CARNEGIE MATH PATHWAYS
WestEd

WEBINAR SERIES:
A Dialogue About What Works in Education

They're Enrolled, Now Keep Them Engaged

Session Goals

We'll highlight:

- Our approach, model, and framework for keeping students engaged
- Share faculty perspectives including promising practices
- Provide insights from our network of institutions and instructors

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Presenters

Andre Freeman
Capital Community College
Professor of Mathematics

Brenda White
Professor, Mathematics
SUNY Morrisville

Rachel Beattie
Director of Productive Persistence
Carnegie Math Pathways

Dan Ray
Lead for Faculty Development
Carnegie Math Pathways

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Of the 1,100,000 first-time students enrolling in community college annually,

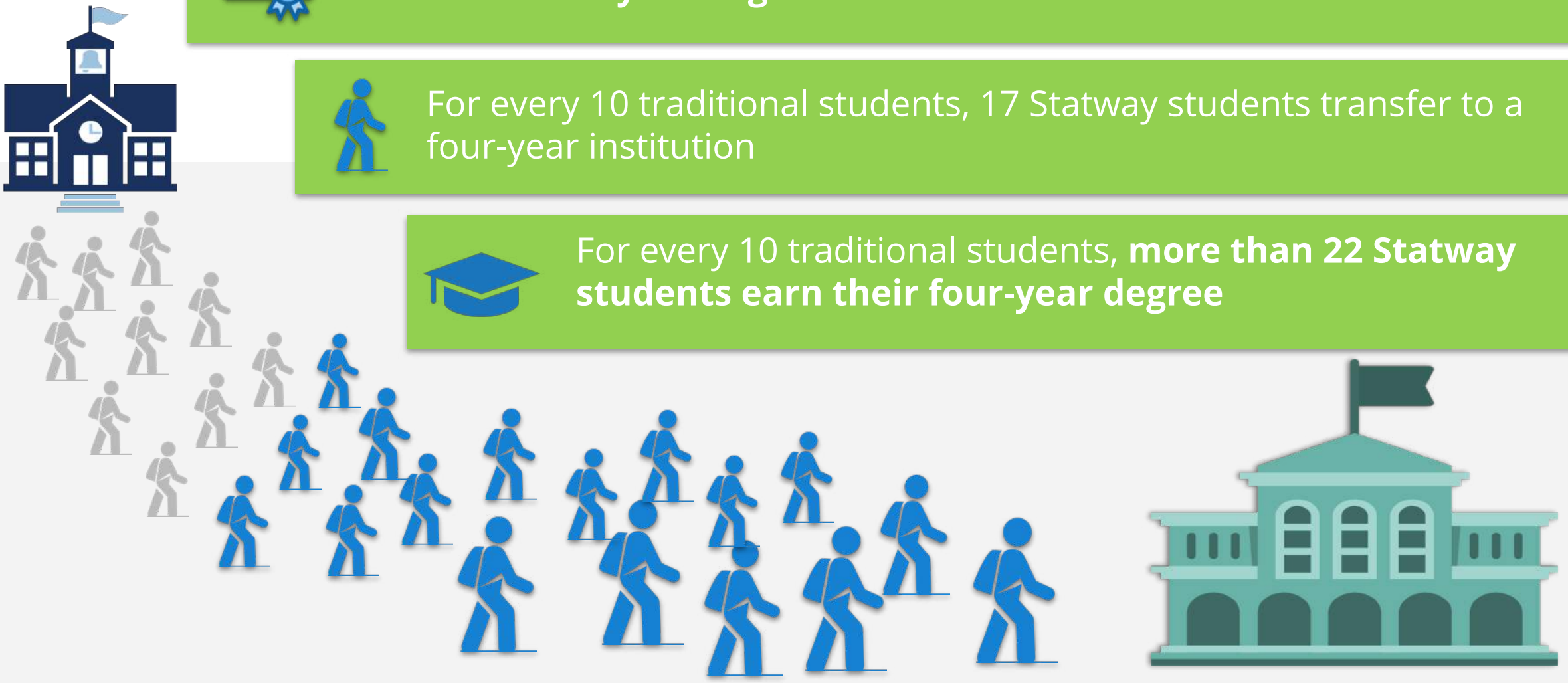
3 out of 5 students

are placed in a remedial math course.

For every 10 traditional students, **more than 15 Statway students earn their two-year degree/credential**

For every 10 traditional students, 17 Statway students transfer to a four-year institution

For every 10 traditional students, **more than 22 Statway students earn their four-year degree**



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Intentional Design

Our network of faculty have developed a suite of courses following a set of critical design principles:

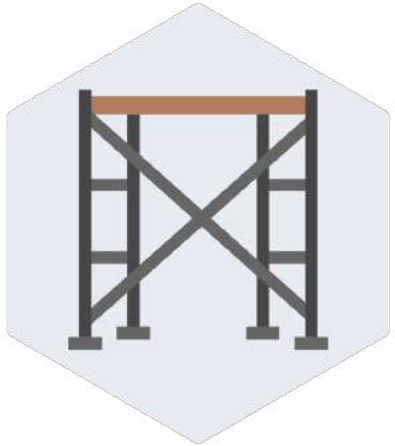
Accelerated Pathways

Help more students achieve college math credit in less time and advance toward their goals

Relevant curriculum and researched-based pedagogy

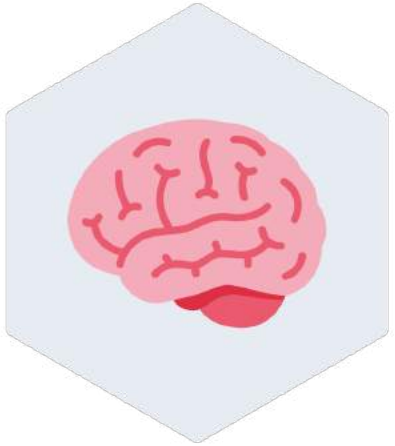
Ensure high quality learning opportunities for all students

Appropriate supports built into the course



Deliver targeted and effective scaffolding for students who need additional support

Embedded Social Emotional Supports



Foster growth mindset, confidence, and belonging to support the whole learner

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Productive Persistence: Tenacity + Good Strategies

Aim:
Students continue to put forth effort during challenges and when they do so they use effective strategies.

- Growth Mindset – Students believe they are capable of learning
- Social Belonging – Students feel socially connected to the instructor, peers, and the course
- Course Value – Students believe the course has value
- Skills & Know-How – Students have skills, habits, and know-how to succeed in course
- Support – Faculty and college support students' skills and mindset

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Welcome Package

- Establishing norms and expectations
- Shifting students' beliefs about themselves
- Shifting faculty members' mindsets

Staying Strong

- Reinforcing norms and expectations
- Sustaining Students' Beliefs about Themselves
- Motivational and Cognitive Supports

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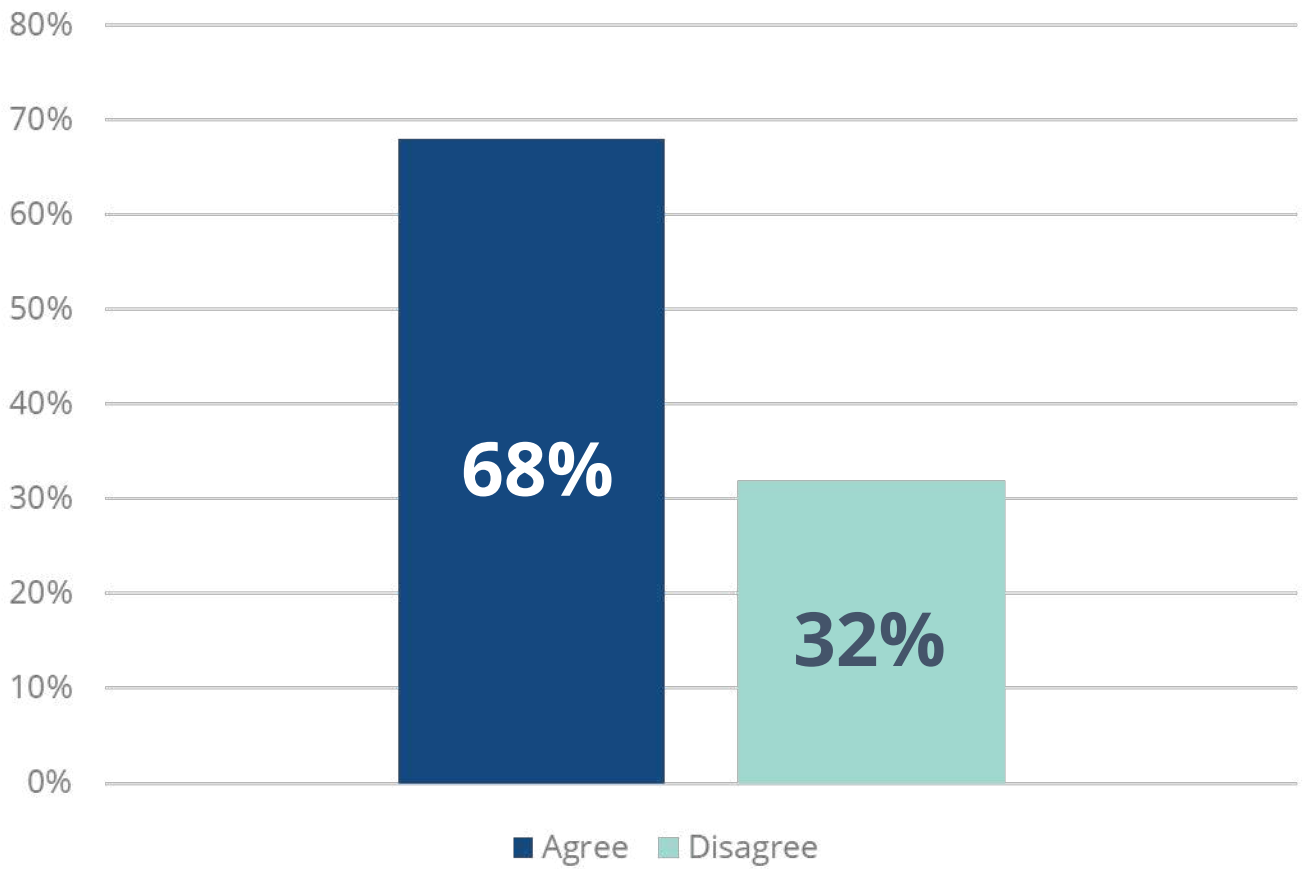
Understanding an Entering Mindset

Students believe they are capable of learning.



“Being a 'math person' or not is something about you that you really can't change. Some people are good at math and other people aren't."

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Mindsets about Ability

Students believe they are capable of learning.

Fixed Mindset (intelligence is fixed)

- "If I have to try hard, I'm clearly not smart."
- There is no point in trying if one is not a "natural."
- If you're "dumb", you have to rely on "luck."

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Growth Mindset (intelligence is malleable)

- "Trying harder makes you smarter."
- Obstacles can be overcome through effort, help from others, and use of improved strategy
- Note: It's NOT just about effort. Also strategy and help.

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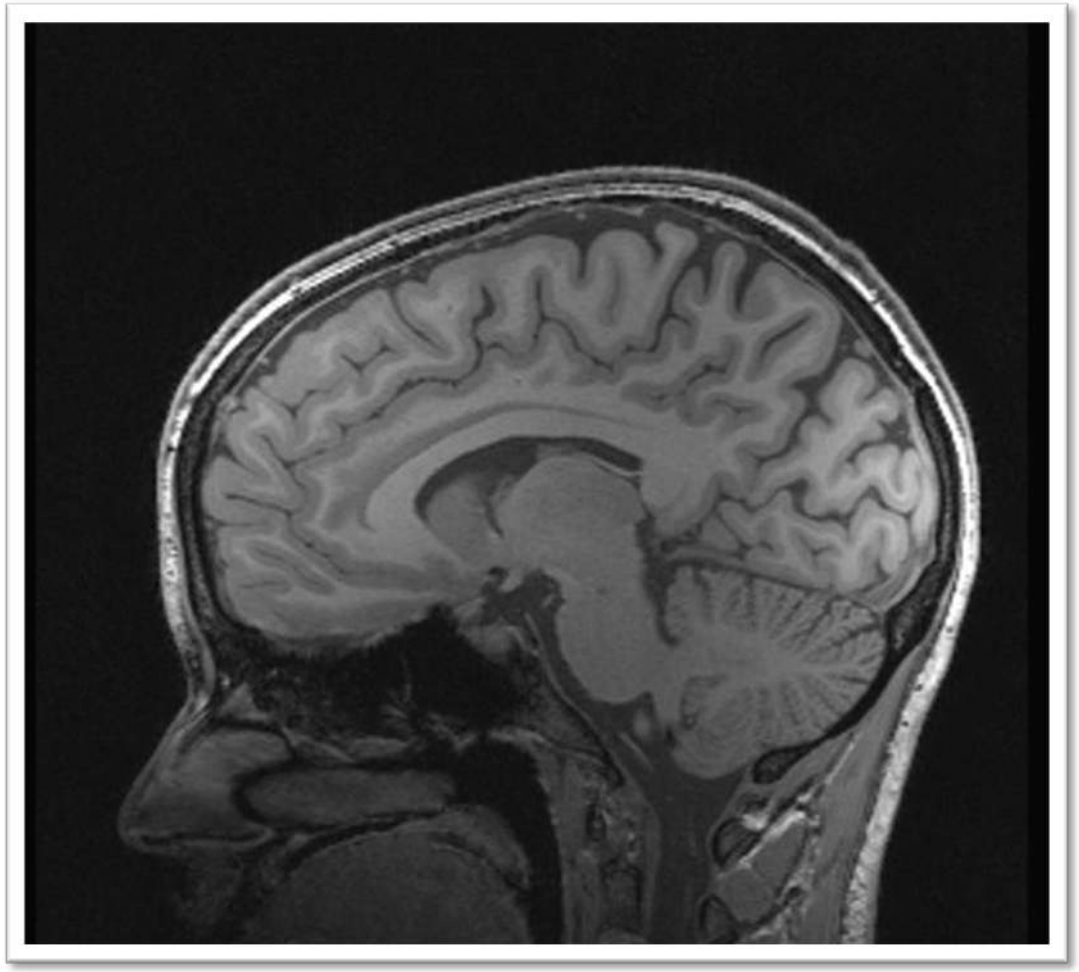
Students believe they are capable of learning.



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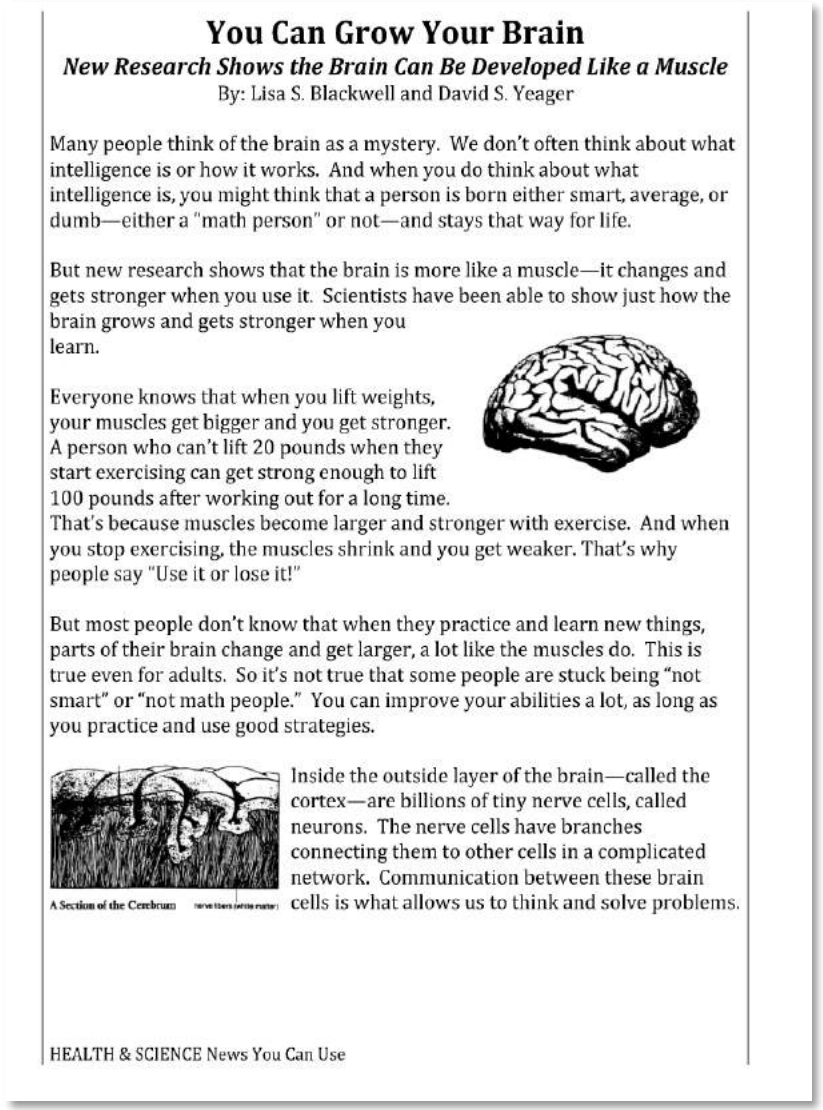

You Can Grow Your Brain

New Research Shows the Brain Can Be Developed Like a Muscle

By: Lisa S. Blackwell and David S. Yeager

Many people think of the brain as a mystery. We don't often think about what intelligence is or how it works. And when you do think about what intelligence is, you might think that a person is born either smart, average, or dumb—either a "math person" or not—and stays that way for life.

But new research shows that the brain is more like a muscle—it changes and gets stronger when you use it. Scientists have been able to show just how the brain grows and gets stronger when you learn.

Everyone knows that when you lift weights, your muscles get bigger and you get stronger. A person who can't lift 20 pounds when they start exercising can get strong enough to lift 100 pounds after working out for a long time. That's because muscles become larger and stronger with exercise. And when you stop exercising, the muscles shrink and you get weaker. That's why people say "Use it or lose it!"

But most people don't know that when they practice and learn new things, parts of their brain change and get larger, a lot like the muscles do. This is true even for adults. So it's not true that some people are stuck being "not smart" or "not math people." You can improve your abilities a lot, as long as you practice and use good strategies.

A Section of the Cerebrum

Inside the outside layer of the brain—called the cortex—are billions of tiny nerve cells, called neurons. The nerve cells have branches connecting them to other cells in a complicated network. Communication between these brain cells is what allows us to think and solve problems.

HEALTH & SCIENCE News You Can Use

"Most people don't know that when they practice and learn new things, parts of ***their brain change*** and get larger, a lot like the ***muscles*** do. This is true **even for adults**. So it's not true that some people are stuck being "not smart" or "not math people." ***You can improve*** your abilities a lot, as long as you ***practice*** and ***use good strategies***."

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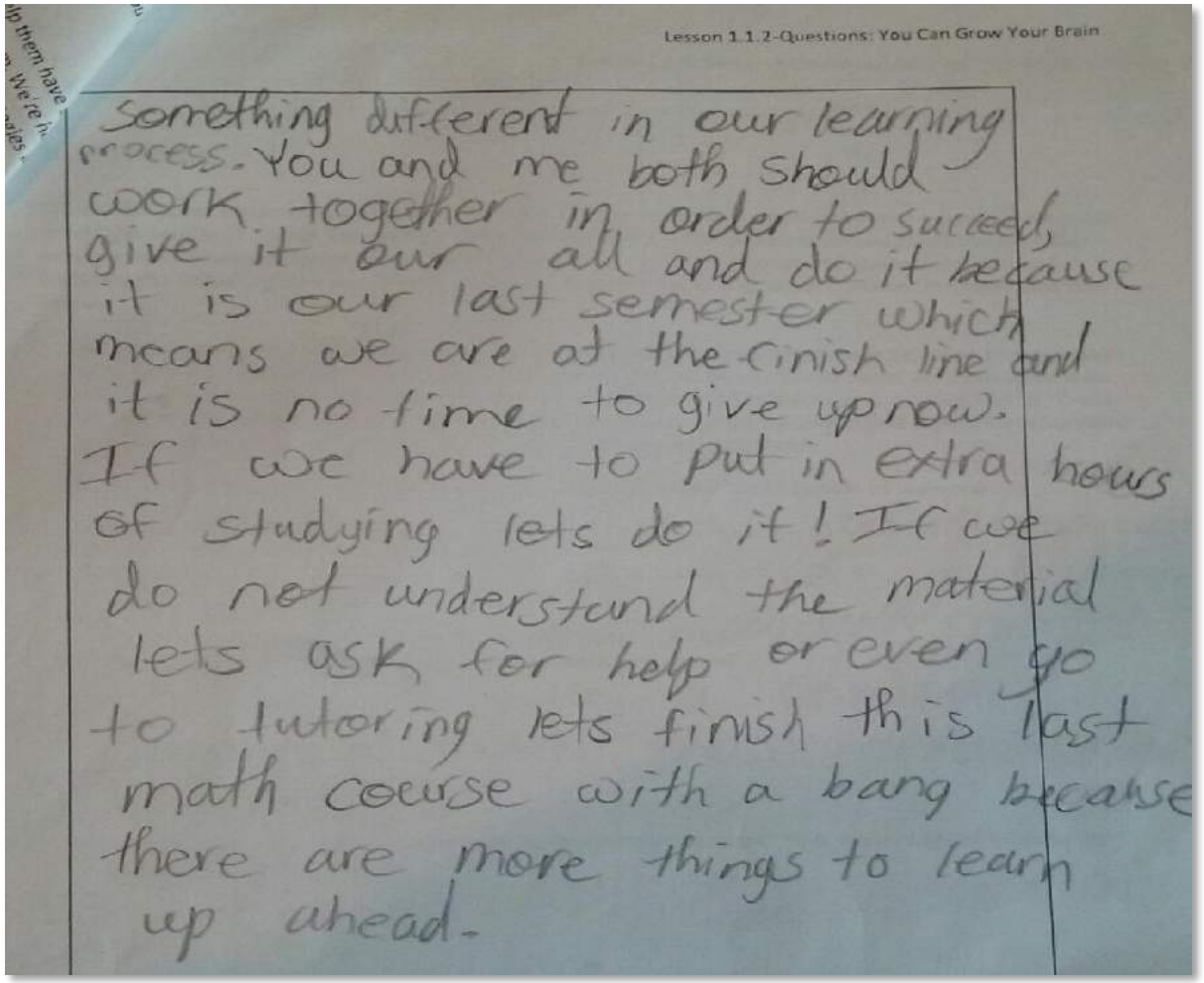
Students believe they are capable of learning.

A Letter to a Future Student



Lesson 1.1.2-Questions: You Can Grow Your Brain

Something different in our learning process. You and me both should work together in order to succeed, give it our all and do it because it is our last semester which means we are at the finish line and it is no time to give up now. If we have to put in extra hours of studying lets do it! If we do not understand the material lets ask for help or even go to tutoring lets finish this last math course with a bang because there are more things to learn up ahead.

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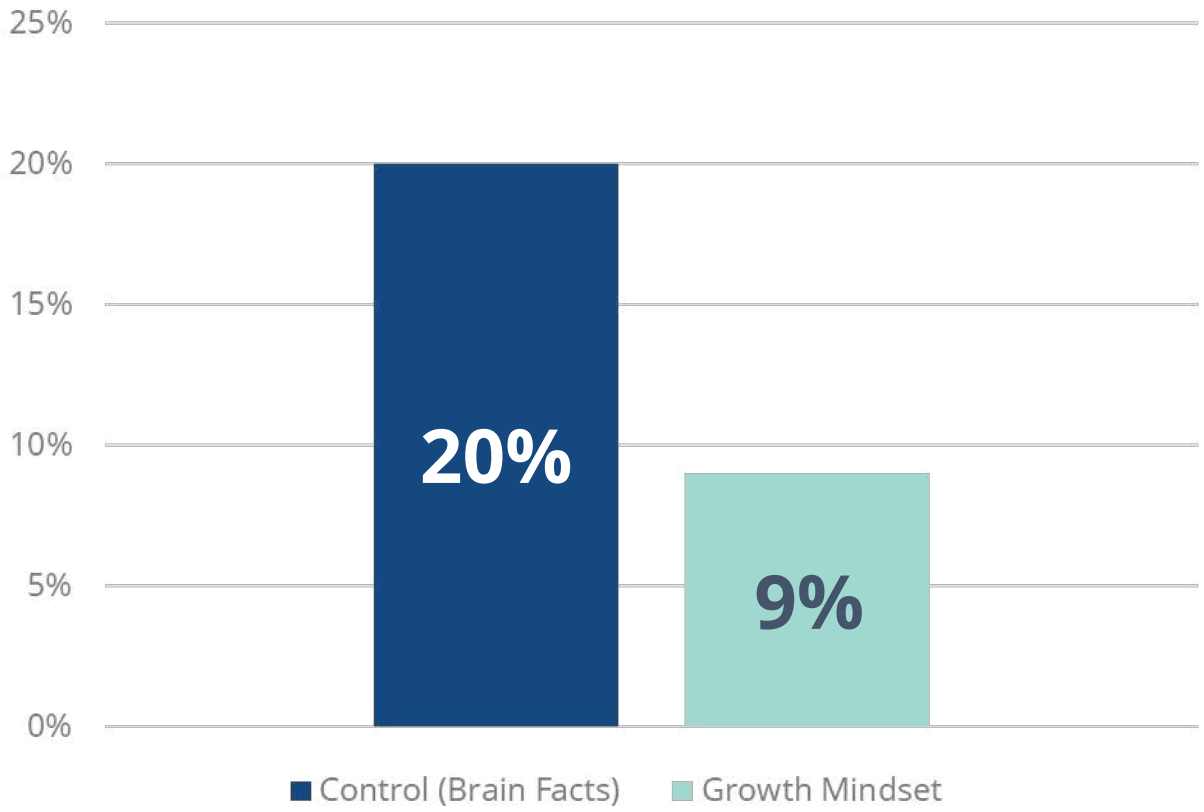
Course Dropout in Developmental Math

Students believe they are capable of learning.



N = 288, Z = 2.87, p = .004

51% decrease
~40 minutes
$0

In collaboration with:
Greg Walton,
Dave Paunesku,
Carol Dweck,
Carissa Romero,
Roberta Carew,
& www.perts.net

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How can you create a classroom culture that supports a growth mindset?

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Everyday Phrases – The What

Students believe they are capable of learning.

- Overall goal: Emphasize the **process** of learning

  We want to create in students a mindset in which the *process*—the thing students can most readily control—is the most relevant part of being a good student. Natural ability should be seen as irrelevant.

- The process is made up of:
  - Sustained **Effort**
  - Good **Strategies**
  - Seeking **Help**

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Students believe they are capable of learning.

Everyday Phrases - Examples

Praise after success

> "You're improving and use some good strategies. [Name the strategies…] Your efforts are really paying off."

instead of

> "I'm glad this is easy for you."

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Students believe they are capable of learning.

Everyday Phrases - Examples

Encouragement after difficulty

> "Struggling is part of learning – it doesn't mean you can't get it. Your brain is making connections that are not yet strong."

instead of

> "You would have done better had you tried harder."

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Everyday Phrases - Examples

Students believe they are capable of learning.

Critical Feedback

> “We have high standards in this class. I wouldn’t hold you to them if I didn’t think you could do it. Let’s set aside time to review your writing together.”

instead of

> “I really like your ideas. Most of the writing didn’t make sense. But I can see you were passionate.”

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How can you create a classroom culture that supports a growth mindset?

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Belonging Uncertainty (Walton & Cohen, 2007)

Students feel socially tied to peers, faculty, and the course.

- People may commonly question their belonging in new social and academic settings
  - Especially when they are targeted by stigma and negative stereotypes (Goffman, 1963; Cohen & Steele, Steele, 1997; Steele, Spencer, & Aronson, 2002)
- This uncertainty makes the meaning of negative social events more ambiguous (Crocker et al, 1991; Cohen, Steele, & Ross, 1999)
  - After each negative event, they have to ask: “Do I belong here or don’t I?”

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Interviews with Students

Students feel socially tied to peers, faculty, and the course.

- “I’m embarrassed to be at community college because high school teachers said I would end up at community college because I’m lazy”
- “I don’t have any friends here. In between classes, I sit in my car and see everyone talking to others and I wonder: how did everyone else make friends?”
- “I felt that if I stopped coming no one would even notice.”

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“How often, if ever, do you wonder: Maybe I don't belong here?”

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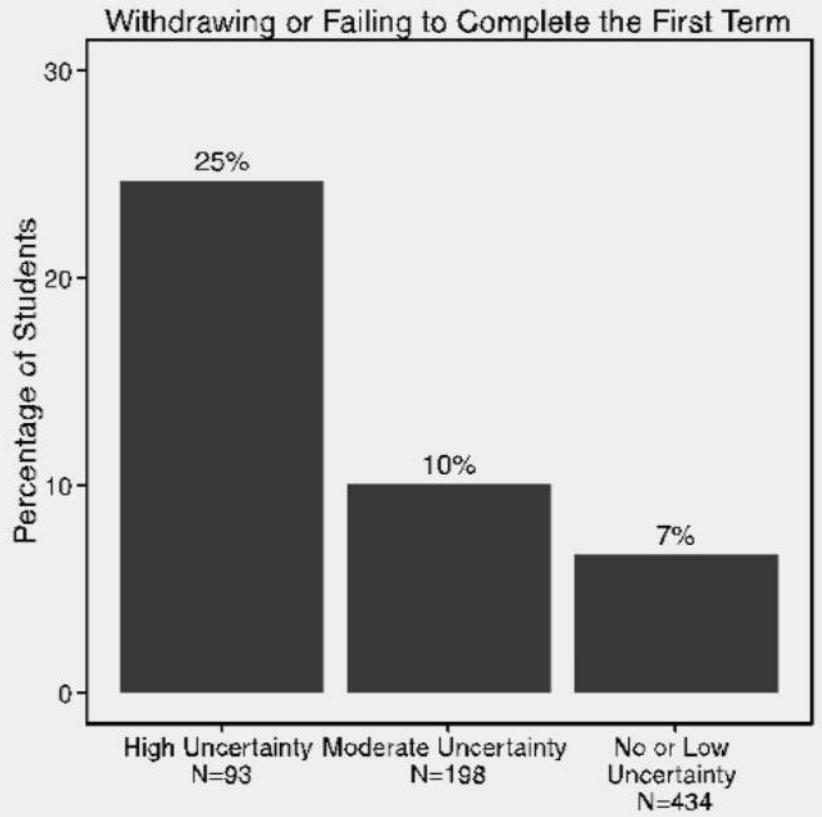

(a) Course Withdrawal ($\chi^2(1)\, p < 0.001$)

Figure 26: Belonging uncertainty after four weeks. High uncertainty: response = 1 or 2; moderate uncertainty: response = 3; no or low uncertainty: response = 4 or 5.

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Students feel socially tied to peers, faculty, and the course.

Trust

- Trust is a “cognitive leap”
  (Bryk et al., 2002; Cohen et al., 1999; Gambetta, 1988)
  - An assumption that another party’s intentions are good
  - An expectation that one will be dealt with fairly

- Trust frames the meaning of ambiguous interpersonal treatment
  (Asch, 2007)

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A Multi-pronged Approach to Promoting Sense of Belonging

Students feel socially tied to peers, faculty, and the course.

- **Contract activity**
- **Faculty Email Routine: Absences**

  Regular email communication routines from faculty to absent students
- **Student Group Noticing Routine**

  Phase 1, student teams are formed and they exchange contact information. Phase 2, students contact absent students to relay information and encourage the missing students to attend the next class.

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Students feel socially tied to peers, faculty, and the course.

Faculty Perspective

I emailed the absent students on Tuesday (n=4) and observed that they all came to class on Thursday! I emphasized the importance of notifying us for an absence on Thursday saying, 'That way, we don't have to worry about you.'

I think putting it in those terms stresses the WE CARE part of attendance and really does make them feel important and help them show up the next time.

Mary Daunis
Normandale Community College
Spring 2017

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Students feel socially tied to peers, faculty, and the course.

Identifying Resources to Help our Students Feel and Stay Connected

- Your campus **Learning Management System (LMS)** - Blackboard, Canvas, Moodle, etc.
  - Discussion Board
  - Student lounge
  - Ice breaker
  - Welcome page from instructor

- Your **campus website**
  - A simple message such as “You Belong!” with linked resources

- Welcome **email** with links – make life easier for students!

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Identifying Resources to Help our Students Feel and Stay Connected

A Liquid Syllabus - “a dynamic, visually compelling media that can be accessed, bookmarked, and read easily from a smartphone or tablet.”

A liquid syllabus:

- Works more effectively for online courses as it is not meant to be printed, but viewed on a screen, and it is mobile friendly.
- Provides students with academic information such as course outline, format, timeline, notes, etc., as the course progresses.
- Addresses non-academic components of a course such as equity, cultural responsiveness, and mindset.
- Contains campus resources so that students can easily access information such as tutoring services, campus reopening plans, keeping safe, WiFi hot spots, etc.

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A Sneak Peak into my Student Resources

Blackboard – one stop shopping for students

- Discussion Board
- Student lounge
- Ice breaker
- Welcome page from instructor
- Syllabus
- Links

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Students feel socially tied to peers, faculty, and the course.

Keep Students Engaged with Each Other

Create frequent opportunities for **Collaboration**

- Group assignments
  - Zoom Breakout rooms
- Projects (small and large)
- Discussion Boards (written & video)
  - FlipGrid
  - Padlet
- Establish and re-establish classroom norms of care, support, and respect.

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Check-In Frequently, Motivate Consistently

- Use the beginning of class to get feedback from students.

- Each week, use consistent, positive, encouraging communication to motivate students to persist.
  - Share inspirational quotes and videos
  - Share your own personal experiences

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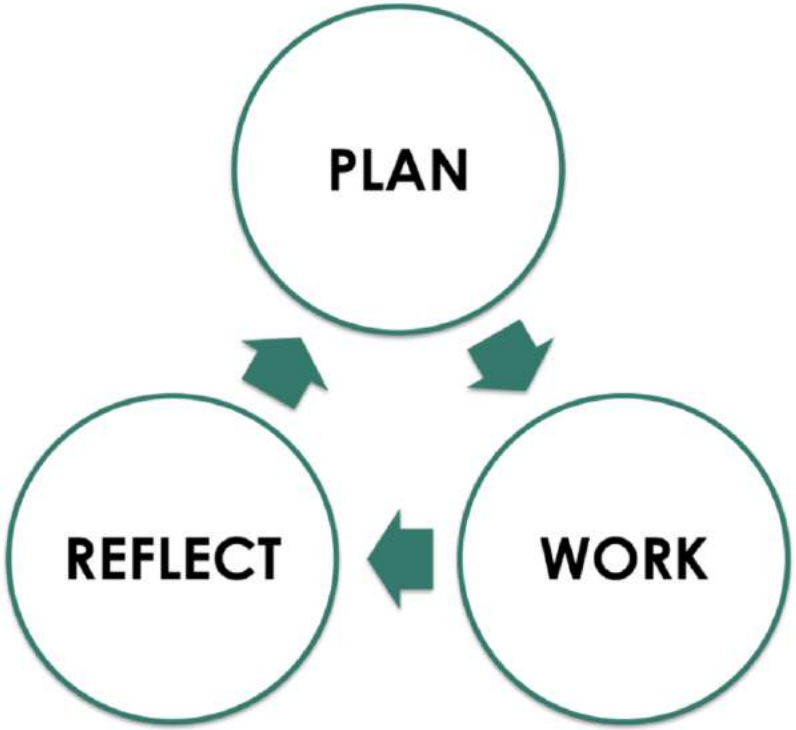
Students feel socially tied to peers, faculty, and the course.

Facilitate Metacognition - Help Students Become Better Learners

- Create opportunities for students to employ self-regulated learning strategies
  - Intro / exit tickets
  - Writing prompts in assignments
    - What do you understand well?
    - What are you not so sure about?
    - What study strategies are working, and why?
    - What study strategies are not working, so well, and why?



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Network Contributions

- Provide space for social presence
  - Open video conferences 15 minutes a head of time to chat
  - Send plentiful emails/notes to individual students
  - Consider a quick “Question of the day”.
    - If you could become the best in the world at cooking one dish, what do you choose?
    - If you had your own talk show, who would be your first guest?

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