Understanding by Design: Teaching for Understanding

presented by

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Key Understandings about...

-- Understanding --

• A primary goal of education is the development and deepening of student understanding of important ideas and processes within, and across, disciplines so that they can transfer their earning to new situations. Rote learning will not prepare students for transfer.

• Content and Standards need to be “unpacked” to identify the big ideas worth understanding and the essential questions worth exploring.

• Evidence of student understanding is revealed when students can apply (transfer) their learning to new situations within authentic contexts.

• Six facets of understanding – the capacity to explain, interpret, apply, shift perspective, empathize, and self-assess – serve as indicators that students understand.

Understanding must be “earned” by the learner. Teaching for understanding facilitates meaning making by students.

-- Design --

• Effective curriculum development reflects a three-stage design process called “backward design.” This process helps to insure that curriculum plans are well aligned and focused on desired results. Backward design of curriculum helps avoid the twin problems of “textbook coverage” and “activity-oriented” teaching.

• The backward design process can be productively applied to planning a single unit, a year-long course, and an entire K-12 curriculum.

• Regular reviews of curriculum and assessment designs, based on design standards, are needed for quality control to avoid the most common design mistakes and disappointing results.

• Educators can “work smarter” in curriculum design by working collaboratively and sharing ideas via electronic networks (e.g., using the Eduplanet21 Planner).
A Summary of Key Research Findings Supporting Understanding by Design

- Views of how effective learning proceeds have shifted from the benefits of diligent drill and practice to focus on students’ understanding and application of knowledge.

- Experts’ knowledge is organized... Their knowledge is not simply a list of facts and formulas that are relevant to the domain; instead, their knowledge is organized around core concepts or ‘big ideas’ that guide their thinking about the domain (e.g., Newton’s second law of motion); it is “conditionalized” to specify the contexts in which it is applicable; it supports understanding and transfer (to other contexts) rather than only the ability to remember. Novices’ knowledge is much less likely to be organized around big ideas; they are more likely to approach problems by searching for correct formulas and pat answers that fit their everyday intuitions.

- Learning must be guided by generalized principles in order to be widely applicable. Knowledge learned at the level of rote memory rarely transfers; transfer most likely occurs when the learner knows and understands underlying principles that can be applied to problems in new contexts. Learning with understanding is more likely to promote transfer than simply memorizing information from a text or a lecture.

- Skills and knowledge must be extended beyond the narrow contexts in which they are initially learned. For example, knowing how to solve a math problem in school may not transfer to solving math problems in other contexts. It is essential for a learner to develop a sense of when what has been learned can be used -- the conditions of application. Failure to transfer is often due to learners’ lack of this type of conditional knowledge.

- Curricula that are a “mile wide and an inch deep” run the risk of developing disconnected rather than connected knowledge. Research on expertise suggest that a superficial coverage of many topics in the domain may be a poor way to help students develop the competencies that will prepare them for future learning and work.”

- Feedback is fundamental to learning, but feedback opportunities are often scarce in classrooms. Students may receive grades on tests and essays, but these are summative assessments that occur at the end of projects. What are needed are formative assessments, which provide students with opportunities to revise and improve the quality of their thinking and understanding.

- Assessments must reflect the learning goals that define various environments. If the goal is to enhance understanding and applicability of knowledge, it is not sufficient to provide assessments that focus primarily on memory for facts and formulas. Many assessments measure only propositional (factual) knowledge and never ask whether students know when, where, and why to use that knowledge. Given the goal of learning with understanding, assessments and feedback must focus on understanding, and not only on memory for procedures or facts.
UbD and Standards-based Curriculum Planning

What Standard(s) will focus this unit? Given your reasons for teaching the unit, which Standard(s) are most relevant?

What big ideas and transfer goals are embedded in the targeted Standard(s)?

What should students eventually be able to do on their own to meet the Standard(s)?

What important questions are raised by this content? What essential questions will guide inquiry?

What specific skills are stated or implied in the Standard(s)? What proficiencies must students attain to meet the Standard(s)?

What "authentic" performance tasks will reveal students' understanding and ability to transfer their learning?

Stage 1 – Desired Results

What should students come to understand to really learn this content well?

What factual knowledge must students acquire to meet the Standard(s)?

Stage 2 – Assessment Evidence

What evidence of learning is called for by the Standard(s)? What assessments are needed?

Stage 3 – Learning Plan

What instruction is needed to equip students to meet the Standard(s)? What learning experiences will help learners acquire targeted knowledge and skills, make meaning of the important ideas and equip them to transfer their learning? What on-going assessments will provide feedback to teachers and students?
Three Interrelated Learning Goals (AMT)

We have found it useful to consider this question by examining three distinct, yet interrelated, learning goals: 1) **acquisition** of new information and skills, 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,
A.M.T. and Teaching for Understanding

1. **Acquisition**: Facts and skills are apprehended and acquired. We learn each in turn, either through direct instruction or self-learning. A key benchmark in such learning is automaticity. The student should as soon as possible be able to recall information (e.g., multiplication tables) and perform a skill (e.g., decoding words) on cue, “unthinkingly.”

Teaching for knowledge and skill acquisition involves familiar methods of direct instruction—lecture, presentation, advance/graphic organizers, convergent questioning, and demonstration/modeling. The learner’s role involves attentiveness, lots of practice, and rehearsal.

2. **Meaning**: The achievement of meaning involves active intellectual work by the learner to make sense of the content and its implications. The learner must try to understand something that cannot be grasped immediately, by making inferences, forming and testing a theory, looking for connections and patterns make meaning. Meaning is not so much “taught and learned” as “challenged and constructed.” We make meaning.

What are the implications for instruction? Because the meaning of abstract ideas must be ultimately considered and tested in the mind of the learner, a teacher cannot simply transmit insight. Students have to be presented with questions and intellectual tasks that resist an easy answer and demand thought. What does this passage in the text mean? It could mean a few different things. What kind of problem is this and how should I proceed? They have to thus be helped to develop mental strategies for building, testing, explaining, and supporting the meanings they make; and develop the habits of mind needed for persisting in the face of challenge and ambiguity.

3. **Transfer**: The ability to transfer is different from meaning-making, though clearly related to it. Having acquired knowledge and skill, and having been helped to come to what the learning means, the learner must now effectively apply and adapt this learning to new and particular situations. *I know how to read; how should I read this text? I know how to add and subtract; which operations are needed here? How precise does my answer need to be in this situation? I know how to write essays; how should this particular audience, purpose, deadline, and word limit be addressed?*
What is Fair?

Who won this year’s 7th grade race around the campus?
Every year Birdsong Middle School has a field day in which classes engage in various outdoor activities. One of the events is a 3/4 mile run around the perimeter of the campus. Below are the results for the four 7th grade classes. The data show the order of finishes for all of the 7th grade runners.

But there is a problem: The teachers never intended this as a competition, so they did not develop a method of calculating the winning class. However, the students want to know the winner!

What is the fairest way to determine which class should be declared winner?
Your group task is to review the order of finish data in the chart below and decide a FAIR way of deciding which class is the winner? Your group should discuss the problem, decide on a winning class, AND be prepared to explain your reasoning and defend your approach.

<table>
<thead>
<tr>
<th>Class rank</th>
<th>Class A</th>
<th>Class B</th>
<th>Class C</th>
<th>Class D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>6</td>
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<td>20</td>
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<td></td>
<td>74</td>
</tr>
</tbody>
</table>

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: 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 their 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
# Learning Goals and Teaching Roles

<table>
<thead>
<tr>
<th>Three Interrelated Learning Goals</th>
<th>ACQUIRE</th>
<th>MAKE MEANING</th>
<th>TRANSFER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: These three goals are of course interrelated. However, there is merit in distinguishing them to sharpen and focus teaching and assessment.</td>
<td>This goal seeks to help learners <strong>acquire</strong> factual information and basic skills.</td>
<td>This goal seeks to help students <strong>construct meaning</strong> (i.e., <strong>come to an understanding</strong>) of important ideas and processes.</td>
<td>This goal seeks to support the learner’s ability to transfer their learning autonomously and effectively in new situations.</td>
</tr>
</tbody>
</table>

## 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

Note: Like the above learning goals, these three teaching roles (and their associated methods) work together in pursuit of identified learning results.
Four Types of Big Ideas

concepts
- adaptation
- equivalence
- rhythm
- migration
- diversity
- perspective

themes
- good & evil
- heroes & sheroes
- the Gilded Age
- freedom & responsibility
- coming of age
- the nature of truth

processes
- Critical Thinking
- Problem Solving
- Scientific Investigation
- Writing Process
- Historical Inquiry
- Creativity

principles
- Force equals mass times acceleration (F=MA).
- Price is a function of supply and demand.
- Water seeks its own level.
- In the absence of forces, an object at rest will remain at rest.
Adding a Conceptual Focus to Curriculum Design

Harvey Silver and Matt Perini (2010) suggest a simple way to make sure that curriculum units maintain a conceptual focus rather than just addressing topics, basic skills or activities. Add to the title of your unit, *A Study In...* or *A Study Of...* and make sure that the word or phrase represents a transferable big idea. Here are examples:

<table>
<thead>
<tr>
<th>For a unit on...</th>
<th>Make it A Study In...</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Rainforest</td>
<td>A COMPLEX ECOSYSTEM</td>
</tr>
<tr>
<td>The story, <em>Frog and Toad are Friends</em></td>
<td>RELATIONSHIPS</td>
</tr>
<tr>
<td>World War I</td>
<td>CAUSES and EFFECTS</td>
</tr>
<tr>
<td>Decimals, Fractions, Percentages</td>
<td>EQUIVALENCE</td>
</tr>
<tr>
<td>Weight Training</td>
<td>PROPER TECHNIQUE</td>
</tr>
<tr>
<td>Spanish – Formal &amp; Informal Greetings</td>
<td>CULTURE and LANGUAGE</td>
</tr>
<tr>
<td>Insects</td>
<td>STRUCTURE and FUNCTION</td>
</tr>
<tr>
<td>Native Peoples</td>
<td>IDENTITY and ADAPTATION</td>
</tr>
<tr>
<td><em>The Catcher in the Rye</em></td>
<td>AUTHOR’S CRAFT</td>
</tr>
<tr>
<td><em>The Catcher in the Rye</em></td>
<td>CHARACTER ANALYSIS</td>
</tr>
</tbody>
</table>

Now, try this for units that you teach.
Clarifying Content Priorities
(example – nutrition – elementary/middle)

**familiar with:**
- general eating patterns and menus from the past
- different conditions requiring dietary restrictions; e.g., high blood pressure, diabetes, stomach ulcers

**important to know and do:**
- types of food in each of the food groups and their nutritional values
- the USDA Food Plate guidelines
- Interpret nutritional information on food labels

**big ideas:**
- balanced diet
- nutritional needs

**understandings:**
- “You are what you eat.” Your diet affects your health, appearance, and performance.
- People have different dietary needs based on age, activity level, weight, and various health considerations.
Clarifying Content Priorities
(example – statistics – secondary)

familiar with:
• key figures who contributed to the development of modern statistics; e.g. Blaise Pascal and Lewis Terman.
• the history of the “bell curve” (normal distribution)

important to know and do:
• measures of central tendency - mean, median, mode, range, standard deviation
• statistical terminology
• data displays - bar graph, line plot, stem and leaf plot
• various statistical formulas

“big ideas”
and enduring understanding(s)

big ideas:
• sampling - patterns - prediction
• correlation - degrees of confidence
understandings:
• Statistical analysis and data display often reveal patterns. Patterns enable prediction.
• Sometimes sampling is better than counting.
• Correlation does not insure causality.
• Statistics can mislead as well as reveal.
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 that cut across topics. 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

<table>
<thead>
<tr>
<th>Overarching Essential Questions</th>
<th>Topical Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Art</strong>&lt;br&gt;• <em>In what ways does art reflect culture as well as shape it?</em>&lt;br&gt;• <em>How do artists choose tools, techniques, and materials to express their ideas?</em>&lt;br&gt;<strong>English/Language Arts</strong>&lt;br&gt;• <em>What makes a great story?</em>&lt;br&gt;• <em>How do effective writers hook and hold their readers?</em></td>
<td><strong>unit on masks</strong>&lt;br&gt;• <em>What do masks and their use reveal about the culture? What tools, techniques, and materials are used in creating masks from different cultures?</em>&lt;br&gt;<strong>unit on mysteries</strong>&lt;br&gt;• <em>What is unique about the mystery genre?</em>&lt;br&gt;• <em>How do great mystery writers hook and hold their readers?</em></td>
</tr>
</tbody>
</table>
Concept Attainment – Essential Questions

Part 1 - Examine the following examples and non-examples to determine the common characteristics of Essential Questions. List these in the box below.

<table>
<thead>
<tr>
<th>Essential Questions</th>
<th>Not Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How are “form” and “function” related in biology?</td>
<td>7. How many legs does a spider have? How does an elephant use its trunk?</td>
</tr>
<tr>
<td>2. How do effective writers hook and hold their readers?</td>
<td>8. What is “foreshadowing”? Can you find an example of “foreshadowing” in the story?</td>
</tr>
<tr>
<td>3. Who “wins” and who “loses” when technologies change?</td>
<td>9. What is the original meaning of the term, technology (from its Greek root, “techne”)?</td>
</tr>
<tr>
<td>4. Should it be an axiom if it is not obvious?</td>
<td>10. By what axioms are we able to prove the Pythagorean theorem?</td>
</tr>
<tr>
<td>5. What distinguishes fluent foreigners from native speakers?</td>
<td>11. What are some French colloquialisms?</td>
</tr>
<tr>
<td>6. How would life be different if we couldn’t measure time?</td>
<td>12. How many minutes are in an hour? How many hours are in a day?</td>
</tr>
</tbody>
</table>

List common characteristics of the Essential Questions:

Part 2 - Use your list of characteristics as criteria to determine which of the following are Essential Questions. Check “yes” or “no” after each example.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. What is the relationship between popularity and greatness in literature?</td>
<td></td>
</tr>
<tr>
<td>14. When was the Magna Carta signed?</td>
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<tr>
<td>15. Crustaceans - what’s up with that?</td>
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<tr>
<td>16. To what extent are common sense and science related?</td>
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<tr>
<td>17. Which modern leader will have the most disappointing legacy?</td>
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<tr>
<td>18. What’s the pattern?</td>
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</tr>
</tbody>
</table>

Refine your list of key characteristics of Essential Questions:
Essential Questions

examples

Arithmetic (numeration)
• What is a number?
• Why do we have numbers? What if we didn’t have numbers?
• Can everything be quantified?

Arts (visual and performing)
• Where do artists get their ideas?
• How does art reflect, as well as shape, culture?
• Do you like that (artwork)?

Culinary Arts
• When is it o.k. to deviate from the recipe?
• What makes a “safe” kitchen?

Dance
• How and what can we communicate through the “language” of dance?
• In what ways can motion evoke emotion?

Economics
• What determines value?
• Can macro-economics inform micro-economics (and vice-versa)?

Foreign/World Language
• What distinguishes a fluent foreigner from a native speaker?
• What can we learn about our own language and culture from studying another?

Geography
• What makes places unique and different?
• How does where we live influence how we live?

Government
• Who should decide?
• How should we balance the rights of individuals with the common good?

Health
• What is “healthful” living?
• How can a diet be healthy for one person and not another?
Essential Questions

examples

History
• Whose “story” is it?
• How do we know what to believe about historical claims?
• What can we learn from the past?

Literature
• What makes a “great” book/story?
• What “truths” can fiction reveal? Should a story teach you something?

Mathematics
• When is the “correct” answer not the best solution?
• What are the limits of mathematical representation/modeling?

Music
• How are sounds and silence organized in various musical forms?
• If practice makes perfect, what makes “perfect” practice?

Physical Education/Athletics
• Who is a “winner?”
• Is pain necessary for progress in athletics? (“No pain, no gain” – agree?)

Reading/Language Arts
• How does what you read influence how you should read it?
• How do you read “between the lines?”
• Why do we punctuate? What if we didn’t have punctuation marks?

Science
• To what extent are science and common sense related?
• How are “form” and “function” related in biology?

Technology
• In what ways can technology enhance research and communication? In what ways might technology hinder them?
• What are the pros and cons of technological progress?

Writing
• How do effective writers hook and hold their readers?
• How does audience and purpose influence writing style?
• What is a “complete” thought?
What Makes an Essential Question?

Questions that meet all or most of the following criteria qualify as “essential.” An essential question:

1) is open-ended; i.e., it typically will not have a single, final, and correct answer.
Essential questions yield inquiry and argument -- a variety of plausible (and arguable) responses, not straightforward facts that end the matter. They should uncover rather than cover (up) the subject’s controversies, puzzles, and perspectives.

2) is thought-provoking and intellectually engaging, often sparking discussion and debate.
Essential Questions work best when they are designed and edited to be thought-provoking to students, engaging them in sustained, focused inquiries. Such questions often involve the counter-intuitive, the visceral, the whimsical, the controversial, the provocative. Is the Internet dangerous for kids? Are censorship and democracy compatible? Does food that is good for you have to taste bad?

3) calls for high-order thinking, such as analysis, inference, evaluation, prediction. It cannot be effectively answered by recall alone (or via a Google search).
Their aim is to stimulate thought, to provoke inquiry, and to spark more questions, including thoughtful student questions, not just pat answers. They serve as doorways into focused yet lively inquiry and research. They are intended to result in conclusions drawn by the learner, not recited facts.

4) points toward important, transferable ideas within (and sometimes across) disciplines.
Essential questions reflect the most historically important issues, problems and debates in a field of study. Is history inevitably biased? What is a proof? Nature or nurture? By examining such questions, students are engaged in thinking like an expert (i.e., “doing” the subject).

5) raises additional questions and sparks further inquiry.
Thought-provoking essential questions are naturally generative. They lead to other important questions within, and sometimes across, subject boundaries. For example: In nature, do only the strong survive? leads to other questions and inquiries into human biology and the physics of physiology. What do we mean by “strong?” Are insects strong (since they are survivors)?

6) requires support and justification, not just an answer.
Essential questions are intended to elicit a variety of plausible (and arguable) responses. Students are expected to provide reasons and evidence. Thus, teachers pose follow-up prompts; e.g., Why?, What's your reasoning? Who agrees? Who disagrees? What's another way of viewing this?

7) recurs over time; i.e., the question can and should be re-visited again and again.
These are questions that are not answerable with finality in a single lesson or brief sentence – and that’s the point. The same important questions get asked and re-asked throughout one’s learning and in the history of the field. For example: What makes a great book great? Are the Harry Potter novels great books? can be productively examined and re-examined by first graders as well as college students. Over time, student responses become more sophisticated, nuanced, and well-reasoned.
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: _______________________________________________________________________________________
____________________________________________________________________________________
Response Techniques

Cue Students
Let students that know that when you pose Essential Questions that: 1) You are not looking for a single “correct” answer. 2) You expect them to explain their thinking and support their position.

Follow-up Probes
Following student responses to open-ended questions, pose follow-up such as:
- What do you mean by _____? • Why? • Can you elaborate? • Say more about that.
- Can you give me an example or analogy to explain that? • Is there another perspective on this?
- What’s your reasoning? • What’s your evidence? • Who has a different idea?

“Wait Time” I and II
Wait Time I refers to the interval of teacher silence after a question is posed, while Wait Time II refers to a similar period of time after a student’s initial response is offered. Extensive research on “wait time” has confirmed the benefits of just 3-5 seconds: more students participate, including by “slow” learners; responses are longer and more compete; more support offered; more questions by students.

Think-Pair-Share
This technique begins with students listening to a question, followed by individual think time during which students are not permitted to converse or to raise their hands but are encouraged to write down or diagram their thoughts. At a designated time, signaled by the teacher, students form pairs and exchange thoughts with their partner. The pairing period is then followed up by a sharing session often in the form of a class discussion.

Random Calling
Resist the habit of only calling on students who raise their hands to respond to a question. Random calling offers every pupil an equal chance of being invited to respond (e.g., via drawing names from a fishbowl). A variation of this technique is “student calling” whereby the teacher asks a student to select another student to respond. (“Marion, will you please call on someone else to reply?”). Another technique to promote active listening is to periodically ask students to summarize what has been said; e.g., “Justin, could you please summarize Maria’s point?” Then, check back with the originator; e.g., “Maria, did Justin accurately capture your idea?”

Class Survey
Perhaps the simplest method for “all pupil response” is to have students use hand signals; e.g., thumbs up, thumbs down (e.g., agree/disagree). Some teachers employ small “white boards” on which students can record brief responses to questions and prompts. Electronic Pupil Response Systems (aka “clickers” and cell phone APPS can be now used for the same purpose.

Devils’ Advocate
By deliberately challenging students’ interpretations or conclusions, or presenting an alternative viewpoint, teachers can press for clarification and justification. Examples:
- I disagree. Convince me. • How would you respond to those who say…? • Is it really “either-or”? • What are you assuming when you say that? • Might there be different ways of thinking about this?
Techniques for HOOKING Learners

Effective teachers recognize the importance of hooking the student at the beginning of a new learning experience. Since the human brain is wired to pay attention to anything in its environment that is novel or unexpected, we can use this pattern to gain students’ attention at the start of a course and the beginning of lessons.

Use the list of various types of attention-getters to brainstorm possible hooks to use in your teaching. Remember, the goal is not attention for its own sake. Make sure that you connect any hook activity with the actual content you want students to learn.

*How will you “hook: student interests?*

- odd fact, anomaly 
- discrepant event, counter-intuitive example 
- provocative question 
- mystery 
- challenge 
- problem 
- controversial issue 
- experiment -- predict outcome 
- role-play or simulation 
- personal experiences 
- emotional connection 
- humor 
- present student choices (e.g., choice of research topic, final project, work partners)

- other:  

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Think-Pair-Share

What is Think-Pair-Share and Why use it?
Think-Pair-Share (TPS) is an instructional strategy developed by Dr. Frank Lyman that provides time and structure for engaging students’ thinking on a given topic. In its basic form, TPS follows three steps:

1. Think: Students think independently about a question or claim that has been posed, forming ideas on their own.
2. Pair: Students then meet in pairs to share and discuss their thoughts. This step allows students to articulate their ideas and to consider those of others.
3. Share: Student pairs share their ideas with a larger group (e.g., another pair) or the entire class.

The Think-Pair-Share technique is strikingly simple, requiring virtually no preparation once it is explained to students and practiced once or twice. Nonetheless, TPS embodies several bodies of research including benefits associated with cooperative learning, discussion in the classroom and “wait time.” These benefits include an increase in student participation, longer and more elaborate answers, reduction of impulsive responses, and inferences that are more likely to be supported by reasons.

How can you use Think-Pair-Share?
Begin by introducing TPS, explaining its purpose and modeling how it works. Then, let students try it out with a simple example to give students a feel for the process. Here are tips for using Think-Pair-Share:

1. Allow between 15 seconds to 2 minutes of individual “think time” depending on the age and experiences of students and the complexity of the question or claim.
2. Encourage students to write down their thoughts during their think time.
3. Remind students that each person is expected to talk during the “pair” phase. If a student is shy or not confident, they should be expected to at least paraphrase what their partner has told them to promote active listening and keeping them actively engaged.
4. Rotate the pairings regularly. Students benefit from interacting with a variety of partners.
5. Once students are comfortable with the process, you can set up particular roles for the pairs depending on the topic and purpose of the lesson. Here are a few possible roles:
   • Paraphraser – One student must paraphrase their partner before offering their own ideas.
   • Interviewer – One student questions the other based on their response, then they switch roles.
   • Devil’s Advocate – Students respectfully challenge each other’s interpretations, conclusions, claims, reasons, evidence, etc. in order to help clarify their thinking.
6. During the “share” part of TPS, teachers should remind students to give reasons for their thinking; e.g., You said __X__, because…; Can you tell us more…;
7. Invite students to respond to each other; e.g., What do you think about that idea?
8. Rather than only calling on students with raised hands, teachers can call on pairs randomly to keep all students on their toes and ready to respond.
Concept Attainment

What is Concept Attainment and Why use it?
Concept Attainment is an inductive instructional technique based on the work of Jerome Bruner. It is a versatile technique that can be used to help students grasp a wide variety of concepts—anything from folktales in a primary-grade classroom to depth of field in a photography course to hydrophobicity in chemistry. The technique actively engages students in making meaning, leading to deeper understanding. Instead of defining concepts for students, teachers challenge students to define those concepts for themselves by comparing examples and non-examples in order to determine the common attributes. The process of extracting attributes from examples is fun for students, because it feels like they’re playing detective; it’s also effective, because it mimics the brain’s natural process for discovering and defining new concepts.

How can you use Concept Attainment?
There are six basic steps in a Concept Attainment lesson:

1. Identify a concept that you want students to understand deeply. (It should have one or more clear critical attributes.) You can name the concept at the start of the lesson or wait till the end to reveal it.
2. Develop yes and no examples of the concept. Yes examples should include—and be designed to help students discover—all the concept’s critical attributes. No examples can include some or none of the critical attributes.
3. Present some examples. Challenge students to figure out what the yes examples have in common and how they differ from the no examples. Ask them to use their comparative analysis to develop a tentative list of the concept’s critical attributes.
4. Present additional yes and no examples. Have students use these examples to test and
5. Help students review all the examples and develop a final and accurate list of the concept’s critical attributes. Then have students define the concept in their own words, using examples and attributes from the lesson to help them.
6. Develop a task that asks students to apply and test their understanding of the concept.

<table>
<thead>
<tr>
<th>YES (examples of concept)</th>
<th>NO (non-examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money talks.</td>
<td>I’ve eaten so much I could burst.</td>
</tr>
<tr>
<td>The city slowly awoke from its slumber and dressed for the day.</td>
<td>The population in the city has nearly doubled in the past twenty years.</td>
</tr>
<tr>
<td>The dog wept from loneliness when its owner died.</td>
<td>The wind was a torrent of darkness stirring the trees.</td>
</tr>
<tr>
<td>The telephone poles have been holding their arms out for a long time. They must be tired.</td>
<td>The road was a ribbon of moonlight.</td>
</tr>
<tr>
<td>The wind moaned as if in pain.</td>
<td>Silence dropped like a curtain around them.</td>
</tr>
</tbody>
</table>

Literary Concept: **Personification** = a figure of speech that endows animals, objects and abstract ideas with human qualities.
Concept Attainment
(continued)

<table>
<thead>
<tr>
<th>YES (examples of concept)</th>
<th>NO (non-examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a person swimming across a river</td>
<td>A child drinks two pints of milk a day.</td>
</tr>
<tr>
<td>The force acting on a plant in a pot hanging from the ceiling.</td>
<td>The dumbbell weighs 25 pounds.</td>
</tr>
<tr>
<td>a train moving at 30 kilometers per hour heading east</td>
<td>a car moving at 33 miles per hour</td>
</tr>
<tr>
<td>the motion of water leaving a hose nozzle</td>
<td>Dinner is always served at 6:45 sharp.</td>
</tr>
</tbody>
</table>

Science Concept: **Vectors** = a quantity possessing both magnitude and direction

Note: At the beginning, you may choose to label the “yes” and “no” examples and challenge students to distinguish the attributes of the concept from the non-examples. Then, present additional examples and ask students to decide (based on their identified attributes) if each example is or is not an example of the concept and explain their reasoning. This approach reveals the extent to which students really understand the concept.

Here are tips for using Concept Attainment:

1. Locating and selecting the best possible exemplars is fundamental. Choose concepts that clearly illustrate the key features you want students to comprehend.
2. To save time, look for existing texts or materials that can serve as yes and no examples rather than creating examples from scratch.
3. Carefully, sequence the examples, beginning with those that reveal clear differences between examples and non-examples. Then, show additional examples and non-examples that reveal subtler distinctions.
4. Don’t limit the examples to words. You can also use pictures, symbols, and equations as examples and non-examples.
5. Once students understand the technique, you can have them create their own concept attainment examples to share with peers. This is a great way for students to review, and deepen their understanding, of important content.

SOURCE: These examples were adapted from Zelly, B. and Fertitta, N. *Concept Attainment: An Instructional Resource Guide*. Annapolis, MD: Anne Arundel County Public Schools.
Concept Maps

What are Concept Maps and Why use them?
Concept maps were initially developed by Joseph Novak based on the learning theories of David Ausubel. They provide a visual, holistic representation of the relationships between concepts. The concepts on a map are presented in a hierarchical form with the major, superordinate concept at the top, followed by subordinate concepts arranged hierarchically below. The concepts are linked by connectors with verbs (or verb phrases) which identify the connecting relationship.

How can you use Concept Maps?
There are three ways in which concept maps can be used:

1. As an advance organizer – A concept map can be used as an advance organizer when it is presented to students at the beginning of new instruction to provide a conceptual framework for material to be learned. In essence, they present a structure of knowledge, akin to a conceptual pegboard on which students can hang new knowledge. Additionally, a concept map presented as an advance organizer can serve to activate students’ prior knowledge related to the new material.

2. As a review tool for students – As students are learning new material, they can create their own concept maps to represent their understanding of conceptual relationships. For example, as an assignment, students could be asked to “map” the key ideas from a reading or lecture, and then share their maps with other students. Concept maps are well suited to have students represent the key concepts in a unit or course.

3. As an assessment – Although there is no single, correct way to represent the relationships between concepts, a concept map does indicate whether its creator truly understands the fundamental structure and organization of the material being represented. Thus, concept maps created by students provide a revealing assessment of the extent to which students truly understand how concepts are related. When used as a formative assessment, the teacher can review the maps to see if there are any missing elements, inaccurate depictions of concept relationships or misconceptions. Then, they
Concept Map – Advance Organizer

The concepts on a map are presented in a hierarchical form with the major, superordinate concept at the top, followed by subordinate concepts arranged hierarchically below. The concepts are linked by connectors with verbs (or verb phrases) which identify the connecting relationship. The Statistics example shown below is an example of the use of a concept map as an Advance Organizer.

Statistics Concept Map

- **Population** → **Parameter**
  - **Statistic (one type)** → **Inferential**
    - **Probability** is a measure of chance
      - Occurrence may create
      - Leads to prediction
  - Central tendency
    - **Mean** (one is)
    - **Median** and **Mode** (two is, three is)
      - **Correlation** (related to)
      - **Significance** (based on)

- **Data** → **Variables** can be **Descriptive** (related to)
  - **Correlation** (based on)
  - **Significance** (leads to)

- **Range** (affected by)
  - **Variance** (occurs with)
    - **Standard Deviation** (measured by)
  - **Frequency** (indicates by)
    - **Histogram** (method of analysis)

- **Bias** (yields)
  - **Random** (selected at)
  - **Sample** (selected by choice)
  - **Population** (divided into)

- **Skewed** and **Normal**
What is a Frayer Diagram and why use it?
The Frayer Diagram is a graphic organizer for introducing new vocabulary as concepts. The diagram contains an oval in the center to place the concept surrounded by four boxes where students can provide definition, characteristics, examples, and non-examples. The organizer requires active meaning making by students—in order to complete the diagram, they draw on prior knowledge, do some research, and discuss the concept with peers.

How can I use a Frayer Diagram?
Introduce students to the Frayer Diagram by:
- describing its purpose
- modeling its use with simple examples
- provide students with guided practice for completing the diagram, moving from simple to more sophisticated concepts.
- Note: Younger students can include pictures.

Here is an example of a Frayer Diagram completed for the concept of formative assessment.

<table>
<thead>
<tr>
<th>Essential Characteristics +</th>
<th>Non-Essential Characteristics –</th>
</tr>
</thead>
</table>
| • on-going as part of instruction  
  • provide feedback to teachers and learners  
  • inform needed adjustments  
  • guide differentiation  
  • not graded | - whole group or individual |
| formative assessment | |

<table>
<thead>
<tr>
<th>Examples +</th>
<th>Non-Examples –</th>
</tr>
</thead>
</table>
| • teacher observation  
  • oral questioning  
  • exit cards  
  • weekly letter  
  • scrimmage  
  • dress rehearsal | - final exam  
- state test  
- senior project  
- AP/IB exam  
- the game  
- the play |
What are Graphic Organizers and Why use them?
Graphic organizers provide a visual representation of facts and concepts and their relationships within organized frames. They have proven to be effective tools to aid learning and thinking by helping students and teachers represent abstract information in more concrete form, depict relationships among facts and concepts, relate new information to prior knowledge, and organize thoughts for writing and speaking. Graphic organizers exist in a variety of forms, such as the web (or mind map), concept map, sequence chain, main idea table, comparison matrix, and flowchart.

Graphic organizers can be pre-developed (e.g., a story map, or Venn diagram) to provide students with an organizing frame within which they can work. For example, the story map below can be used by students to teach students about narrative structure. It makes the invisible elements of a story more concrete. A story map can help younger students understand that nearly all stories contain common elements, and it can help students of all ages analyze the story elements in books, movies, and plays. Additionally, this graphic organizer can serve as a generative tool to assist students when they are writing their own stories.

One reason for the effectiveness of graphic organizers as tools for learning may have to do with the fact that the brain typically processes information via two distinct channels—a visual channel and a verbal or linguistic channel. Working together, each increases the power of the other, thus making dual coding a highly effective way to enhance students’ retention and understanding of what they learn.

How can you use Graphic Organizers?
There are two general types of graphic organizers – ones that are pre-developed and those that are generated by students.

Pre-developed organizers – Pre-developed graphic organizers may be productively utilized before instructional activities, such as reading or viewing a film, to activate prior knowledge, to provide a conceptual framework for integrating new information, and to encourage student prediction. During instruction, organizers can help students actively process and represent information in new forms. They help organize ideas for writing and speaking, decision making, or design thinking. They can also serve as formative checks of students’ understanding. And after instruction, graphic organizers may be used to summarize learning, encourage elaboration, provide a structure for review, and assess the depth of student understanding.

When introducing students to a new graphic organizer; teachers should describe its purpose, model its use, and provide students with opportunities for guided practice. Once students become comfortable using an organizer, more independent applications are appropriate.
Adding Up the Facts

Adding Up the Facts is a graphic organizer that supports students in “making meaning” from a collection of facts. This tool asks students to draw an inference or make a generalization by “adding up the facts.”

Many pioneers, especially children, died from disease.

The pioneers had to grow, or hunt for, their food. Often, they went hungry.

Much hard work was required to settle new land - clearing fields, constructing shelter, etc.

Settlers faced attacks by Native American tribes on whose lands they travelled or settled.

The pioneers faced many hardships in the settlement of the west.
Story Map

A Story Map makes the basic elements of a story more tangible. This organizer helps students follow and summarize stories as they read. It also provides a structure to guide students as they create their own narratives.

Title

Setting

Characters

Problem

Key Events

Event # 1
Event # 2
Event # 3
Event # 4
Event # 5
Event # 6

Resolution
A Character Trait Map helps students make inferences about a character by identifying patterns in their words and actions. The following example is from an analysis of the main character in the play, *Death of a Salesman*.

**Character Trait Map**

- **Willie Loman**
  - **actions**
    - He travels alone.
    - He feels that people are against him.
  - **traits**
    - alienated
    - confused
    - weak
  - **actions**
    - He contradicts himself.
    - He engages in fantasy.
  - **actions**
    - He won’t accept job from Charlie.
    - He doesn’t want to admit failures.
    - He was afraid to stand up to his boss.
    - He attempted suicide.

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### Argumentation Table

<table>
<thead>
<tr>
<th>Players under 14 years of age should not be allowed to play tackle football.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Claim</strong></td>
</tr>
<tr>
<td><strong>Reasoning</strong></td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
</tr>
<tr>
<td><strong>Tackle football is dangerous.</strong> Football exposes players to repeated blows to the head. The effects are cumulative and can lead to chronic traumatic encephalopathy (CTE), a degenerative brain disease associated with depression, suicidal behavior, dementia and other symptoms.</td>
</tr>
<tr>
<td><strong>Young athletes are especially vulnerable.</strong> Since the brains of younger players are still developing, they may be especially susceptible to the ill effects of repeated blows to the head suffered in practices and games.</td>
</tr>
<tr>
<td><strong>Many children are at risk.</strong> American football is one of the most popular sports for young athletes. In the United States, there are more than one million youth football players (ages 6 to 12 years) in Pop Warner leagues.</td>
</tr>
<tr>
<td><strong>There are safer ways to learn the game.</strong> Younger players can play “flag” football and learn the basics of the game while greatly reducing the chance of injuring their brains.</td>
</tr>
<tr>
<td><strong>Research suggests that repetitive, sub-concussive hits contribute to the development of CTE.</strong> Source: <em>Radiology Journal</em></td>
</tr>
<tr>
<td><strong>Players under the age of age of 12 showed, “increased odds for impairment in self-reported neuropsychiatric and executive function.”</strong></td>
</tr>
<tr>
<td><strong>Source:</strong> Sports &amp; Fitness Industry Association</td>
</tr>
<tr>
<td><strong>The American Academy of Pediatrics recommends the establishment of non-tackling football leagues.</strong></td>
</tr>
</tbody>
</table>
Student-generated organizers – While established graphic organizers can have great value in supporting learning, students should be allowed, and encouraged, to create their own organizers for a variety of purposes, including notetaking, reviewing and synthesizing information, symbolizing abstract concepts, and generating new ideas. By doing so, learners are actively making meaning of new material in accordance with the workings of their unique minds. Here is an example of a students’ web on the human nervous system.

Summarizing

What is Summarizing and Why use it?
A summary provides a succinct condensation of main points from a larger body of material. Research has demonstrated that having students regularly summarize key ideas from their reading, viewing and listening has a positive effects on student learning at all grade levels and content areas, particularly when this skill is taught explicitly and used regularly. Creating a summary requires the active processing of information and can enhance information recall; identification and comprehension of key ideas; and clarification of thoughts before writing or speaking. Student summaries can also serve as formative assessments, since they make students’ thinking and understanding explicit to both the learner and teacher; i.e., may reveal inaccuracies of misconceptions that need to be corrected.

How can you use Summarizing to enhance student learning?
Two practical techniques that teachers can use to help students identify essential information main idea and write concise summaries of main ideas are described below:

Single-Sentence Summaries – is a technique that combines both notemaking and summarizing to make reading more active and reflective (Silver & Boutz, 2015). After a reading a short passage (e.g., one or several paragraphs), the students are asked to pause and record the key point of that section of the text. It is important to emphasize that students’ summary sentences are not to be copied. Instead, single-sentence summaries should be written in the student’s own words and should capture what the student believes is most important. When used regularly, this technique supports students in developing a “summarizing habit” so that over time, it becomes second nature for readers to stop, process, and jot down the big idea as they read.

4-2-1 Summaries – uses a collaborative process to help students develop an effective summary. Here is a summary (: of the process:
1. After reading, listening or viewing, students are asked to review the text (or video or presentation) and decide what they believe are four important ideas or points. Students record their four big ideas on a graphic organizer (see figure).
2. Students then pair up with another student to share and compare their ideas. Each pair discusses both students’ ideas and strives to reach consensus on the two most important ideas.
3. The process is repeated with another pair; together the four students share and compare their ideas and then work as a team to determine the single most important idea in the text they have read. Through this process, students condense their thinking down until it contains the essential information and results in a succinct summary.

See examples of these summarizing techniques and associated tools on the following pages.
Summarizing
(continued)

Single Sentence Summaries – To introduce this technique, show examples of what successful summary sentences look like. Then, model the process by thinking aloud as you create a single sentence summary of a paragraph. To help students get used to using this comprehension-enhancing technique, you can format readings into chunks (e.g., separate paragraphs) and leave space on the right-hand side for students to summarize each paragraph. For example, a health/physical education teacher who was teaching about the role that aerobic and anaerobic respiration play in exercise pulled a relevant reading from an online textbook and formatted it in Word as shown in the example below.

<table>
<thead>
<tr>
<th>Text</th>
<th>Single Sentence Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Role of Aerobic and Anaerobic Respiration During Exercise</td>
<td></td>
</tr>
<tr>
<td>Why do you breathe? It’s pretty simple. If you don’t you die. We breathe to get oxygen and remove carbon dioxide from the body. Your body is made up of cells. Every cell needs oxygen to convert food into energy that can be stored in the cells so that they can carry out the activities of life. Without oxygen, this conversion of food into energy stops and life soon ends.</td>
<td></td>
</tr>
<tr>
<td>Living things must carry out respiration in order to release energy for life from their food. Much of our food is digested into a simple sugar called glucose. The mitochondria of your cells combine the glucose sugar molecules with oxygen to form a chemical substance called ATP. ATP stands for Adenosine Triphosphate, and is a chemical with a large amount of stored energy that the cells can transport and use where and when it is needed by the body.</td>
<td></td>
</tr>
<tr>
<td>Playing a sport requires a large amount of energy. Your muscle cells need a lot of oxygen to burn food to convert sugar into ATP. Without respiration making all of this happen efficiently, you would be unable to meet the demands of rigorous physically activity.</td>
<td></td>
</tr>
</tbody>
</table>
Summary Paragraph: What did I learn?

The Gold Rush changed both the population and landscape of California. When gold was discovered at Sutter’s Mill in 1848, people from the United States and around the world rushed to California. The overall population got larger and more diverse. But the native population dropped. Over 400,000 natives were killed or died from disease or starvation. The rush to California didn’t just change the population. It changed the landscape, too. Towns, businesses, roads, and schools sprung up everywhere. And miners polluted and destroyed the environment. Overall, the Gold Rush changed California’s land, people, and development in many different and lasting ways.
# Reading for Understanding – Reading Stances

<table>
<thead>
<tr>
<th>STANCES</th>
<th>Fiction</th>
<th>Non-Fiction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Literal</strong></td>
<td>- What is this [novel, film, poem,] about?</td>
<td>- What is the topic or the “gist” of the text this [book, article, essay, blog, etc.]?</td>
</tr>
<tr>
<td></td>
<td>- What is the main topic or “gist”?</td>
<td>- What are the keys facts?</td>
</tr>
<tr>
<td></td>
<td>- Where is the setting? ... the time period?</td>
<td>- What is the most important information conveyed?</td>
</tr>
<tr>
<td></td>
<td>- When did this piece take place?</td>
<td>- What did you learn from this?</td>
</tr>
<tr>
<td></td>
<td>- Who are the major and minor characters?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- What is the situation or problem?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- What are the most important events?</td>
<td></td>
</tr>
<tr>
<td><strong>Interpretive</strong></td>
<td>- What is the meaning of _____?</td>
<td>- What is the meaning of _____?</td>
</tr>
<tr>
<td></td>
<td>- What is the implicit theme or message?</td>
<td>- What conclusions do you draw from this?</td>
</tr>
<tr>
<td></td>
<td>- What is the significance of the title?</td>
<td>- What is the [attitude, philosophy, politics, etc.] of the author(s)?</td>
</tr>
<tr>
<td></td>
<td>- How would you describe the mood?</td>
<td>- How does this piece compare to [one or more related works]?</td>
</tr>
<tr>
<td></td>
<td>- What traits do the character(s) exhibit?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- What does [figurative language] mean?</td>
<td></td>
</tr>
<tr>
<td><strong>Personal</strong></td>
<td>- How is this like something from your life?</td>
<td>- What did this make you think?</td>
</tr>
<tr>
<td></td>
<td>- How do you relate to this theme?</td>
<td>- Do you agree with the author?</td>
</tr>
<tr>
<td></td>
<td>- What did this make you think or feel?</td>
<td>- Are you convinced? ...persuaded?</td>
</tr>
<tr>
<td></td>
<td>- What would you have done if you were the character?</td>
<td>- Did you change your mind?</td>
</tr>
<tr>
<td></td>
<td>- What questions would you like to ask the author/character(s)?</td>
<td>- What additional information is needed?</td>
</tr>
<tr>
<td><strong>Critical</strong></td>
<td>- What are the greatest strengths of this piece? ...greatest weakness(es)? Imagine you are a literary critic.</td>
<td>- What questions would you like to ask the author(s)?</td>
</tr>
<tr>
<td></td>
<td>- How effectively did the author convey the theme? ...describe the setting? ...develop the characters? ...establish the mood? ...unfold the plot and ...build to a climax? ... use imagery and figurative language?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Would you recommend this to others?</td>
<td>- How clear was this piece? ...accurate? ...complete? ...unbiased?</td>
</tr>
<tr>
<td></td>
<td>- How well does the organizational structure work?</td>
<td>- How well does the organizational structure work?</td>
</tr>
<tr>
<td></td>
<td>- What are the greatest strengths of this piece? ... the greatest weakness(es)?</td>
<td>- How effectively did the author achieve his or her purpose; e.g., to inform?... to persuade?</td>
</tr>
</tbody>
</table>
What is Reading for Understanding and Why use it?
Reading for understanding is a complex and multi-faceted process. The Reading Stances technique, reflects ideas originally developed by Dr. Judith Langer (1994). It engages students in interacting with, and responding to, text according to four “stances”—literal, interpretive, personal, and critical. The Reading Stances give teachers a rich, yet manageable way to create dynamic questions that engage students in reading for meaning and deep comprehension. Here is a summary of the four Reading Stances:

- **Literal Stance** – Readers form an initial impression of the text. They are “reading the words” and focusing on the literal: What is this about? What is the topic or the “gist” of the selection? What are the key facts? Readers define, describe, restate, and summarize what they have read.

- **Interpretive Stance** – Students develop interpretations of the text, seeking deeper meaning about the embedded concepts and themes. They “read between the lines” to interpret, make inferences and draw conclusions: What can you infer or conclude from this text? What is the meaning of _____? What is the implicit theme or message? What meaning lies “between the lines”?

- **Personal Stance** – Readers connect their personal experiences with the selection. They “read beyond the lines” to explore what the text means to them and reflect their lives accordingly: How is this like something from your own experiences? How do I relate to this topic? What does it say to me?

- **Critical Stance** – Readers read analytically and critically. They “question the author and the text” evaluatively: Fiction: How effectively did the author convey the themes, characters, story line? Non-fiction: How useful was this information? To what extent is this account accurate, complete, and unbiased?

Note: The same questions can be applied to responding to films, television shows, theater events, political speeches, and commercial advertisements.

How can you use the Reading Stances to enhance students’ understanding?
Explain the purpose of using the Reading Stances as a means to deeper comprehension. Model the process by “thinking aloud” and showing examples. Then, have the students apply the technique, initially to a simple reading passage, and later to more complex pieces.

Once basic stance questions have been posed, teachers should always ask students for explanation and support, and expect them to cite evidence from the text to support their responses. Examples of follow-ups: Why? What led you to that idea (inference, interpretation or conclusion)? What evidence from the text shows that? Is there another interpretation? Do you agree with the author?
What Is Exemplary Design for Learning?

1. Think back to your many prior experiences with well-designed learning, both in and out of school. What was the most well-designed learning experience you have ever encountered as a learner? What features of the design - not the teacher’s style or your interests - made the learning so engaging and effective? (Design elements include: challenges posed, sequence of activities, resources provided, assignments, assessments, groupings, teacher’s role, etc.). Briefly describe the design, below:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. In sharing your recollections and analyses with your colleagues, build a list of generalizations that follow from the accounts. What do well-designed learning experiences have in common? In other words, what must be built in “by design” for any learning experience to be maximally effective and engaging for students?

The best designs for learning...

• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
• ______________________________________________________________
Characteristics of the Best Learning Designs...

(based on surveys of K-16 faculty throughout the nation)

**Expectations**  
*the best learning designs...*
- provide clear learning goals and performance expectations.
- cast learning goals in terms of genuine/meaningful performance.
- frame the work around genuine questions & meaningful challenges.
- show models/exemplars of expected performance.

**Instruction**  
in the best learning designs...
- the teacher serves as a facilitator/coach to support the learner.
- targeted instruction and relevant resources are provided to “equip” students for expected performance.
- the textbook serves as one resource among many (i.e., text is resource, not syllabus).
- the teacher “uncovers” important ideas/processes by exploring essential questions and genuine applications of knowledge and skills.

**Learning Activities**  
in the best learning designs...
- individual differences (e.g., learning styles, skill levels, interests) are accommodated through a variety of activities/methods.
- there is variety in work, methods and students have some choice (e.g., opportunities for both group and individual work).
- learning is active/experiential to help students “construct meaning”.
- cycles of model-try-feedback-refine anchor the learning.

**Assessment**  
in the best learning designs...
- there is no mystery as to performance goals or standards.
- diagnostic assessments check for prior knowledge, skill level, and misconceptions.
- students demonstrate their understanding through “real world” applications (i.e., genuine use of knowledge and skills, tangible product, target audience).
- assessment methods are matched to achievement targets.
- on-going, timely feedback is provided.
- learners have opportunities for trial and error, reflection and revision.
- self-assessment is expected.

**Sequence & Coherence**  
*the best learning designs...*
- start with a “hook”, immerse the learner in a genuine problem/issue/challenge.
- move back and forth from whole to part, with increasing complexity.
- scaffold learning in “do-able” increments.
- teach as needed; don’t over-teach all of the “basics” first.
- revisit ideas – have learners rethink and revise earlier ideas/work.
- are flexible (e.g., respond to student needs; revise plan to achieve goals).
### Analyzing Current Practices Against Best Learning Designs

3 = consistently  2 = sometimes  1 = rarely/never

#### Expectations

*To what extent does my/our designs...*

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide clear learning goals and performance expectations (i.e., no mystery for learners)?</td>
<td>✗</td>
</tr>
<tr>
<td>cast learning goals in terms of genuine/meaningful performance?</td>
<td>✗</td>
</tr>
<tr>
<td>frame the work around genuine questions &amp; meaningful challenges?</td>
<td>✗</td>
</tr>
<tr>
<td>show models/exemplars of expected performance?</td>
<td>✗</td>
</tr>
</tbody>
</table>

#### Instruction

*To what extent does my/our teaching...*

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide targeted instruction and relevant resources to “equip” students for expected performance?</td>
<td>✗</td>
</tr>
<tr>
<td>use the textbook as one resource among many (i.e., the textbook is a resource, <em>not</em> the syllabus)?</td>
<td>✗</td>
</tr>
<tr>
<td>help “uncover” important ideas/processes by exploring essential questions?</td>
<td>✗</td>
</tr>
</tbody>
</table>

#### Learning Activities

*To what extent does my/our learning activities...*

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>address individual differences (e.g., learning styles, skill levels, interests) through a variety of activities/methods (vs. “one size fits all”)?</td>
<td>✗</td>
</tr>
<tr>
<td>provide variety in work, methods and students have some choice (e.g., opportunities for both group and individual work)?</td>
<td>✗</td>
</tr>
<tr>
<td>include inquiry/experiential opportunities to help students “make meaning” for themselves?</td>
<td>✗</td>
</tr>
<tr>
<td>incorporate cycles of <em>model-try-feedback-refine</em> learning experiences?</td>
<td>✗</td>
</tr>
</tbody>
</table>

#### Assessment

*To what extent does my/our assessments...*

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>provide appropriate measures of <em>all</em> of the learning goals?</td>
<td>✗</td>
</tr>
<tr>
<td>ask students to demonstrate their understanding through “real world” applications?</td>
<td>✗</td>
</tr>
<tr>
<td>provide on-going, timely, and descriptive feedback to learners?</td>
<td>✗</td>
</tr>
<tr>
<td>include opportunities for trial and error, reflection and revision?</td>
<td>✗</td>
</tr>
<tr>
<td>allow self-assessment by the learners?</td>
<td>✗</td>
</tr>
</tbody>
</table>

#### Sequence & Coherence

*To what extent does my/our designs...*

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>include pre-assessments to check for prior knowledge, skill level, and misconceptions?</td>
<td>✗</td>
</tr>
<tr>
<td>begin with a “hook” (e.g., immerse the learner in a genuine problem/issue/challenge)?</td>
<td>✗</td>
</tr>
<tr>
<td>move back and forth from whole to part, with increasing complexity?</td>
<td>✗</td>
</tr>
<tr>
<td>scaffold learning in “do-able” increments?</td>
<td>✗</td>
</tr>
<tr>
<td>revisit important ideas/questions and allow learners to rethink and revise earlier ideas/work?</td>
<td>✗</td>
</tr>
<tr>
<td>remain flexible (e.g., to respond to student needs; allow revisions to achieve goals)?</td>
<td>✗</td>
</tr>
</tbody>
</table>
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 performance 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