

Improving Practice: The Hope of Theory and Research

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Why are we here?

Adult Skills in America: A Story of Two Nations



Many people think they know who needs adult education services.

Most of them don't know who actually needs assistance.

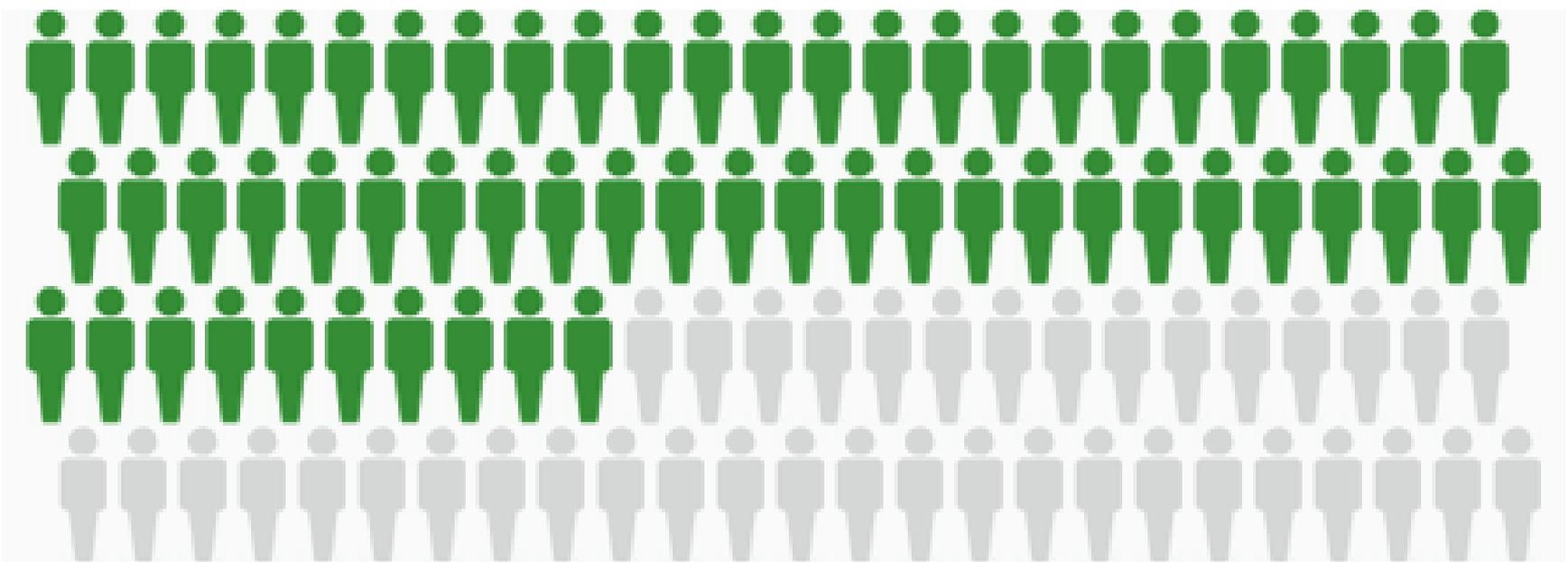


Results from the PIAAC

(OECD assessment of adult skills)

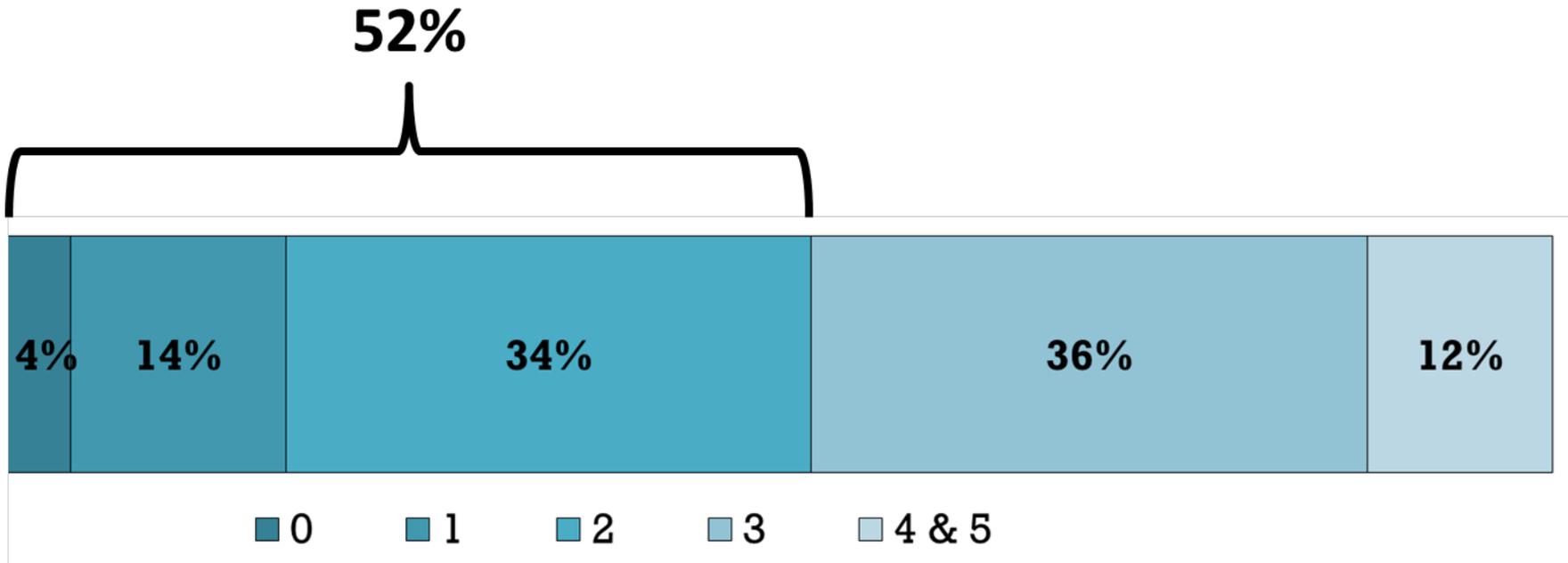
- Literacy
- Numeracy
- Problem-solving in
Technology-Rich
Environments

Survey says...

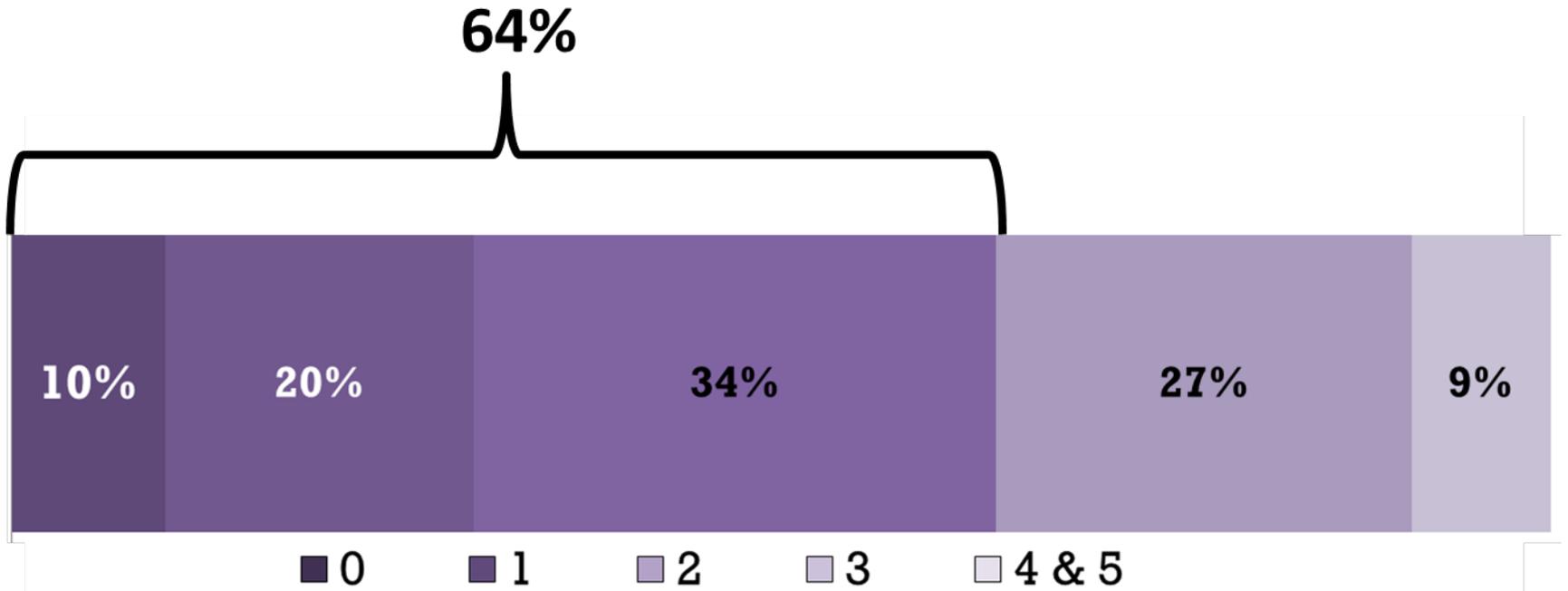


Approximately 60% are below average.

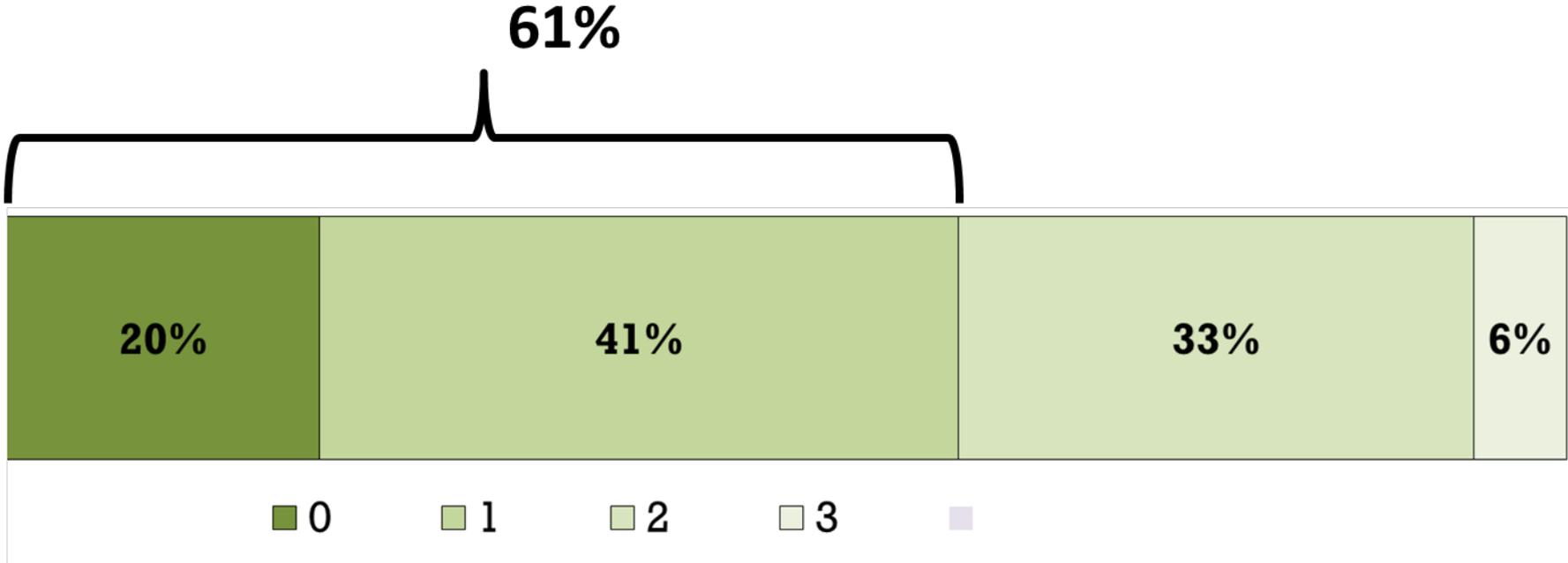
Literacy



Numeracy



Problem-solving in Technology-Rich Environments



LITERACY



MATH SKILLS



35 million
adults have low literacy

{ 18 percent of the
adult population }



58 million
adults have low math skills

{ 30 percent of the
adult population }

LITERACY



MATH SKILLS



35 million
adults have low literacy

{ 18 percent of the
adult population }

CAN:
read brief paragraphs
about the results of an
election and determine
the name of the winning
candidate.

LITERACY



MATH SKILLS



35 million
adults have low literacy

{ 18 percent of the
adult population }

CAN'T:

go to a website about a fundraising event and find the sponsor's phone number.

LITERACY



MATH SKILLS

CAN:

look at a photo of 35 candles
in a box and say how many
boxes would be needed to
hold 105 candles.



58 million
adults have low math skills

{ **30 percent** of the
adult population }

LITERACY



MATH SKILLS

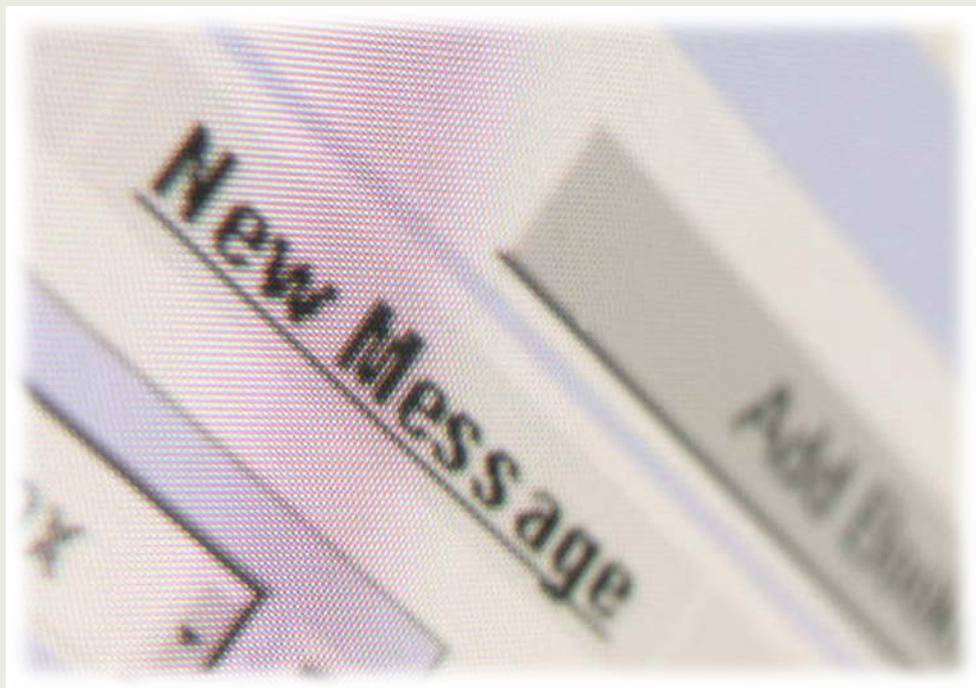
CAN'T:

figure out how much a
salesman should be paid for
mileage (miles x per mile rate)
plus expenses.



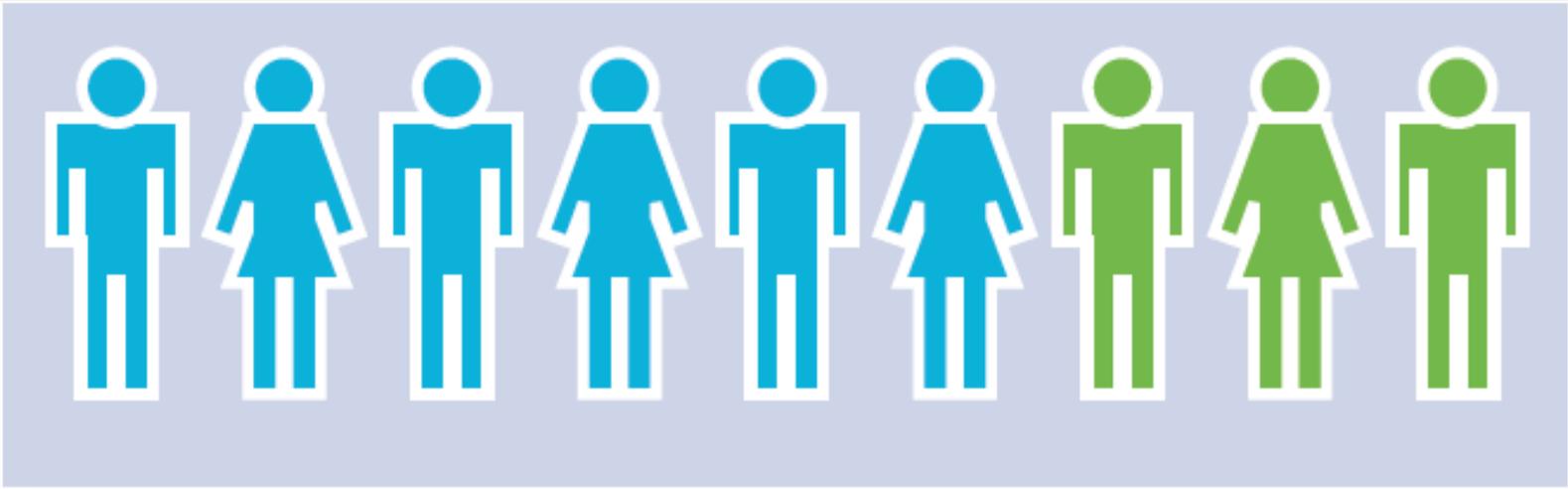
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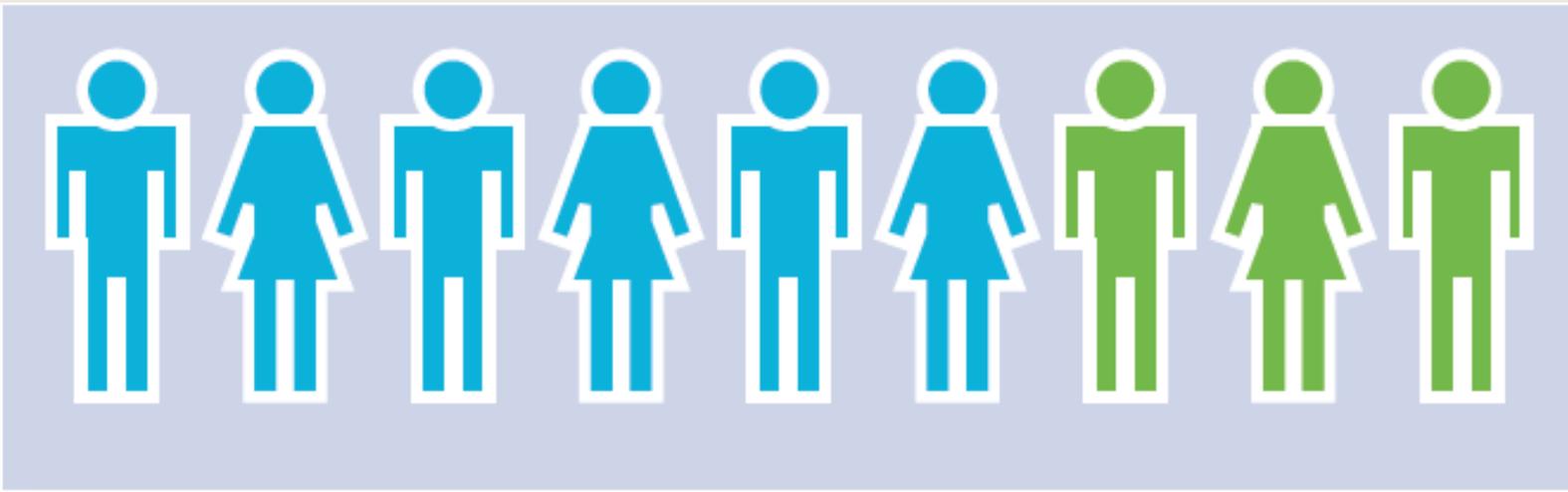


Problem-solving in Technology Rich Environments

**3 out of 10 adults have
difficulty sorting e-mails
into folders**



Nearly two-thirds are employed.



About two-thirds have at least a high school education and most are American-born.



Each age group performed similarly (i.e., the young were just as weak as the old).



So basically, the difficulty your students face is a difficulty many American adults face.

The difference is that most of them don't have someone like you.

How should you serve?

Teaching Adults: Theory and Research

[How] Is learning different for adults?



Andragogy: Teaching Adults

Malcolm Knowles



Malcolm Knowles's Theory of Andragogy

More independent
and self-directed
learners



Malcolm Knowles's Theory of Andragogy

Have a rich set of life
experiences to draw
upon



Malcolm Knowles's Theory of Andragogy

Want to learn about
things that are
immediately relevant
to their social roles
and personal lives



Malcolm Knowles's Theory of Andragogy

Want to learn in
order to solve
problems – must be
applicable
knowledge



Malcolm Knowles's Theory of Andragogy

Need to know why
they need to know
(relevance needs to
be apparent)



Malcolm Knowles's Theory of Andragogy

Have a wide array of
“internal incentives”
for learning (e.g.,
self-esteem)



Why Adults Learn (Lieb, 1991)

Social relationships (to make friends)

External expectations (to comply)

Social welfare (to improve the community)

Personal advancement (to improve status)

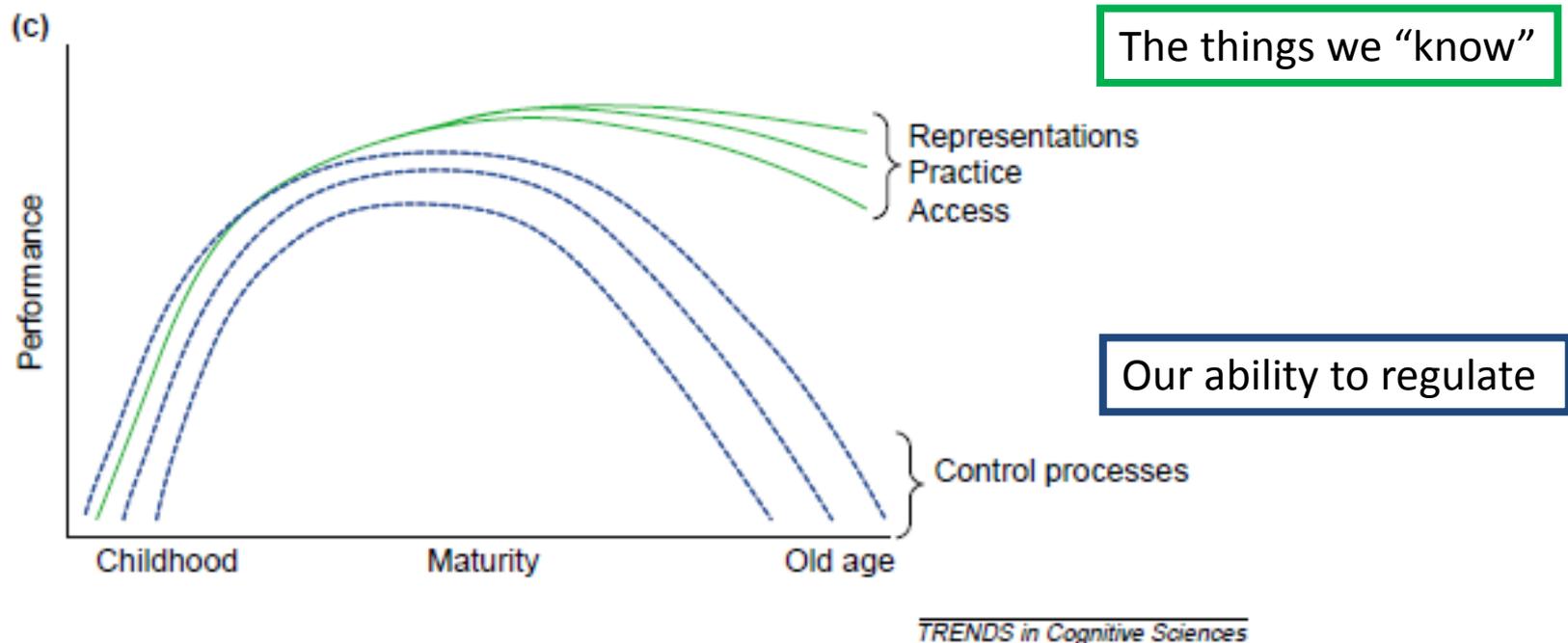
Escape/Stimulation (to avoid boredom)

Cognitive interest (to satisfy curiosity)



Research in Cognitive Science

Different cognitive abilities have different trajectories.



(Crain & Bialystok, 2006.)

Brod, G., Werkle-Bergner, M., & Shing, Y. L. (2013). The Influence of Prior Knowledge on Memory: A Developmental Cognitive Neuroscience Perspective. *Frontiers in Behavioral Neuroscience*, 7, 139.

doi:10.3389/fnbeh.2013.00139

Craik, F. I., & Bialystok, E. (2006). Cognition through the lifespan: mechanisms of change. *Trends in cognitive sciences*, 10(3), 131-138.

Prior knowledge and life experience affect current learning.

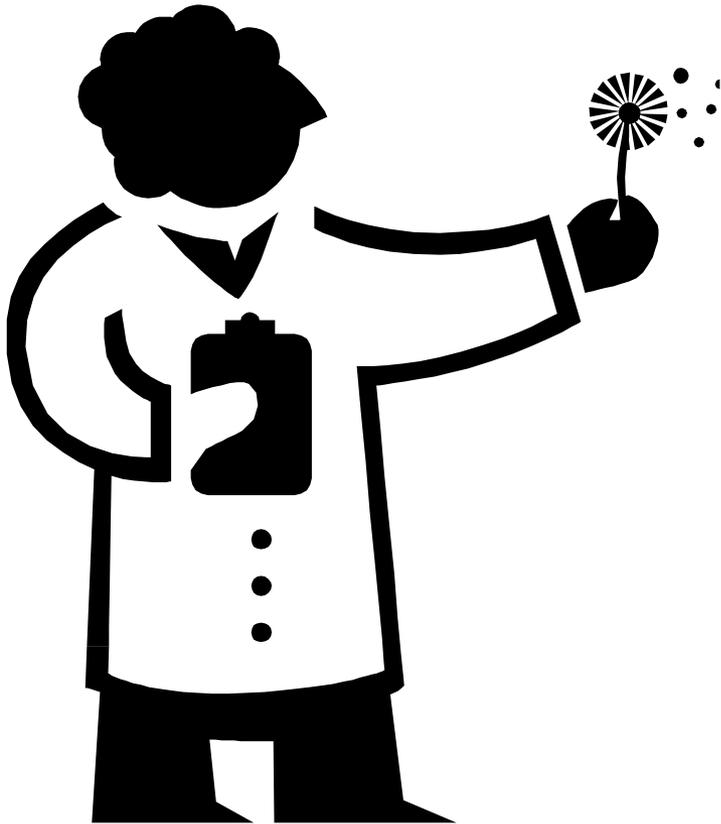


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Research in Adult Education



- Literacy & reading
- Motivation & persistence
- Alternative/blended program structures and models

Does education research have anything specific to offer?

Trends in Cognitive Research



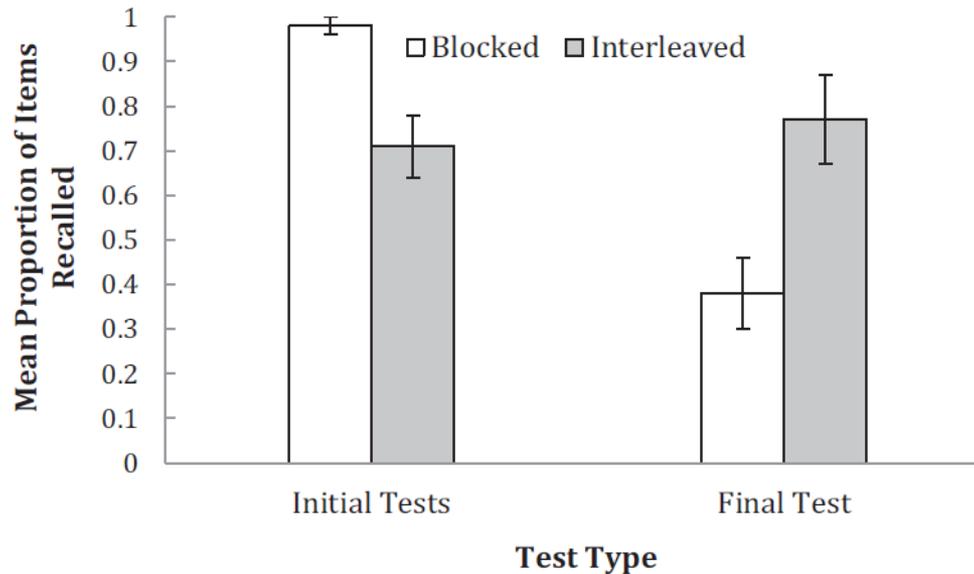
The following practices have received a lot of attention and are still being evaluated.

These have not been tested with our target population, so we cannot ensure that they “work” for adults with low literacy.

1. Distribution: Spacing and Interleaving

- Do not encourage cramming.
- Encourage students to pause, return, try to remember on their own, and then check.
- Mix examples and question types (e.g., have multiplication, addition, and fractions together).

1. Distribution: Spacing and Interleaving



Students learn better when there is a variety and when there's a delay.

2. Explanatory Questioning



Elaborative interrogation: students ask themselves questions and provide answers

Self-explanation: students explain to themselves why certain points are true

2. Explanatory Questioning

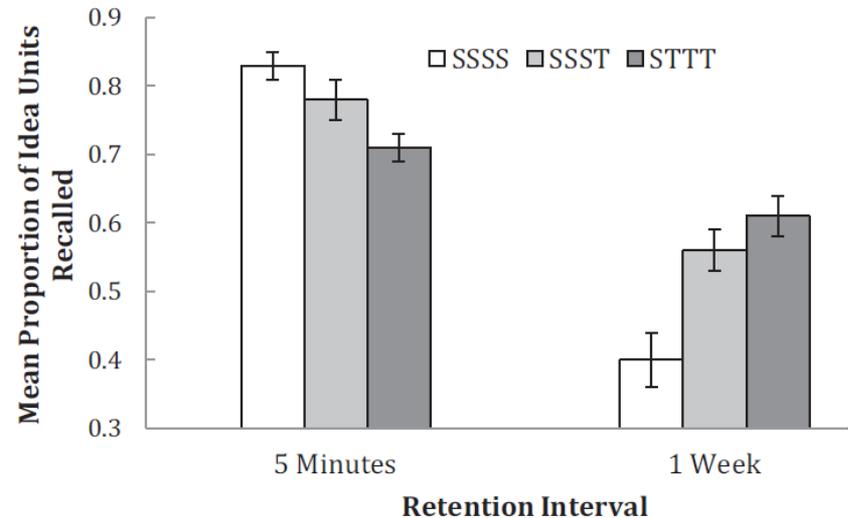
- This may require some initial modeling and encouragement.
- You may want to explain to your students why you're doing this.
- (Remember that all skilled readers do these sorts of things implicitly.)



This helps to encourage deeper processing and personal engagement.

3. Frequent quizzing

Common “study” approaches (e.g., highlighting and re-reading) are not as beneficial as low-stakes quizzes.



- SSSS: pure studying
- SSST: one test
- STTT: study once, test three times

3. Frequent quizzing

Benefits of frequent quizzing:

- retrieving information makes that same information more retrievable in the future
- Students learn what they know and what they do not know and can adjust accordingly
- Teachers learn what students know and what is still problematic (formative assessment)

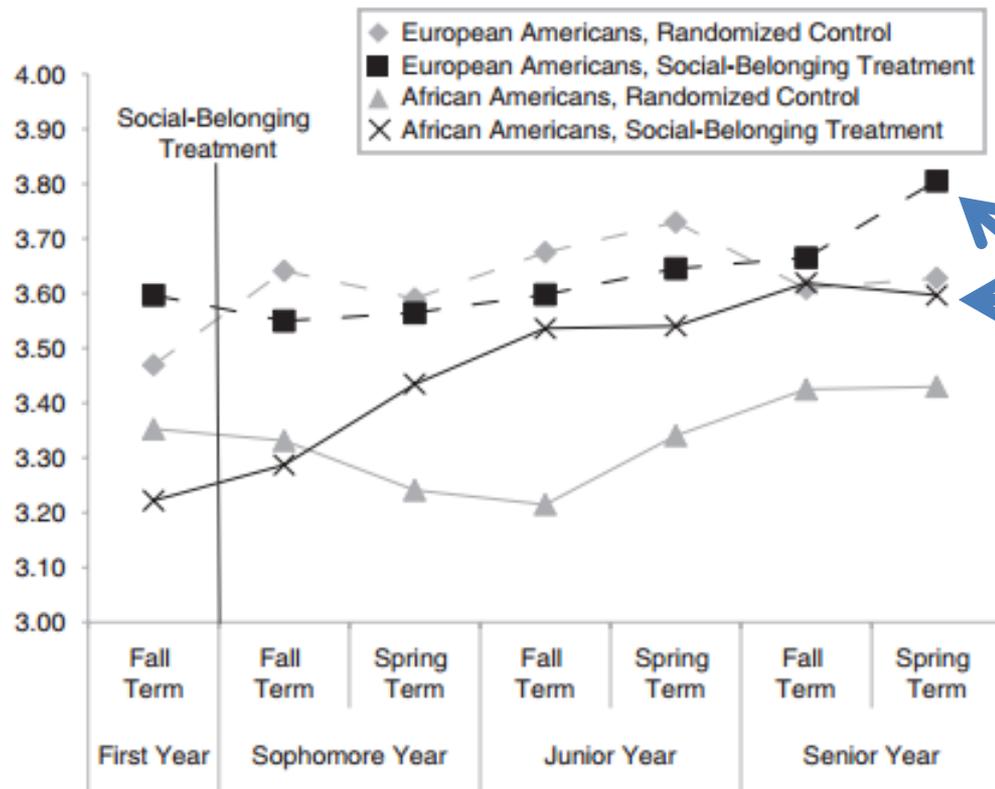
Assessing learning (low-stakes testing) helps both the student and the teacher improve.

4. Addressing beliefs, attributions, and mindsets

- Many students may have negative experiences or heightened anxiety around school.
- Cultural stereotypes and biases affect students' perceptions of their abilities.
- Some people believe intellect and academic skills are fixed (i.e., you're smart or your not).

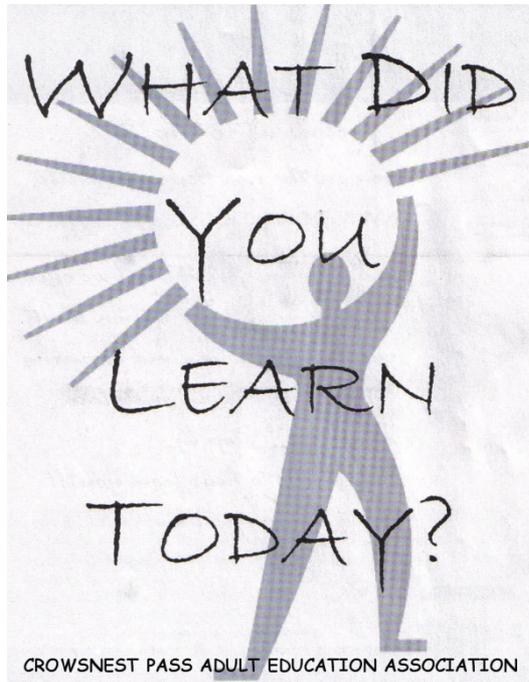
Changing people's perceptions
can help set them on a positive,
recursive path.

4. Addressing beliefs, attributions, and mindsets



A “belonging” intervention with incoming freshmen showed a 3-year gain GPA and self-reported happiness and well-being, especially strong for African-American students.

FIGURE 3. Mean academic performance as a function of semester, student race, and experimental condition (raw means) in Walton and Cohen (2011). Reprinted by permission from the American Association for the Advancement of Science.



In conclusion...

**What Might This Mean for You
(and Your Students)?**

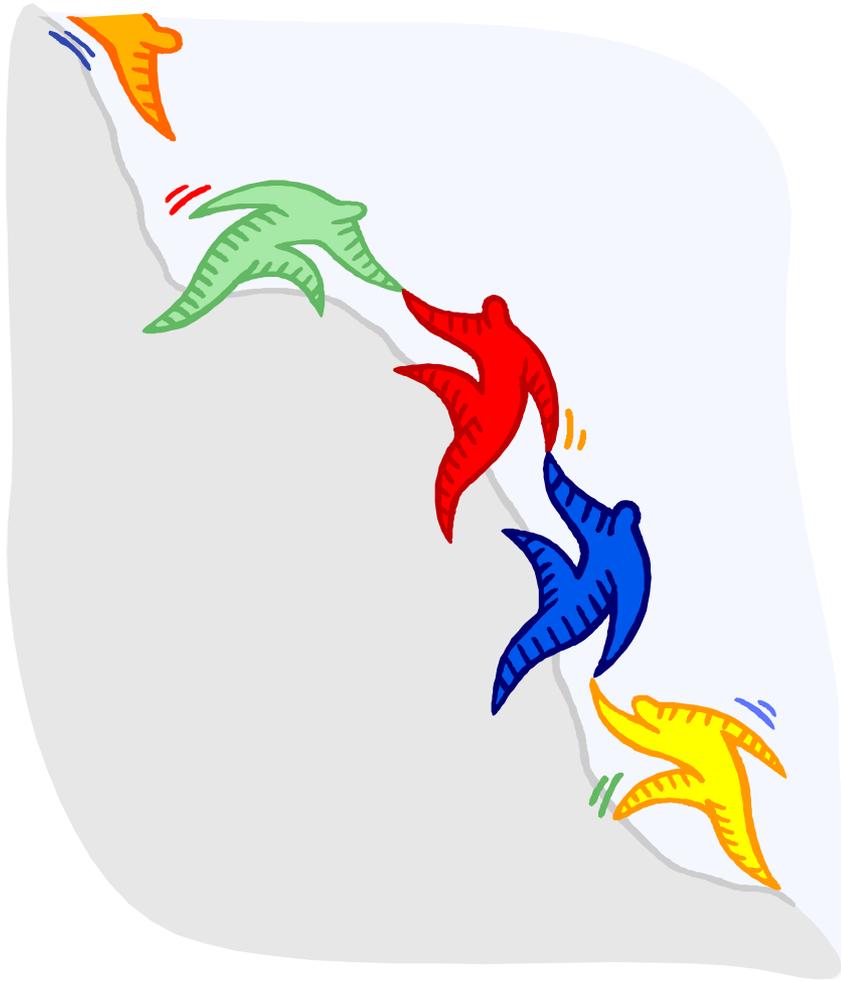
Reality

You and your students have a difficult task.



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MANY COURSES + MANY PLACES + INFORMAL TEACHING
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**Track progress not
just achievement.**

**Changes in
behavior and beliefs
are essential and
count!**

Principles to Take with You

Adult Learning Theory:

1. Adults need to be involved in the planning and evaluation
2. Keep instruction “problem-centered” instead of “content-centered”
3. Adult learners’ experiences should inform the basis of learning activities
4. Activities should be immediately relevant to and useful for adults’ lives

(Knowles, 1984)

Cognitive Science Research:

1. Spacing/Interleaving
2. Explanatory questioning
3. Frequent quizzing
4. Address beliefs, attributions, and mindsets

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