Developing an Understanding-based Curriculum around Common Core Standards

Topical Agenda
- Key Features of CC Standards
- Unpacking CC Standards
- A Backward Design Template
- Curriculum Mapping – “macro”
- Resources for Working Smarter

Common Core Standards
- Developed under the auspices of the National Governors Association (NGA) and the Council of Chief State School Officers (CCSS).

Common Core Standards
- The Math and E/LA Standards have been “adopted” by 44 states and Washington, D.C. schools.
- Draft Science Standards have been released for review (summer 2011).

E/LA Standards
- Reading – Greater balance of literature and informational texts
- Writing – Emphasis on informative/explanatory writing; argument and support
- Speaking and Listening

E/LA Standards
- Ten Anchor Standards and grade-level expectations organized by strand
- College and Career Readiness Standards
- Sample grade-level maps, units, assessment tasks and samples of student work

© 2004 Jay McTighe and Grant Wiggins
The E/LA Standards are intended to apply in history/social studies, science, and technical subjects.

They complement rather than replace content standards in those subjects.

Appendix A – contains supplementary material on reading, writing, speaking and listening; glossary of key terms.
Appendix B – consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels; sample performance tasks.
Appendix C – annotated writing samples

Focus on transferable ‘big ideas’
“…not only by stressing conceptual understanding of key ideas, but also by continually returning to organizing principles such as place value or the properties of operations to structure those ideas.”

Include eight Standards of Mathematical Practice along with content standards.

Examples:
4. Model with mathematics
6. Attend to precision

Focus on seven Crosscutting Concepts (“big ideas”)

6. Structure and Function. The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.

Include eight Practices for K-12 Classrooms.
Examples:
1. Asking questions (for science) and defining problems (for engineering)
3. Planning & carrying out investigations
7. Engaging in argument from evidence
Two consortia (PARCC and Smarter Balanced Assessment Consortium) are now developing assessments for the CC Standards.

The assessments are scheduled to be available for use in states by the 2014-2015 school year.

Common Core Standards

- Standards are not curriculum.

“These Standards do not dictate curriculum or teaching methods.”

-- The Common Core Standards

Curriculum

“the course to be run”

Curriculum = a plan to achieve designated goals

Curriculum ≠ not a list of topics and related activities

#1 Standards are not curriculum.

“Consider an analogy with home building and renovation: The standards are like the building code. Architects and builders must attend to them but they are not the purpose of their design...

#2 A Research Finding

A guaranteed and viable curriculum is the #1 school-level factor impacting student achievement.

-- Marzano, What Works in Schools

...The house to be built or renovated is designed to meet the needs of the client in a functional and pleasing manner - while also meeting the building code along the way.”

-- Wiggins and McTighe
“There is no such thing as effective differentiation devoid of a high quality curriculum... The teacher’s first job is always to ensure that the curriculum is coherent, important, inviting, and thoughtful. Then and only then does it make sense to differentiate that curriculum.”

-- Carol Ann Tomlinson

160 national and state-level standards documents (more than 2000 pages)

a synthesis yielded 255 standards and 3,968 benchmarks

-- Marzano & Kendall, 1999

would require an additional 15,465 hours for students to learn them all!

9 more years (K-21)

-- Marzano & Kendall, 1999

“...the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement .... To deliver on the promise of common standards, the standards must address the problem of a curriculum that is a mile wide and an inch deep.”

Mathematics Standards

“(That is, what and how students are taught should reflect not only the topics that fall within a certain academic discipline, but also the key ideas that determine how knowledge is organized and generated within that discipline. This implies that ‘to be coherent,’ a set of content standards must evolve from particulars... to deeper structures inherent in the discipline.”

CC Mathematics Standards, p. 2

“The revised AP® Biology course addresses this challenge by shifting from a traditional “content coverage” model of instruction to one that focuses on enduring, conceptual understandings and the content that supports them. This approach will enable students to spend less time on factual recall and more time on inquiry-based learning of essential concepts, and will help them develop the reasoning skills necessary to engage in the science practices...”

Revision of Advanced Placement Biology
The AP World History Curriculum is organized around key concepts and core themes, along with four Historical Thinking Skills:
1. Crafting Historical Arguments from Historical Evidence
2. Chronological Reasoning
3. Comparison and Contextualization
4. Historical Interpretation and Synthesis

“We turn now to the questions of how experts’ knowledge is organized…Their knowledge is not simply a list of facts and formulas that are relevant to the domain; instead, their knowledge is organized around core concepts or ‘big ideas’ that guide their thinking about the domain.”
~ Bransford, et. Al., How People Learn, p 24

“Learning with understanding is more likely to promote transfer than simply memorizing information from a text or a lecture
~ Bransford, et. Al., How People Learn, p 224

Meet in groups of 3 - 5 to...
- summarize key points.
- add your own thoughts.
- pose clarifying questions.

Consider: What are the “big ideas” embedded within the standards?

Common Core big ideas standards

Distinguish goal types - A, M, T
Determine appropriate assessments
Three Types of Goals

- Acquisition of knowledge and skills
- Understanding of conceptually “big ideas”
- Transfer of learning to new situations

Long-Term Transfer Goal

“Students will be able to independently use their learning to...”
An effective curriculum equips learners for autonomous performance... by design!

Transfer Goal – E/LA

Students who are College and Career ready:
Demonstrate independence.
“Students can, without scaffolding, comprehend and evaluate complex texts across a range of types and disciplines, and they can construct effective arguments and convey intricate or multifaceted information.”

Transfer Goal – History/SS

- Use knowledge of patterns of history to better understand the present and prepare for the future.
- Critically appraise historical claims and analyze contemporary issues.
- Participate as an active and civil citizen in a democratic society.

Transfer Goal – World Languages

Effectively communicate with varied audiences and for varied purposes while displaying appropriate cultural understanding.

The “Top Down” Method

In order to meet the standard, students will need to understand that -

Understanding(s)
In order to understand, students will need to consider such questions as -

Essential Question(s)
The “Inside Out” Method

nouns and adjectives
verbs

standards
understandings
assessments

Unpacking Standards

Try your hand…
Apply one of the “unpacking” methods to one of the Anchor standards for Reading or Writing or one of the Mathematical Practices.

Common Core Standards
Mathematics

Model with mathematics.

Mathematical modeling

‘Big Idea’ Understandings:
• Mathematicians create models to interpret and predict the behavior of real world phenomena.
• Mathematical models have limits and sometimes they distort or misrepresent.

Mathematical modeling

Essential Questions:
• How can we best model this (real world phenomena)?
• What are the limits of this model?
• How reliable are its predictions?

Structures in Mathematics

‘Big Idea’ Understandings:
• Recognizing predictable patterns allows the creation of functional relationships.
• Statistical analysis and display often reveal patterns in data, enabling us to make predictions with degrees of confidence.
**Structures in Mathematics**

**Essential Questions:**
- What's the pattern?
- What will happen next?
- How sure are you?

**CORE IDEA PS2: MOTION, FORCES AND INTERACTIONS**

**Essential Questions:**
- How can one predict an object's continued motion, changes in motion, or stability?
- What underlying forces explain the variety of interactions observed?

---

**#5 Design Curriculum “Backward”**

1. What do you want students to learn?
2. How will you know they have learned it?
3. How will you teach to help them learn it?

---

**3 Stages of Backward Design**

1. Identify desired results.
2. Determine acceptable evidence.
3. Plan learning experiences & instruction.

---

**“Backward” Design Logic**

Think like an assessor, not an activity designer!

---

**This is not Backward Design**

1. Identify desired results.
3. Plan learning experiences & instruction.
2. Determine acceptable evidence.

---

© 2004 Jay McTighe and Grant Wiggins
The UbD Template...

- reflects a way of thinking and planning
- fosters a “mental template” for effective design

The UbD 1-page template

- fosters alignment:
  - content standards
  - ’big ideas’
  - essential questions
  - assessments
  - learning activities

Content standards are the goals, not text coverage.

Use the textbook as a resource -- not the syllabus!

To what extent does “backward design” and the Design Template...

1) reflect the way in which teachers in your school/district currently plan?
2) have implications for curriculum planning practices -- for individual teachers, teams and district-level curriculum design?

Three-Minute Pause

Meet in groups of 3 - 5 to...
- summarize key points.
- add your own thoughts.
- pose clarifying questions.

Teaching and Learning for Understanding

- Acquire important knowledge and skills
- Make Meaning of “big ideas”
- Transfer learning to new situations

© 2004 Jay McTighe and Grant Wiggins
UBD Template 2.0

- Like a software upgrade
- Same 3 stages of design

With an increased emphasis on:
- TRANSFER
- A-M-T
- Alignment

3 Stages of Backward Design

1. Identify desired results.
2. Determine acceptable evidence.
3. Plan learning experiences & instruction.

Think “Photo Album” versus “Snapshot”

Sound assessment requires multiple sources of evidence, collected over time.

Gather evidence from a Range of Assessments

- authentic tasks and projects
- academic exam questions, prompts, and problems
- quizzes and test items
- informal checks for understanding
- student self-assessments

Check for Alignment

Cover Stage 1 and ask others: What do the assessments suggest that the Desired Results in Stage 1 must be?

<table>
<thead>
<tr>
<th>Stage 1 – Desired Results</th>
<th>Stage 2 – Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Check for Alignment</strong></td>
<td><strong>Performance Tasks</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Assessment Evidence</strong></td>
</tr>
<tr>
<td></td>
<td><strong>You Are What You Eat:</strong></td>
</tr>
<tr>
<td></td>
<td>Create a picture book to teach 1st graders about “healthful” eating and health problems that may result from poor nutrition.</td>
</tr>
<tr>
<td></td>
<td><strong>Camp Menu:</strong></td>
</tr>
<tr>
<td></td>
<td>Design a “balanced” 3-day menu for meals and snacks for a weekend camping trip. Explain why your menu plan is both healthy and tasty.</td>
</tr>
<tr>
<td></td>
<td><strong>Other Evidence:</strong></td>
</tr>
<tr>
<td></td>
<td>• Quiz on the food groups and their nutritional benefits.</td>
</tr>
<tr>
<td></td>
<td>• Skill check on interpreting nutrition information on food labels.</td>
</tr>
<tr>
<td></td>
<td>• Test on health problems caused by poor eating.</td>
</tr>
</tbody>
</table>
|                           | • Daily eating journal with reflections on choices made.
Students will use a knowledge of nutrition to plan appropriate diets for themselves and others.

### Standard 6-c
- A balanced diet contributes to mental and physical health.
- Healthy eating requires people to make conscious choices that may challenge comfortable habits.
- **What should we eat?**
- **Why are there so many nutritionally-related health problems despite all we know?**

#### Essential Questions
- **What should we eat?**
- **Why are there so many nutritionally-related health problems despite all we know?**

#### Essential Knowledge & Skill
- Nutrition vocabulary
- Food groups
- Nutrition-related health problems
- Interpret nutrition info. on food labels
- Analyze & evaluate diets
- Plan a balanced diet

---

**Example: Teach a Lesson**

You have been asked to help a third grader understand the economic concept of “supply and demand”.

Design a plan for a 5 minute lesson. You may wish to use examples (e.g., Beanie Babies or Pokemon cards), visuals, or manipulatives to help them understand.

---

**Example: Day Care Center**

You have been hired by a day care agency to fence in an area to be used for a play area.

You have been provided with 60 feet of fencing (in 4’ sections) and a 4’ gate. How can you put up the fence so the children will have the maximum amount of space in which to play?

Submit your plan for the playground area. Include a diagram, your calculations, and a summary of why this is the best design.

---

**Example: State Tour**

The State Department of Tourism has asked your help in planning a four-day tour of (your state) for a group of foreign visitors.

Plan the tour to help the visitors understand the state’s history, geography and its key economic assets.

You should prepare a written itinerary, including an explanation of why each site was included on the tour.

---

**Example: You Are What You Eat**

Since our class has been studying nutrition, the first grade teachers have asked us to help their students learn about healthful eating. Your job is to create a picture book to use in explaining what a ‘balanced diet’ is. Include pictures to show health problems that result from poor eating habits.

---

**Example: Mail-Order Friend**

Imagine that you could order a friend from a mail-order friends catalog. Before ordering, think about the qualities that you value in a true friend. Then, make sure that you speak clearly so that the salesperson will know exactly what type of person to send you.
example: School Map

A new student has just joined your class. Since he is new to the school, you have been asked to draw a map of the school to help the new student find his way around the school. Be sure that your map includes a title, labels, symbols, and a legend.

designing task scenarios

G ♦ What is the goal in the scenario?
R ♦ What is your role?
A ♦ Who is the audience?
S ♦ What is your situation (context)?
P ♦ What products/performances will you prepare?
S ♦ By what standards (criteria) will your work be judged?

example: Death of an Element

Your element has died. Write an obituary for your deceased element in which you explain the effects that its absence will have on the chemical world and the human race.

unit on statistics

- What is fair?
- How can math help us judge fairly?

unit on statistics - mean, median, mode

“What is Fair?” Individual ranking of runners in a race by all 7th-grade classes

| Initial problem: Four 7th-grade classes had a race of all the students. Devise as many ways as you can to determine a fair ranking of the 4 classes, given the individual runner results in the table. Identify the two best ways you think would be most fair. Be prepared to explain your answer. |
|---|---|---|---|---|
| Rank | Class A | Class B | Class C | Class D |
| 1 | 7 | 3 | 10 | 9 |
| 2 | 8 | 5 | 11 | 1 |
| 3 | 12 | 6 | 10 | 4 |
| 4 | 13 | 8 | 12 | 7 |
| 5 | 14 | 9 | 14 | 2 |
| 6 | 15 | 10 | 17 | 1 |
| 7 | 16 | 11 | 19 | 3 |
| 8 | 17 | 12 | 20 | 5 |
| 9 | 18 | 13 | 21 | 7 |
| 10 | 19 | 14 | 22 | 9 |
| 11 | 20 | 15 | 23 | 11 |
| 12 | 21 | 16 | 24 | 13 |
| 13 | 22 | 17 | 25 | 15 |
| 14 | 23 | 18 | 26 | 17 |
| 15 | 24 | 19 | 27 | 19 |
| 16 | 25 | 20 | 28 | 21 |
| 17 | 26 | 21 | 29 | 23 |
| 18 | 27 | 22 | 30 | 25 |
| 19 | 28 | 23 | 31 | 27 |
| 20 | 29 | 24 | 32 | 29 |
| 21 | 30 | 25 | 33 | 31 |

EQ – What mathematical tools can help us judge fairness?

Other meaning-making questions and activities
- What do we mean when we say that the rules of a game of chance are “not fair”? What role does mathematics play in our judgment?
- Why is it fair to have one person cut the cake and the other person to choose the piece?
- When is straight majority voting “fair” and when is it “not fair”?
- When is it “fair” to consider an “average” in ranking performance (e.g. salaries, home prices, batting average) and when is it “unfair”? 

© 2004 Jay McTighe and Grant Wiggins
NOTE: The content is learned as a means to answer questions and help solve problems!

*Measures of central tendency:
  - Mean
  - Median
  - Mode
  - Standard Deviation (range/variance)

Meaning Making & Transfer Activity

Based on our study in this unit of various measures of central tendency, and the pros and cons of using “averages” (and other such measures) in various situations, propose and defend a “fair” grading system for use in this school.

How should students’ grades be calculated? Explain why is your grading system would be more fair than the current system?

Covering a textbook is not the goal.

The textbook should be used as a resource, but not the syllabus!

Performance Task: Making the Grade

Your math teacher will allow you to select the measure of central tendency (i.e., mean, median or mode) by which your quarterly grade will be calculated.

Review your grades for quizzes, tests, and homework to decide which measure of central tendency will be best for your situation. Write a note to your teacher explaining why you selected that method.

Other Evidence:

Measures of Central Tendency

- quizzes on specific skills (e.g., calculating mean, identifying median)
- finding and explaining “real world” examples of each measure (e.g., scoring in diving competitions)

You Can Use A.M.T. to...

- Develop assessments and lessons
- Code learning events (Stage 3)
- Code assessments (Stage 2)
- Observe and give feedback
- Reflect on lessons & units

© 2004 Jay McTighe and Grant Wiggins
UbD Websites

Go to:
www.jaymctighe.com

then, to Resources

• UbD-Supportive Websites
• Common Core Standards