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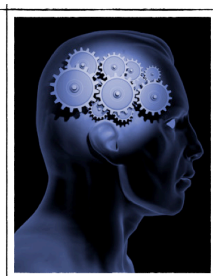
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### Understandings



- Purpose:
  - To focus curriculum around enduring, transferrable learning to avoid educator and student fixation on narrow objectives
  - To encourage active meaning making by the students
- Material section starts on p. 59

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Meaning	
<p><b>UNDERSTANDINGS</b> <i>Students will understand that...</i></p> <p>U1 Defensive driving assumes that other drivers are not attentive and that they might make sudden or ill-advised moves.</p> <p>U2 The time needed to stop or react is deceptively small, thus requiring constant anticipation &amp; attention.</p> <p>U3 Effective drivers constantly adapt to the various traffic, road, &amp; weather conditions.</p>	
Acquisition of Knowledge & Skill	
<p><i>Students will know...</i></p> <p>K1 the driving laws of their state, province or country</p> <p>K2 rules of the road for legal, courteous and defensive driving</p> <p>K3 basic car features and functions</p>	<p><i>Students will be skilled at...</i></p> <p>S1 procedures of safe driving under varied traffic, road &amp; weather conditions</p> <p>S2 signalling/communicating intentions</p> <p>S3 quick response to surprises</p> <p>S4 parallel parking</p>

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## Meaning Making

Make Meaning

- Connect the dots' -
  - Make sense of (seemingly isolated) experiences, data, or facts
  - Identify the gist, point, purpose, significance, big idea
  - Draw appropriate (but not obvious) inferences (e.g. motive)

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Kurt Fischer (2008) of Harvard University's *Mind, Brain and Education Institute*

- *"We are not brains disembodied in the bucket sitting in the corner. And likewise, we don't learn by having information stuck into our brains. It doesn't work that way. We have to learn more actively than that. So it is not true that you can plug the world into the brain and thereby know everything. Instead, knowledge has to built."*

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### What is real understanding? How does it differ from 'knows a lot'

<ul style="list-style-type: none"> <li>• If you really understand you can...</li> </ul>	<ul style="list-style-type: none"> <li>• If you know a lot, but don't really understand, you can only...</li> </ul>
Apply different areas beyond subject Put it into action Troubleshoot See the big picture Explain why Demonstrate See elegance which sponsors more interest Transfer to new, more complex situations Teach it to someone else – big picture, explain why apply	Teach it to someone else by repeating the lesson or strategy Parrot Solve similar problems Can perform it but can't explain why Share answer but can't explain thinking You can fake it, you can pass a test You can demonstrate it in the moment but it doesn't have traction

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**Group the answers**

- If you really understand you can...

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**One circle feeds the other**

- If you really understand you can...

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**Not New idea — from Bloom**

- "Application is different from simple comprehension: the student is not prompted to give specific knowledge, nor is the problem old-hat. The tests must involve situations new to the student..."
- "Ideally we are seeking a problem which will test the extent to which the individual has learned to apply an abstraction in a practical way."

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### Understandings

- Reflect important, transferrable ideas
- Are stated as full-sentence generalizations — Students will understand that...
- **EXAMPLES:**
  - *Recognizing predictable patterns allows the creation of functional relationships.*
  - *The quality of the search affects the accuracy and depth of the research.*
  - *Feedback provides the author with concrete information about whether the intended result was achieved.*

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### Research on the science of learning *Framed as Understandings*

- New knowledge is built as an extension of existing knowledge.
- When given a question, problem, or situation, people search their memory banks to look for an answer.
- Novice learners need to acquire factual knowledge in tandem with conceptual understanding in order to be able to think effectively.

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### Research on the science of learning *Framed as Understandings*

- The quality of focus during learning impacts the likelihood of whether it will be remembered.
- The motivation and capacity to learn is naturally intrinsic.

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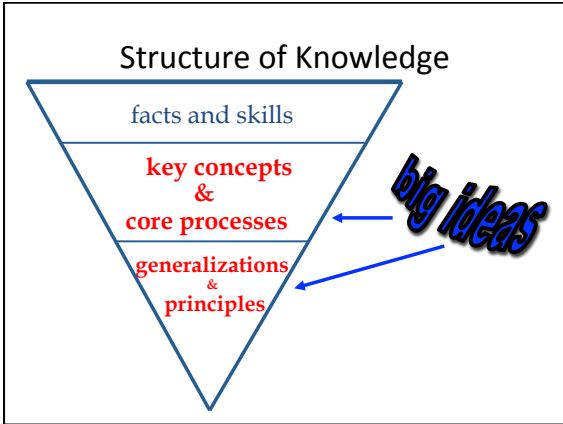
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### Understanding Development

Key Concept to Understanding	Key Process to Understanding
<ul style="list-style-type: none"><li>• Key concept: <b>Conflict</b></li><li>• Understanding: <i>International conflict often leads to strong disagreements regarding isolationism/nationalism and intervention/involvement.</i></li></ul>	<ul style="list-style-type: none"><li>• Key process: "backward push"</li><li>• Related Understanding: <i>The most efficient and effective stroke mechanics push the maximum amount of water directly backward.</i></li></ul>

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### Principles and Generalizations

- **(KEY CONCEPT?)** Democratic governments must balance rights of individuals with the common good.
- **(KEY CONCEPT?)** Correlation does not insure causality.
- **(KEY CONCEPT?)** Creating space away from the ball/puck increases scoring opportunities (e.g., in soccer, football, basketball, hockey).

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### Tips on Framing Understandings

Avoid stating the desired understanding as a topic or phrase. (e.g. "the Westward movement")

- Instead, frame as "Students will understand that..." (e.g. "The settlers endured great hardship in their quest for land in the West.")

Beware of stating an understanding as a truism or vague generality. (e.g. "Musicians work with sounds to create music." OR "Fractions are important")

- Instead frame the understanding so that it is clear but also a generalization, principle. "Music has the potential to elicit powerful responses." OR "Fractions are parts of a whole, the whole can stay the same even though the number of parts can change."

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### Essential Questions



- Purpose:
  - To provoke deep thought, lively discussion, sustained inquiry, and additional questions leading to new and/or deeper insight(s)
  - To ask students to consider alternatives, weigh evidence, support their ideas and rethink key ideas
  - To support connections within and across content and context
- Materials start on p. 68

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### Nature of intelligence

"Intelligence cannot develop without matter to think about. Making new connections depends on knowing about something in the first place to provide a basis for thinking of other things to do – of other questions to ask – that demand more complex connections in order to make sense. The more ideas about something people already have at their disposal, the more new ideas occur and the more they can coordinate to build up more complicated schemes."

-- Eleanor Duckworth, *The Having of Wonderful Ideas*

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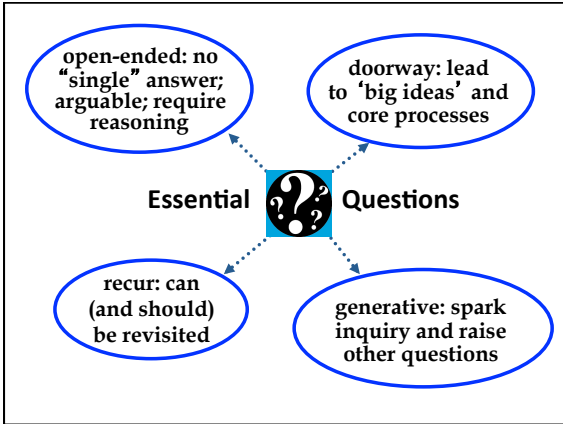
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### Essential Questions

- Broad and general in nature
  - **OVERARCHING** are more global
  - **TOPICAL** are more unit specific
- Lead to understandings
- EXAMPLE OF **OVERARCHING** ESSENTIAL QUESTION:
  - What is the author saying? How do you know?*
- EXAMPLE OF **TOPICAL** ESSENTIAL QUESTION:
  - How does Shakespeare's use of puns affect our interpretation of the dialogue?*

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### The Peace Corps: Language Training

- How can my cultural awareness enhance my language learning and vice versa?
- What are different language learning styles?
- How do I determine my language learning style?

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### Health Essential Questions



- How do other people see me? How do I deserve to be treated?
- What is the downside of the risk I'm about to take? How does that affect the decision I'm about to make?
- How do I keep myself, and others safe? How do I get out of a dangerous/hurtful situation? When do I need to call in the reinforcements?
- How do I determine if the information/source is valid/reliable?
- How does what I put in or on my body affect the way it works?
- How do I build and sustain relationships?

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### Essential Questions for I.B. Primary Schools



- What is it like?
- Why is it that way?
- How does it work?
- How is it changing?
- How is it connected to other things?
- How do we know?

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### Career and Tech Ed. Essential Questions



- What hazards are present in the work environment?
- How do you reduce the risk of injury in the work environment (personal equipment, using these materials, this tool, this piece of equipment, collaborating with others)?
- How precise do I need to be based on the product (and the specs)?
- Which measurement tool (scale) is most appropriate for a given task? How do I use it properly to produce a quality product?
- How do I use what I already know to make sense of this current situation?
- How do you adapt techniques if the most appropriate equipment/ingredients/resources aren't available?
- How do I increase efficiency without sacrificing quality?

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### Career and Tech Ed. Essential Questions



- How do I choose the right material/tool for a task to keep the customer/client happy?
- What are the sounds/smells/sights/texture that I sense that indicate there is a problem?
- What professional language (terms and abbreviations and symbols) is common in the work environment? How can I remember?
- What things do I do to show my professionalism? Where do I need to improve?
- How do I learn most effectively?
- How do I demonstrate understanding?
- Is this good enough? Is it done to a high standard? (different standards in each industry; getting it done right vs. meeting your own high expectations) Could it/How can it be made better?
- How do I know the customer /client/instructor is satisfied with both product and professionalism?

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### Essential Questions in Skill Areas

- Underlying concepts: *What are the big ideas underlying skill performance?*
- Purpose, value: *Why is the skill important?*
- Strategy, tactics: *What strategies do skilled performers employ? How can skill performance be more efficient and effective?*
- Context: *When should you use the skill?*

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### Turning a “teacher” question into a “kid-friendly” one



- Initial teacher question:
  - How are adolescent beliefs and actions influenced by peer pressure?
- Student-suggested revision:
  - Why do kids sometimes act stupid when they’re in groups?

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### Concept Attainment

- 1. Compare examples (+) and non-examples (-) of a concept.
- 2. Identify the distinguishing characteristics of each.
- 3. Test your working definition against new cases.
- 4. Refine your concept definition.



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YES NO

What is the relationship between popularity and greatness in literature?

When was the Magna Carta signed?

Crustaceans - what's up with that?

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YES NO

Which Canadian prime minister has the most disappointing legacy?

What's the pattern?

To what extent are science and common sense related?

*It depends on intent!*

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## Adaptation



**Understanding:**

Living organisms have developed adaptive mechanisms to enable them to survive changing environments.



**Essential Question:**

*In what ways do living things adapt in order to survive changing environments?*

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## Predictive statistics



**Understanding:**

Statistical analysis and display often reveal patterns in data, enabling us to make predictions with degrees of confidence.



**Essential Question:**

*Can you predict the future? What will happen next? How sure are you?*

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## World literature



**Understanding:**

Great literature from various cultures explores enduring themes and reveals recurrent aspects of the human condition.



**Essential Question:**

*How can stories from other places and times be about us?*

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## Practice for skills



### Understanding:

Effective practice requires clear goals, on-going monitoring (i.e., feedback), and adjustments when needed.



### Essential Question:

*If practice makes perfect, what makes "perfect" practice?*

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### Science Overarching Essential Questions

1. What do I observe/notice?
2. How do I use my knowledge and experience to develop a hypothesis?
3. What tools do I need to complete this investigation? How do I use these tools to collect accurate data/information? How do I record it?
4. What do my observations tell me? What conclusions and predictions can I make from my observations? What new questions do I have as a result of my findings?
5. How does this new learning support/connect to or change what I already know?
6. How do I communicate what I wondered about/observed and found/learned?

### Science Overarching Understandings

- A. Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena.
- B. Scientific inquiry progresses through a continuous and cyclical process of observation, questioning, hypothesis formation, data collection, recording, and analysis.
- C. Scientists evaluate what data/information is valid and reliable to shape their thinking and actions (i.e. predictions, conclusions, models, further investigations).
- D. The presentation of observations, findings and learning should be relevant (to the problem/hypothesis) and communicated clearly.

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## More great resources in the materials

- English/Language Arts: Overarching Understandings and Essential Questions for Reading (p. 72) and Writing (p. 73)
- Overarching Essential Questions for Mathematics (p. 74)
- Deriving Essential Questions from Visual Arts Standards (p. 75)
- Conceptual Map for Foundation in Physics: Essential Questions and Understandings
- Framing a Course Using Essential Questions: Biology (p. 77) and French I (p. 78)

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