- But this activity turned out to provide a key “manipulation check” and way to further reinforce growth mindset thinking.

Draw a picture of yourself trying something challenging



$$\frac{100x^2(54xyz + 500 + 20x)}{10xy + 45z + 25}$$

Draw a picture of yourself trying something challenging



a harder book

Sol

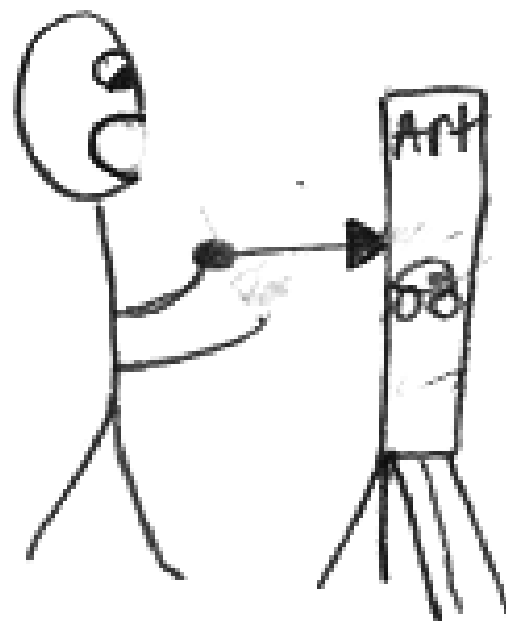


Draw a picture of yourself trying something challenging



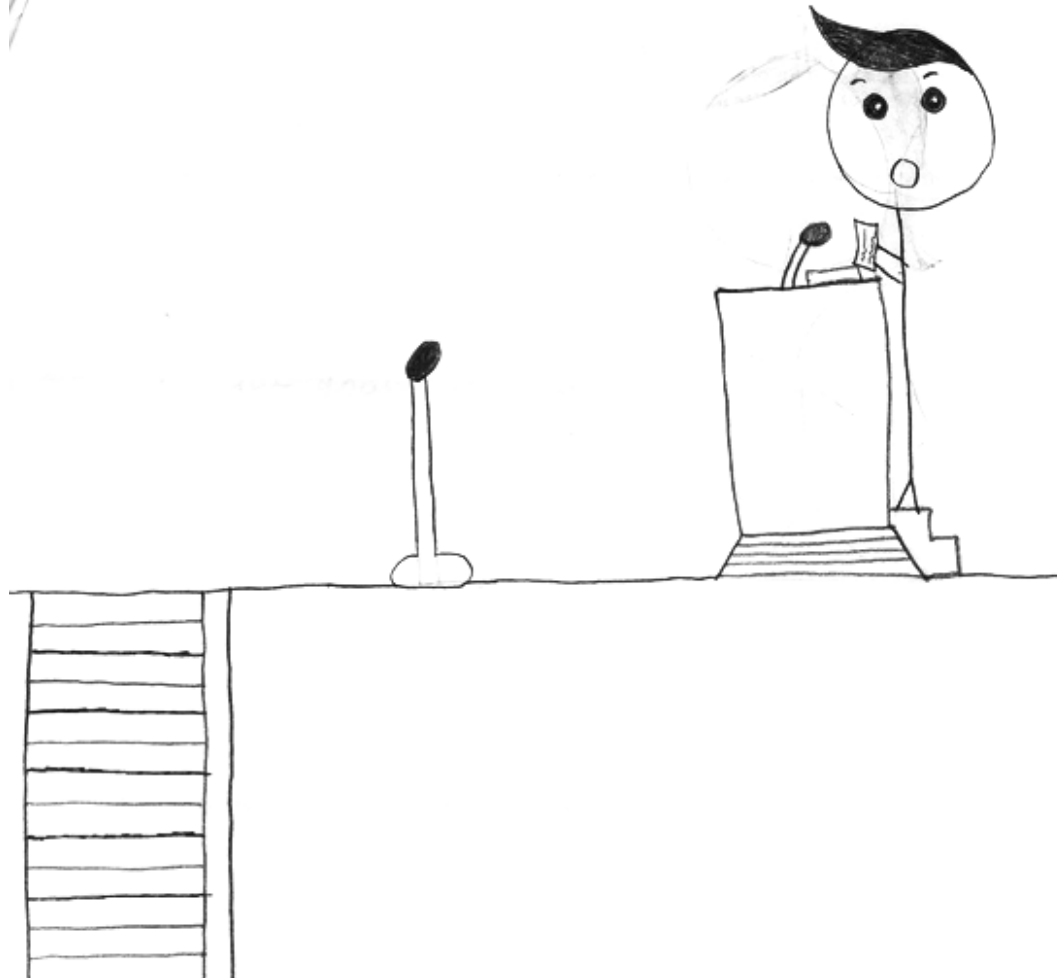
rapping
faster
and trying
to beat
my record.

Draw a picture of yourself trying something challenging

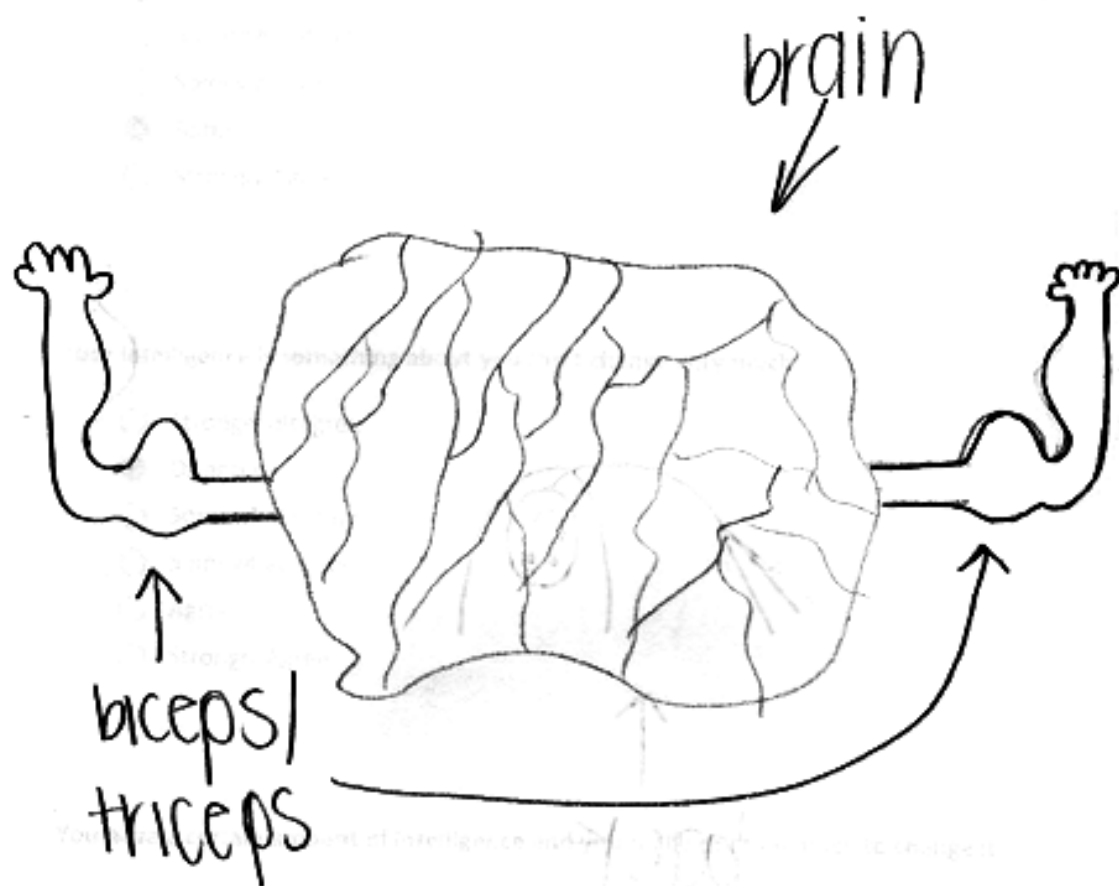


our Name: _____

Draw a picture of yourself trying something challenging



Draw a picture of a brain growing stronger



Draw a picture of a brain growing stronger

Fill in the brain for the 10 levels that now represent whatever you think

Draw of yourself trying something challenging

You can learn new things, but you can't do anything to change your brain

☐ Strongly disagree

☐ Disagree

☐ Neutral/No opinion

☐ Agree

☐ Strongly agree

Your intelligence is fixed and can't change very much

☐ Strongly disagree

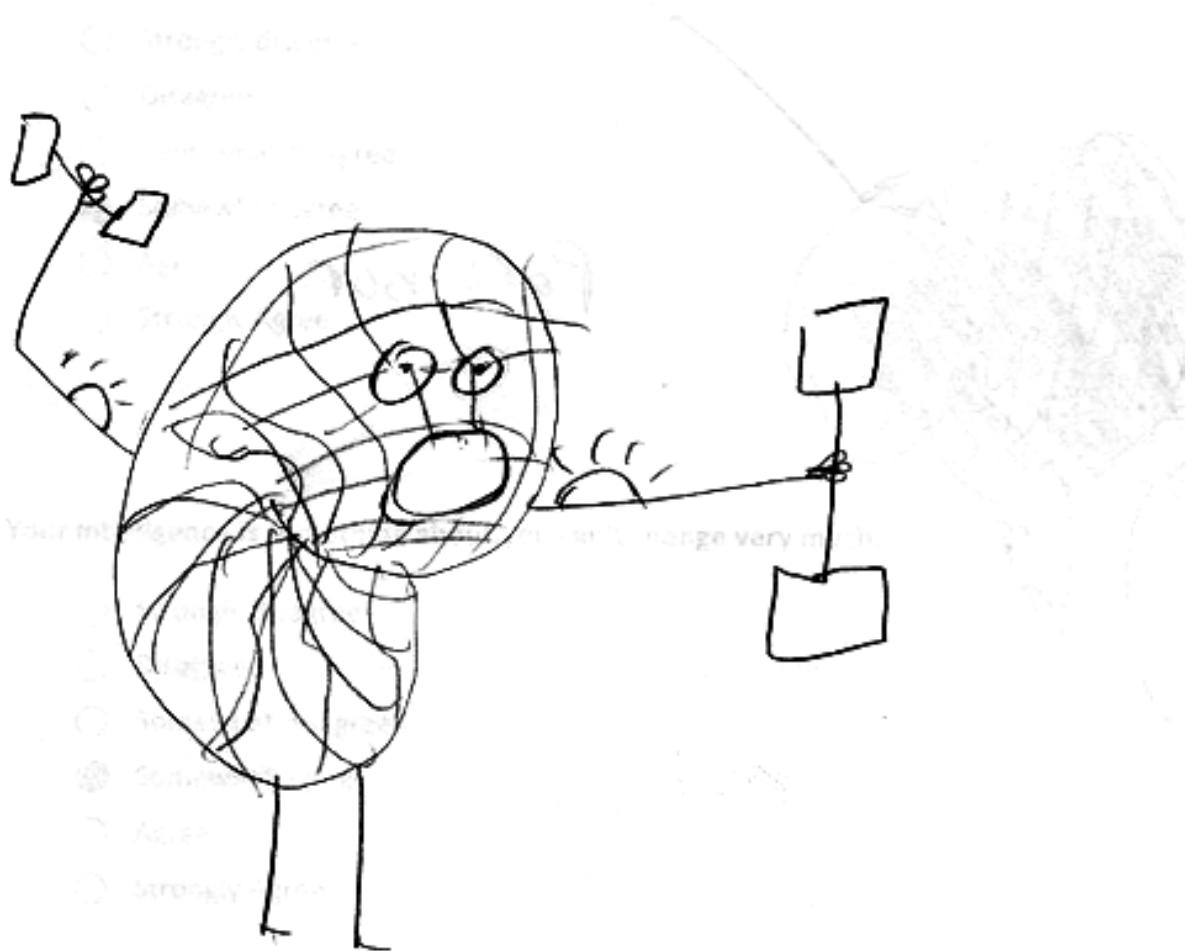
☐ Disagree

☐ Neutral/No opinion

☐ Agree

☐ Strongly agree

You have a certain amount of intelligence and you really can't do much to change it.



Draw a picture of a brain growing stronger

Solve harder problems
in math



$$\frac{45x + 5}{5}$$

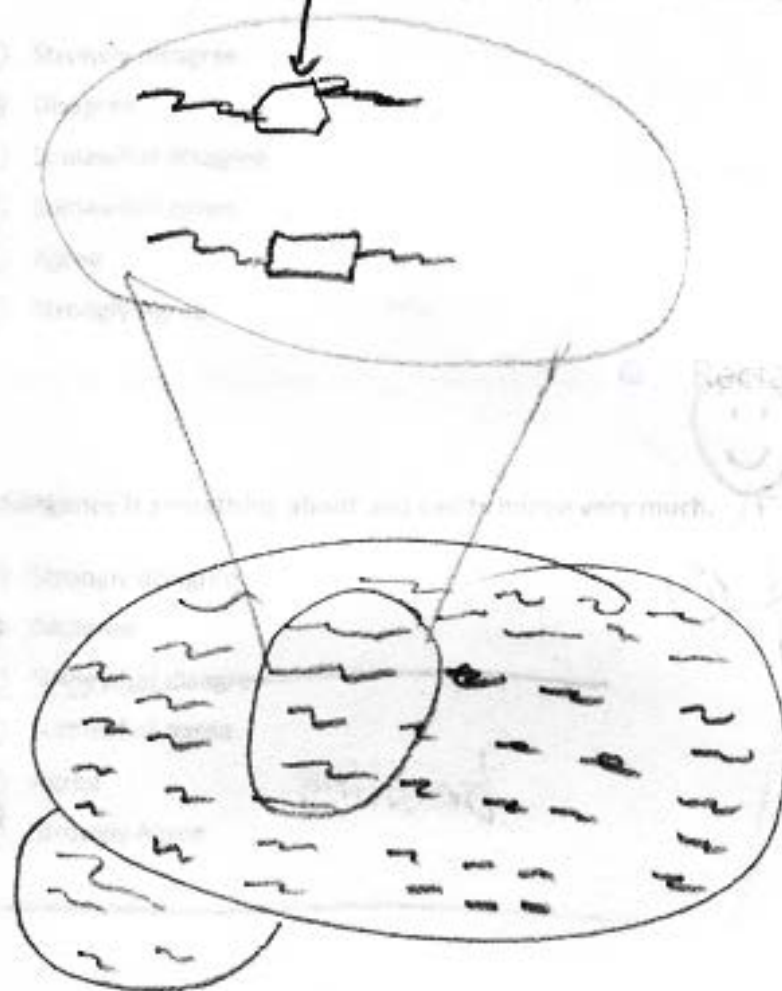


$$\frac{50x + 20x + 40x + 2 + 5 + 7}{8 + 2}$$



Draw a picture of a brain growing stronger

new connections



You have a certain amount of intelligence and you really can't do much to change it.

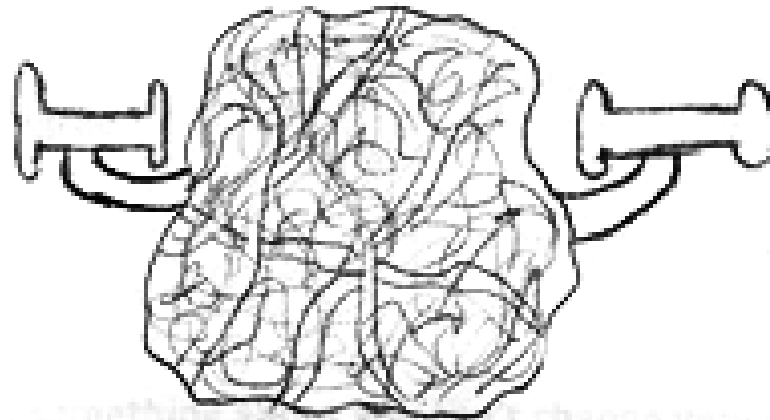
Draw a picture of a brain growing stronger

Fill in the circle for the response that now represents what you think.

gaining something new to a

You can learn new things, but you can't really change your basic intelligence.

- ☒ Strongly disagree
- ☐ Disagree
- ☐ Somewhat disagree
- ☐ Somewhat agree
- ☐ Agree
- ☐ Strongly agree



Your intelligence is something you can't change very much.



Unexpected Results (continued)

- We also learned if students saw the app a 2nd time, they were less enthusiastic about doing it again.
- So, this impacted our discussions of how to strategically scale up the experience to the rest of the school.

Scaling Up the Intervention in 2015-16

- This fall, all incoming 5th grade students were exposed to the app (N=175) to strategically promote growth mindset thinking at the outset.
- In addition, a targeted group of 8th grade students (N = 93) who had not been exposed were provided the app.
- Once again, students increased in growth mindset by over $\frac{1}{2}$ a standard deviation.

But... uncovered new issues

- Some 5th grade students' reading levels were as low as 1st or 2nd grade.
- While the material in the app was appropriate, some students struggled with the growth mindset measure.
- So, we piloted a new growth mindset assessment in our final 3 classrooms, and will work with our teachers once again.

We owe a lot of thanks...

- The contributions of our middle school teachers:
Leah Brockman, Jackie Funkhouser, Carol Hall,
Teresa Jackson, Teresa Keesling, and Julie Shiflet.
- Our colleagues at Carnegie and PERTS.
- Key financial support from the Raikes Foundation,
the Commonwealth of Virginia's 4VA grant
program, and Harrisonburg City Public Schools to
be able to engage in this work.



“I thought a researcher was someone who collected data, wrote about it, and told me what worked. Then I was the person who took the information and used it.

But now I see that I’m a researcher too! I can collect data and use it in my teaching to make it better.”

Thank You!