Designing an Understanding-based Curriculum around Common Core Standards

presented by

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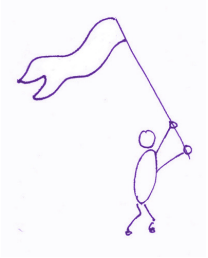
STANDARDS



Definition

Standards specify established learning goals. A *content* standard provides a written description of what students should know and be able to do in a particular discipline or subject area. A *performance* standard specifies how well students need to perform in order to meet the standard.

Some standards are broad and overarching (e.g., *Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence*), while others are grade/level-specific (e.g., *Grade 4 – Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers*.)

Standards specify goals related to **content** (e.g., *Grade 6 – Write and evaluate numerical expressions involving whole-number exponents*) as well as **process** (e.g., *Make sense of problems and persevere in solving them*).

Recommendations

Standards are not curriculum; they provide the framework upon which curricula are developed. Educators must translate Standards into a teachable curriculum to insure a guaranteed set of desired results. Since Standards documents often contain a mix of knowledge, skills, conceptual understandings, transfer abilities and habits of mind, it is necessary to "unpack" them to clarify the desired results and develop appropriate assessments and instruction.

The Common Core Standards have been developed with long-term outcomes in mind (e.g., College and Career Anchor Standards in English Language Arts), and their components are intended to work together (e.g., Content and Practice Standards in mathematics). It is important for educators to understand the intent and structure of the Standards in order to work with them most effectively. Accordingly, I recommend that schools set the expectation and schedule the time for staff to read and discuss the Standards, beginning with the "front matter," *not* the grade-level Standards. Consider using the following essential question to guide staff reading and discussion: *What are the new emphases in these Standards and what do they mean for our practice?*

Areas of Emphasis
in the
Common Core State Standards

The Common Core State Standards in Mathematics

"…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. 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."

-- Common Core State Standards for Mathematics

The Common Core State Standards in English/Language Arts

"Students can, without significant 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. Likewise, students are able independently to discern a speaker's key points, request clarification, and ask relevant questions. They build on others' ideas, articulate their own ideas, and confirm they have been understood. Without prompting, they demonstrate command of standard English and acquire and use a wide-ranging vocabulary. More broadly, they become self-directed learners, effectively seeking out and using resources to assist them, including teachers, peers, and print and digital reference materials."

-- Common Core State Standards for English Language Arts

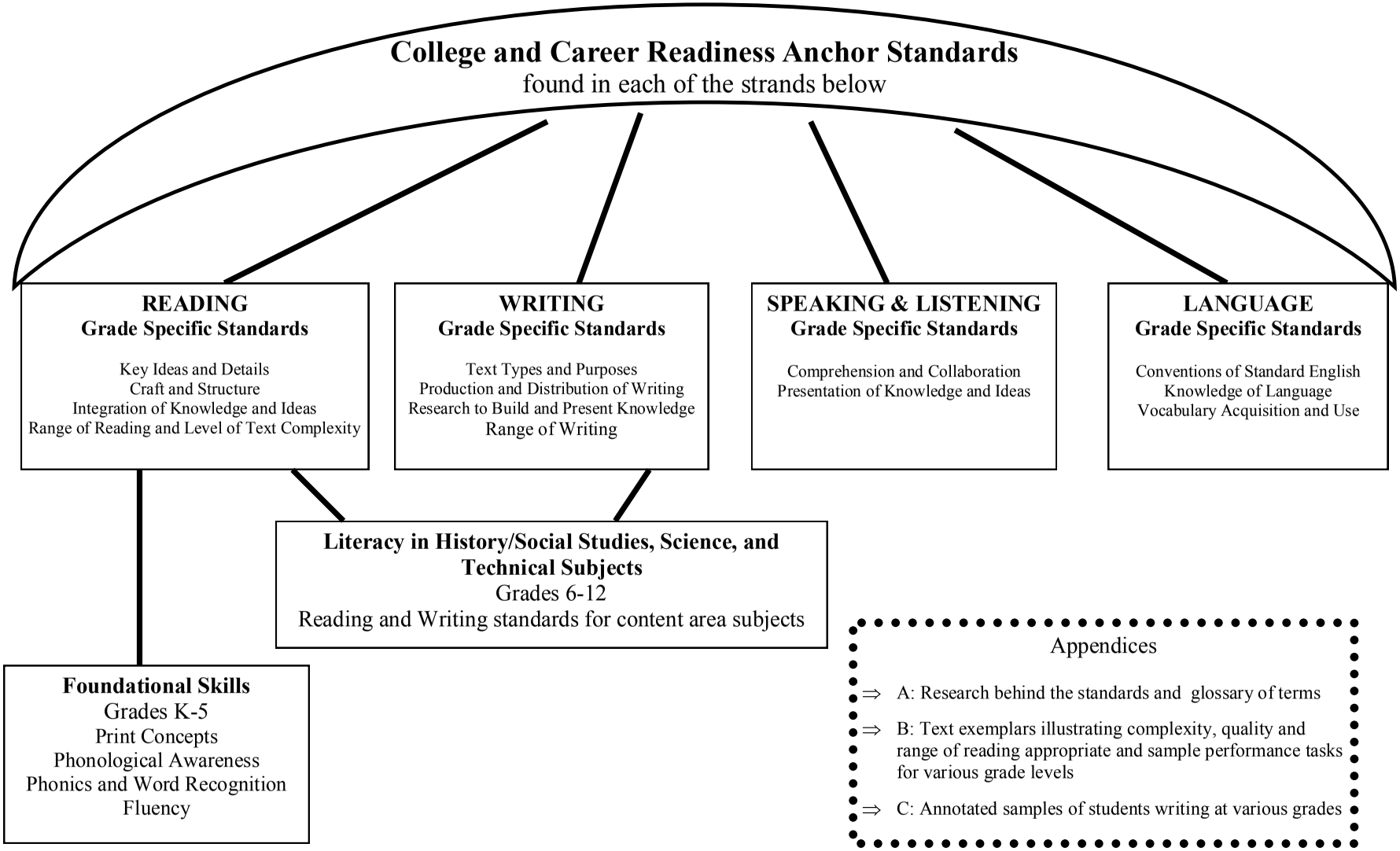
The (Draft) Common Core State Standards in Science

"The framework focuses on a limited number of core ideas in science and engineering both within and across the disciplines. The committee made this choice in order to avoid shallow coverage of a large number of topics and to allow more time for teachers and students to explore each idea in greater depth. Reduction of the sheer sum of details to be mastered is intended to give time for students to engage in scientific investigations and argumentation and to achieve depth of understanding of the core ideas presented. Delimiting what is to be learned about each core idea within each grade band also helps clarify what is most important to spend time on, and avoid the proliferation of detail to be learned with no conceptual grounding.

-- Common Core Science Standards (draft)

Common Core Standards

English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects



Key Points in the English Language Arts Standards

Reading

The standards establish a "staircase" of increasing complexity in what students must be able to read so that all students are ready for the demands of college- and career-level reading no later than the end of high school. The standards also require the progressive development of reading comprehension so that students advancing through the grades are able to gain more from whatever they read. Through reading a diverse array of classic and contemporary literature as well as challenging informational texts in a range of subjects, students are expected to build knowledge, gain insights, explore possibilities, and broaden their perspective. Because the standards are building blocks for successful classrooms, but recognize that teachers, school districts and states need to decide on appropriate curriculum, they intentionally do not offer a reading list. Instead, they offer numerous sample texts to help teachers prepare for the school year and allow parents and students to know what to expect at the beginning of the year.

Writing

The ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence is a cornerstone of the writing standards, with opinion writing – a basic form of argument – extending down into the earliest grades.

Research – both short, focused projects (such as those commonly required in the workplace) and longer term in depth research – is emphasized throughout the standards but most prominently in the writing strand since a written analysis and presentation of findings is so often critical.

Speaking and Listening

The standards require that students gain, evaluate, and present increasingly complex information, ideas, and evidence through listening and speaking as well as through media. An important focus of the speaking and listening standards is academic discussion in one-on-one, small-group, and whole-class settings. Formal presentations are one important way such talk occurs, but so is the more informal discussion that takes place as students collaborate to answer questions, build understanding, and solve problems.

Language

The standards expect that students will grow their vocabularies through a mix of conversations, direct instruction, and reading. The standards will help students determine word meanings, appreciate the nuances of words, and steadily expand their repertoire of words and phrases.

The standards recognize that students must be able to use formal English in their writing and speaking but that they must also be able to make informed, skillful choices among the many ways to express themselves through language.

Vocabulary and conventions are treated in their own strand not because skills in these areas should be handled in isolation but because their use extends across reading, writing, speaking, and listening.

Media and Technology

Just as media and technology are integrated in school and life in the twenty-first century, skills related to media use (both critical analysis and production of media) are integrated throughout the standards.

English Language Arts Standards
College and Career Readiness

Anchor Standards for Reading

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

English Language Arts Standards
College and Career Readiness

Anchor Standards for Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Pedagogical Shifts Demanded by the ELA Standards

			Notes & Ideas
1	**Balancing Informational & Literary Text**	Students read a true balance of informational and literary texts.	
2	**Knowledge in the Disciplines**	Students build knowledge about the world (domains/ content areas) through *text* rather than the teacher or activities.	
3	**Staircase of Complexity**	Students read the central, grade appropriate text around which instruction is centered. Teachers create more time and space and support in the curriculum for *close* reading.	
4	**Text-based Answers**	Students engage in rich and rigorous evidence-based conversations about text.	
5	**Writing from Sources**	Writing emphasizes use of evidence from sources to inform or make an argument.	
6	**Academic Vocabulary**	Students constantly build the transferable vocabulary they need to access grade level complex texts. This can be done effectively by spiraling like content in increasingly complex texts.	

Source: ENGAGE NY

Common Core Standards for Mathematics

Introduction – Articulates the philosophical and conceptual foundation for the Standards. Describes their organization and how they should be applied.

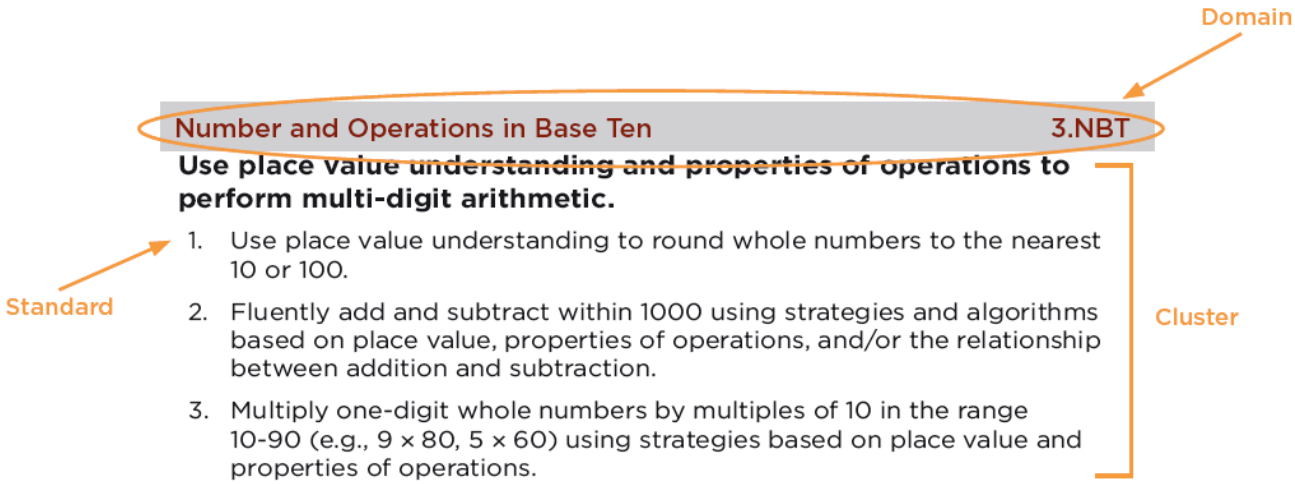
Standards for Mathematical Practice – These overarching standards apply across the content standards in each grade

- Standards for mathematical proficiency: reasoning, problem solving, modeling, decision making, and engagement
- Mathematical "habits of mind"

<u>Grade-Level Standards</u> – Define what students should know and be able to do at each grade level

K-8 grade-by-grade standards are organized by domain

- **Domains**: overarching ideas that connect topics across the grades
- **Clusters:** illustrate progression of increasing complexity from grade to grade



9-12 high school standards are organized around five conceptual categories

- Number and Quantity, Algebra, Functions, Geometry, and Statistics and Probability
- Content categories: overarching ideas that describe strands of content
- Domains/Clusters: groups of standards that describe coherent aspects of the content category
- Standards indicated as (+) are beyond the college and career readiness level but are necessary for advanced mathematics courses (calculus, discrete mathematics, and advanced statistics.)

Key Points in the Mathematics Standards

• 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.' 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.

• The standards stress not only procedural skill but also **conceptual understanding**, to make sure students are learning and absorbing the critical information they need to succeed at higher levels - rather than the current practices by which many students learn enough to get by on the next test, but forget it shortly thereafter, only to review again the following year.

• The K-5 standards provide students with a solid foundation in whole numbers, addition, subtraction, multiplication, division, fractions and decimals—which help young students build the foundation to successfully apply more demanding math concepts and procedures, and move into applications.

• Having built a strong foundation K-5, students can do *hands on* learning in geometry, algebra and probability and statistics. Students who have completed 7th grade and mastered the content and skills through the 7th grade will be well-prepared for algebra in grade 8.

• The high school standards call on students to practice applying mathematical ways of thinking to **real world issues and challenges**; they prepare students to think and reason mathematically. The high school standards set a rigorous definition of college and career readiness, by helping students develop a depth of understanding and ability to apply mathematics to novel situations, as college students and employees regularly do.

• The high school standards emphasize **mathematical modeling**, the use of mathematics and statistics to analyze empirical situations, understand them better, and improve decisions.

Mathematics Standards

Standards for Mathematical Practice

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years.

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices. In this respect, those content standards which set an expectation of understanding are potential "**points of intersection**" between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum...

Pedagogical Shifts Demanded by the Mathematics Standards

			Notes & Ideas
1	**Focus**	Teachers significantly narrow and deepen the scope of how time and energy is spent in the math classroom. They do so in order to focus deeply on only the concepts that are prioritized in standards.	
2	**Coherence**	Educators carefully connect the learning within and across grades so that students can build new understanding onto foundations built in previous years.	
3	**Fluency**	Students are expected to have speed and accuracy with simple calculations; teachers structure class time and/or homework time for students to memorize, through repetition, core functions.	
4	**Deep Understanding**	Students deeply understand and can operate easily within a math concept before moving on. They learn more than the trick to get the answer right. They learn the math.	
5	**Application**	Students are expected to use math and choose the appropriate concept for application even when they are not prompted to do so.	
6	**Dual Intensity**	Students are practicing and understanding. There is more than a balance between these two things in the classroom – both are occurring with intensity.	

Source: ENGAGE NY

Framework for K-12 Science Education

The Framework outlines the three dimensions that are needed to provide students a high quality science education. The integration of these three dimensions provides students with a context for the content of science, how science knowledge is acquired and understood, and how the sciences are connected through concepts that have universal meaning across the disciplines. The following excerpt is quoted from the Framework.

Dimension 1: Practices

Dimension 1 describes (a) the major practices that scientists employ as they investigate and build models and theories about the world and (b) a key set of engineering practices that engineers use as they design and build systems. We use the term "practices" instead of a term such as "skills" to emphasize that engaging in scientific investigation requires not only skill but also knowledge that is specific to each practice.

Similarly, because the term "inquiry," extensively referred to in previous standards documents, has been interpreted over time in many different ways throughout the science education community, part of our intent in articulating the practices in Dimension 1 is to better specify what is meant by inquiry in science and the range of cognitive, social, and physical practices that it requires. As in all inquiry-based approaches to science teaching, our expectation is that students will themselves engage in the practices and not merely learn about them secondhand. Students cannot comprehend scientific practices, nor fully appreciate the nature of scientific knowledge itself, without directly experiencing those practices for themselves.

Dimension 2: Crosscutting Concepts

The crosscutting concepts have application across all domains of science. As such, they provide one way of linking across the domains in Dimension 3. These crosscutting concepts are not unique to this report. They echo many of the unifying concepts and processes in the National Science Education Standards, the common themes in the Benchmarks for Science Literacy, and the unifying concepts in the Science College Board Standards for College Success. The framework's structure also reflects discussions related to the NSTA Science Anchors project, which emphasized the need to consider not only disciplinary content but also the ideas and practices that cut across the science disciplines.

Dimension 3: Disciplinary Core Ideas

The continuing expansion of scientific knowledge makes it impossible to teach all the ideas related to a given discipline in exhaustive detail during the K-12 years. But given the cornucopia of information available today virtually at a touch—people live, after all, in an information age—an important role of science education is not to teach "all the facts" but rather to prepare students with sufficient core knowledge so that they can later acquire additional information on their own. —An education focused on a limited set of ideas and practices in science and engineering should enable students to evaluate and select reliable sources of scientific information, and allow them to continue their development well beyond their K-12 school years as science learners, users of scientific knowledge, and perhaps also as producers of such knowledge.

Key Conceptual Understandings and Processes in the Science Standards

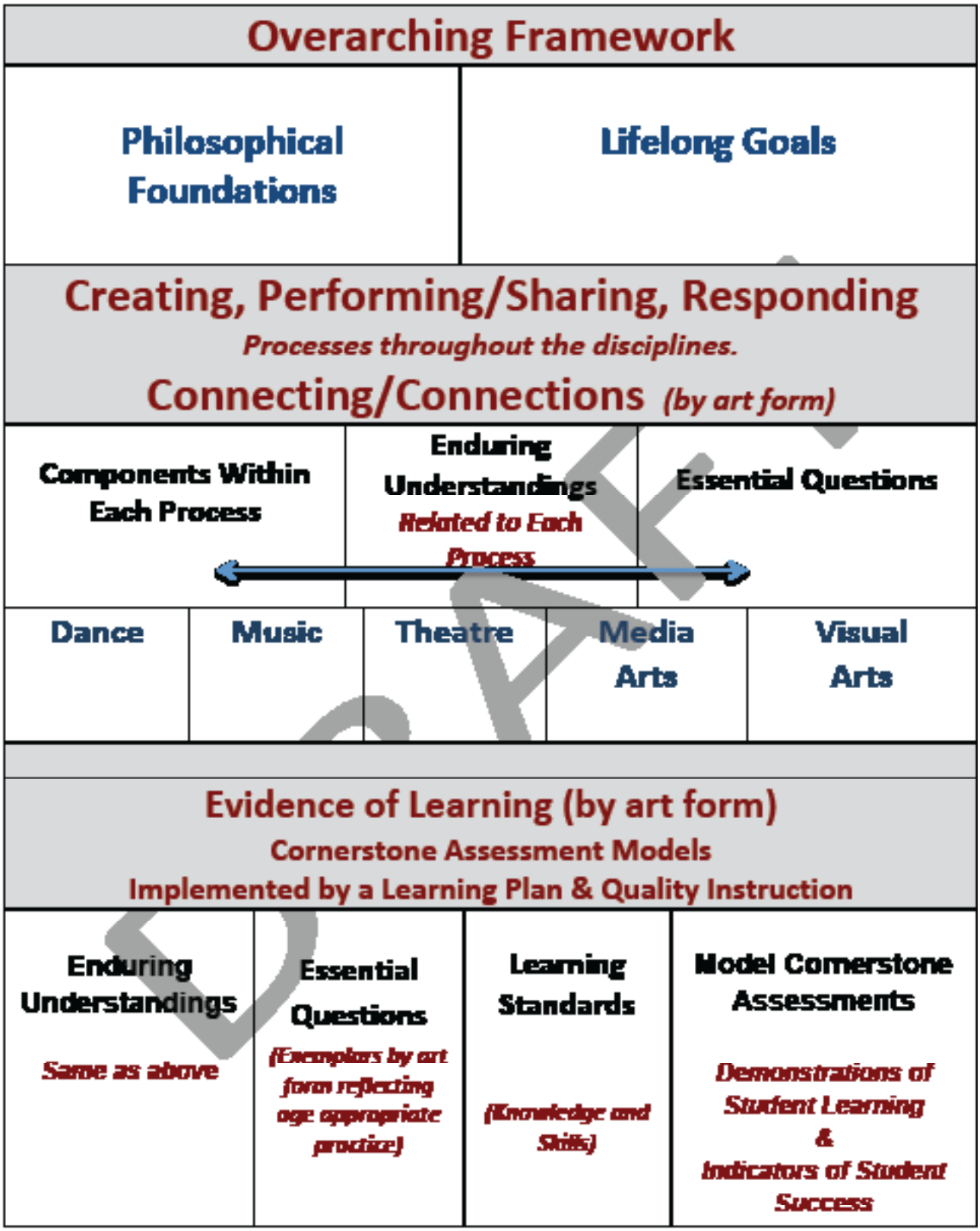
Practices for K-12 Science Classrooms

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics, information and computer technology, & computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

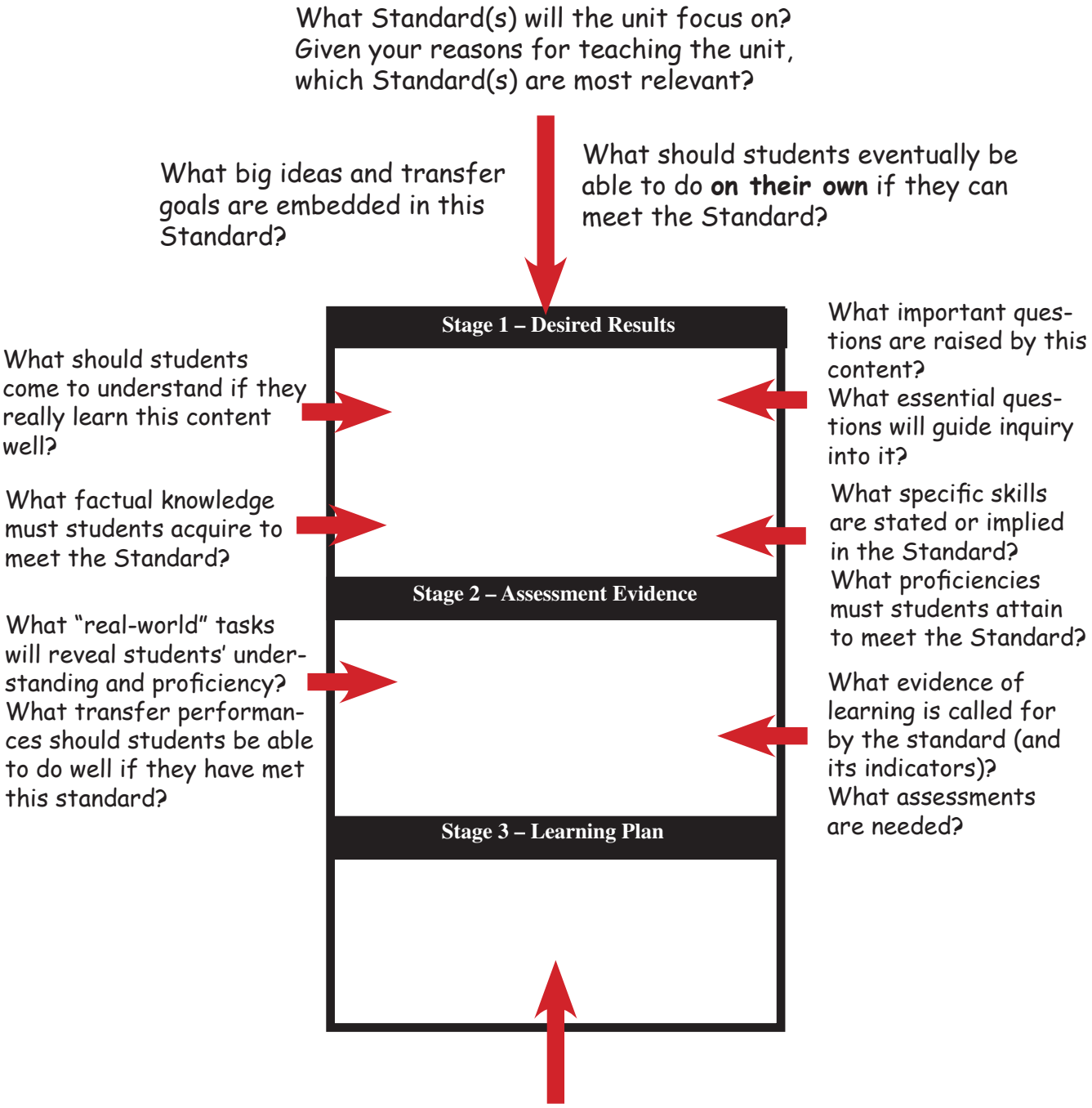
Crosscutting Scientific and Engineering Concepts

1. Patterns – Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
2. Cause and Effect – Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
3. Scale, Proportion, and Quantity – In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.
4. Systems and System Models – Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.
5. Energy and Matter – Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.
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.
7. Stability and Change – For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of the system are critical elements of study.

Next Generation Arts Standards



Curriculum Planning with Standards using UbD



UbD in a Nutshell

Guiding Principles of Understanding by Design

1. UbD is a way of thinking purposefully about curricular planning and school reform. It offers a 3-stage design process, a set of helpful design tools, and design standards – not a rigid program or prescriptive recipe.

2. The primary goal of UbD is student understanding: the ability to make meaning of "big ideas" and transfer learning.

3. UbD "unpacks" and transforms Content Standards into the relevant Stage 1 elements and appropriate assessments in Stage 2.

4. Understanding is revealed when students autonomously transfer their learning through authentic performance. Six facets of understanding – the capacity to *explain, interpret, apply, shift perspective, empathize*, and *self assess* – serve as indicators of understanding.

5. Teachers are coaches of understanding, not mere purveyors of content or activity. They design for and support "meaning making" and "transfer" by the learner; and adjust to achieve intended results.

6. Planning is best done "backward" from the desired results and the transfer tasks that embody the goals. The 3 Stages (Desired Results, Evidence, Learning Plan) must align for the unit to be most effective.

7. Regular reviews of curriculum against design standards enhance curricular quality and effectiveness.

8. UbD reflects a "continuous improvement" approach. The results of curriculum designs – student performance - informs needed adjustments.

Key Questions of Backward Design

Stage 1: Desired Results

- *What long-term transfer goals are sought?*
- *What meanings should students make in order to arrive at important understandings?*
- *What essential questions will students explore?*
- *What knowledge & skill will students acquire?*
- *What established goals/Standards are targeted?*

Stage 2: Evidence

- *What performances and products will reveal evidence of meaning-making and transfer?*
- *By what criteria will performance be assessed, in light of Stage 1 desired results?*
- *What additional evidence will be collected for all Stage 1 Desired Results?*

Stage 3: Learning Plan

- *What activities, experiences, and lessons will lead to achievement of the desired results and success at the assessments?*
- *How will the learning plan help students of Acquisition, Meaning Making, and Transfer?*
- *How will the unit be sequenced and differentiated to optimize achievement for all learners?*
- *Are all three stages properly aligned?*

The Understanding by Design Template 2.0

Frequently Asked Questions

1. Why did you change the UbD Template?
Just as computer software programs are regularly updated to incorporate new ideas and adjustments based on user feedback, the new Template reflects the most current thinking on UbD, based on our own observations and the constant feedback we get from users throughout the world. In particular, we have seen the need to highlight transfer goals and the coding of Stages 2 and 3 because too often well-intentioned designers were not focusing on long-term transfer in their units, and the unit assessments often did not closely align with the stated goals of Stage 1.

2. Do you have to follow the UbD Template order (top to bottom) when you design?
No. Backward design does not demand a rigid sequence. The process of thinking through a design is inherently non-linear, with various entry points, leading eventually to a logically-organized product. Regardless of approach, designers should routinely check the emerging design against the UbD Design Standards to ensure that the process yields a desired high-quality unit design.

3. Should you use the 3-stage UbD Template for planning lessons as well as units?
We do not recommend isolated lesson planning separate from unit planning. We have chosen the unit as a focus for design because the key elements of UbD – understandings, essential questions, and transfer performances – are too complex and multi-faceted to be satisfactorily addressed within a single lesson. For instance, essential questions should be revisited over time, not answered by the end of a single class period.

Nonetheless, the larger unit goals provide the context in which individual lessons are planned. Teachers often report that careful attention to Stages 1 and 2 sharpens their lesson planning, resulting in more purposeful teaching and improved learning.

Wiggins, G. and McTighe, J. (2011) *The Understanding by Design Guide to Creating High Quality Units.* Association for Supervision and Curriculum Development (ASCD).
<http://www.ascd.org/publications/books/109107.aspx>

Stage 1 – Desired Results

Established Goals

National Driver Development Standards

G1 Demonstrate a working knowledge of rules, regulations and procedures of operating an automobile

G2 Use visual search skills to obtain correct information and make reduced-risk decisions for effective speed and position adjustments

G3 Interact with other users within the Highway Transportation System by adjusting speed, space, and communications to avoid conflicts and reduce risk

G4 Demonstrate balanced vehicle movement through steering, braking, and accelerating in a precise and timely manner throughout a variety of adverse conditions

Source: *American Driver & Traffic Safety Association*

Transfer

Students will be able to independently use their learning to...

T1 drive courteously and defensively without accidents or needless risk.

T2 anticipate and adapt their knowledge of safe and defensive driving to various traffic, road and weather conditions.

Meaning

UNDERSTANDINGS
Students will understand that...

U1 A motor vehicle can become a lethal weapon, and driving one demands constant attention.
U2 Defensive driving assumes that other drivers are not attentive and that they might make sudden or ill-advised moves.
U3 Effective drivers constantly adapt to the various traffic, road, & weather conditions.

ESSENTIAL QUESTIONS
Students will keep considering...

Q1 What must I anticipate and do to minimize risk and accidents when I drive?

Q2 What makes a courteous and defensive driver?

Acquisition of Knowledge & Skill

Students will know...

K1 the driving laws of their state, province or country
K2 rules of the road for legal, courteous and defensive driving
K3 basic car features and functions
K4 what to do in case of an accident

Students will be skilled at...

S1 procedures of safe driving under varied traffic, road & weather conditions
S2 signalling/communicating intentions
S3 quick response to surprises
S4 parallel parking

Stage 2 – Evidence

Coding	Evaluative Criteria	Assessment Evidence
		PERFORMANCE TASK(S)
Transfer goals	• skillful • courteous/ defensive • anticipates well • responsive	1. *Task*: drive from home to school and back, with parental and teacher supervision. The goal is to demonstrate skillful, responsive, and defensive driving under real-world conditions. 2. *Task*: Same task as #1 but with rainy conditions. 3. *Task*: Same task as #1 but with rush hour traffic.
Meaning Goals		4. Booklet: Write a booklet for other young drivers on the big ideas of safe and effective driving
		OTHER EVIDENCE
Meaning Goals	• accurate • perceptive	5. Self-assess your driving and parking in Tasks 1 - 3 in terms of *courteous* & *defensive*. Discuss adjustments made.
Skill & Transfer Goals	• skilled	6. Observation of student driver in a driving simultor or car off road.
Knowledge & Skill Goals; simple transfer	• knows the law • drives well enough to meet driving test criteria	7. Written test required for getting a license. 8. Road test required for getting a license.

Stage 3 – Learning Plan

Coding — **Code Key:** T = transfer, M = Meaning-making, A = Acquisition

Pre-assessment

Pre-assessment of driving knowledge, skill, understandings, and attitudes using surveys and simulators.

Progress Monitoring

LEARNING EVENTS

Note: this is a merely suggestive overview of a unit plan. A typical unit summarizes all learning events in more detail.

T — All instruction is carried out and formatively assessed under a 5-level system of increased autonomy:

- the skill is introduced
- it can be carried out under full instruction
- it can be carried out correctly when prompted
- it seldom needs to be prompted
- you can carry it out consistently without any prompting

Formative assessment and informal feedback by instructor as student tries to apply skills learned while driving off-road

- Look for such common misconceptions and skill deficits as -
  - * failure to check mirrors and peripheral vision
  - * not accurately responding during changes in road conditions
  - * not perceiving speed of oncoming cars during merges and turns

A — Expert driving is modeled via video and the driving instructor; the driving exam is introduced and studied.

M — Reflection and generalizations promoted via discussion of the essential questions after each virtual and real road experience. Written self-assessment required after each driving experience.

A, T — Experience and equipping via direct instruction and vidoe simultaors is provided in terms of how to handle: Wet Roads, Dry Roads, Darkness Daylight, Highway, City, Country.

A, T — Separate skill development and real-world practice in –

Car Check	Circles	Anticipation & Planning Ahead
Safety Checks	Pedestrian Crossings	Use of Speed
Controls & Instruments	Highways	Other Traffic
Starting up, Moving and Stopping	Turns	Intersections
Safe Positioning	Reversing	Darkness
Mirrors	Parking	Weather Conditions
Signals	Emergency Stopping	Rules & Laws
	Security	

Stage 1 – Desired Results

Established Goals

What Content Standards, Program and/or Mission related goal(s) will this unit address?

Transfer

Students will be able to independently use their learning to...

What kinds of long-term, independent accomplishments are desired?

Meaning

UNDERSTANDINGS
Students will understand that...

What specifically do you want students to understand?

What inferences should they make?

ESSENTIAL QUESTIONS
Students will keep considering...

What thought-provoking questions will foster inquiry, meaning making, and transfer?

Acquisition of Knowledge & Skill

Students will know...

What facts and basic concepts should students know and be able to recall?

Students will be skilled at...

What discrete skills and processes should students be able to use?

Stage 2 – Evidence

Coding	Evaluative Criteria	Assessment Evidence
Are all of the Desired Results being appropriately assessed?	What criteria will be used in each assessment to evaluate attainment of the Desired Results? Regardless of the *format* of the assessment, what qualities are most important?	**PERFORMANCE TASK(S)** **How will students demonstrate their understanding (meaning-making and transfer) through complex performance?** *Consider the six facets when developing assessments of understanding. Optional: Use the G.R.A.S.P.S. elements to frame an authentic context for the task(s).* **OTHER EVIDENCE** **What other evidence will you collect to determine whether Stage 1 goals were achieved?**

Stage 3 – Learning Plan

Coding

What pre-assessments will you use to check students' prior knowledge, skill levels and potential misconceptions?

Pre-assessment

Progress Monitoring

LEARNING EVENTS

What's the goal for (or type of) each event?

Are all three types of goals (acquisition, meaning, and transfer) addressed in the learning plan?

Does the learning plan reflect principles of learning and best practices?

Is there tight alignment across all three stages?

While detailed lesson plans are not expected here, you should include sufficient information so that another teacher who is familiar with the unit's content could understand and follow the basic learning plan. That means not just stating WHAT learners will do but WHY the event is proposed - its purpose

Optional: Use the column on the left to code your learning activities; e.g., their alignment with Stage 1 elements, T-M-A, or W.H.E.R.E.T.O.

How will you monitor students' progress towards acquisition, meaning-making, and transfer, <u>during</u> lesson events?

What are potential rough spots and student misunderstandings?

How will students get the feedback they need and opportunities to make use of it?

TRANSFER GOALS

Definition

Transfer Goals highlight the effective uses of understanding, knowledge, and skill that we seek in the long run; i.e., what we want students to be able to do when they confront new challenges – both in and outside of school. There are a small number of overarching, long-term transfer goals in each subject area. For example, a long-term aim in mathematics is for students to be able to solve "real world" problems on their own. A long-term transfer goal in history is for students to apply the lessons of history when considering contemporary issues.

In every case, the ability to transfer learning manifests itself in not just one setting but varied real-world situations. Transfer is about independent performance in context. You can only be said to have fully understood if you can apply your learning without someone telling you what to do and when to do it. In the real world, no teacher is there to direct and remind you about which lesson to plug in here or there. Transfer is about intelligently and effectively drawing from your repertoire, independently, to handle new contexts on your own. In the real world, no teacher is there to direct and remind you about which lesson to plug in here or there: transfer is about intelligently and effectively drawing from your repertoire, independently, to handle particular contexts on your own. The goal of transfer thus requires that an instructional plan (in Stage 3) help the student to become increasingly autonomous, and the assessments (in Stage 2) need to determine the degree of student autonomy.

Transfer goals have several distinguishing characteristics:

- They require application (not simply recognition or recall).
- The application occurs in new situations (not ones previously taught or encoun tered; i.e., the task cannot be accomplished as a result of rote learning).
- The transfer requires a thoughtful assessment of which prior learning applies here – i.e. some strategic thinking is required (not simply "plugging in" skill and facts).
- The learners must apply their learning autonomously (on their own, without coaching or teacher support).
- Transfer calls for the use of habits of mind (i.e., good judgment, self regulation, persistence) along with academic understanding, knowledge and skill.

Long Term Transfer Goals

examples

Students will be able to independently use their learning to:

History
• Apply lessons of the past to current and future events and issues, and to other historical eras
• Critically appraise political, social, and historical claims/decisions in light of available evidence and reasoning

Health and Physical Education
• Make healthful choices and decisions regarding diet, exercise, stress management, alcohol/drug use
• Play a chosen game skillfully and with good sportsmanship

Mathematics
• Investigate and find patterns in phenomena/data, and model them mathematically
• Apply sound mathematical reasoning to clarify and solve novel mathematical problems

Performing & Fine Arts
• Find meaning and interest in varied works and performances of art
• Create/perform works in one or more media to express ideas and/or to evoke mood and emotion

Reading
• Read and respond to text in various genres (literature, non-fiction, technical) for various purposes (entertainment, to be informed, to perform a task)
• Comprehend text by inferring and tracing the main idea, interpreting ("between the lines"), critically appraising, and making personal connections

Research
• Locate pertinent information from varied sources (print, on-line; primary, secondary)
• Critically evaluate sources and information (e.g., for accuracy, completeness, timeliness, lack of bias, properly referenced)

Science
• Evaluate scientific claims and analyze current issues involving science or technology
• Conduct a sound investigation to answer an empirical question

World Language
• Communicate effectively in the target language in common "real world" situations
• Demonstrate sensitivity in behavior and speech to culture and context

Writing
• Write in various genres for various audiences in order to explain (expository), entertain (narrative/poem), argue (persuasive), guide (technical), and challenge (satirical)
• Carefully draft, write, edit, and polish one's own and others' writing to make it publishable

Transfer Goals

examples from schools and districts

Science Transfer Goals

Students will be able to independently use their learning to:

- Apply knowledge of science and engineering to engage in public discussions on relevant issues in a changing world.
- Conduct investigations, individually and collaboratively, to answer questions.
- Evaluate scientific claims for validity.
- Think systemically.

Source: North Slope Borough School District, Barrow, Alaska (July 2012)

Visual Arts Transfer Goals

Students will be able to independently use their learning to:

- Create engaging and purposeful artistic expressions in forms that vary in terms of media and style.
- Communicate ideas, experiences, and stories through art.
- Respond to the artistic expression of others through global understanding, critical stance, personal connection, and interpretation.
- Respond to technical and conceptual challenges of his/her own.
- Develop an independent artistic vision.

Source: Sheridan School, Washington, DC (June 2011)

World Languages Transfer Goals

Students will be able to independently use their learning to:

- Communicate effectively in the target language(s) in realistic situations while displaying a sensitivity to culture and context.
- Emulate native speakers.
- Willingly taking risks with language, both within and outside of the classroom.

Source: The Dalton School, New York, NY (March 2012)

Special Education

Students will be able to independently use their learning to:

- Function in the community while respecting social/cultural norms.
- Advocate for their personal needs – academic, behavioral, emotional, and physical.
- Communicate effectively based on purpose, task, and audience using appropriate vocabulary.
- Explore and pursue viable options based on aspirations, interests, and experience.

Source: Prosper ISD, TX (April 2013)

UNDERSTANDINGS

Definition

Identify the important, transferrable ideas and processes that students should come to understand. Understandings differ in scope and breadth. **Overarching** understandings point beyond the specifics of a unit to the larger, transferrable ideas that spiral throughout the curriculum. **Topical** understandings target the particular insights we want students to attain within a unit of study. Topical understandings are less likely to transfer to other topics. Effective understandings…

- Reflect important, transferrable ideas
- Are stated as full-sentence generalizations — Students will understand that…

Desired understandings are identified in Stage 1 for the purpose of:

1. focusing curriculum around enduring, transferable learning to avoid educator and student fixation on narrow objectives;
2. encouraging active meaning making by students; and
3. are necessary for transfer of learning to new situations.

Examples

Overarching Understandings	Topical Understandings
Economics Price is a function of supply and demand. Science Gravity is not a physical thing but a term describing the constant rate of acceleration of all falling objects. Physical Education A muscle that contracts through its full range of motion will generate more force Mathematics Mathematics allows us to see patterns that might have remained unseen.	Unit on Money (elementary) The cost of a Beanie Baby depends on demand and availability at any given time. Unit on Gravitational Force Vertical height, not the angle and distance of descent, determines the eventual speed of a falling object. Unit on Golf A full stroke with follow-through will increase your distance on a drive. Unit on Statistics Statistical analysis and graphic displays often reveal patterns in seemingly random data or populations, enabling predictions.

Tips on Framing Understandings

Frame the desired understanding as a full-sentence generalization in response to the phrase, *"Students will understand that..."*

State *specifically* what it is about the topic that students are expected to grasp. Many curricular frameworks, content standards documents, and teacher objectives make the mistake of framing "understandings" as a topic (e.g., *Students will understand the water cycle.*) or skill (e.g., *Students will understand how to multiply.).*

We recommend that you summarize the *particular* understanding(s) you are after, being as specific as possible about the insights that should result from exploring the topic (e.g., *Data analysis and graphic displays often reveal helpful patterns and enable prediction.*).

A practical way to accomplish this is to frame the understanding(s) in response to the stem: "the students will understand **that**..." (e.g., *The Civil War was fought initially over states rights issues and regional economic politics, not just the morality of slavery.).* This approach helps to clarify the desired generalizations that we want students to come to understand, while avoiding the problems of stating the understanding in terms of a topic or skill.

Another way to think about it: If your unit topic is a "story," then what is (are) the moral(s) of your story? By stating the understanding as a "moral of the story," designers move beyond topics to clarify the complete understanding they seek. For example, in a unit on animal adaptation, one of the "morals" can be stated as, *Living organisms have developed adaptive mechanisms to enable them to survive harsh or changing environments.*

Beware of stating an understanding as a truism or vague generality.

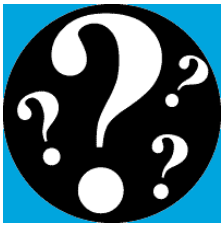
Avoid truisms – statements that are true by definition (e.g., *Triangles have 3 sides*) or state the obvious (e.g., *Musicians work with sounds to create music).* Likewise, vague generalities (e.g., *America is a complex country* or *Writing involves many different elements*) are too global to provide useful and transferrable insights into important ideas. A practical tip: Check to see that your stated understandings do not end in an adjective (e.g., *Fractions are important).*

Avoid the phrase, *"Students will understand how to...."*

Such a statement is ambiguous. One meaning is that the student will develop certain skills. This kind of objective is best placed in the Skills section on the design template. Another meaning of "understand how" implies that there are insights essential to wise use of the skill – e.g., knowing *why* something works or is useful. Those desired insights should be made explicit and framed as under standings in that section of the template.

A practical way to accomplish this is to specify "why?" "how?" and "so what?" as a means of identifying desired understandings in skill areas.

ESSENTIAL QUESTIONS



Definition

Open-ended questions designed to promote sustained inquiry and meaning making. Essential questions differ in scope and breadth. We distinguish between overarching and topical questions. **Overarching** essential questions point beyond the particulars of a unit to the larger, transferable ideas and enduring understandings. They recur fruitfully across the grades, spiraling throughout the curriculum to provide conceptual through lines. Effective overarching essential questions:

- are broad and general in nature; and
- lead to overarching understandings

Topical essential questions are more specific. They guide the exploration of ideas and processes within particular topics within a unit of study.

Essential questions are identified in Stage 1 for the purpose of:

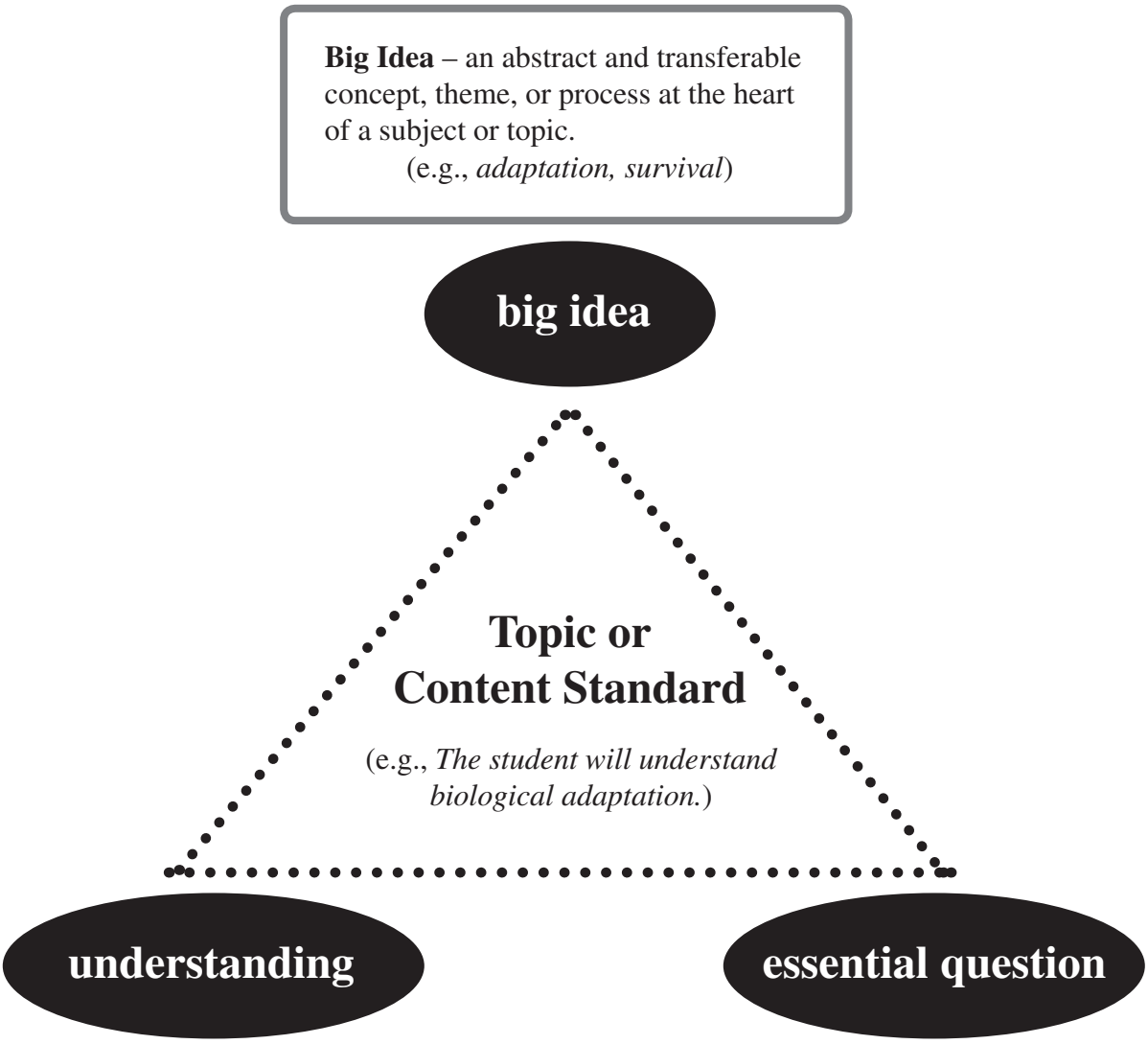
1. Provoking deep thought, lively discussion, sustained inquiry, and additional questions leading to new and/or deeper insight(s)
2. Asking students to consider alternatives, weigh evidence, support their ideas and rethink key ideas
3. Support connections within and across content and context

Examples

Overarching Essential Questions	Topical Essential Questions
• *In what ways does art reflect culture as well as shape it?* • *How do artists choose tools, techniques, and materials to express their ideas?* • *What makes a great story?* • *How do effective writers hook and hold their readers?*	**unit on masks** • *What do masks and their use reveal about the culture? What tools, techniques, and materials are used in creating masks from different cultures?* **unit on mysteries** • *What is unique about the mystery genre?* • *How do great mystery writers hook and hold their readers?*

Big Ideas, Understandings and Essential Questions

The following visual represents the interrelationship among big ideas, understandings and essential questions.



Understanding – a full-sentence generalization, specifying what we want students to come to understand about the big idea(s).
(e.g., *Students will understand that... Living organisms (populations) adapt in order to survive harsh or changing environments.*)

Essential Question – a provocative, open-ended question, designed to guide inquiry into the big idea(s). By actively exploring the essential question(s), students make meaning and deepen their understanding.
(e.g., *How do living organisms survive in harsh or changing environments?*)

Tips for Using Essential Questions

1. Organize programs, courses, units of study, and lessons around the questions. Make the "content" answers to questions.

2. Select or design assessment tasks (up front) that are explicitly linked to the questions. The task(s) and performance standards should clarify what acceptable pursuit of, and answers to, the questions actually look like.

3. Use a reasonable number of questions per unit (2-5). Make less be more. Prioritize 'content' for students to make the work clearly focus on *a few key* questions.

4. Frame the questions in "kid language" as needed to make them more accessible. Edit the questions to make them as engaging and provocative as possible for the age-group.

5. Ensure that every child understands the questions and sees their value. Conduct a survey or informal check, as necessary, to ensure this.

6. Derive and design specific concrete exploratory activities and inquiries for each question.

7. Sequence the questions so they "naturally" lead from one to another.

8. Post the essential questions in classroom(s), and encourage students to organize notebooks around them to make clear their importance for study and note-taking.

9. Help students to personalize the questions. Have them share examples, personal stories, and hunches. Encourage them to bring in clippings and artifacts to help make the questions come alive.

10. Allot sufficient time for "unpacking" the questions — examining sub-questions and probing implications — mindful of student age, experience, and other instructional obligations. Use question/concept maps to show relatedness of questions.

11. Share your questions with other faculty to make planning and teaching for cross-subject matter coherence more likely. Ideas to promote overarching questions school-wide — ask teachers to post their questions in the faculty room and/or in department meeting/planning areas. Type and circulate questions in the faculty bulletin. Present and discuss at faculty and P.T.S.A. meetings.

Other tips: _____

_____

Unpacking Standards - "Inside Out" Method

STANDARD

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Source: Common Core – College and Career Readiness Anchor Standards – Writing

Stated/implied "big ideas" in NOUNS:

- development • organization • style
- task • audience • purpose

("form follows function")

Stated/implied performances in VERBS:

Produce (writing)

ADJECTIVES and ADVERBS:

- clear
- coherent
- appropriate

Understandings

- A writer's purpose (e.g., to inform, entertain, persuade, etc.) and audience shapes the style, development and organization of the writing.
- Different writing genres and purposes have unique organizational patterns.

Essential Questions

- *What is my goal? For whom am I writing?*
- *How does purpose and audience affect a writer's style and organization?*
- *How do effective writers hook and hold their readers in different genres (e.g., mystery, essay, poem, historical fiction)?*

Transfer Goal(s)

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Performance Task(s)

- Write for the same purpose to different audiences, and explain the influence of the target audience on thestyle, word choice, etc.
- Write on the same content in two different genres and explain each genre's influence on organization, style, word choice.

Criteria

- clear • coherent
- appropriate to task, purpose, audience

Unpacking Standards - "Inside Out" Method

STANDARD

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

Source: Common Core – College and Career Readiness Standards – Writing

Stated/implied "big ideas" in NOUNS:

- arguments
- claims
- topics or texts
- evidence
- reasoning

Stated/implied performances in VERBS:

- write
- support (claims)
- analyze (topics/texts)
- reasoning

ADJECTIVES and ADVERBS:

- valid
- relevant
- sufficient

Understandings

- The effectiveness of an argument is dependent upon the quality of the supporting evidence used (validity, appropriateness) and how it is conveyed.

Essential Questions

- *What makes an argument convincing?*
- *What is the best evidence I can use to support my argument?*
- *How do I best organize and present my argument?*

Transfer Goal(s)

produce clear and coherent writing to persuade a target audience

Performance Task(s)

Based on your reading of informational texts on a local or national issue, prepare a (report, letter to editor, essay) for a specific audience to convince them of your position. Your argument should follow a logical sequence with supporting evidence for your position (claim).

Criteria

- relevant evidence
- sufficient evidence
- valid reasoning

Unpacking Standards - "Inside Out" Method

STANDARD

Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

Source: Common Core – College and Career Readiness Anchor Standards – Reading

Stated/implied "big ideas" in NOUNS:

- ideas
- themes
- text
- development
- details

Stated/implied performances in VERBS:

- determine
- analyze
- summarize

ADJECTIVES and ADVERBS:

- central
- key
- supporting

Understandings

- Authors do not always state the central idea or theme overtly; readers have to infer it "between the lines."
- Effective readers use specific strategies to help them infer the implied main ideas of a text.

Essential Questions

- How can I to determine the central idea or theme of what I read?
- How can I read "between the lines" to determine the author's meaning?
- What strategies do effective readers use to make meaning from a text?

Transfer Goal(s)

Determine central ideas or themes of a text and analyze their development. Summarize the key supporting details

Performance Task(s)

- Prepare a "study guide" for students by summarizing the central ideas or key themes of a text.
- Use the "Adding up the Facts" organizer to show how supporting details lead to an inference about main ideas.

Criteria

- appropriate inference
- effective summary
- supported by key details

Unpacking Standards - "Inside Out" Method

STANDARD Model with Mathematics

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace....routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

Source: Common Core State Standards – Mathematics

Stated/implied "big ideas" in NOUNS:

- mathematical model(s)
- "real life" problems
- disciplines and life

Stated/implied performances in VERBS:

- model
- apply
- solve
- interpret
- reflect on
- improve

ADJECTIVES and ADVERBS:

Understandings

- Mathematical models simplify and connect phenomena to assist in understanding and problem solving.
- Mathematical models must be viewed critically so that they do not mislead.
- Effective problem solvers always check for the reasonableness of solutions.

Essential Questions

- *How can I best model this phenomena in this situation?*
- *Do these results make sense?*
- *What are the limits of this mathematical model in this context?*
- *What do effective problem solvers do?*

Transfer Goal(s)

Apply the mathematics they know to develop mathematical models for solving real world problems

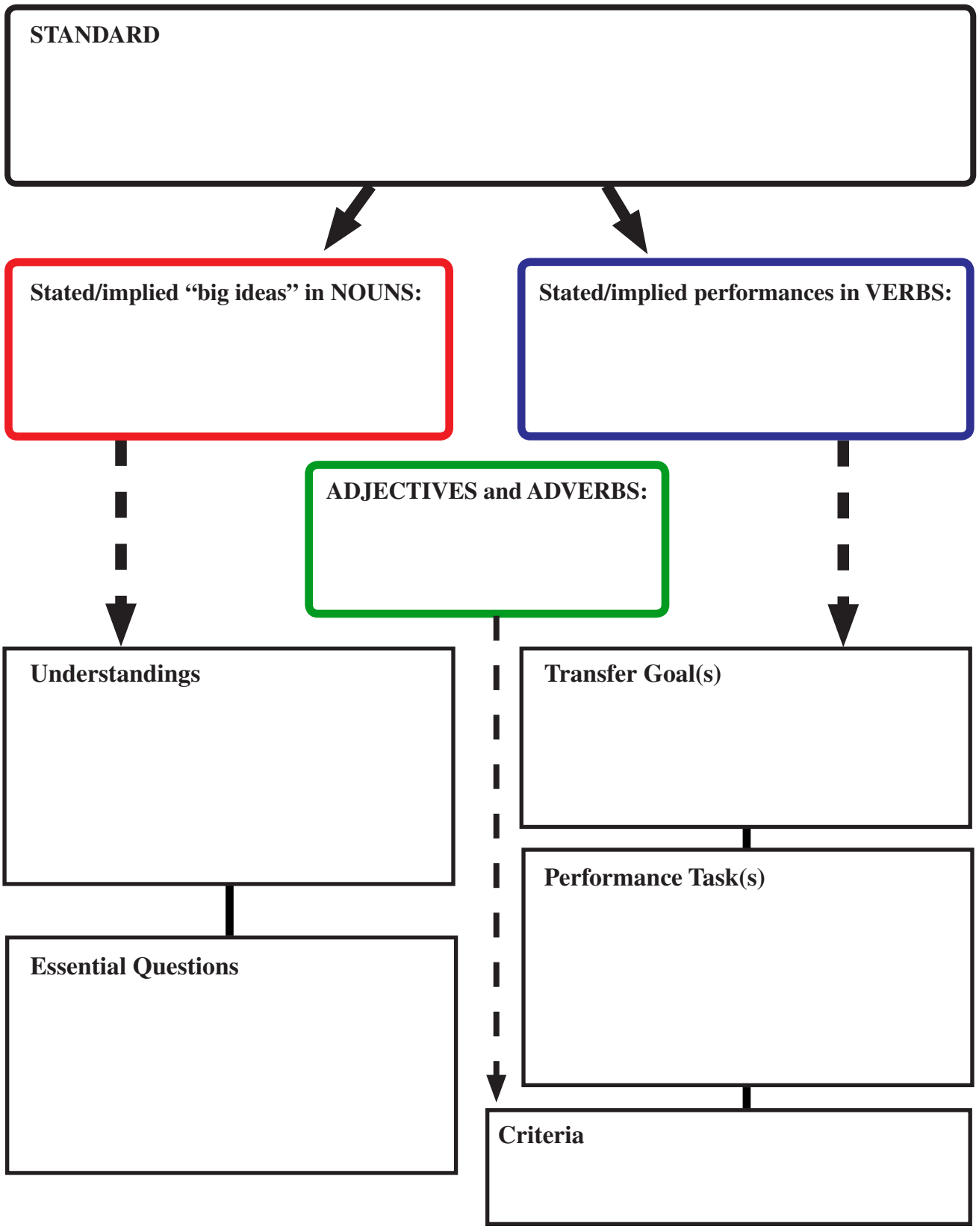
Performance Task(s)

- Create a mathematical model for a selected "real-world" situation (e.g., seasonal temperatures).
- Critically review and improve a mathematical model for its appropriateness to a given situation.

Criteria

- appropriate modeling
- accurate
- reasonableness of solution

Unpacking Standards - "Inside Out" Method



Sources of Assessment Evidence: Self Assessment

Directions: Use the following scale to rate your "level of use" of each of the following assessment tools (at the classroom, school or district level). What do the survey results suggest? What patterns do you notice? Are you collecting appropriate evidence for *all* the desired results, or only those that are easiest to test and grade? Is an important learning goal "falling through the cracks" because it is not being assessed?

4 = Frequent Use

3 = Use Sometimes

2 = Occasional Use

1 = Do Not Use

_____1. selected-response format (e.g., multiple-choice, true-false) quizzes and tests

_____2. written/oral responses to academic prompts (short-answer format)

_____3. performance assessment tasks, yielding:

____ extended written products (e.g., essays, lab reports)

____ visual products (e.g., Power Point show, mural)

____ oral performances (e.g., oral report, foreign language dialogues)

____ demonstrations (e.g., skill performance in physical education)

_____4. long-term, "authentic" projects (e.g., senior exhibition)

_____5. portfolios - collections of student work over time

_____6. reflective journals or learning logs

_____7. informal, on-going observations of students

_____8. formal observations of students using observable indicators or criterion list

_____9. student self-assessments

_____10. peer reviews and peer response groups

_____11. other: _____

What is understanding?

Part 1 – How would you define "understanding"? What does it mean to "really understand" or "get it"?

Understanding:

Part 2 - What are concrete indicators of *really* understanding something (as apposed to merely knowing important facts about it)? What can the person with understanding do that the person with only knowledge—even lots of knowledge—cannot do?

Indicators of Understanding	***Indicators of Knowledge without Understanding***

A Collection of Assessment Evidence

example - unit on Nutrition - grades 5-6

Performance Tasks:

You Are What You Eat – Students create an illustrated brochure to teach younger children about the importance of good nutrition for healthful living.

Camp Menu – Students develop a 3-day menu for meals and snacks for an upcoming Outdoor Education camp experience. They write a letter to the camp director to explain why their menu should be selected (by showing that it meets the USDA Food Pyramid recommendations, yet tasty enough for the students).

Other Evidence:
(e.g., tests, quizzes, prompts, work samples, observations, etc.)

Quiz - the food groups and the USDA recommendations

Quiz - Skill Check – reading food labels for nutrition info.

Prompt - Describe two health problems that could arise as a result of poor nutrition and explain how these could be avoided.

Student Self-Assessment and Reflection:

1. self assess the brochure, You are What You Eat
2. self assess the camp menu
3. self assess the extent to which you "eat healthy" at the end of unit (compared to the beginning)

Performance Tasks

Performance tasks can be used as rich learning activities or as assessments. They ask students to apply knowledge and skills to a new situation, and typically yield tangible products and performances that serve as evidence of learning. Performance tasks (as distinct from long-term projects) can usually be completed within a relatively short time frame, generally between one and four class periods. Here are general characteristics of performance tasks; they:

- demand thoughtful application of knowledge and skills, not just recall;
- yield tangible products and performances that serve as evidence of learning;
- establish authentic contexts for performance;
- can integrate two or more subjects as well as 21st century skills (e.g., critical thinking, technology use, teamwork);
- do not have a "single, best" answer or one, "right way" to accomplish the task;
- evaluate performance with established criteria and rubrics; and
- may be used as rich learning activities and/or assessments.

Performance tasks may be content-specific (e.g., mathematics, science, social studies) or integrated (i.e., involving two or more subjects). One natural interdisciplinary connection is to include a reading, research and/or communication (writing, graphics, presentation) component to tasks in content areas. Such tasks encourage students to see meaningful learning as integrated, rather than something which occurs in isolated segments.

Two examples of performance tasks are provided below.

Fairy Tales [grades 3-4]

You have just finished reading three fairy tales that all have the same general pattern – characters overcoming a confrontation with an animal when the animal's intent is to harm the character(s). Your task is to write a story that includes all the characteristics of a fairy tale and also uses this same general pattern. You will then read your story to your kindergarten reading buddy and teach him/her about the characteristics and general pattern of a fairy tale.

Source: Assessing Outcomes: Performance Assessment Using Dimensions of Learning

City Park [high school physics]

Your design team has been asked by the City Park Department to construct a model for a new playground near the elementary school. The playground will have swing sets and see-saws. For the safety of the children who will be using the playground equipment, you must design your swings so that they don't swing too fast or "loop-the-loop " over the top of the swing set.

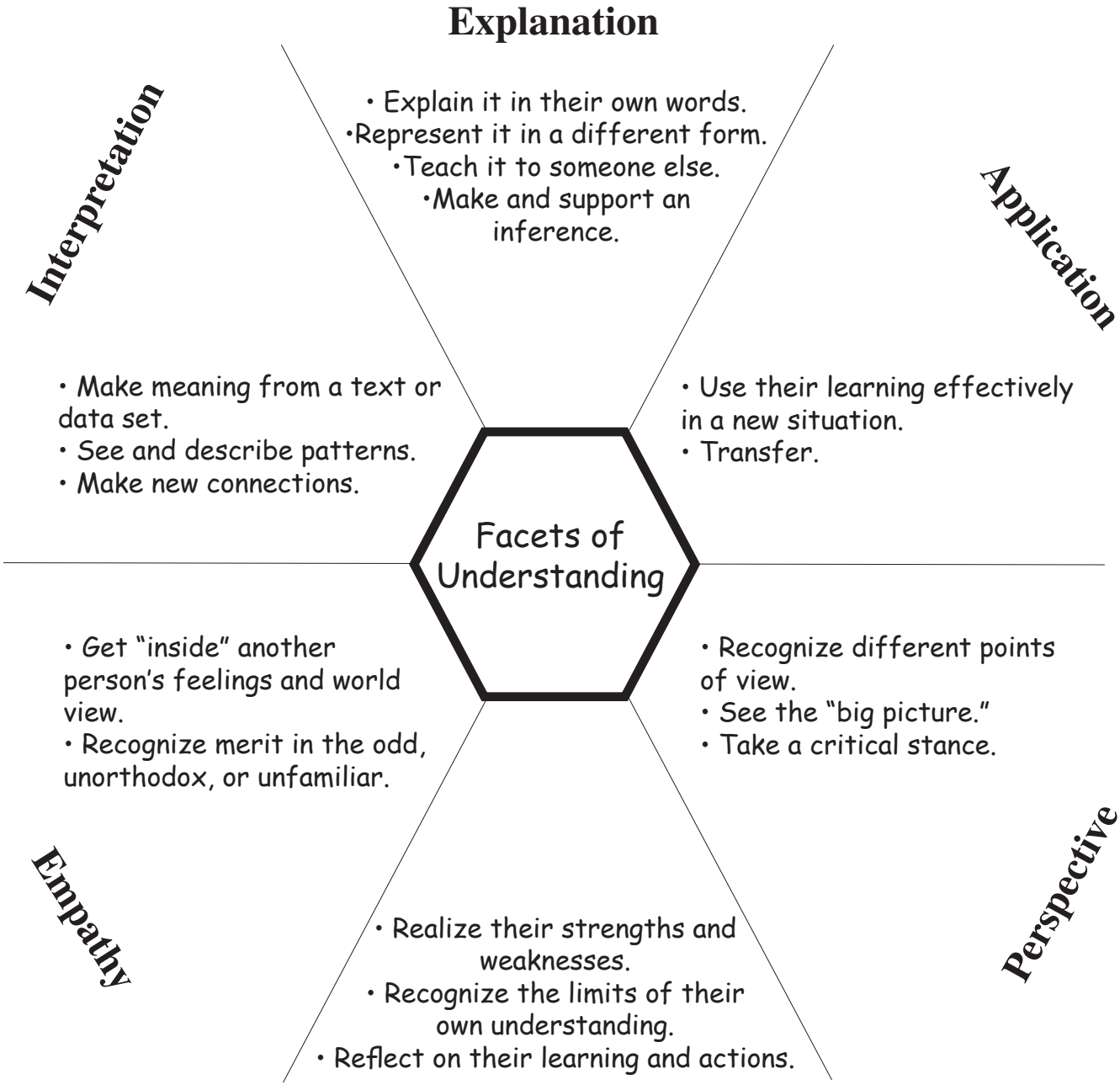
Design and conduct an experiment to determine how the variables - length, mass, height of release - affect the rate of back-and-forth movement of a swing. Be prepared to present your findings, recommendations, and a demonstration to the City Park officials.

Source: A Tool Kit for Professional Developers: Alternative Assessment

The Facets of Understanding

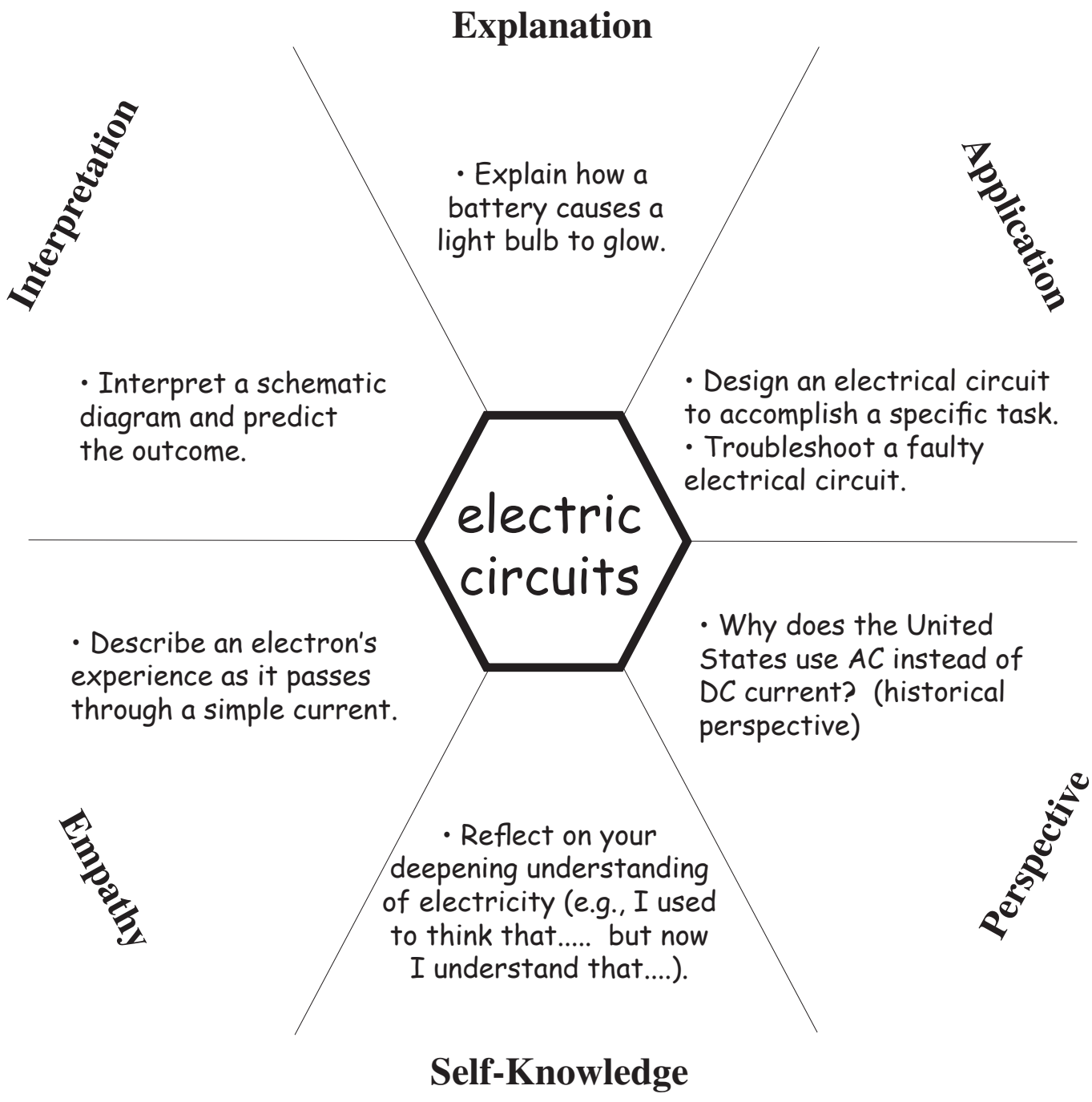
The facets of understanding provide *indicators* of understanding and thus can be used to select or develop assessments.

If someone really understands something, they can...



Brainstorming Assessment Ideas Using the Facets

Use the six facets of understanding to generate possible ways in which students might reveal understanding.



Matrix Method -- Mathematics Common Core Standards

Practice Standards MATH GR 3 **Content Standards**	*1 Make sense of problems and persevere in solving them.*	*2 Reason abstractly and quantitatively.*	*3 Construct viable arguments and critique the reasoning of others.*	*4 Model with mathematics.*	*5 Use appropriate tools strategically.*	*6 Attend to precision.*	*7 Look for and make use of structure.*	*8 Look for and express regularity in repeated reasoning.*
Represent and solve problems involving multiplication and division.								
Understand properties of multiplication and the relationship between multiplication and division.								
Multiply and divide within 100.								
Solve problems involving the four operations, and identify and explain patterns in arithmetic.								
Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.								
Use place value understanding and properties of operations to perform multi-digit arithmetic.								
Develop understanding of fractions as numbers.								
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.								
Represent and interpret data.								
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.								
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.								
Reason with shapes and their attributes.								

Unpacking Standards – "Matrix" Method

Common Core State Standards
Mathematics

Content Standards

Grade 3:

❑	Represent and solve problems involving multiplication and division.
❑	Understand properties of multiplication and the relationship between multiplication and division.
❑	Multiply and divide within 100.
☑	Solve problems involving the four operations, and identify and explain patterns in arithmetic.
❑	Use place value understanding and properties of operations to perform multi-digit arithmetic.
❑	Develop understanding of fractions as numbers.
❑	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
☑	Represent and interpret data.
❑	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
❑	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
❑	Reason with shapes and their attributes.

Process Standards

Standards for Mathematical Practice:

- ❑ 1. Make sense of problems and persevere in solving them.
- ☑ 2. Reason abstractly and quantitatively.
- ❑ 3. Construct viable arguments and critique the reasoning of others.
- ☑ 4. Model with mathematics.
- ❑ 5. Use appropriate tools strategically.
- ❑ 6. Attend to precision.
- ❑ 7. Look for and make use of structure.
- ❑ 8. Look for and express regularity in repeated reasoning.

TRANSFER GOAL(S) *Students will be able to independently use their learning to...*

Collect, organize, display data on real-world phenomena; analyze data to identify patterns; use patterns to make predicitons; communicate clearly using mathematical terminology.

PERFORMANCE TASK Ideas

Every seven weeks students work in groups of four to measure the height of each other using tape measures affixed to the classroom walls. By mid-May, the class has obtained six height measures. Then, students create a simple graph (height in inches plotted against the months of the school year) and plot the data. Using rulers, they connect the dots to see "rise over run" (a visual representation of their growth over time). The chart papers are posted throughout the room, and the students circulate in a gallery walk to view the changes in heights of the various groups.

Students then analyze the data to answer guiding questions: "In what months did we grow the most this year?" "Is there a difference between how boys and girls have grown in second grade?" "How does our class growth compare to that in the other second grades?" "What can we predict for next year's second graders about how they will grow based on our data?" Students are then work in their groups to develop a presentation for the current 2nd graders to predict how much they will grow in 3rd grade.

Unpacking Standards – "Matrix" Method

Common Core State Standards
Mathematics

Content Standards

Grade 6:

☑ Understand ratio concepts and use ratio reasoning to solve problems.

☑ Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

❑ Compute fluently with multi-digit numbers and find common factors and multiples.

❑ Apply and extend previous understandings of numbers to the system of rational numbers.

❑ Apply and extend previous understandings of arithmetic to algebraic expressions.

❑ Reason about and solve one-variable equations and inequalities.

❑ Represent and analyze quantitative relationships between dependent and independent variables.

☑ Solve real-world and mathematical problems involving area, surface area, and volume.

❑ Develop understanding of statistical variability.

❑ Summarize and describe distributions.

Process Standards

Standards for Mathematical Practice:

☑ 1. Make sense of problems and persevere in solving them.
❑ 2. Reason abstractly and quantitatively.
❑ 3. Construct viable arguments and critique the reasoning of others.
☑ 4. Model with mathematics.
❑ 5. Use appropriate tools strategically.
☑ 6. Attend to precision.
❑ 7. Look for and make use of structure.
❑ 8. Look for and express regularity in repeated reasoning.

TRANSFER GOAL(S) *Students will be able to independently use their learning to...*

apply mathematical reasoning to solve problems involving ratio.

PERFORMANCE TASK Ideas

A former NBA legend, Hoops McGinty, has pledged money to the local science museum for an exhibit on our solar system. He pledges the money under one condition: that a regulation NBA basketball be used to represent some aspect of the scale display and that other NBA-related shapes and sizes be used (e.g., a basketball be used to represent a planet or mon). The building floor space is 300 by 800 feet. As designer, how do you propose that the main exhibit hall with a model of the solar system be built to scale? Prepare a diagram with accurate measurements drawn to scale. Show your work so that Hoops will approve and select your design.

Unpacking Standards – "Matrix" Method

A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas Science

High School Biology

Content Standards

Core Concepts of Science and Engineering

✔ 1. **Patterns.** Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.

✔ 2. **Cause and effect**. Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.

3. **Scale, proportion, and quantity.** In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance.

4. **Systems and system models.** Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.

5. **Energy and matter**. Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations.

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.

✔ 7. **Stability and change.** For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of the system are critical elements of study.

Process Standards

Scientific and Engineering Practices:

- ❑ 1. Asking questions (for science) and defining problems (for 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 (for science) and designing solutions (for engineering)
- ❑ 7. Engaging in argument from evidence
- ☑ 8. Obtaining, evaluating, and communicating information

TRANSFER GOAL(S) *Students will be able to independently use their learning to...*

Design and conduct a scientific investigation and communicate results for a self-generated hypothesis.

PERFORMANCE TASK Ideas

Task 1 – *How does exercise affect the pulse rate?*
Design and conduct an investigation that compares normal pulse rate to changes caused by two selected physical activities (e.g., jogging, swimming, push-ups, squats) for designated intervals. Prepare a report including:
• an explanation of homeostasis, oxygen/carbon dioxide feedback loop, effect of pulse rate
• an interpretation of the results
Answer these questions in your report – *How did the pulse rates during exercise compare to the normal (resting) pulse rate? How do CO2 and O2 levels effect the heart rate? How does the heart rate effect pulse rate? How does this affect homeostasis? Is the respiratory rate also affected? • How can your design be improved?*

Task 2 – Design and construct a scientific experiment to test which of four antacids would be the most effective for neutralizing acid. Prepare a (news article, podcast, Power Point slide show, Animoto animation) to communicate your findings to the general public.

*Source: pals.sri.com

Unpacking Standards – "Matrix" Method

The College Board
Advanced Placement Program

WORLD HISTORY

Content Standards

Theme 1: Interaction between humans and the environment
- o Demography and disease
- ✔ Migration
- ✔ Patterns of settlement
- o Technology

Theme 2: Development and interaction of cultures
- o Religions
- ✔ Belief systems, philosophies, and ideologies
- o Science and technology
- o The arts and architecture

Theme 3: State building, expansion and conflict
- o Political structures and forms of governance
- o Empires
- o Nations and nationalism
- o Revolts and revolutions
- o Regional, transregional, and global structures and organizations

Theme 4: Creation, expansion and interaction of
- o Agricultural and pastoral production
- o Trade and commerce
- o Labor systems
- o Industrialization
- o Capitalism and socialism

Theme 5: Development and transformation of social structures
- o Gender roles and relations
- o Family and kinship
- o Racial and ethnic constructions
- o Social and economic classes

Process Standards

Historical Thinking Skills:

✔ ★ **Crafting historical arguments from historical evidence**
- ★ Historical argumentation
- ✔ ★ Appropriate use of relevant historical evidence

★ **Chronological reasoning**
- ★ Historical causation
- ★ Patterns of continuity and change over time
- ❍ Periodization

★ **Comparison and contextualization**
- ★ Comparison
- ★ Contextualization

✔ ★ **Historical interpretation and synthesis**
- ★ Interpretation
- ★ Synthesis

TRANSFER GOAL(S) *Students will be able to independently use their learning to...*

Use primary and secondary sources to produce an informed explanation of *what* happened, *why* it happened, and *how* it impacted the future.

PERFORMANCE TASK Ideas

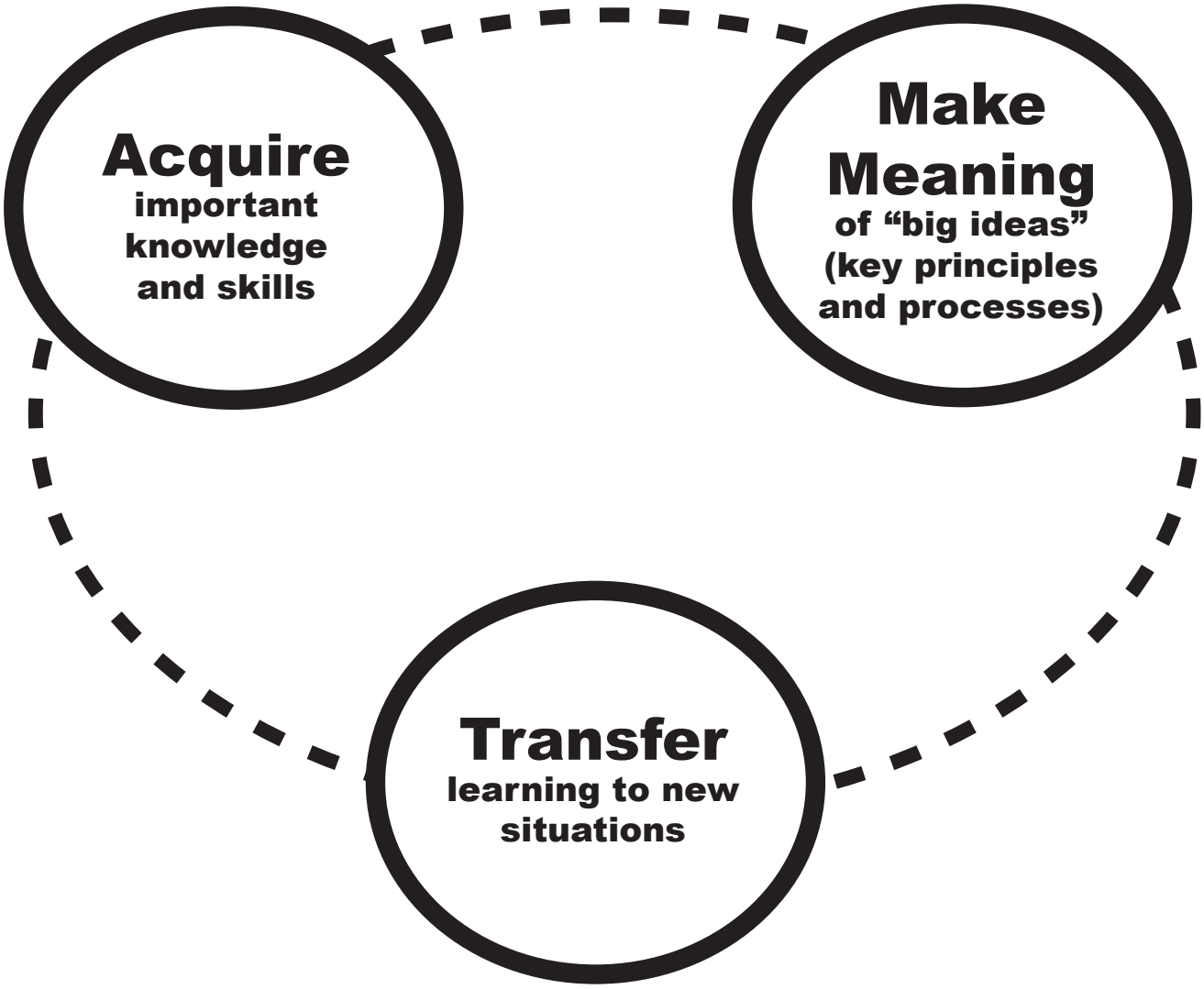
Consider this questions – *How did the coercive labor systems in the Americas impact the economic growth and cultural patterns of both Africa and the Americas?*
In 1998, UNESCO decreed that August 23rd is the "International Day for the Remembrance of the Slave Trade and its Abolition." The focus of this year's remembrance is how economy shapes public behavior. Prepare a keynote address that describes how coercive labor systems impacted Africa and the Americas both economically and culturally. Be sure to consider alternate points of view in your address as there are some areas of disagreement amongst historians.

Teaching and Learning for Understanding

What does it mean to teach and learn for understanding?

We have found it useful to consider this question by examining three distinct, yet interrelated, learning goals: 1) acquisition of new information and skill, 2) making meaning of that content (i.e., coming to understand), and 3) transfer of one's knowledge (i.e., applying one's learning to new situations).

These three categories link directly to elements identified in *Understanding by Design*. In Stage 1 teachers specify the knowledge and skill that they intend students to **acquire**. They also decide upon the "big ideas" they want students to come to understand and develop essential questions to help students **make meaning** of those ideas. In Stage 2, teachers develop performance tasks requiring **transfer** as evidence that students understand and can apply their knowledge in authentic contexts.



What is Fair?

Who won this year's 7th grade race around the campus?
Every year at Birdsong Middle School, there is an all-class race. Below are the results for the 7th grade (which is made up of four different classes). But there is a problem: no one agrees on who won! One person thinks Class C should win the trophy because they had the 1st runner overall in the race. Another person thinks Class D should win because they had 3 runners come in under 10th place. A third person says: just find the average. But a 4th person said: wait a minute – Class C had more students in their class than Class D. Averages won't be fair! A 5th person says: use the scoring system in Cross Country – just add up the place of finish of the top 5 finishers in each class and the lowest total wins. A 6th person says – unfair! Some classes did well in the first few runners but poorly in the middle! Why should *they* win? Now, everyone is confused and arguing.

What is the fairest way to determine the winner? Which class should win the trophy?
Your group, well-known in the school as a group of expert mathematicians (and respected for your sense of fairness) is being consulted as to who should win the trophy. What will you recommend and why?

Class rank	Class A	Class B	Class C	Class D
1	4	6	1	2
2	9	7	3	5
3	11	10	14	8
4	12	13	18	15
5	20	16	19	17
6	21	22	23	31
7	25	24	28	33
8	26	27	30	36
9	29	34	32	37
10	35	39	41	38
11	43	40	44	46
12	45	42	47	51
13	49	48	50	55
14	54	52	56	57
15	61	53	60	58
16	65	62	63	59
17	69	66	64	67
18	70	72	68	
19	71		73	
20			74	

Notes on the chart:
• The numbers in the chart, from 1 to 74 represent the place of finish of that runner. So, the overall race winner was from Class C, the number two runner overall was in Class D, etc.
• Class rank refers to the rank of finish place in that class, not the overall race. So, the first runner in class A was 4th overall in the race, the 2nd best runner in class A came in 9th overall, etc.
• The blanks reflect the fact that each of the 4 classes has a different number of students.

Coding a Learning Plan Using A - M - T

A = acquiring basic knowledge and skills **M** = making meaning **T** = transfer

Mathematics Unit on Measures of Central Tendency

Essential Question: *What is fair - and how can mathematics help us answer the question?*

1. Introduce and discuss the essential question, first part - What is "fair"? What is "unfair'? **M**

2. Introduce the 7th grade race problem. Which of the 7th-grade classes won the race? What is a fair way to decide? Small-group inquiry, followed by class discussion of answers. **M**

3. Teacher informs students about the mathematical connections derived from the problem analysis, and lays out the unit and its culminating transfer task. **A**

4. In small-group jigsaw, students share their answers to the INQUIRY sheet, then return to their team to generalize from all the small-group work. Discuss other examples related to the concept of "fairness" such as the following. **M**

- *What is a fair way to rank many teams when they do not all play each other?*
- *What is a fair way to split up limited food among hungry people of very different sizes?*
- *When is it 'fair' to use majority vote and when is it not fair? What might be fairer?*
- *Is it fair to have apportioned Representatives based on a state's population, yet have two Senators from each state irrespective of their size? What might be fairer?*
- *What are fair and unfair ways of representing how much money the "average" worker earns, for purposes of making government policy?*

5. Teacher connects the discussion to the next section in the textbook - measures of central tendency (mean, median, mode, range, standard deviation). **A**

6. Students practice calculating each type of measure. **A**

7. Teacher gives quiz on mean, median, mode from textbook. **A**

8. Teacher leads a review and discussion of the quiz results. **A M**

9. Group task worked on in class: What is the fairest possible grading system for schools to use? **M** T

10. Individuals and small teams present their grading policy recommendations and reasons. **M T**

11. Culminating transfer task: Each student determines which measure (mean, median or mode) should be used to calculate <u>their</u> grade for the marking period and writes a note to the teacher showing their calculations and explaining their choice. **T**

12. Students write a reflection on the essential question and their learnings as a result of the unit. **M**

UNITED STATES SOCCER FEDERATION

Our challenge is to develop players that are:
- Technically Gifted
- Tactically Sound
- Composed
- Creative
- Risk Takers
- "Own the Game" and are focused on solving the problems that the game presents, instead of primarily thinking about coach imposed solutions to the game

EVOLVING COACHES –> EVOLVING PLAYERS
In order to affect change on the players a shift in coaching methodology may need to take place. The development of creative, intuitive players is greatly impacted by coaching style and demands.

When conducting training sessions, there needs to be a greater reliance on game oriented training that is player centered and enables players to explore and arrive at solutions while they play. This is in contrast to the "coach centered" training that has been the mainstay of coaching methodology over the years.

GAME CENTERED TRAINING DEFINED
"Game centered training" implies that the primary training environment is the game as opposed to training players in "drill" type environments. This is not to say that there is not a time for a more "direct" approach to coaching. At times, players need more guidance and direction as they are developing. However, if the goal is to develop creative players who have the abilities to solve problems, and interpret game situations by themselves, a "guided discovery" approach needs to be employed.

This approach taps in to certain essentials that are always present within the team. Players want to play and enjoy playing the game first and foremost. Since the "game" is used in training, this allows for players to be comfortable with the pace, duration, and physical and mental demands that the game provides. The reason why the players play is because they enjoy the game. They have a passion for the game. This is where they find and express their joy and creativity.

Games vs. Drills: a comparison

GAME
- This is what the players actually face during competition. It is 100% realistic.
- Therefore, the players are more competent at transferring what they have learned in training to the game itself.
- Game Experience = 100% of Training Time

Learning Goals and Teaching Roles

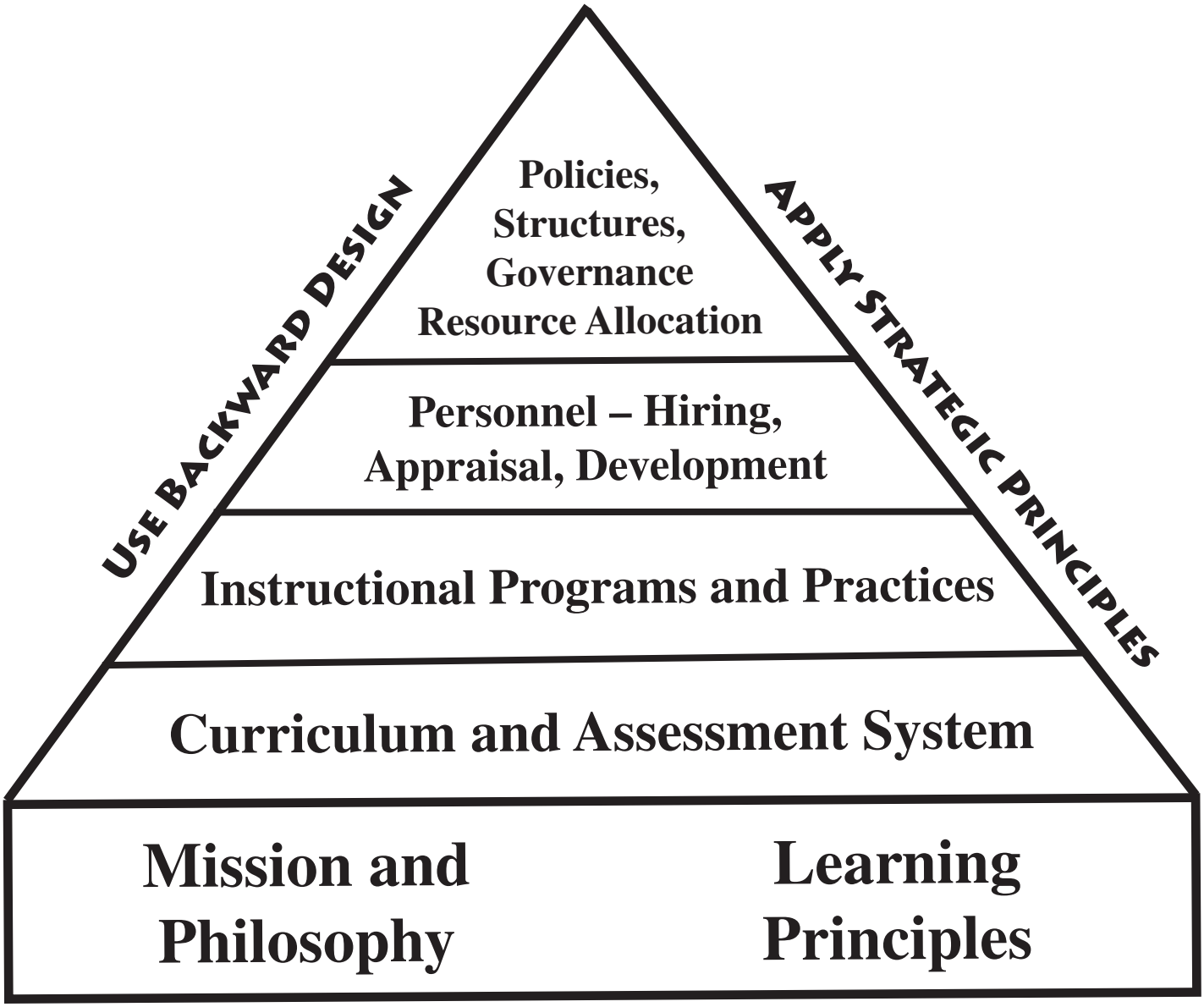
Three Interrelated Learning Goals →	**ACQUIRE**	**MAKE MEANING**	**TRANSFER**
Note: These three goals are of course interrelated. However, there is merit in distinguishing them to sharpen and focus teaching and assessment.	This goal seeks to help learners *acquire* factual information and basic skills.	This goal seeks to help students *construct meaning* (i.e., *come to an understanding)* of important ideas and processes.	This goal seeks to support the learner's ability to *transfer* their learning autonomously and effectively in new situations.
Teacher Role/ Instructional Strategies *Note: Like the above learning goals, these three teaching roles (and their associated methods) work together in pursuit of identified learning results.*	Direct Instruction In this role, the teacher's primary role is to *inform* the learners through explicit instruction in targeted knowledge and skills; differentiating as needed. *Strategies include:* ❍ diagnostic assessment ❍ lecture ❍ advanced organizers ❍ graphic organizers ❍ questioning (convergent) ❍ demonstration/modeling ❍ process guides ❍ guided practice ❍ feedback, corrections, ❍ differentiation	Facilitative Teaching Teachers in this role engage the learners in actively processing information and guide their inquiry into complex problems, texts, projects, cases, or simulations; differentiating as needed. *Strategies include:* ❍ diagnostic assessment ❍ using analogies ❍ graphic organizers ❍ questioning (divergent) & probing ❍ concept attainment ❍ inquiry-oriented approaches ❍ Problem-Based Learning ❍ Socratic Seminar ❍ Reciprocal Teaching ❍ formative (on-going) assessments ❍ understanding notebook ❍ feedback/ corrections ❍ rethinking and reflection prompts ❍ differentiated instruction	Coaching In a coaching role, teachers establish clear performance goals, supervise on-going opportunities to perform (independent practice) in increasingly complex situations, provide models and give on-going feedback (as personalized as possible). They also provide "just in time teaching" (direct instruction) when needed. *Strategies include:* ❍ on-going assessment, ❍ providing specific feedback in the context of authentic application ❍ conferencing ❍ prompting self assessment and reflection

Teaching and Assessing for Understanding – Observable Classroom Indicators

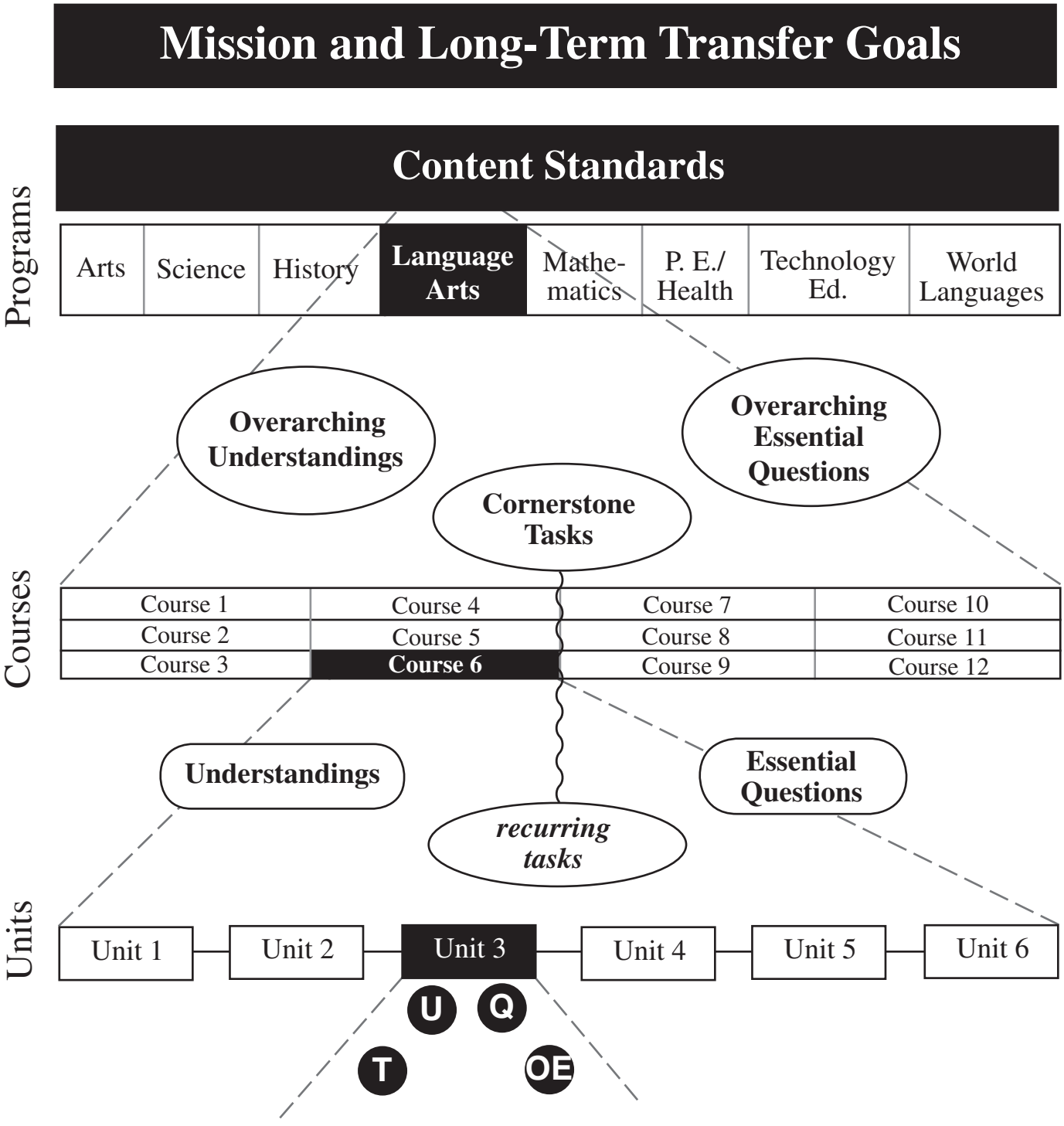
To what extent are...

1. Instruction and assessment focused on "big ideas" and essential questions based on established standards/outcomes?	**4**	**3**	**2**	**1**
2. Essential questions posted and revisited throughout a unit?	**4**	**3**	**2**	**1**
3. Pre-assessments used to check students' prior knowledge and potential misconceptions regarding new topics of study?	**4**	**3**	**2**	**1**
4. Opening "hooks" used to engage students in exploring the big ideas and essential questions?	**4**	**3**	**2**	**1**
5. Students' understanding of the "big ideas" and core processes assessed through authentic tasks involving one or more of the six facets?	**4**	**3**	**2**	**1**
6. Evaluations of student products/performances based upon known criteria/rubrics, performance standards, and models (exemplars)?	**4**	**3**	**2**	**1**
7. Appropriate instructional strategies used to help learners' **acquire** knowledge and skills, **make meaning** of the big ideas, and **transfer** their learning?	**4**	**3**	**2**	**1**
8. Students given regular opportunities to rethink, revise and reflect on their work based on feedback from on-going (formative) assessments?	**4**	**3**	**2**	**1**
9. The students expected to self-asses/ reflect on their work/learning and set goals for improvement?	**4**	**3**	**2**	**1**
10. Other: _____	**4**	**3**	**2**	**1**

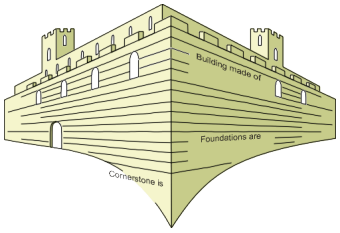
Schooling by Design – Key Elements



Curriculum Design: Macro and Micro Views



Cornerstone Tasks



The pressures of high-stakes accountability testing have led many schools and districts to encourage their teachers to engage in "test prep" instruction, especially in the tested grades and subject areas. Additionally, there has been an increase in the use of "interim" or benchmark assessments that mimic the state tests. While these practices may have their place, they typically focus on decontextualized content knowledge and skills at the expense of more relevant and engaging learning. As a counter-balance to "test prep" teaching and "practice" testing, Grant Wiggins and I have argued for the inclusion of more robust and authentic tasks as part of a local curriculum and assessment system. We refer to these as "cornerstone" tasks.

The Cornerstones are curriculum-embedded tasks that are intended to engage students in applying their knowledge and skills in an authentic context. Like a cornerstone anchors a building, these tasks are meant to anchor the curriculum around the most important performances that we want learners to be able to do (on their own) with acquired content knowledge and skills. They honor the intent of the Standards, within and across subject areas, instead of emphasizing only the tested (a.k.a. "eligible") content. Moreover, they support effective instructional practices that engage learners in "meaning making" and transfer.

More specifically, Cornerstone tasks:

- are *curriculum embedded* (as opposed to externally imposed);
- *recur across the grades*, becoming increasingly sophisticated over time;
- establish *authentic contexts* for performance;
- call for *understanding* and *transfer* via genuine performance;
- may be used as rich learning activities *or* assessments;
- *integrate 21st century skills* (e.g., critical thinking, technology use, teamwork) with subject area content;
- evaluate performance with established *rubrics*;
- engage students in *meaningful learning* while encouraging the best teaching;
- provide content for student portfolios so that they graduate with a *resume of demonstrated accomplishments* rather than simply a transcript of courses taken.




Cornerstone Assessments in Writing (6-12)

GREECE CENTRAL SCHOOL DISTRICT, NY

GRADE	Expository	Persuasive	Literary Analysis	Creative/ Expressive
Grade 6	Research report	Position paper	Literary essay on setting or conflict	Original myth
Grade 7	Autobiography	Policy evaluation	Literary essay on character	Persona writing
Grade 8	Research report	Problem/ solution essay	Literary essay on symbolism	Narrative fiction
Grade 9	Cause/effect essay	Editorial	Analysis of multiple literary elements	Poetry
Grade 10	Research report	Social issue essay	Critical Lens essay	Historical Persona
Grade 11	Definition essay	Argumentative essay	Comparative genre essay	Parody/satire
Grade 12	Research paper	Position paper	Response to literary criticsm	Irony

Cornerstone Assessments – Examples of Recurring Tasks

Mathematical Modeling

Grade 2/3

Every seven weeks students work in groups of four to measure the height of each other using tape measures affixed to the classroom walls. By mid-May, the class has obtained six height measures. Then, students create a simple graph (height in inches plotted against the months of the school year) and plot the data. Using rulers, they connect the dots to see "rise over run" (a visual representation of their growth over time). The chart papers are posted throughout the room, and the students circulate in a gallery walk to view the changes in heights of the various groups.

Students then analyze the data to answer guiding questions: "In what months did we grow the most this year?" "Is there a difference between how boys and girls have grown in second grade?" "How does our class growth compare to that in the other second grades?" "What can we predict for next year's second graders about how they will grow based on our data?" Students are then work in their groups to develop a presentation for the current 1st/2nd graders to predict how much they will grow next school year.

Middle School

A former NBA legend, Hoops McGinty, has pledged money to the local science museum for an exhibit on our solar system. He pledges the money under one condition: that a regulation NBA basketball be used to represent some aspect of the scale display and that other NBA-related shapes and sizes be used (e.g., a basketball be used to represent a planet or moon). The building floor space is 300 by 800 feet.

Your job is to create a model of the solar system that is built to scale to fit within this space. Prepare a diagram with accurate measurements drawn to scale. Show your work so that Hoops will approve and fund your design.

High School

Create a mathematical model in order to:

- recommend the most cost effective cell phone contract while considering different variables (e.g., type of cell phone, length of contract, calling/data amounts).
- compare home mortgage options for varied purchase prices, down payments, interest rate plans, and length of term (including variable rates).
- predict future Olympic event winning times (e.g., men's and women's marathon).

The Literacy Design Collaborative Task Templates

Funded through the Bill and Melinda Gates Foundation, the Literacy Design Collaborative (LDC) has developed a set of Modules designed to support the integration of the Common Core Standards (6-12) in English/ Language Arts with core content in Science, Social Studies and Technical areas. Each Module consists of a task and associated instructional procedures intended to provide a rigorous, authentic classroom experience for students at the secondary level.

The Tasks require students to read, analyze, and comprehend written materials and then write cogent arguments, explanations, or narratives in the subjects they are studying. A key feature of the LDC's work is a set of generic Task Templates -- fill-in-the-blank "shells" that allow teachers to design their own tasks.

Here are several samples:

Argumentation Task Template

After researching _____ (informational texts) on _____ (content topic or issue), write a/an _____ (essay or substitute) that argues your position on _____ (topic, issue, essential question). Support your position with evidence from research. Be sure to acknowledge competing views. Give examples from from past or current events issues to illustrate and clarify your position.

Social Studies Example:
After researching academic articles on **censorship**, write a/an **blog or editorial** that argues your position on **the use of filters the use of Internet filters by schools**. Support your position with evidence from research. Be sure to acknowledge competing views.

ELA Example:
What makes something something funny? After reading selections from **Mark Twain and Dave Barry**, write a **review** that **compares their their humor** and argues **which type of humor works for a contemporary audience and why**. Be sure to support your position with evidence from the texts.. Be sure to support your position with evidence from the texts.

Informational or Explanatory Task Template

[Insert question] After reading _____ (literature or informational texts), write a/an _____ (essay, report, article, or substitute) that defines and explains (term or concept). Support your discussion with evidence from the text(s). What _____ (conclusions or implications) can you draw?

Social Studies Example:
What did the authors of the American Constitution mean by "rights"? After reading the **Bill of Rights**, write an **essay** that defines **"rights"** and explains **"rights" as the authors use it in this foundational document**. Support your discussion with evidence from the text. What implications implications can you draw?

Cornerstone Assessments – Examples of Recurring Tasks

Social Studies

Upper Elementary/Middle School

You have an idea that you believe will make your school better, and you want to convince school leaders that they should act on your idea. Identify your audience (e.g., principal, PTSA Board, students) and:

- Describe your idea.
- Explain why & how it will improve the school.
- Develop a plan for acting on your idea.

Your idea and plan can be communicated to your target audience in a letter, e-mail, or presentation.

High School

After investigating a current political issue, prepare a position paper/presentation for a public policy maker (e.g., Congress person) or group (e.g., school board, legislative committee). Assume that the policy maker or group is opposed to your position. Your position statement should provide an analysis of the issue, consider options, present your position, rebut opposing positions, and attempt to persuade the public policy maker or group to vote accordingly.

Your position can be communicated in a written report, via a web blog, or delivered as a presentation.

Other: _____

_____

_____

_____

_____

_____

Cornerstone Assessments – Examples of Recurring Tasks

Science

Upper Elementary

The Pooper Scooper Kitty Litter Company claims that their litter is 40% more absorbent than other brands.

You are a Consumer Advocates researcher who has been asked to evaluate their claim. Develop a plan for conducting the investigation. Your plan should be specific enough so that the lab investigators could follow it to evaluate the claim.

Middle School

Design and conduct an investigation to answer the question, How does exercise affect the pulse rate? Compare normal pulse rate to changes caused by two selected physical activities (e.g., jogging, push-ups, squats, swimming) for designated intervals.

Prepare a report to explain the results to other students in a news article, e-mail, graphic, or other appropriate media..

High School

Design an investigation to answer the question, How much does it cost to take a shower?

Identify the variables that must be considered and then develop a plan for conducting the investigation. Your plan should be specific enough so that other investigators could follow it and answer the question.

Common Rubric for Mathematical Problem Solving

	Problem Solving	Reasoning and Proof	Communications	Representation
4 Expert	An efficient strategy is chosen and progress towards a solution is evaluated. Adjustments in strategy, if necessary, are made along the way, and / or alternative strategies are considered. Evidence of analyzing the situation in mathematical terms, and extending prior knowledge is present. A correct answer is achieved.	Deductive arguments are used to justify decisions and may result in formal proofs. Evidence is used to justify and support decisions made and conclusions reached. This may lead to generalizing and extending the solution to other cases.	A sense of audience and purpose is communicated. Communication of argument is supported by mathematical properties. Precise math language and symbolic notation are used to consolidate math thinking and to communicate ideas.	Abstract or symbolic mathematical representations are constructed to analyze relationships, extend thinking, and clarify or interpret phenomenon.
3 Practitioner	A correct strategy is chosen based on mathematical situation in the task. Planning or monitoring of strategy is evident. Evidence of solidifying prior knowledge and applying it to the problem. A correct answer is achieved.	Arguments are constructed with adequate mathematical basis. A systematic approach and/or justification of correct reasoning is present. This may lead to clarification of the task and noting patterns, structures and regularities.	A sense of audience or purpose is communicated. *and/or* Communication of an approach is evident through a methodical, organized, coherent sequenced and labeled response. Formal math language is used to share and clarify ideas.	Appropriate and accurate mathematical representations are constructed and refined to solve problems or portray solutions.
2 Apprentice	A partially correct strategy is chosen, or a correct strategy for only solving part of the task is chosen. Evidence of drawing on some previous knowledge is present, showing some relevant engagement in the task.	Arguments are made with some mathematical basis. Some correct reasoning or justification for reasoning is present with trial and error, or unsystematic trying of several cases.	Some awareness of audience or purpose is communicated, and may take place in the form of paraphrasing of the task. *or* Some communication of an approach is evident through verbal/written accounts and explanations, use of diagrams or objects, writing, and using mathematical symbols.	An attempt is made to construct mathematical representations to record and communicate problem solving, but they are incomplete or inappropriate.
1 Novice	No strategy is chosen, or a strategy is chosen that will not lead to a correct solution.	Arguments are made with no mathematical basis. No correct reasoning nor justification for reasoning is present.	No awareness of audience or purpose is communicated. *or* Little or no communication of an approach is evident *or* Everyday, familiar language is used to communicate ideas.	No attempt is made to construct mathematical representations.

Source: Exemplars.com

Common Analytic Rubric for Persuasive Writing

SKILL AREA	6 Responses at this level:	5 Responses at this level:	4 Responses at this level:	3 Responses at this level:	2 Responses at this level:	1 Responses at this leve
Meaning: the extent to which the writing exhibits sound understanding, analysis, and explanation, of the writing task and text(s)	• convey an accurate and in-depth understanding of the topic, audience, and purpose for the writing task • offer insightful and thorough analysis and explanation in support of the argument or position	• convey an accurate and complete understanding of the topic, audience, and purpose for the writing task • offer clear and explicit analysis and explanation in support of the argument or position	• convey an accurate although somewhat basic understanding of the topic, audience, and purpose for the writing task • offer partial analysis and explanation in support of the argument or position	• convey a partly accurate understanding of the topic, audience, and purpose of the writing task • offer limited analysis or superficial explanation that only partially support the argument or position	• convey a confused or largely inaccurate understanding of the topic, audience, and purpose for the writing task • offer unclear analysis or unwarranted explanations that fail to support the argument or position	• provide no evidenc of understanding the writing task or topic • make incoherent explanations that do not support the argument or positior
Development: the extent to which ideas are elaborated using specific and relevant details and/or evidence to support the thesis	• support the position clearly and fully with arguments that effectively integrate and elaborate on specific ideas and textual evidence from a variety of sources • effectively anticipate and convincingly refute opposing view points	• support the position clearly and consistently with arguments that incorporate and explain ideas and specific textual evidence from a variety of sources • anticipate and somewhat convincingly refute opposing viewpoints	• support the position with arguments that use ideas and relevant textual evidence from a variety of sources • anticipate and attempt to refute opposing viewpoints at a basic level	• support the position partially, using some ideas and textual evidence but without much elaboration or from limited sources • partially anticipate and with a limited or confused attempt to refute opposing viewpoints but	• attempt to support the position, but textual ideas and evidence is vague, repetitive, or unjustified • allude to opposing viewpoints but make no attempt to refute them	• completely lack development and do not include textual evidence • make no attempt tc anticipate or refute opposing viewpoints
Organization: the extent to which the writing establishes a clear thesis and maintains direction, focus, and coherence	• skillfully establish and maintain consistent focus on a clear and compelling thesis • exhibit logical and coherent structure with claims, evidence and interpretations that convincingly support the thesis • make skillful use of transition words and phrases	• effectively establish and maintain consistent focus on a clear thesis • exhibit a logical sequence of claims, evidence, and interpretations to support the thesis • make effective use of transition words and phrases	• establish and maintain focus on a clear thesis • exhibit a logical sequence of claims, evidence, and interpretations but ideas within paragraphs may be inconsistently organized • make some attempt to use basic transition words and phrases	• establish but fail to consistently maintain focus on a basic thesis • exhibit a basic structure but lack the coherence of consistent claims, evidence, and interpretations • make an inconsistent attempt to use some basic transition words or phrases	• establish a confused or irrelevant thesis and fail to maintain focus • exhibit an attempt to organize ideas into a beginning, middle, and end, but lack coherence • make little attempt to use transition words and phrases	• fail to include a thesis or maintain focus • complete lack of organization and coherence • make no attempt tc use transition words phrases
Language: the extent to which the writing reveals an awareness of audience and purpose through word choice and sentence variety	• are stylistically sophisticated, using language that is precise and engaging, with a notable sense of voice and awareness of audience and purpose • effectively incorporate a range of varied sentence patterns to reveal syntactic fluency	• use language that is fluent and original, with evident awareness of audience and purpose • incorporate varied sentence patterns that reveal an awareness of different syntactic structures	• use appropriate language, with some awareness of audience and purpose • make some attempt to include different sentence patterns but with awkward or uneven success	• rely on basic vocabulary, with little awareness of audience or purpose • reveal a limited awareness of how to vary sentence patterns and rely on a limited range syntactic structures	• use language that is imprecise or unsuitable for the audience or purpose • reveal a confused understanding of how to write in complete sentences and little or no ability to vary sentence patterns	• use language that i incoherent or inappropriate • include a preponderance of sentence fragments and run-ons that significantly hinder comprehension
Conventions: the extent to which the writing exhibits conventional spelling, punctuation, paragraphing, capitalization, and	• demonstrate control of the conventions with essentially no errors, even with sophisticated language	• demonstrate control of the conventions, exhibiting occasional errors only when using sophisticated language (e.g., punctuation of complex sentences)	• demonstrate partial control, exhibiting occasional errors that do not hinder comprehension (e.g., incorrect use of homonyms)	• demonstrate emerging control, exhibiting frequent errors that somewhat hinder comprehension (e.g., agreement of pronouns and antecedents; spelling of basic words)	• demonstrate lack of control, exhibiting frequent errors that make comprehension difficult (e.g., subject verb agreement; use of slang)	• illegible or unrecognizable as literate English