

Technology, Learning, and Performance

Dave L. Edyburn, Ph.D.
University of Wisconsin-Milwaukee

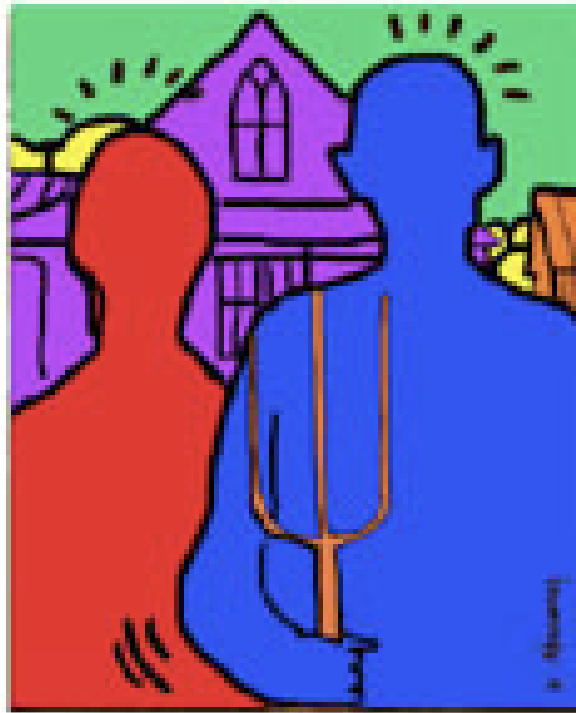
Overview

- Are existing schooling practices for all students?
- How does success and failure impact learning?
- What role should technology play to enhance the academic performance of diverse students?

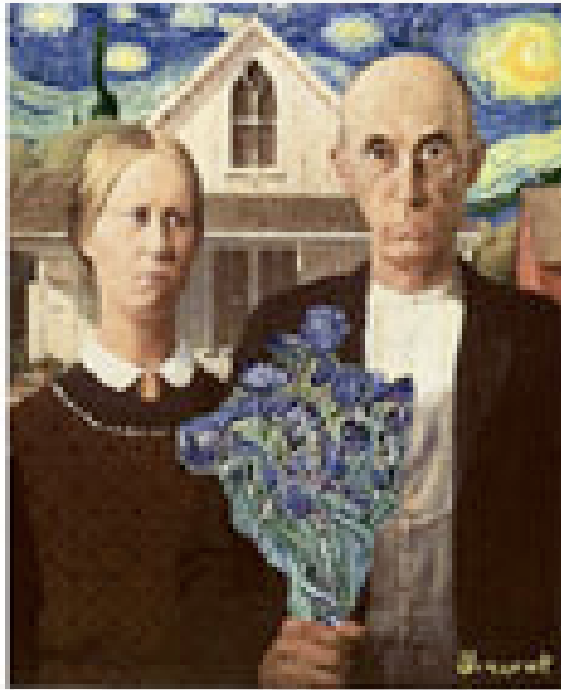
American Gothic



American Gothic



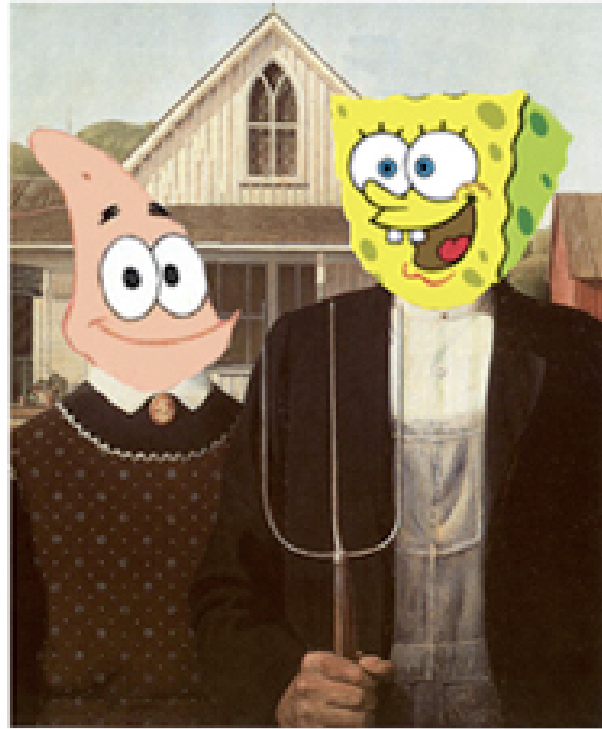
American Gothic



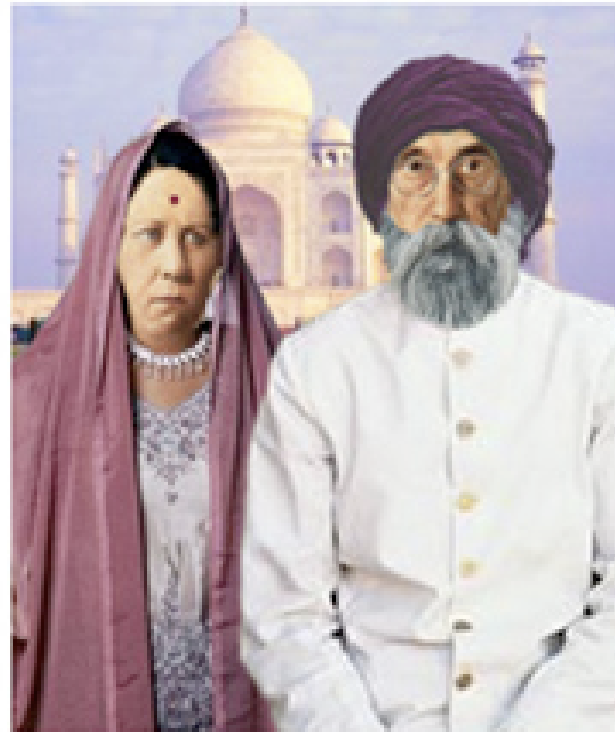
American Gothic



American Gothic



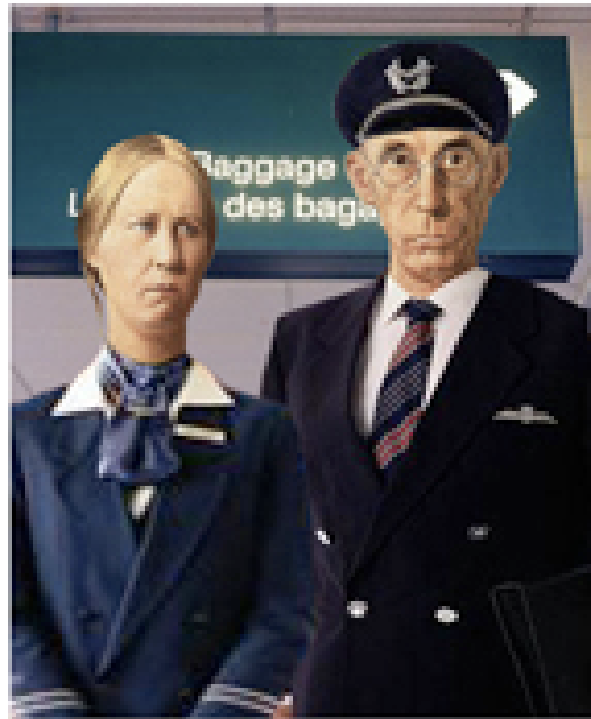
American Gothic



American Gothic



American Gothic



American Gothic



American Gothic



Technology



Technology

- Three forms of technology:
 - Assistive Technology
 - Instructional Technology
 - Universal Design for Learning

Assistive Technology

Synonyms
of any...

An AT device
is anything...

... Assistive technology device means **any**

item, piece of equipment, or product system,
whether acquired commercially off the
shelf, modified, or customized, that is used
to increase, maintain, or improve the functional
capabilities of a child with a disability.

Where does AT come
from? You can buy it,
you can buy it and
change it, or you can
make it...

The focus of
our work...

The standards of whether
anything is AT: it must help
a child stay the same
(maintain) get a little better
(improve) or get a lot better
(increase)...

If the outcome
of AT use is to
enhance func-
tional perfor-
mance then
where's the
evidence of
what children
can do as a
result of their
AT use?

Instructional Technology

- Technology that is used to enhance teaching and learning.
- Is the choice to use technology simply a teacher preference?

Universal Design for Learning

Universal Design for Learning

Universal Design for Learning

- Teaching Every Student in the Digital Age

Universal Design for Learning

- Teaching Every Student in the Digital Age
- Multiple means of representation

Universal Design for Learning

- Teaching Every Student in the Digital Age
- Multiple means of representation
- Multiple means of expression

Universal Design for Learning

- Teaching Every Student in the Digital Age
- Multiple means of representation
- Multiple means of expression
- Multiple means of engagement

AT, IT, or UDL?

AT, IT, or UDL?

- Sensor to open the door at the store

AT, IT, or UDL?

- Sensor to open the door at the store
- Ask

AT, IT, or UDL?

- Sensor to open the door at the store
- Ask
- iDictate

AT, IT, or UDL?

- Sensor to open the door at the store
- Ask
- iDictate
- Web Math

Technology Provides Options

Technology Provides Options

- Options for balancing my checkbook

Technology Provides Options

- Options for balancing my checkbook
 - Mental math

Technology Provides Options

- Options for balancing my checkbook
 - Mental math
 - Calculator

Technology Provides Options

- Options for balancing my checkbook
 - Mental math
 - Calculator
 - Have someone else do it

Technology Provides Options

- Options for balancing my checkbook
 - Mental math
 - Calculator
 - Have someone else do it
 - Online banking

Learning

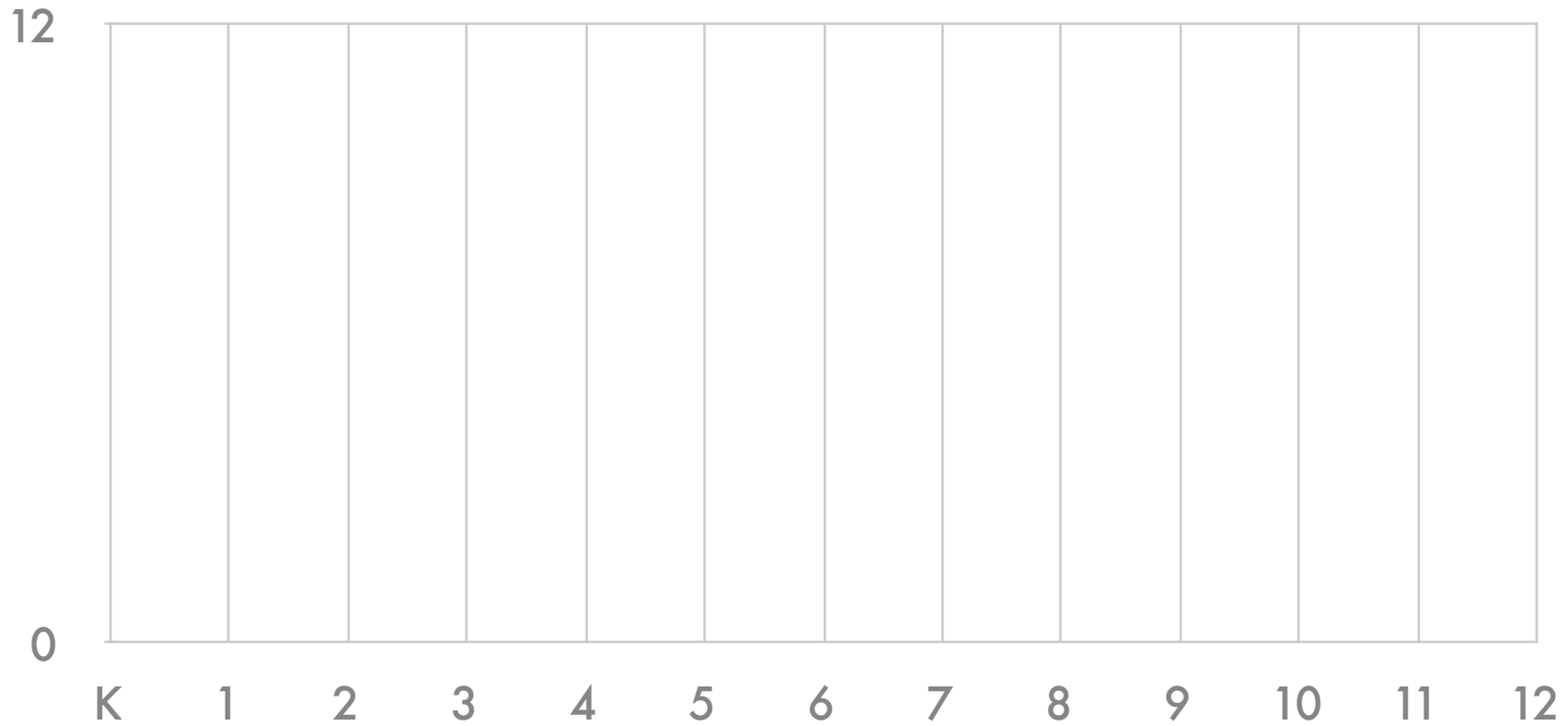


The Achievement Gap

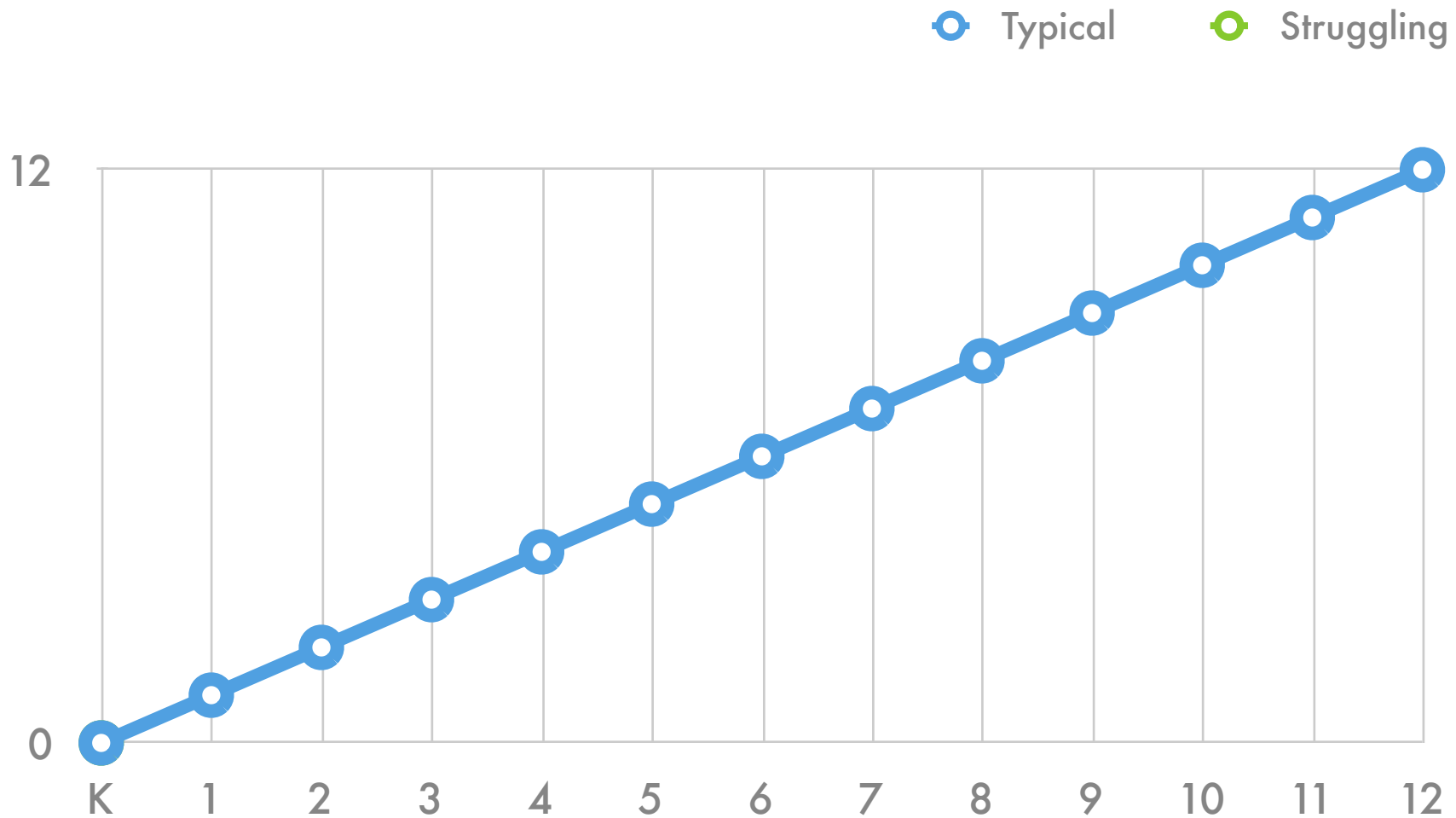
- Research documents an outcome of schooling over the past 60 years: chronic under-achievement

Achievement Gap

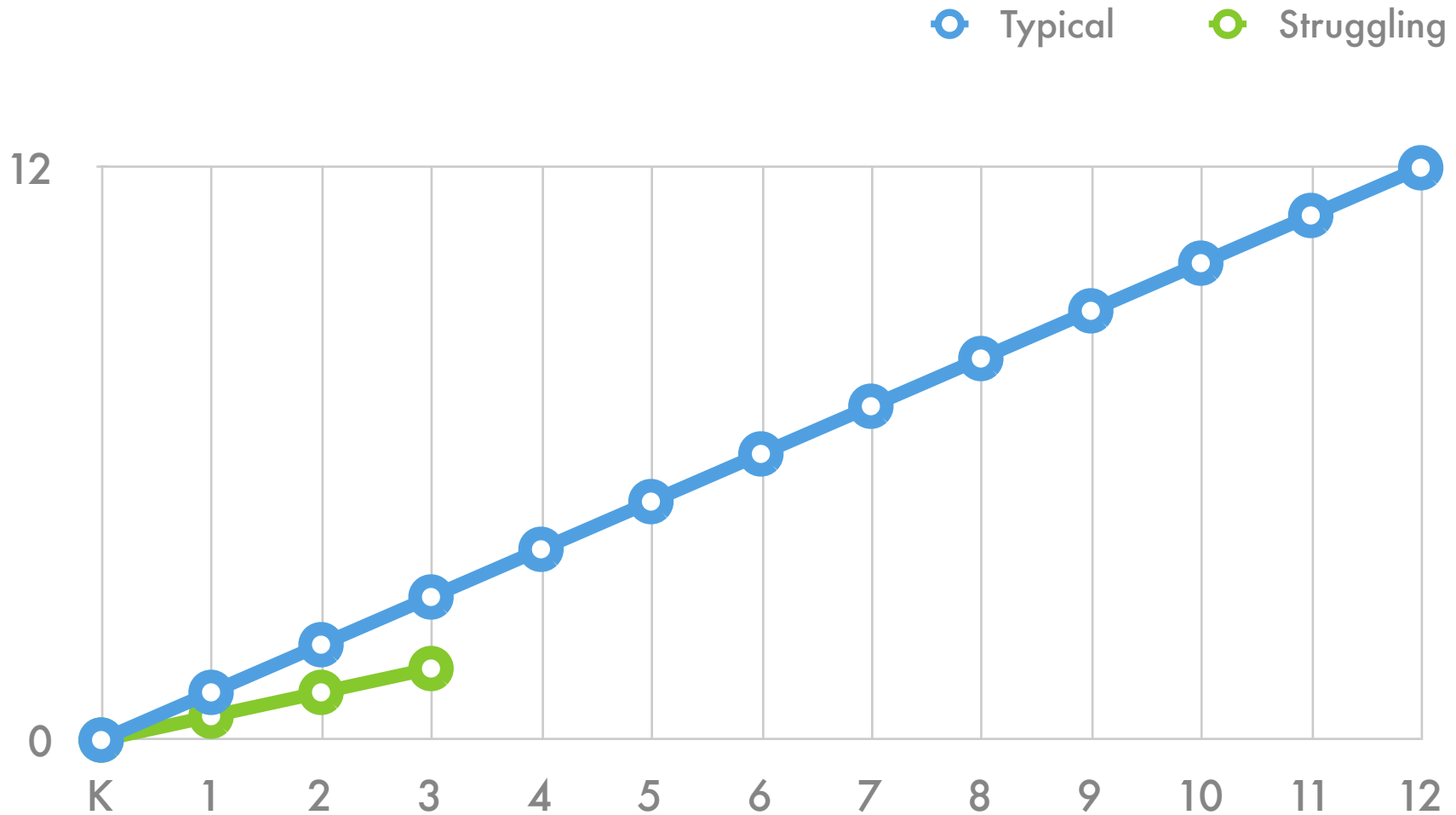
Typical Struggling



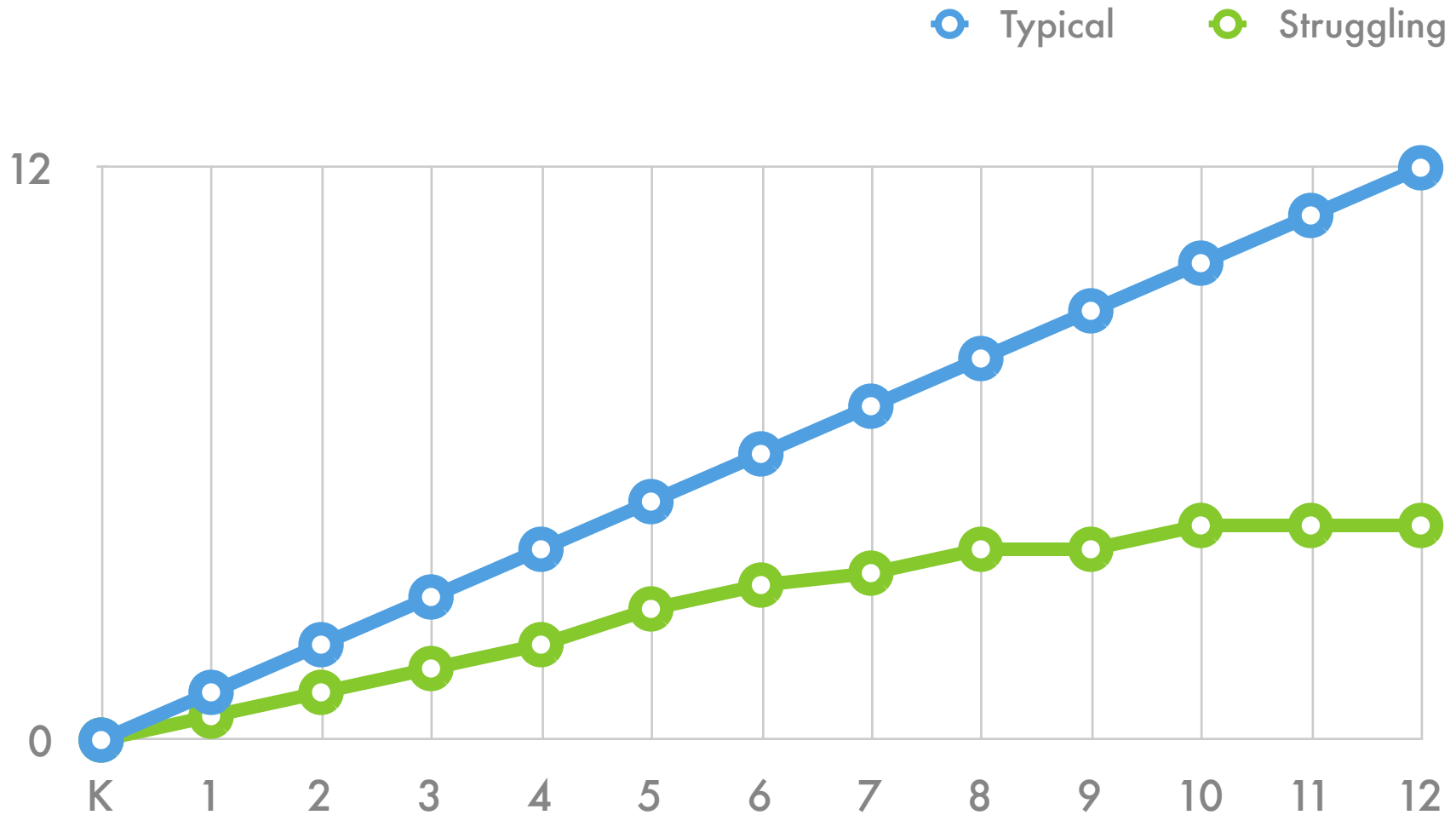
Achievement Gap



Achievement Gap



Achievement Gap



Lessons Learned?

Lessons Learned?

- T/F Existing schooling practices are effective for all students.

Lessons Learned?

- T/F Existing schooling practices are effective for all students.
- T/F Continuing to do what we have always done will produce different results.

Lessons Learned?

Lessons Learned?

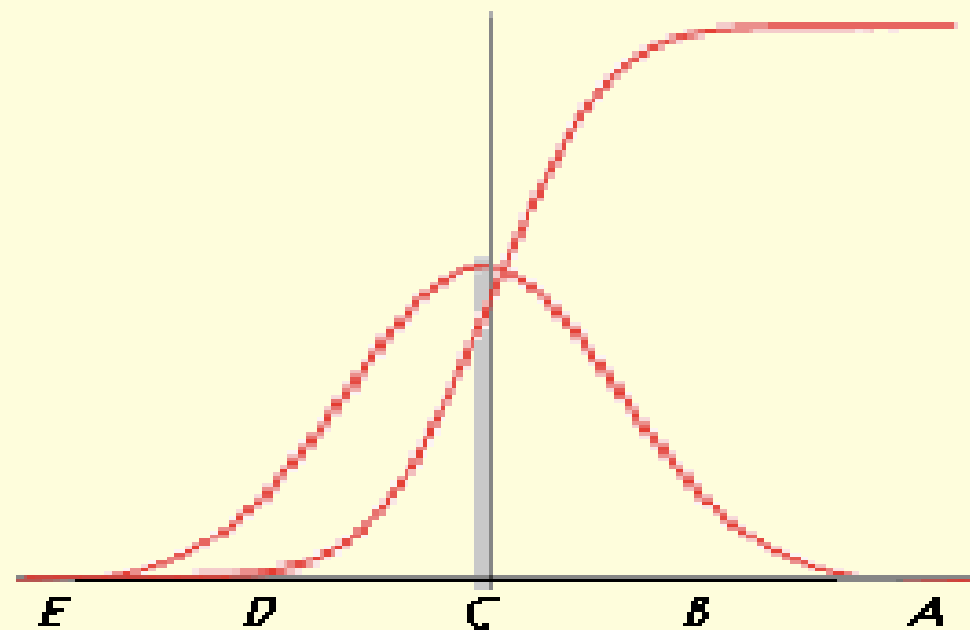
- T/F Testing students more frequently will close the achievement gap.

Lessons Learned?

- T/F Testing students more frequently will close the achievement gap.
- T/F The achievement gap has economic, social, and psychological costs to those that experience chronic academic failure.

Growth

Improving a Classroom Learning System



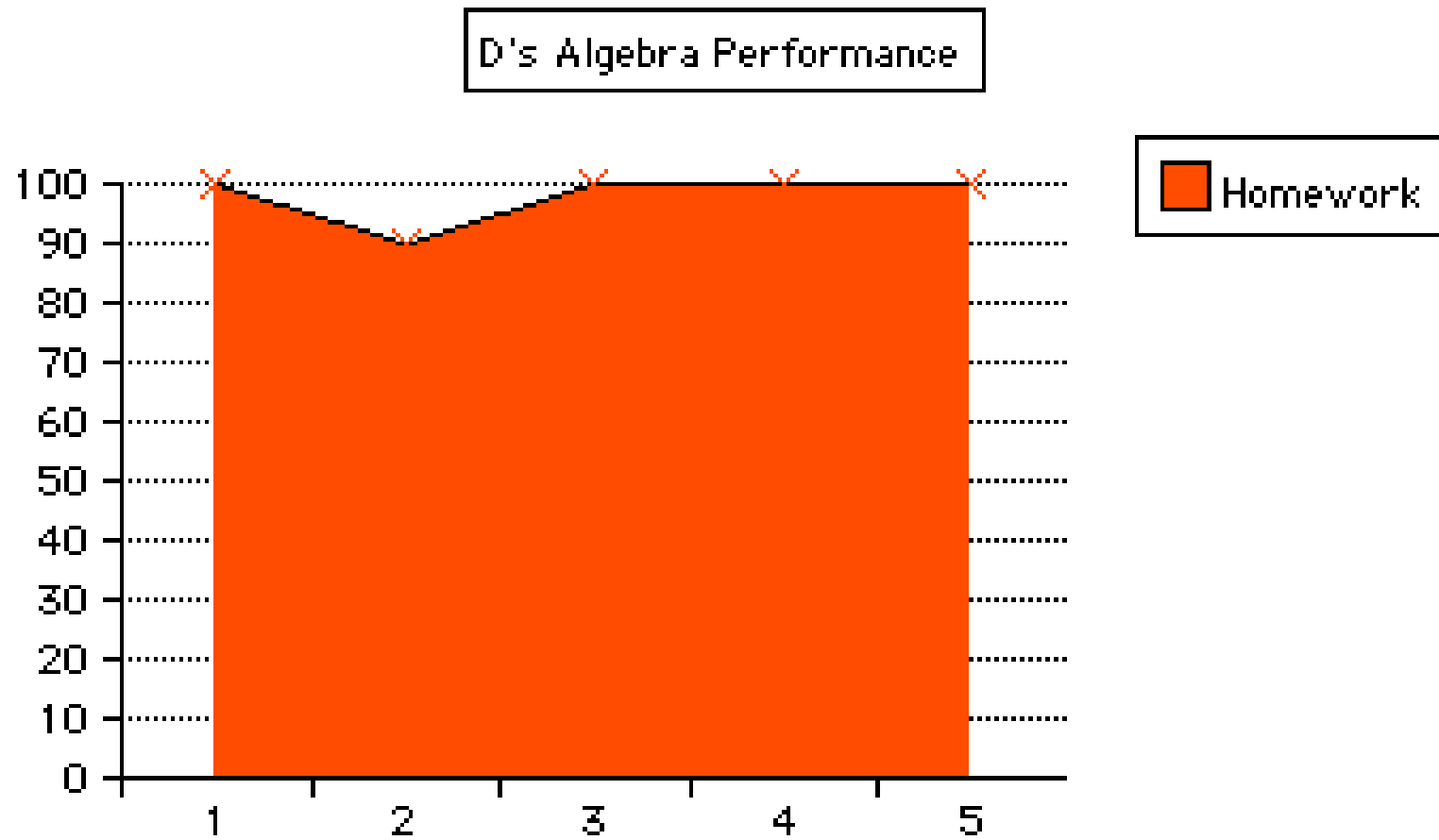
Performance



How Much Failure Data?

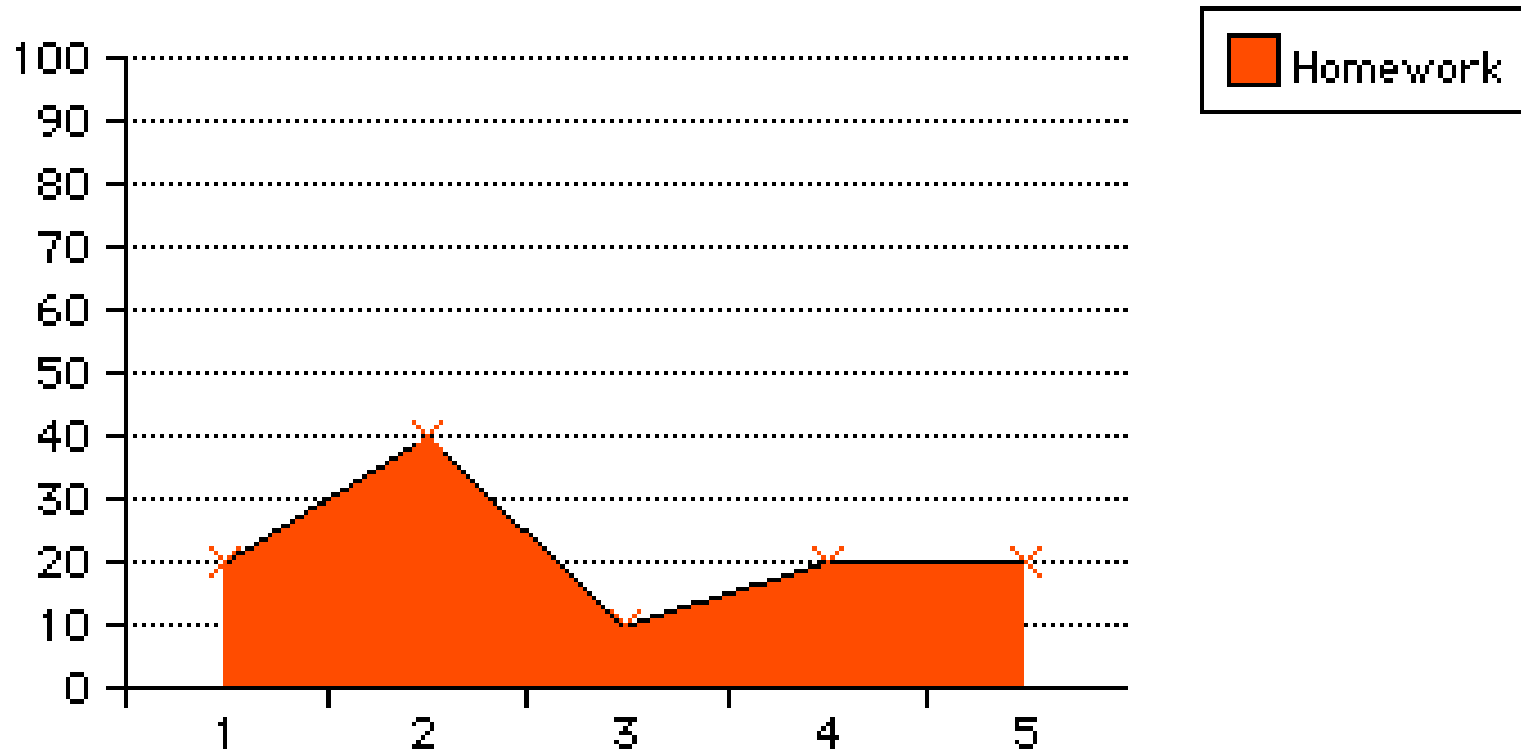
- How much failure data do you need before you know I can't do a task?

You Be the Judge...



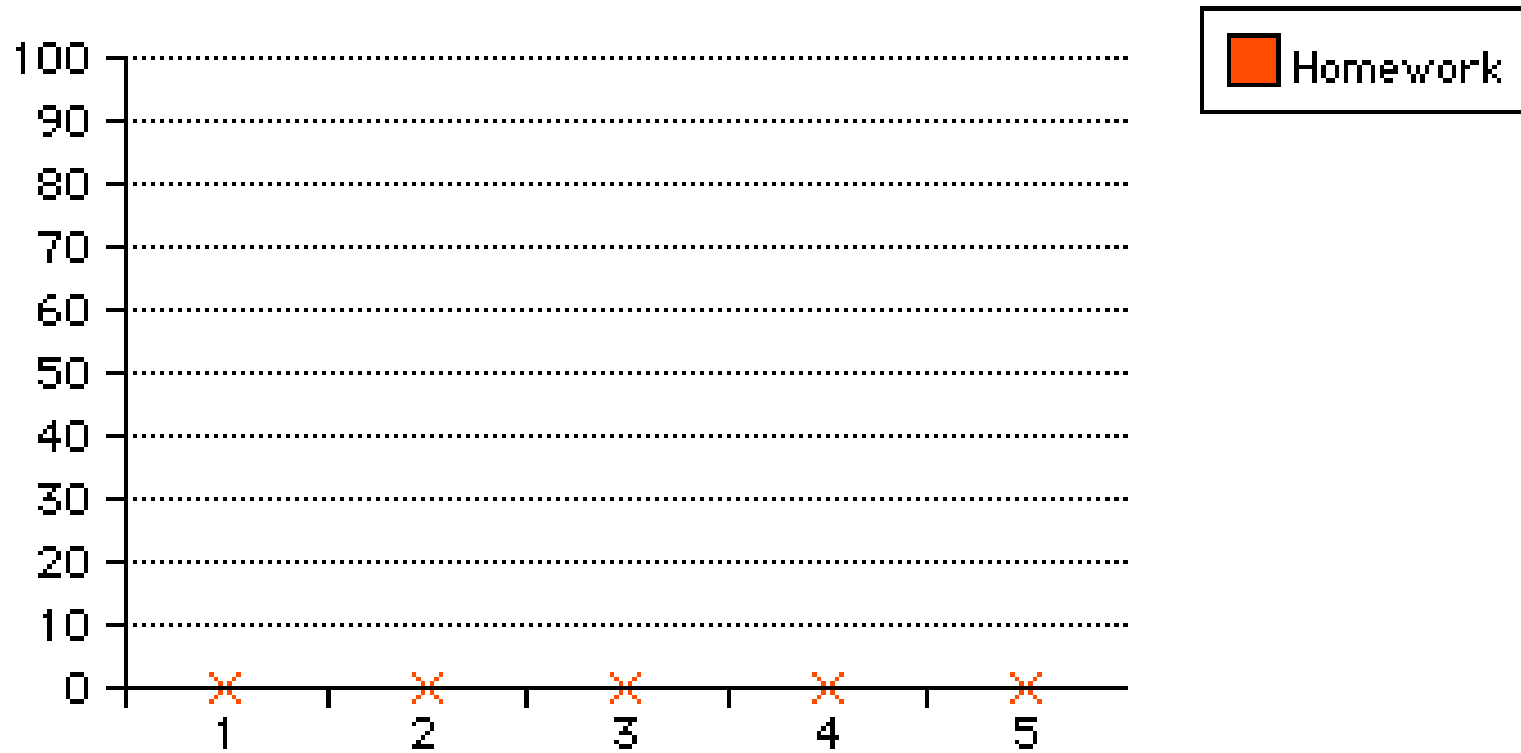
You Be the Judge...

L's Algebra Performance

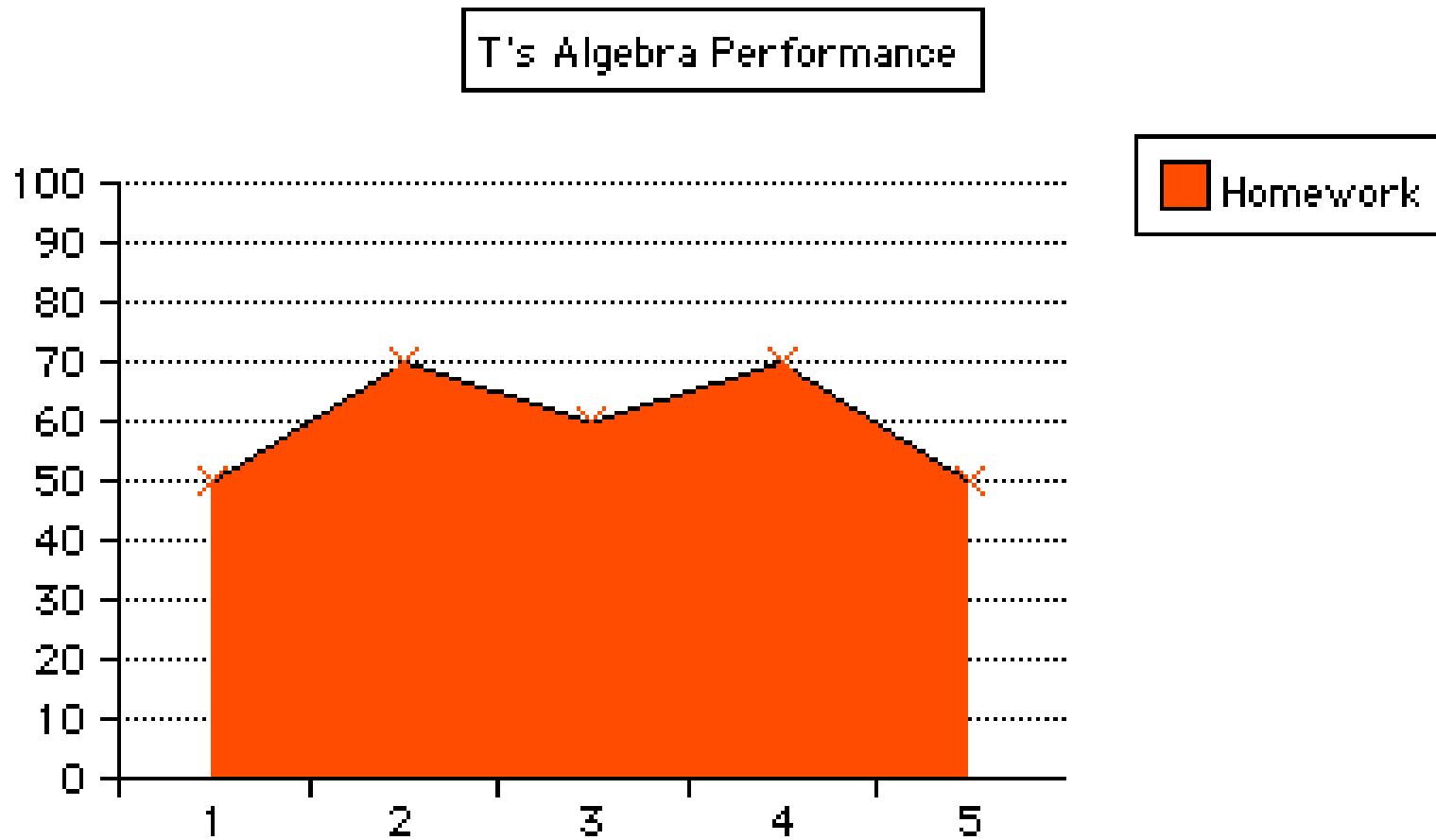


You Be the Judge...

K's Algebra Performance



You Be the Judge...

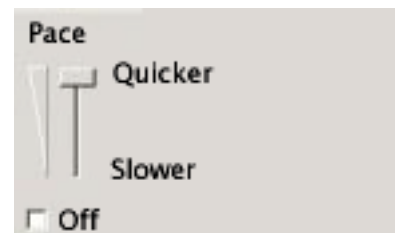
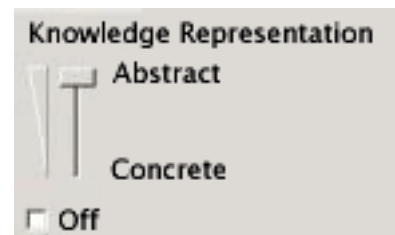


When to Intervene?

- Scenario 1
- Scenario 2
- What's the trigger to intervene?

What Do We Do?

- Optimal Challenge
- Sliders
 - Example



What Do We Do?

- Optimal Challenge
- Windows to the Universe

What Do We Do?

- Optimal Challenge
- Cognitive Rescaling

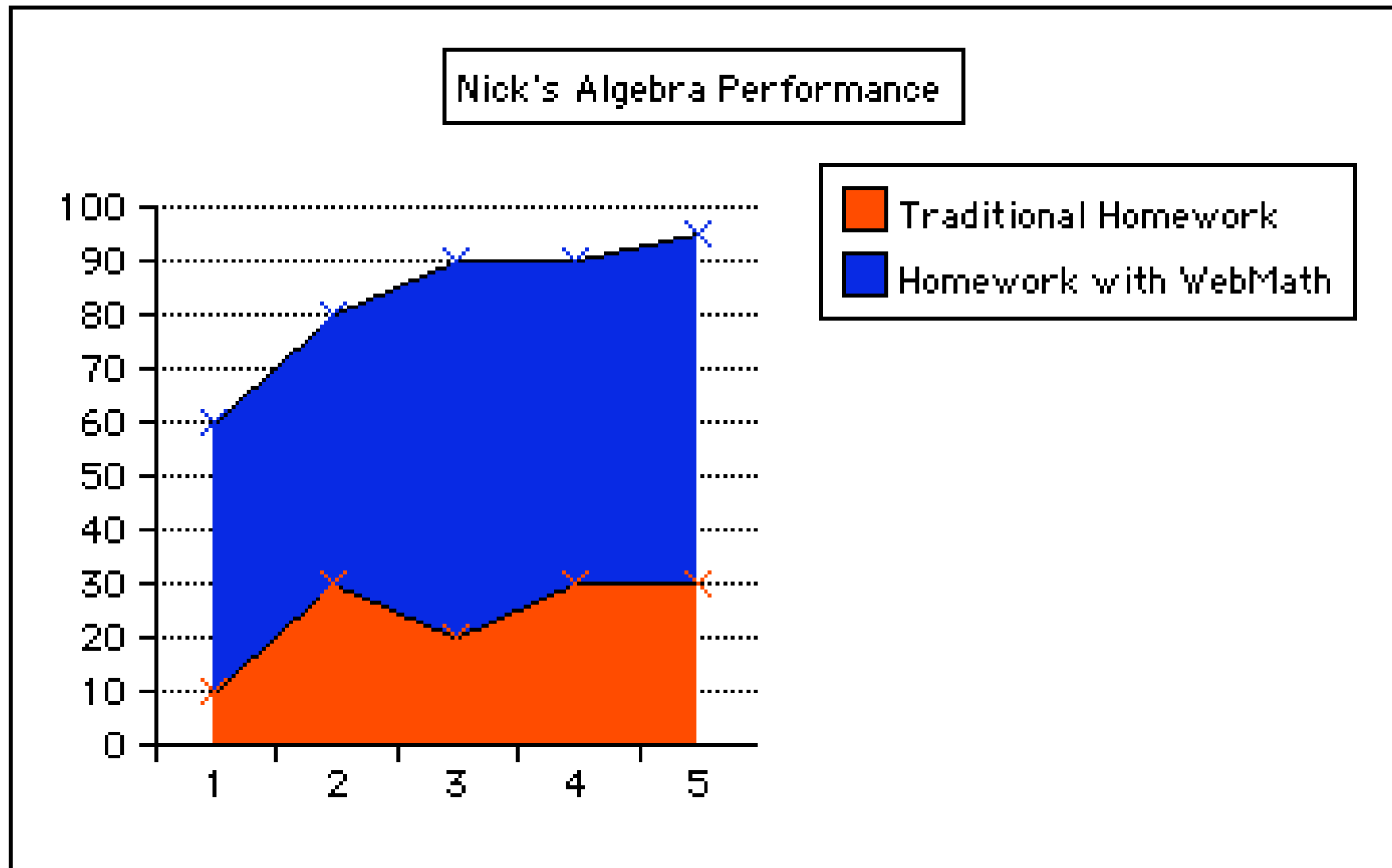
What Do We Do?

- Performance Support
 - Starchild

What Do We Do?

- Success: Technology-Enhanced Performance
 - WebMath

You Be the Judge...



What Do We Do?

- What happens when I can't read at grade level?
- ReadPlease
- Edyburn, D.L. (2007). Technology enhanced reading performance: Defining a research agenda. *Reading Research Quarterly*, 42(1), 146-152.

Issues

Issues

- Naked Independence

Issues

- Naked Independence
- Grading

Issues

- Naked Independence
- Grading
- Cheating

Issues

- Naked Independence
- Grading
- Cheating
- Fairness

Issues

- Naked Independence
- Grading
- Cheating
- Fairness
- Confusion (scaffold vs. augment)

What Do We Do?

- Failure
 - Failure lasts a lifetime

Concluding Comments

- The diversity of contemporary classrooms requires that we break out of the one-size-fits-all mentality of curriculum, instruction, and assessment.
- How can flexible digital technologies engage students in ways that result in higher levels of academic achievement?

For more information:

Dave Edyburn

email: edyburn@uwm.edu

web page: www.uwm.edu/~edyburn/