Putting American Schools Back to Work:
The Michigan Model Scales Up

Presentation to the Wolverine Caucus • Lansing, MI

Wednesday, June 12, 2013

BY-NC-ND
This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Kristof, NYT, September 13, 2012

http://www.nytimes.com/2012/09/13/opinion/kristof-students-over-unions.html?ref=opinion

"The most important civil rights battleground today is education, and, likewise, the most crucial struggle against poverty is the one fought in schools."

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

We have a big problem.

rank

11^{th}

reading

rank

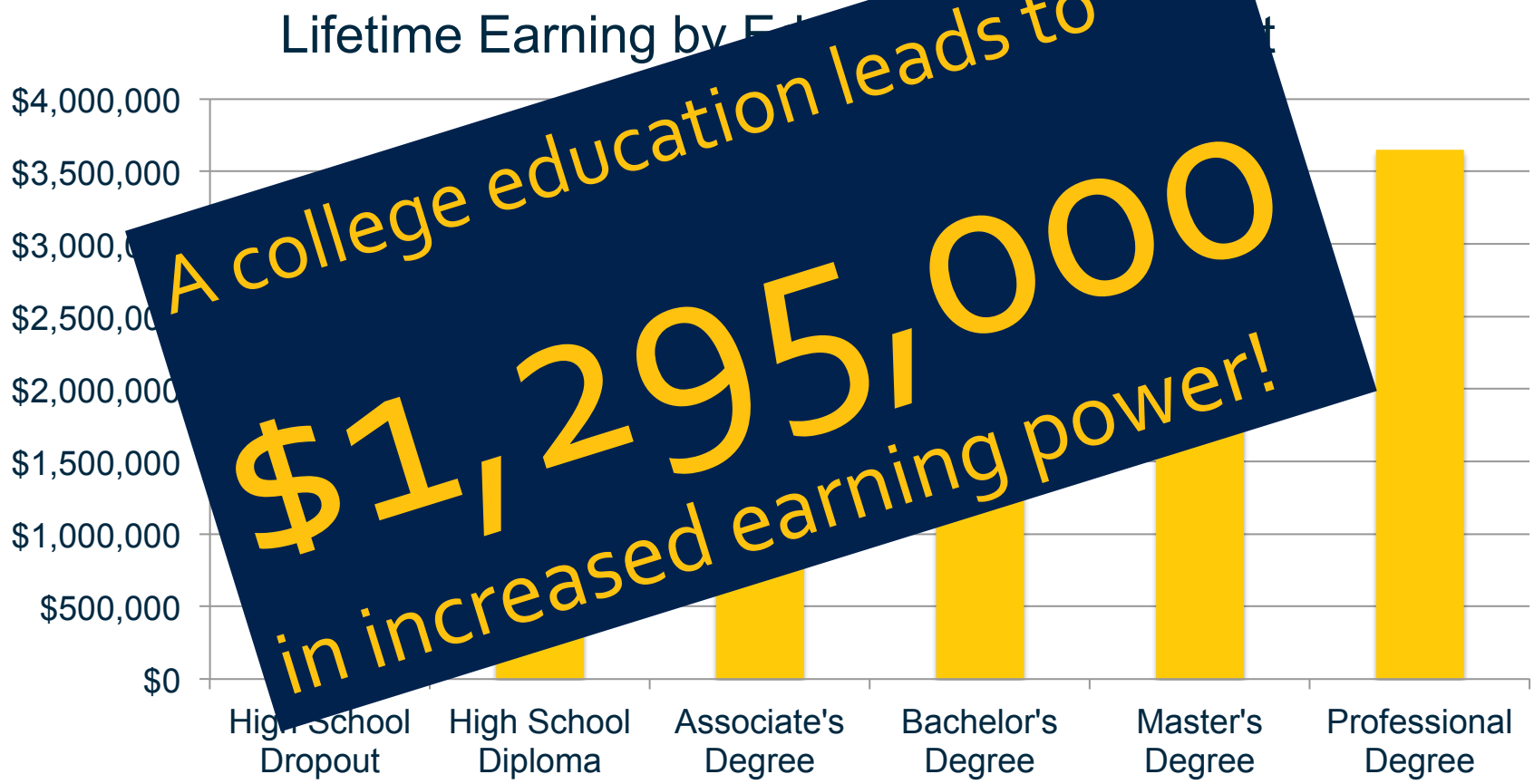
24^{th}

math

The United States is falling behind.

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

The stakes are high



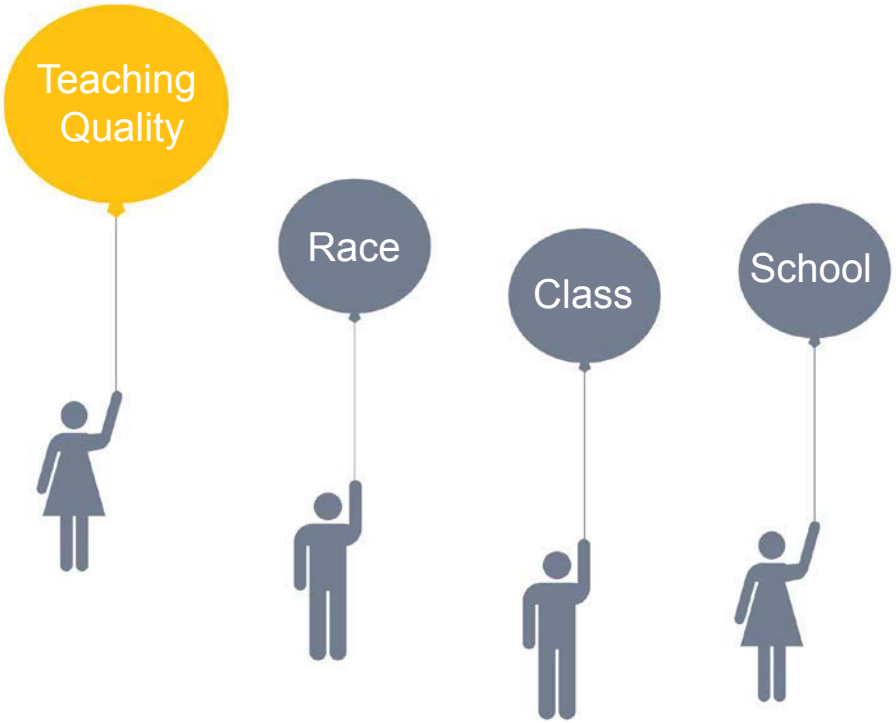
A college education leads to

$1,295,000

in increased earning power!

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Good teaching is powerful



Teaching quality dramatically influences differences in student performance, over race, class, or school context.

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Effective vs. ineffective teachers

83rd PERCENTILE

29th PERCENTILE

At the end of 5th grade, children assigned to three effective teachers in a row score at the 83rd percentile in math. Children assigned to three ineffective teachers in a row score at the 29th percentile.

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

A major threat to America's future

- 50,000,000 young people in schools, receiving very uneven teaching →
  - Underprepared for postsecondary education and for the workplace
  - Underprepared for participation in a diverse democracy
- Our goal: To ensure that every child receives skillful teaching every day, every year

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Overview of today's argument

① Why improved *initial professional training* is crucial in improving teaching quality, and its place in an overall strategy for improving student learning

② Elements of strong training for responsible entry-level professional practice (and examples)

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

No professionally grounded system for teachers' training

1. No common curriculum for the professional training of teachers for new or practicing teachers
2. A reliance on academic standards and preparation for content knowledge
3. Over 3,000 independent providers of initial teacher training, and a vast array of professional development providers
4. No common standard of performance for entry to independent practice with (on) young people

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

What should initial training and licensure do?

1. Take as the central imperative the **rights of children**
2. Focus on preparing entry-level teachers who are ready to care for the **academic, social, emotional, and physical safety** of children, and to conform to standards of **ethical practice**
3. Provide assurance to parents and to the public that the beginning professional has met the standards necessary to be given initial responsibility for students' learning

In other words, ensure that the beginning teacher meets the standard of safe to practice

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu







This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

University of Michigan model:
Strong training for responsible practice

1. Clear specification of high-leverage practices: the skills, capabilities, and qualities of performance necessary for basic independent practice
2. Detailed developmental clinical training, progressing from supported investigation of practice to simulations to supervised apprenticeship to supervised independent practice
3. Consequential performance assessments of competence, both formative and culminating

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

High-leverage instructional practices

High-leverage practices (HLPs) are instructional tasks and activities that powerfully promote learning and are fundamental to skillful teaching.

Based on work done at the University of Michigan School of Education in the redesign of our teacher education program, and at TeachingWorks, an organization housed at U-M whose mission it is to improve the quality of teaching and learning by transforming teachers' education.

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Examples of high-leverage practices

- Leading a whole-class discussion
- Eliciting and interpreting individual students' thinking
- Explaining and modeling core content
- Formulating and posing questions
- Establishing norms and routines for classroom discourse and work that are central to the content
- Recognizing particular common patterns of student thinking and development in a subject-matter domain
- Setting up and managing small group work
- Selecting and using specific methods to check understanding and monitor student learning during and across lessons
- Composing, selecting, adapting quizzes, tests, and other methods of assessing student learning of a chunk of instruction
- Conducting a meeting about a student with a parent or guardian

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

View beginning teaching practice

- Third grade, urban school
- Diverse class in terms of current knowledge and skill
- Teaching a textbook lesson on the concept and calculations of average ("mean")

1. What are some of the high-leverage practices required for teaching this lesson?
2. What mathematical knowledge and skills are required?

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

What are the high-leverage practices involved in this lesson?

- Interpret, modify, and use this textbook lesson
- Explain and represent core content
- Formulate and pose questions
- Lead a whole-group discussion

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

What mathematical knowledge is required?

- Know the concept of average and how to calculate an average
- Understand, generate, and use appropriate and accessible representations for the concept of **average**
- Be able to talk in mathematically accurate, precise, and accessible ways, and with fluency
- Make judgments about what aspects of the content are focal in this lesson (i.e., concept of average, not adding and dividing)

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Clinical training

- Deliberate guided learning from skilled teachers (clinical rounds)
- Study of videos and other primary records of practice
- Rehearsals
- Rubrics for providing detailed feedback
- Systematic clinical experience with supervision and feedback, staged across time

BY-NC-ND
This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Practicing defibrillation



This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Practicing a guided reading lesson



This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Building new assessments of teaching practice

- Based on actual performance of specific high-leverage practices
- Tied to teaching specific academic content
- Conducted in a variety of settings for practice, depending on what is being assessed

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Assessing diagnostic capability: Analyzing errors

What mathematical steps could have produced this answer?

(a)

$$\begin{array}{r} 49 \\ \times\ 25 \\ \hline 405 \\ 108 \\ \hline 1485 \end{array}$$

(b)

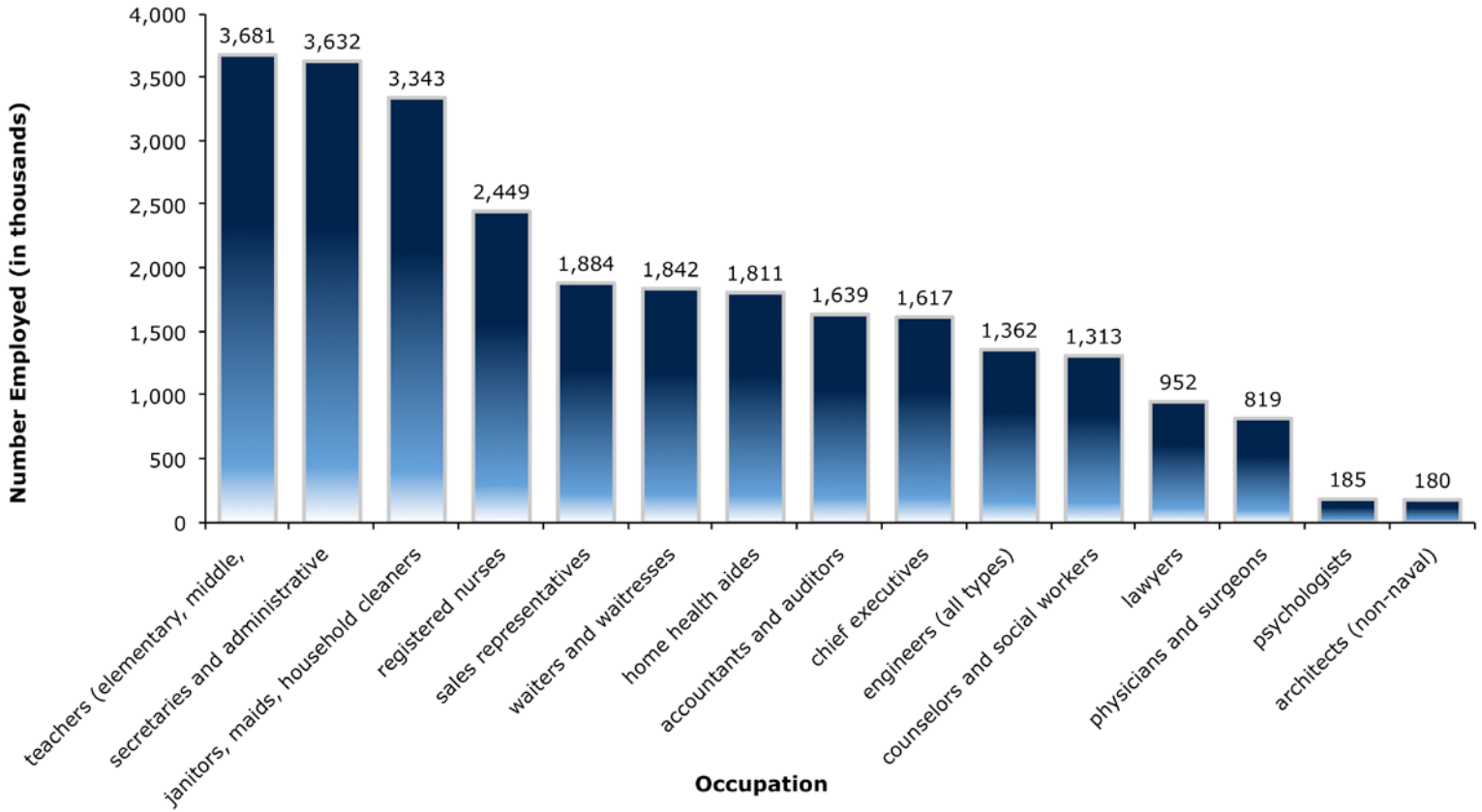
$$\begin{array}{r} 49 \\ \times\ 25 \\ \hline 225 \\ 100 \\ \hline 325 \end{array}$$

(c)

$$\begin{array}{r} 49 \\ \times\ 25 \\ \hline 1250 \\ 25 \\ \hline 1275 \end{array}$$

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

The scale of the need is enormous



BY-NC-ND
This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

The U.S. education system is vast

3,500,000

teachers

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

The U.S. education system is vast

14,000

school districts

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

The U.S. education system is vast

over 2,200

programs that prepare teachers

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Scaling up with TeachingWorks

- The future of America's 50,000,000 schoolchildren is at risk
- Because every child deserves a skillful teacher, it's not enough to train only University of Michigan students to serve in our classrooms
- It's not enough to change other teacher training programs in a piecemeal way either —
- We must work together to overhaul teacher training

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu



What *is* TeachingWorks?

- A national organization housed at the University of Michigan School of Education
- Focused on ensuring that every child gets skillful teaching every single year by building strong professional infrastructure for the training, development, and assessment of teaching practice
- Based on work done at the University of Michigan in our own programs and also in partnership with other programs and organizations

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu



TeachingWorks

Four main arenas of work

① Advancing the development of a common curriculum for teaching

② Developing performance assessments that measure a teacher's readiness for independent practice

③ Providing training for those who work with teachers

④ Making available trustworthy information and data about teaching

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu



What can you do?

- Learn more about us at teachingworks.org and become engaged in our mission
- Attend a seminar (in person or online)
- Visit the Elementary Mathematics Laboratory (July 29 – August 9)
- Spread the word
- Support our efforts

Together, we can ensure that all 50 million children in the U.S. have GREAT teachers!

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Great teachers aren't born.

THEY'RE TAUGHT.

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Credits



Image on slide 11:
"Haircut" by Flickr user I Should Be Folding Laundry
Licensed under a Creative Commons Attribution 2.0 Generic License
http://creativecommons.org/licenses/by/2.0/deed.en



Image on slide 11:
"20110916_171840" by Flickr user Team Massachusetts
Licensed under a Creative Commons Attribution 2.0 Generic License
http://creativecommons.org/licenses/by/2.0/deed.en



Image on slide 11:
"nursing_student" by Flickr user University of Missouri System
Licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 2.0 Generic License
http://creativecommons.org/licenses/by-nc-nd/2.0/deed.en

BY-NC-ND This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu

Credits



Image on slide 11:
"almost forbidden territory...." by Flickr user Esthr
Licensed under a Creative Commons Attribution-NonCommercial 2.0 Generic License
http://creativecommons.org/licenses/by-nc/2.0/deed.en



Image on slide 11:
"Marielle Carving Francinaldo's Ear" by Flickr user ReSurge International
Licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 2.0 Generic License
http://creativecommons.org/licenses/by-nc-nd/2.0/deed.en



Image on slide 19:
© 2009 Stuart Isett. www.isett.com. All rights reserved. Used with special permission.

This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works Version 3.0 United States License: http://creativecommons.org/licenses/by-nc-nd/3.0/us/
© 2013 Mathematics Teaching and Learning to Teach • School of Education • University of Michigan • Ann Arbor, MI 48109 • mtlt@umich.edu