Standards: Where We've Been and Where We're Going

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Minnesota Rural Education Conference

November 13, 2012

Minnesota Department of Education

"Leading for educational excellence and equity. Every day for every one."

Topics

- Evolution of standards across cultures and time
- Development of Minnesota's academic standards
- Milestones in U.S. curricular history leading to standards-based instruction
- How standards may look in the future
- Standards: Themes about where we've been and where we're going

Evolution of Standards
Across Cultures and Time

Source: Barbara Anderegg, The History of Standards, Wisc-Online.com

Origin of Standards

Since ancient times, people have struggled to harness nature and measure what we have.

Standards were developed to ensure that whatever we're making is made to the right dimensions and works as it should.

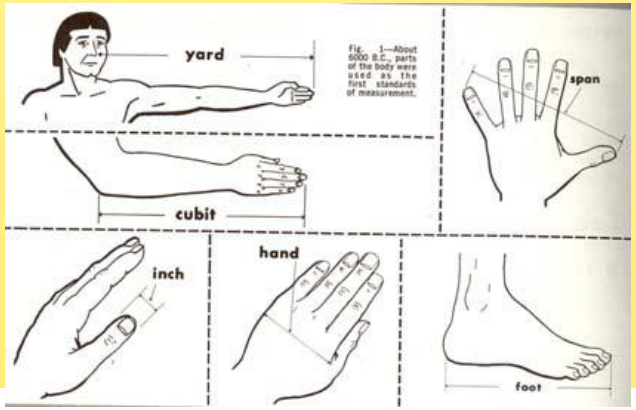
No concept is more important to measurement than that of standards.

Over a million years ago…

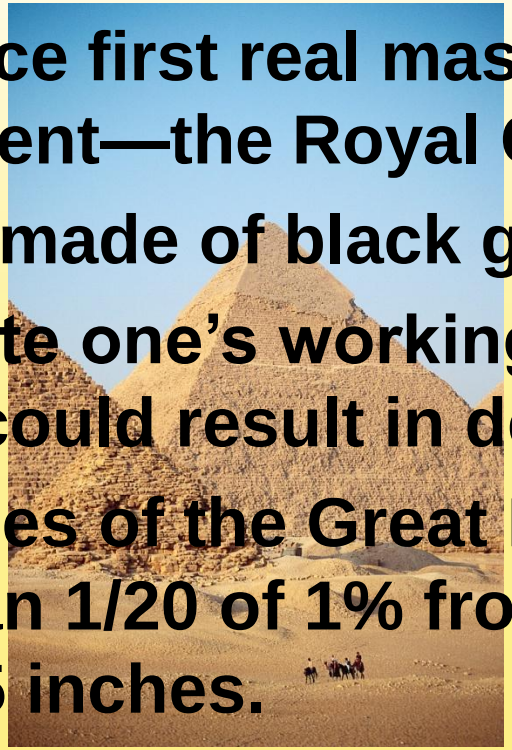
- **Man made a spear that coincided with his stature and muscular strength.**
- **How to make another just like it?**
- **Compared new spear with original.**
- **Each person produced primarily for his own needs.**

About 8,000 years ago…

- First civilizations formed along Tigris, Euphrates and Nile rivers.
- People made huts, looms, plows, hoes, sickles.
- Used their body parts as standards including their forearms, hands and fingers.
- This worked because each person completed a job from start to finish.



About 5,000 years ago…



- Egyptians produce first real master standard of linear measurement—the Royal Cubit.
- Royal Cubit was made of black granite.
- Failure to calibrate one's working cubit against the Royal Cubit could result in death!
- Length of the sides of the Great Pyramid could vary no more than 1/20 of 1% from the mean length of 9069.45 inches.

About 3,000 years ago…

- **Greeks learned about measurement from Egyptians.**
- **2/3 of the small Egyptian cubit became the Greek foot with 16 divisions.**
- **Roman foot followed and was slightly shorter than the Greek foot.**

About 900 years ago…

- King Henry I decreed the yard: length from the point of his nose to the end of his thumb
- Led to the iron ulna as England's standard yard

1700's

- **1790: French Republicans established meter as one ten millionth of the distance from the North Pole to the Equator (passing through Paris!)**
- **1799: First metal standard of the meter made (platinum Meter of the Archives-MA)**
- **1889: 30 prototype meters made and calibrated with each other**
- **The one most closely replicating the MA became the Int'l. Prototype Meter, and remained the Int'l. Standard of Length until 1960.**

1798

- **Eli Whitney revolutionized manufacturing with his idea of identical, interchangeable parts.**
- **Until then, rifles were made one at a time, fitting parts together by hand.**
- **Built 10,000 muskets over 8 years.**
- **Opened door to modern assembly line production and measurements based on universal standards.**

1898

- C.E. Johannson created his gage block series, standards which could be combined into many different lengths.
- Calibrated against the Int'l. Standard of Length, they became the link to a universal standard.
- Over time, the Int'l. Standard of Length changed from the platinum-iridium bar to the definition of the meter as the distance light travels in a vacuum in 1/299792458 of a second.
- This standard can be reproduced anywhere in the world.

To increase collaboration, a universal standard was needed

- **When one person made a tool from start to finish, there was little need for a universal standard.**
- **As groups of people collaborated to make more complex tools, they needed a universal standard as a means to communicate with each other.**
- **Resulted in search for a universal standard based on an unchanging constant of nature.**
- **Today we find this standard in the distance light travels in a vacuum.**

Development of Minnesota's Academic Standards

Some milestones

Minnesota: 1970s

- **MN Educational Assessment Program (MEAP) begins**
- **MDE begins development of Some Essential Learner Outcomes (SELOs) that specify subject matter for instruction.**
- **Legislature enacts Planning, Evaluation and Reporting law focusing on a "results" orientation. Requires districts to have written plans for goals, strategies, evaluation and reporting, instructional objectives and a curriculum review cycle.**

Minnesota: 1980's

- ***A Nation at Risk*** **report calls for sweeping reform**
- **Business leaders, parents, etc. ask for graduates to be better prepared for postsecondary education and work.**
- **State Board of Education and legislature voice intent to move from "input" rules to "output" rules (i.e., outcomes or results) that identify what students must know and be able to do when they graduate.**

Minnesota: 1988

Legislative Auditor's report states—

- **At most, 1/3 of MN's high school districts have policies which establish minimum standards for graduates' reading and mathematics skills.**

- **Of those districts that have such policies, many have set the expectations at only fifth to eighth grade levels.**

Minnesota: 1990's

- **SCANS report calls for "workplace know-how"**
- **"Results-oriented" graduation rule to be based on demonstrated student achievement rather than completion of courses/credits.**
- **1993: Course credit requirements repealed.**
- **Basic Standards (minimum competencies/basic skills tests) in rdg., math, written comp. adopted**
- **Profile of Learning (high standards) adopted**
- **"Performance Packages" developed by teachers will be used to assess Profile standards.**

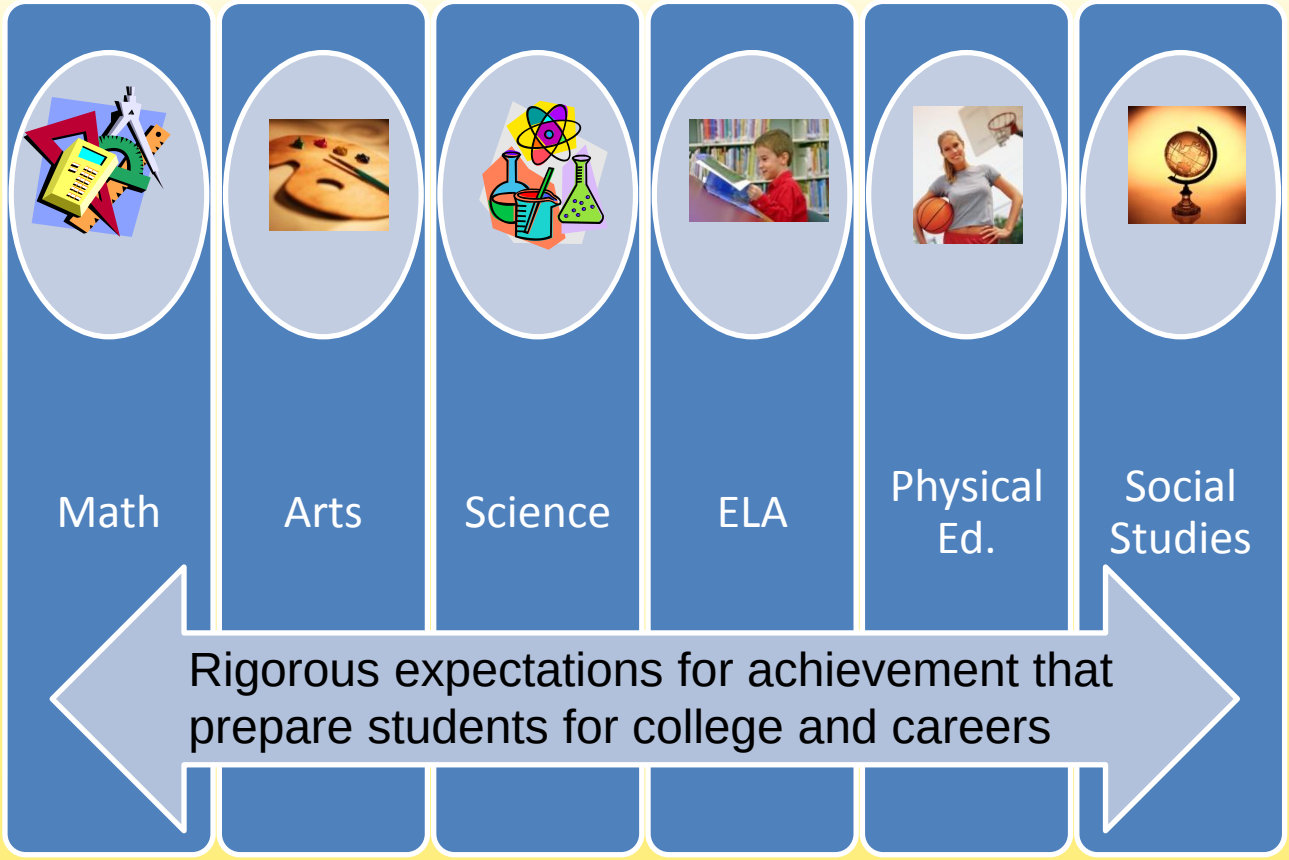
Minnesota: 2000's

- **2002: Federal reauthorization of ESEA, *No Child Left Behind* (NCLB)**
- **NCLB has requirements for standards and accountability. Includes requirement that all students be proficient in 12 years (2013-14)**
- **2003: Legislature repeals Profile of Learning and establishes new credit-based graduation requirements.**
- **2003-04: New rigorous standards created with grade-level benchmarks in math, l. arts, arts, sci., soc. studies. (2010: phy. ed standards added.)**

Minnesota: 2000's (cont'd.)

- **2005: MN joins *American Diploma Project* sponsored by Achieve, Inc. Goal is to align HS standards with demands of college and work.**
- **2006: Standards review and revision cycle adopted.**
- **Revised standards must reflect college and career readiness skills, and must embed technology and information literacy.**
- **MN helps develop *Common Core* (CC) *State Standards*. MN adopts CC ELA standards and adds content. MN can't adopt new math standards until 2015-16 (may or may not be CC math standards).**

Minnesota K-12 Academic Standards Revised 2007-2011



Minnesota Standards Revision Timeline

Review	Implement	Review
2006-2007	Mathematics 2010-2011	2015-2016
2007-2008	Arts 2010-2011	2016-2017
2008-2009	Science 2011-2012	2017-2018
2009-2010	Language Arts 2012-2013	2018-2019
	Phys. Education 2012-2013 (NASBE standards adopted in 2010)	
2010-2011	Social Studies 2013-2014	2019-2020

Locally determined standards: World Languages, Health, Career & Tech. Ed.

Standards change over time.

Like standards of measurement that have changed since ancient times, academic standards have changed to reflect new understandings about disciplinary content, and new approaches in curriculum, instruction and assessment.

- **How broad or specific? How many?**
- **Teaching-centered or learner-centered?**
- **Something to be introduced or reinforced or mastered?**
- **Voluntary or required for all students?**

High School Standards—
Examples from past and present

(Past) The only U.S. history standard in the Profile:

Themes of U.S. History: Trace significant themes in the development of the United States.

(Current) 1 of 9 U.S. hist. standards in MN Academic Standards: Understand that the divergence of colonial interests from those of England led to an independence movement that resulted in the American revolution and the foundation of a new nation based on the ideals of self-government and liberty. (Hist. Std. 17-Revolution and a New Nation, 1754-1800s)

Sample High School Benchmarks—past and current

U.S. history benchmarks in the Profile:

(none)

1 0f 4 U.S. history benchmarks for standard 17 in the MN Academic Standards:

Analyze the American revolutionaries' justifications, principles and ideals as expressed in the Declaration of Independence; identify the sources of these principles and ideals and their impact on subsequent revolutions in Europe, the Caribbean, and Latin America.

Standards Review Process

Standards Review Committee

Public invited to apply online; commissioner selects committee. The committee—

- Analyzes the current standards
- Advises the Technical Writing Team (TWT) of needed changes
- Reviews drafts of the TWT's work and recommends changes
- Endorses the final draft of revised standards; submits it for commissioner's approval
- Led by postsecondary and K-12 co-chairs named by commissioner

Technical Writing Team (TWT)

- Subset (8-15 members) of Standards Committee named by commissioner
- Members possess technical skills in the content area and/or curriculum and as a group, represent K-16 range of the content area
- Draft revisions to standards based on direction provided by Standards Committee

Stages of Review Process

1. Gap analysis: Compare MN standards to exemplary standards in other states and countries and national reports of significance.
2. First draft
3. Public review and comment period
    - Online feedback
    - Town meetings
    - Targeted feedback (commissioner meets with education and business groups)
4. Second draft

Stages of Review Process (cont'd.)

5. Expert reviews: Includes experts in standards in the content area and special education (includes Achieve's American Diploma Project review for math and reading-language arts)
6. Third draft
7. Commissioner approves draft
8. Sharing with legislators and others; posting on MDE website
9. Rulemaking process

Revised Standards Must Reflect—

1. Technology and information literacy standards (in consultation with school media specialists)*
2. College and work readiness skills*
3. Contributions of Minnesota American Indian tribes and communities**

* Minn. Stat. § 120B.023

**Minn. Stat. § 120B.021, subd. 1

Milestones in U.S. curricular history leading to standards-based instruction

Source: Jane E. Pollock, Improving Student Learning One Teacher at a Time, ASCD, 2007.

U.S. Curricular History—
The "Big Three"

1. B. Bloom → 1. Well-articulated curriculum
2. M. Hunter → 2. Instruction planning & delivery
3. G. Wiggins → 3. Assessment

From the “Big Three” to the “Big Four”

1. B. Bloom	→	1. Well-articulated curriculum
2. M. Hunter	→	2. Instruction planning & delivery
3. G. Wiggins	→	3. Assessment
4. R. Marzano	→	4. Feedback

Tenets of the "Big Four"
Principles for Improving Student Learning

1. **Well-articulated curriculum.**

Know and use clearly articulated learning targets that are robust concepts, generalizations, or procedures. Use precise terminology to describe what students will learn.

2. **Purposefully plan and deliver instruction.**

Plan and use instructional strategies that will help the learner remember content and apply information and skills rather than just do schoolwork.

Tenets of the "Big Four" (cont'd.)

3. **Vary the assessment.**

Use a range of assessment methods to clarify the learner's status relative to learning targets, and generate the information necessary to help the learner achieve these targets.

4. **Give criterion-based feedback.**

Give methodical, precise feedback to the learner based on the targets, and refine record keeping and reporting accordingly.

From standards to learning targets: the “Goldilocks” rule

- **Our experience in Minnesota and elsewhere tells us that outcomes were too broad and behavioral objectives too specific.**
- **Robust conceptual and procedural benchmarks are “just right.”**

How standards may look in the future

Framework for K-12 Science Education (To be used to develop standards)

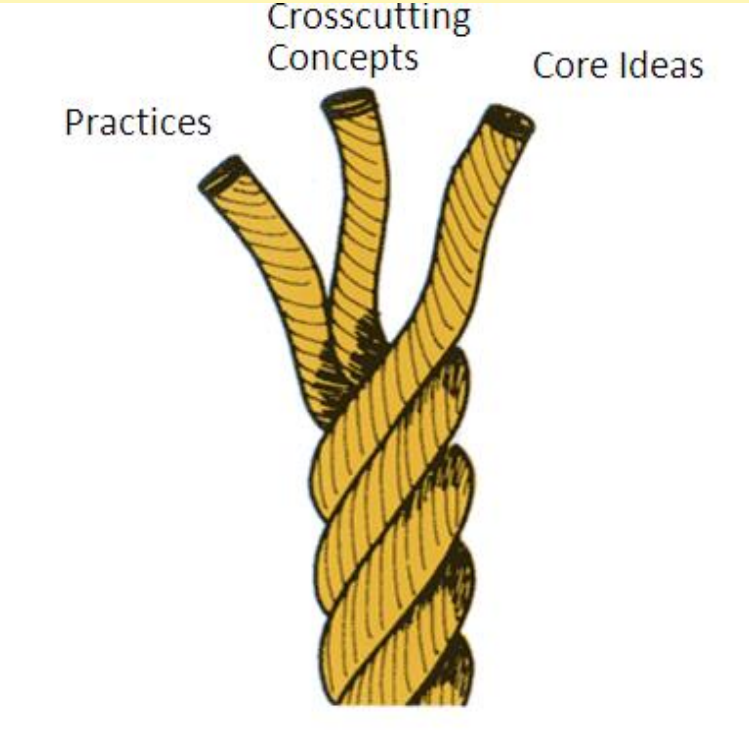
I. Scientific and Engineering Practices

II. Crosscutting Concepts

III. Core Ideas

Source:

National Research Council

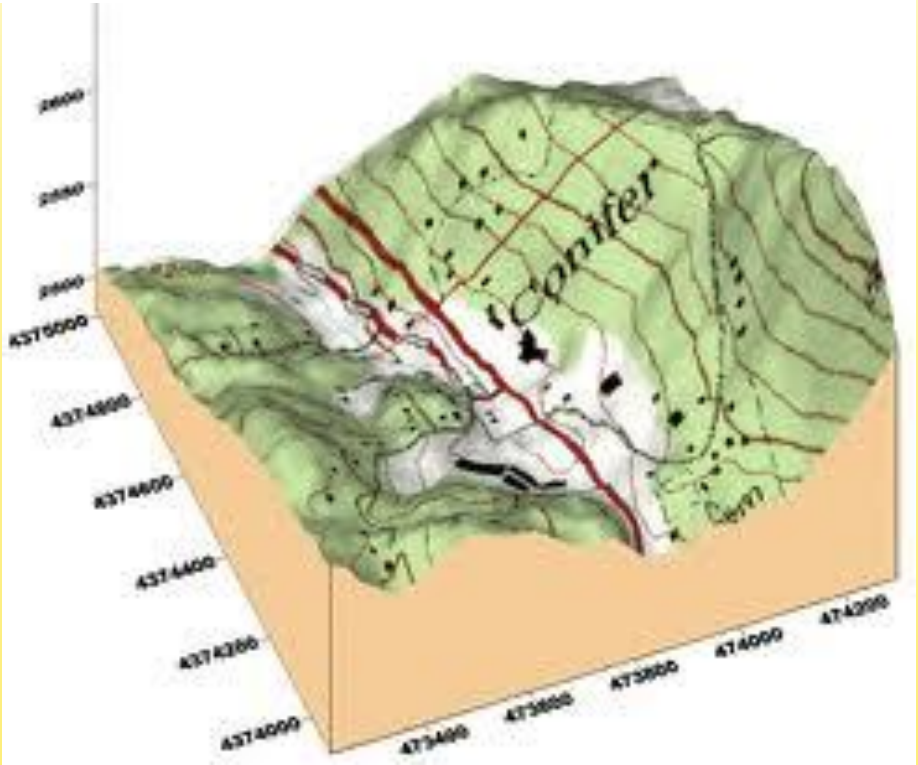


Science and Engineering Practices

1. Asking Questions (Science) and Defining Problems (Engineering)
2. Developing and Using Models
3. Planning and Carrying Out Investigations
4. Analyzing and Interpreting Data
5. Using Mathematics, Information and Computer Technology, and Computational Thinking
6. Constructing Explanations (Science) and Designing Solutions (Engineering)
7. Engaging in Argument from Evidence
8. Obtaining, Evaluating, and Communicating Information

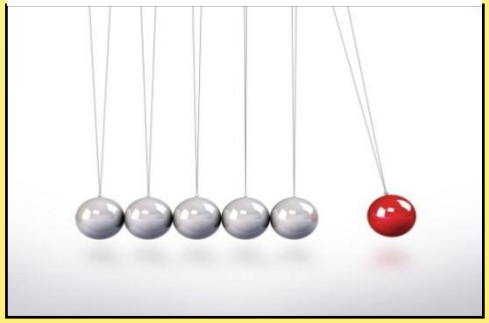
Crosscutting Concepts
What disciplines address these concepts?

Scale, Proportion, and Quantity



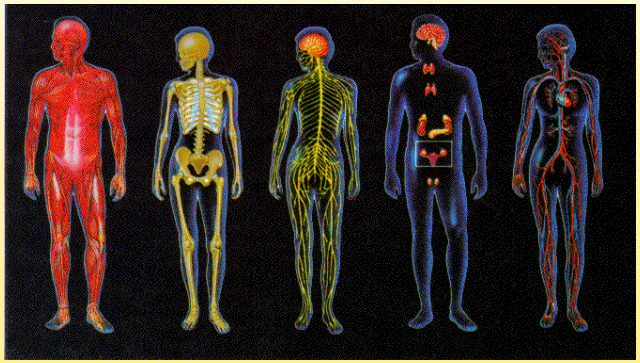
Patterns

Cause and Effect



Crosscutting Concepts
What disciplines address these concepts?

Systems and System Models



Energy and Matter

Stability and Change

Structure and Function

Standards: Where we've been and where we're going

THEMES

Standards: Where We've Been and Where We're Going

Themes

- **Helping all students to achieve at high levels is complex work. Complex work requires the collaboration of many educators.**
- **Increased collaboration requires well-written standards that clearly identify important grade level knowledge and skills.**
- **Standards foster communication about student learning.**

Standards: Where We've Been and Where We're Going (themes, cont'd.)

- **A powerful form of professional development is for educators to have conversations about student learning.**
- **A highly effective way to improve achievement is to give students specific feedback focused on standards and learning targets.**
- **Standards will continue to evolve based on new understandings about curriculum, instruction, and how students learn, and the kinds of skills they will need to lead productive, fulfilling lives in an increasingly globalized world.**

Questions? Comments?

Thanks for all you do to help students achieve Minnesota's standards!

Presenter Contact Information

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