



OFFICE OF
Educational Technology

The Future of Educational Technology

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Office of Educational Technology • US Department of Education

 @OfficeOfEdTech

 @southjoseph



**What are the technology trends
that will fundamentally change
how we learn?**

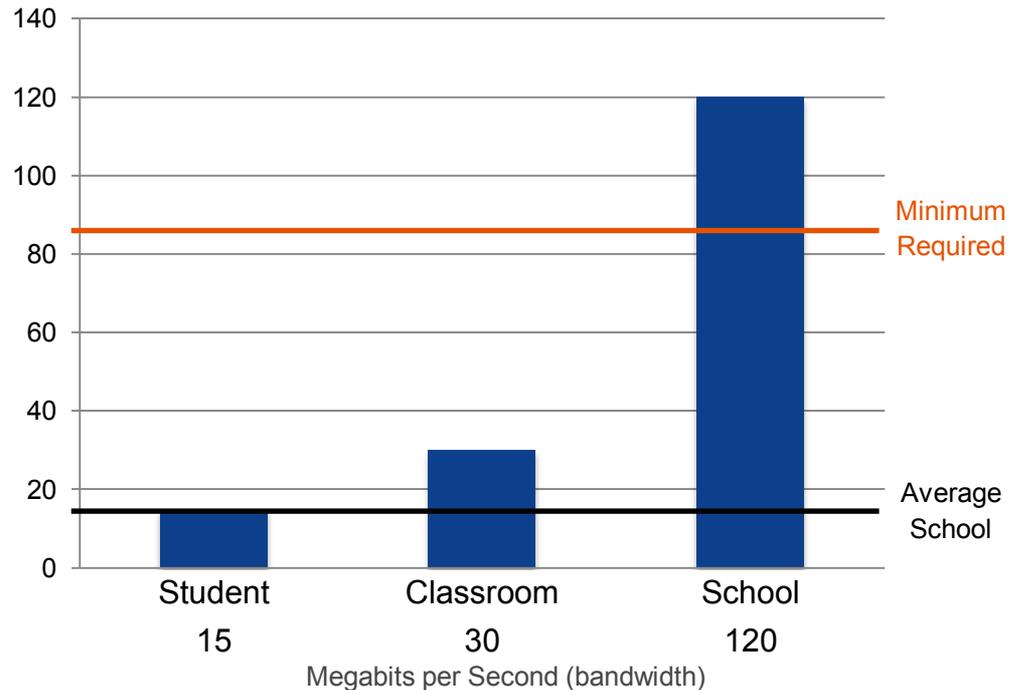
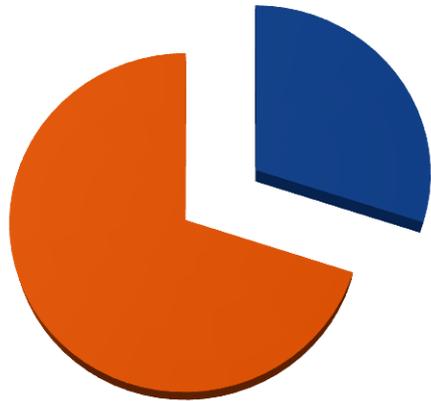


Ubiquitous Broadband

Required Bandwidth

Digital learning requires at least 100Mbps to the classroom.
Only 30% of schools in the U.S. have sufficient bandwidth in the classroom.

■ 100+Mbps ■ Less than 100Mbps





“In a country where we expect free wi-fi with our coffee, we should definitely demand it in our schools”

~ President Obama

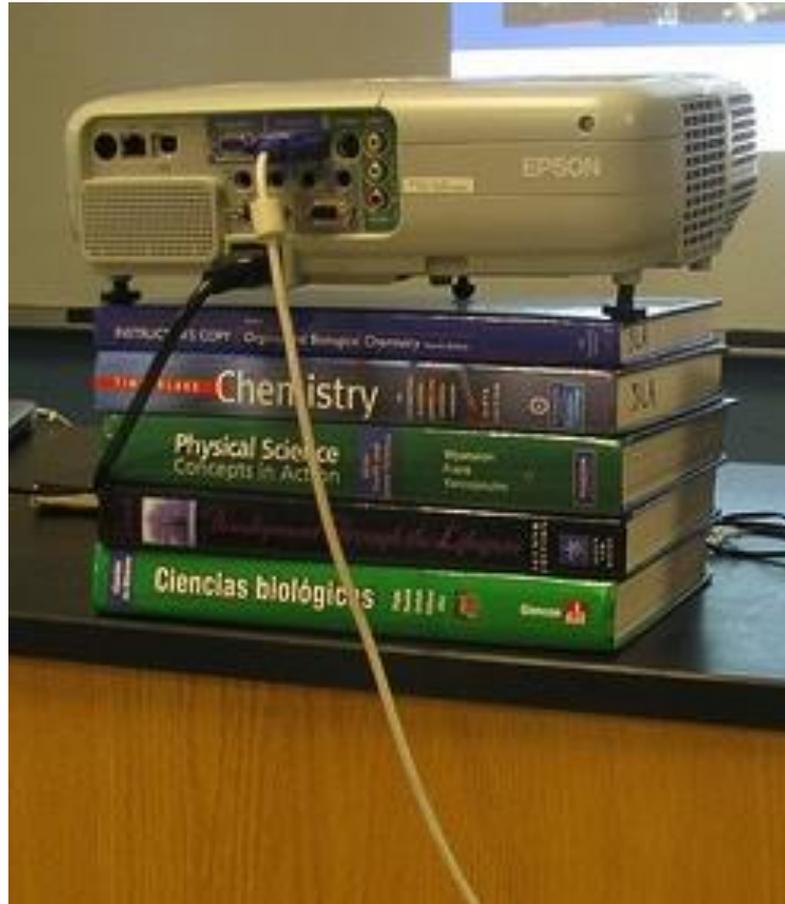
FCC E-Rate Modernization

NEW FOCUS ON BROADBAND & WI-FI CONNECTIVITY

- \$2B “down payment” for high speed connectivity
- \$1B per year for Wi-Fi inside of schools & libraries
- Phasing out pagers, landlines

Estimated to affect 10 million students per year
Over 5 years could reach 50 million (all of them!)





<https://www.flickr.com/photos/mathplourde/>



Data Implications

- Data will flow freely & in real time
- Cloud-based systems will be viable
 - No lag time
 - Easy maintenance
 - Automatic scalability



Personalized Learning

Do these children learn at the same pace?



<https://www.flickr.com/photos/senchang/>

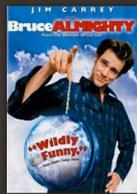


NETFLIX

3/142

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Un Pez, Dos Peces, Pez Rojo, Pez Azul...
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**SECRETLY
TEACHES
ALGEBRA**



AFTER
25 MINUTES

0/28

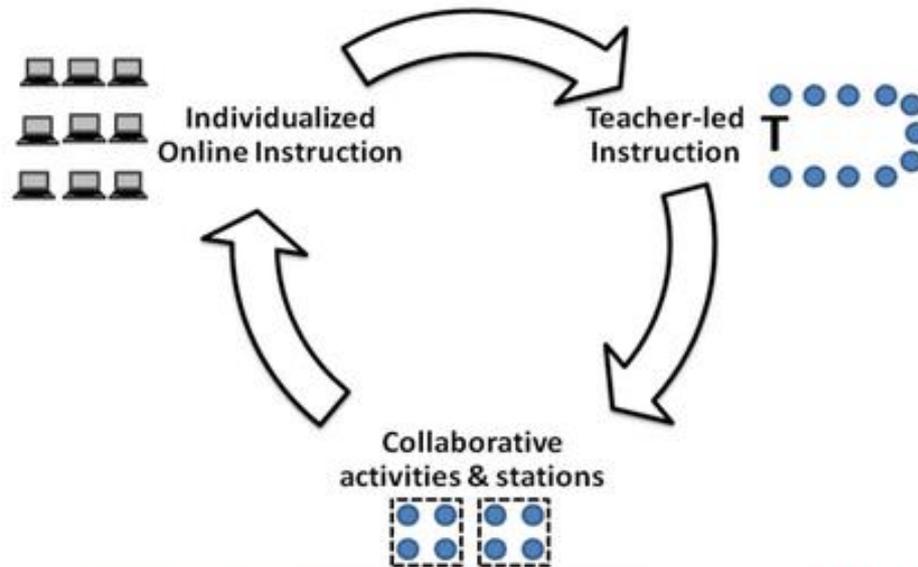
$$\frac{(3 \cdot x + (-3) \cdot x)}{(-2) \cdot x + 5} + \frac{(x + (-3))}{6} = \left(\frac{2 \cdot x}{3} + (-5) \right) \cdot 2$$

1 2 3 4 5 6 7 8

**AFTER
4 HOURS**

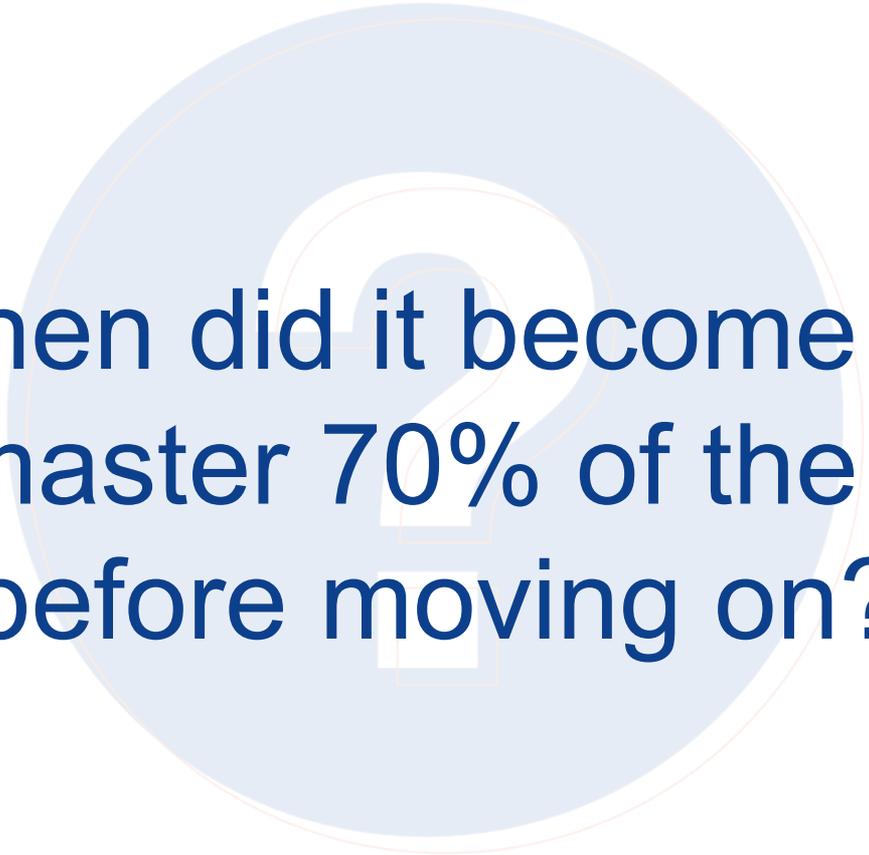
Example of blended classroom

Station-rotation model: KIPP Empower





Competency-based Learning



When did it become ok
to only master 70% of the material
before moving on?



Why do we hold time constant
and allow mastery to vary?

Learning Positioning System



Classroom List | Class: 4th Grade Language Arts | View All Standards

[RL: Reading Literature](#)
[RI: Reading Informational Text](#)
[RF: Reading Foundational Skills](#)
[W: Writing](#)
[SL: Speaking & Listening](#)
[L: Language](#)

Students [Add Student](#)

Student	Last Test	A-2	4.RF.1	4.RF.2	4.RF.4	4.RF.5	4.RF.6	4.RF.7	4.RF.8	4.RF.9	4.RF.10
Bane, Brandon	8/9		PROFICIENT								
Bender, Briana	8/9		PROFICIENT								
Branson, Jacob	8/9		PROFICIENT								
Cooper, Andrew	8/9		PROFICIENT								
Davis, Madison	8/9		PROFICIENT								
Engle, Joshua	8/9		PROFICIENT								
Faust, Lauren	8/9		PROFICIENT								
Fleddig, Hannah	8/9		PROFICIENT								
Kendrick, Ryan	8/9		PROFICIENT								
Mogaw, Elizabeth	8/9		PROFICIENT								
Moore, Jessica	8/9		PROFICIENT								
Peterson, William	8/9		PROFICIENT								
Peter, Matthew	8/9		PROFICIENT								
Pugh, Samantha	8/9		PROFICIENT								
Rag, Christopher	8/9		PROFICIENT								
Sandy, Sarah	8/9		PROFICIENT								
Shaw, Megan	8/9		PROFICIENT								
Tapley, Austin	8/9		PROFICIENT								
Warren, Ashley	8/9		PROFICIENT								
Woolley, Joseph	8/9		PROFICIENT								
TOTALS			100%	100%	100%	100%	100%	100%	100%	100%	100%

Exercises

Suggested Exercises

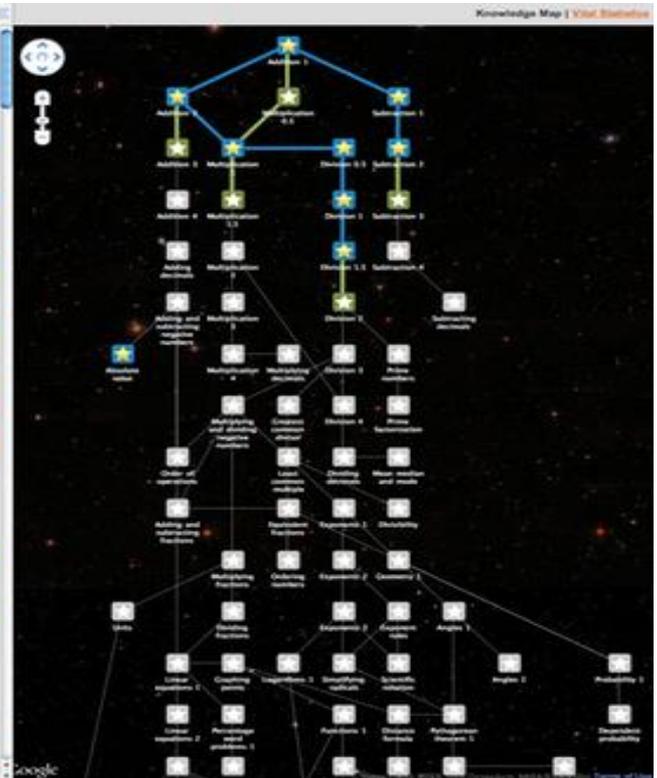
- Multiplication 0.5 (228)
- Addition 3 (228)
- Subtraction 3 (228)
- Multiplication 1.5 (228)
- Division 2 (228)
- Solving for the y-intercept (228)
- Slope of a line (228)

Recent Exercises

- Multiplication 3 (79)
- Subtracting decimals (79)

All Exercises (1106 All)

- Addition 1 (9)



Online Skills Academy

PATHWAYS TO EMPLOYMENT

- \$25M from Department of Labor
- Create “skills pathways”
 - Competencies
 - Curated OER learning resources
 - High fidelity, low cost assessments
 - Relevant, aligned credential
 - Academic credential
 - Industry recognized credential
- Low or no cost to the student with optional add-ons

Data Implications

- Vastly more data points than ever before to manage
- Much more complete picture of learning
- Increased need for data interpretation tools



Seamless Transition to College & Career



<https://www.flickr.com/photos/soundman1024/>



Micro-credentialing

Open Badge Backpack

Home

Sign Out

Badges

Accepted



Upload Badges

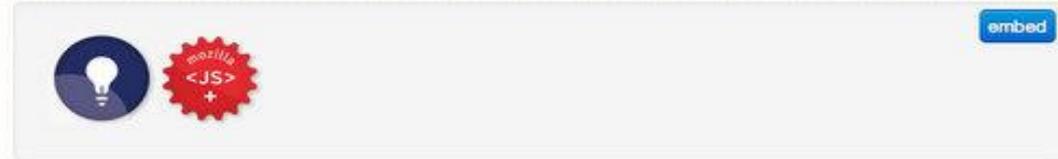
If you have badges you've been awarded, you can upload them manually

Choose File No file chosen

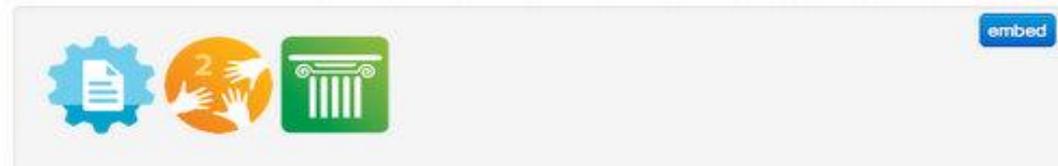
Upload

Groups

School of Webcraft



DYN iRemix



the “who would you hire” game



Has HS diploma and took some
Computer Science classes



4 senior Google developers rated
examples of her code her code as 5+

Last month, 53 developers said she
provided the best solution to resolving
bugs in their iOS code

Data Implications

- Credentials will become data rich instead of data poor
- Credentials will be multi-sourced
- Credentials will need to be truly portable & follow the user



Rapid Cycle, Low Cost Research & Evaluation

A Source of Inequality: Summer Melt

Percentages indicate the share of college-intending students that do not enroll anywhere in the fall following high school graduation



- **Personalized text reminders of required summer tasks:**

- FAFSA and financial aid award letters
- Orientation, placement tests, and housing
- Tuition bill and health insurance

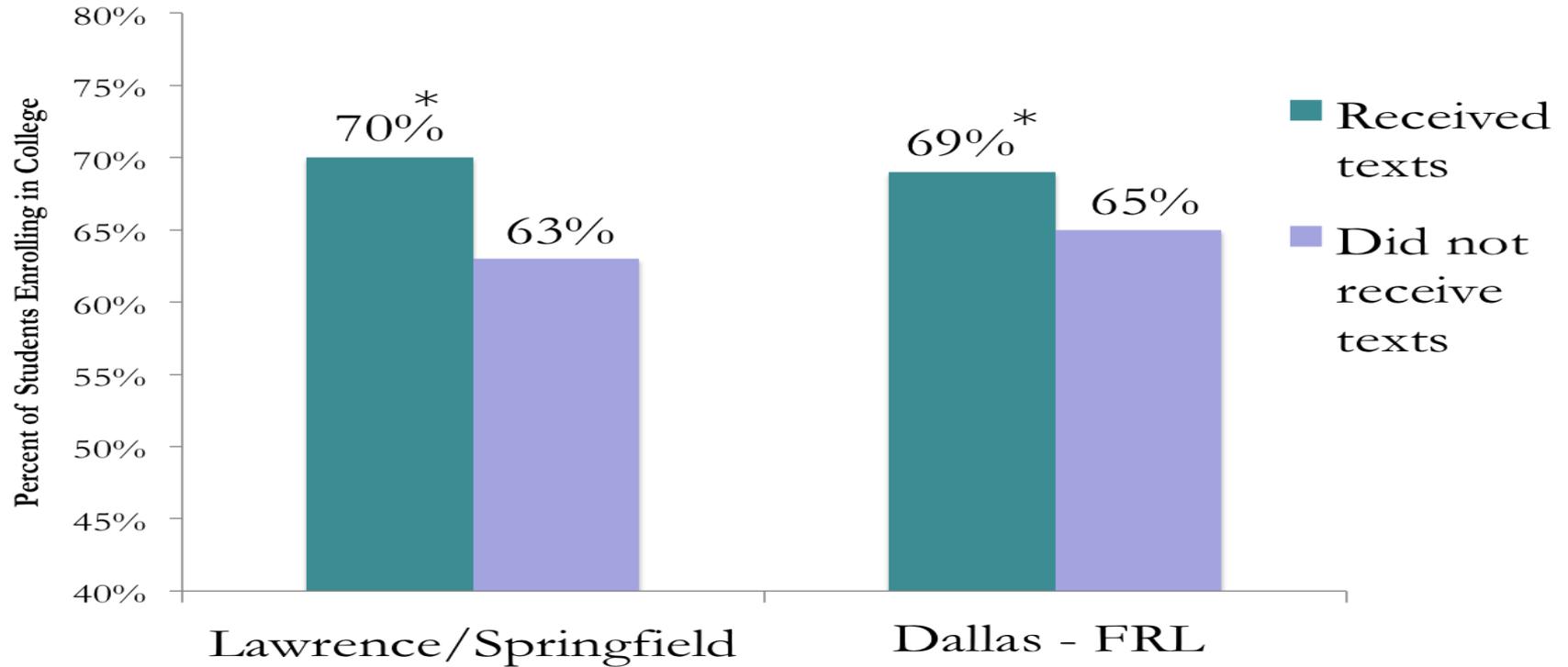


Hi Alex! have you signed up for the UM-Boston orientation? Last one is [7/15](http://1233433.org). Need to register? <http://1233433.org>. Need help? Reply to talk w/ an advisor.



Hi Alex! Need help w/ the FAFSA? Questions about your fin. aid award letter, or need more aid? Reply to meet with a DISD counselor

A few text messages can go a long way

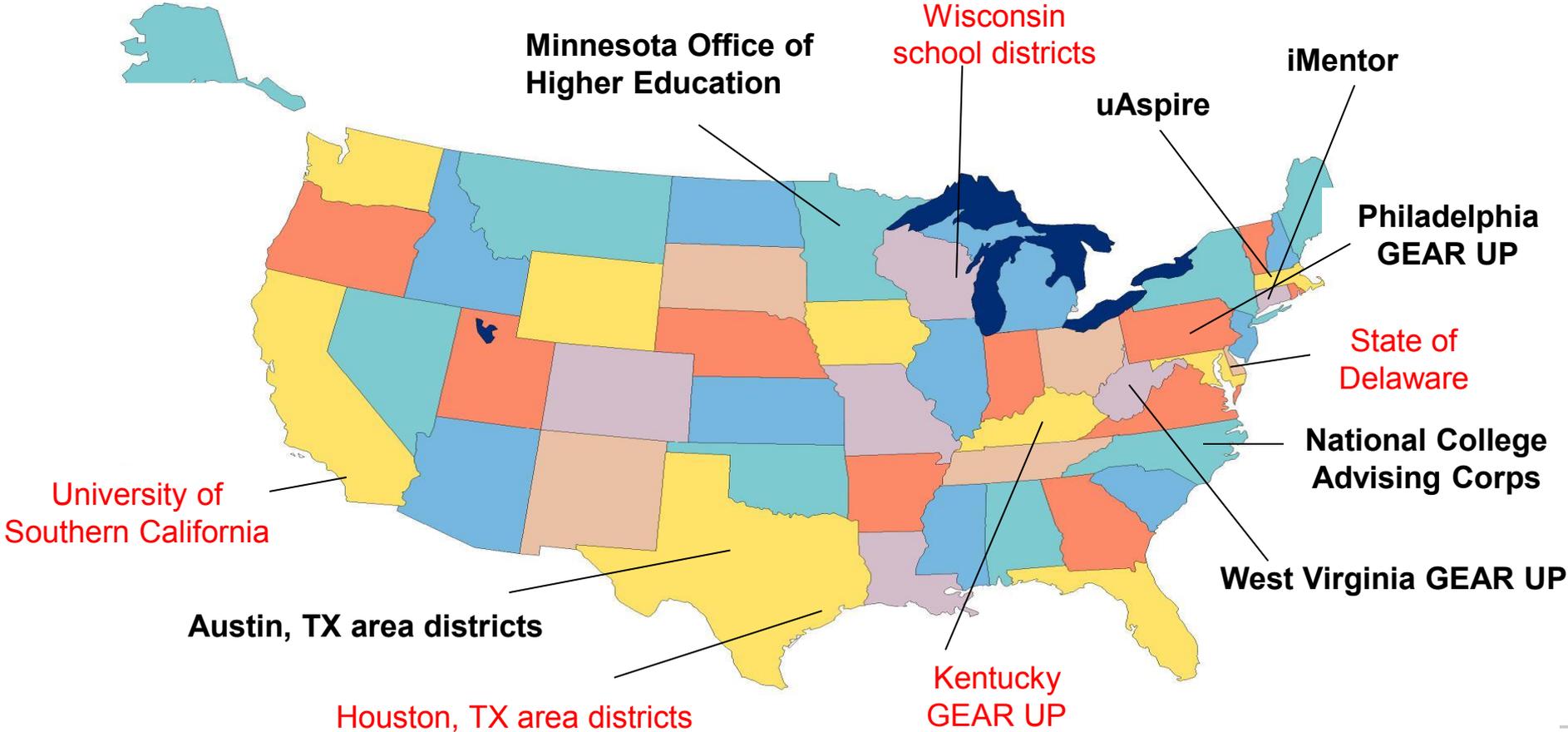


To learn more: forthcoming book *Summer Melt* (Harvard Ed Press), co-written w/ Lindsay Page

Rigorous evidence → Rapid scaling

Current adopters

Potential adopters



Data Implications

- Existing administrative data is crucial
 - Must contain outcome measures
 - Must be measured systematically
 - Must be clean & credible

To what end?

- Increase access
- Tailor learning
- Prepare digital citizens
- Create creators

the WHITE HOUSE

STUDENT FILM FESTIVAL

★★★★★



Thank You!



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