Essential Questions

Essential Questions: Opening Doors to Student Understanding

Workshop Content

✔ EQs and “Backward Design”
✔ Essential Questions - Key Features
✔ Different Types of EQs
✔ Designing Essential Questions
✔ Tips for Using Essential Questions
✔ Web Site Resources

3 Stages of Backward Design

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

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Essential Questions

The UbD Template...

Essential Questions

What make a question ESSENTIAL?

Essential Questions from the “leading edge”

To arrive at the edge of the world's knowledge, seek out the most complex and sophisticated minds; put them in a room together, and have them ask each other the questions they are asking themselves.

www.edge.org

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Essential Questions

From the leading edge...

“What do collapses of past societies teach us about our own future?”

Jared Diamond
Biologist, UCLA Medical School
Author of The Third Chimpanzee and Guns, Germs, and Steel

From the leading edge...

My question: “Is there a happiness gene and (if so) is it dominant?”

Louis Rossetto
Co-founder and publisher of Wired

From the leading edge...

“It is now possible for functional parts of one animal’s brain to be transplanted into another’s. Can the memories and goals and desires of an animal be transplanted as well?”

Marc Hauser
Evolutionary Psychologist, Harvard University
Author of The Evolution of Communication

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My question is, “Why is music such a pleasure?”
Nicholas Humphrey
Psychologist, New School for Social Research
Author of Consciousness Regained and A History of the Mind

“Can we measure the onset of consciousness in an infant?”
David Gross
Kavli Institute for Theoretical Physics

My question is, “What goes on in the head of a baby?”
Freeman Dyson
Physicist, Institute for Advanced Study
Author of Disturbing the Universe and From Eros to Gaia
Questions about questions:
1. What questions were once popular but have now been answered?
2. What questions should never have been asked in the first place?
3. What questions have disappeared although they never received a satisfactory answer?

Richard Dawkins, Evolutionary biologist, Oxford University

Sample Essential Questions:
- How does art reflect, as well as shape, culture?
- What should we eat?
- In what way do effective writers hook and hold their readers?
- How do I know what to believe about a scientific claim?

Concept Attainment
1. Compare examples (+) and non-examples (–) of a concept.
2. Identify the distinguishing characteristics of each.
3. Test your theory against new examples.
4. Refine your concept definition.
Essential Questions

<table>
<thead>
<tr>
<th>Essential Questions</th>
<th>Not Essential Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do effective problem solvers do when they get stuck?</td>
<td>What steps did you follow to get your answer?</td>
</tr>
<tr>
<td>Is there ever a “just” war?</td>
<td>What key event sparked World War I?</td>
</tr>
<tr>
<td>How can I sound more like a native speaker?</td>
<td>What are some common Spanish colloquialisms?</td>
</tr>
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<tr>
<td>What should we eat?</td>
<td>What foods are in the DAIRY food group?</td>
</tr>
<tr>
<td>Should it be an axiom if it is not obvious?</td>
<td>By what axioms are we able to prove the Pythagorean theorem?</td>
</tr>
<tr>
<td>Who is a true friend?</td>
<td>Who is Maggie’s best friend in the story?</td>
</tr>
</tbody>
</table>

Open-ended; not a “single” answer; require support

Thought provoking; intellectually engaging

Essential Questions

Recur: can (and should) be revisited

Generative; spark inquiry and raise other questions

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Essential Questions

A finer grained look

Consider EQs in Two Strands

Next Generation Science Standards

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.

How are structure and function related:
...in living things?
...in non-living things?
Essential Questions

Next Generation Science Standards

Includes eight Practices for K-12 Classrooms. Example:

7. Engaging in argument from evidence

What makes a credible argument?
What constitutes effective evidence?

EQs in Two Tracks - Social Studies

<table>
<thead>
<tr>
<th>Content EQs</th>
<th>Process EQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• How should we balance individual rights with the common good?</td>
<td>• How do we know what to believe about historical claims?</td>
</tr>
<tr>
<td>• Does capitalism insure economic inequality?</td>
<td>• Whose “story” is this?</td>
</tr>
</tbody>
</table>

EQs in Two Tracks - E/LA

<table>
<thead>
<tr>
<th>Content EQs</th>
<th>Process EQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What “truths” can we learn from fiction?</td>
<td>• How does what I read influence how I should read it?</td>
</tr>
<tr>
<td>• Can anyone be a hero?</td>
<td>• How do you read “between the lines”?</td>
</tr>
</tbody>
</table>
### EQs in Two Tracks – Math

<table>
<thead>
<tr>
<th>Content EQs</th>
<th>Process EQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What do numbers show?</td>
<td>• What do good problem solvers do?</td>
</tr>
<tr>
<td>• What are the limits of this mathematical model (e.g., a linear equation)?</td>
<td>• What makes an answer reasonable?</td>
</tr>
</tbody>
</table>

### EQs in Two Tracks – Arts

<table>
<thead>
<tr>
<th>Content EQs</th>
<th>Process EQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• How do the arts reflect and shape culture?</td>
<td>• How do tools and materials influence artistic expression?</td>
</tr>
<tr>
<td>• How and why do artists break with tradition?</td>
<td>• How can/should we “read” a work of art?</td>
</tr>
</tbody>
</table>

### EQs in Two Tracks – P.E./Sports

<table>
<thead>
<tr>
<th>Content EQs</th>
<th>Process EQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• When and why should we change the rules?</td>
<td>• No pain, no gain – agree?</td>
</tr>
<tr>
<td>• Why and how do we “create space” when on offense?</td>
<td>• If practice makes perfect, what makes “perfect” practice?</td>
</tr>
</tbody>
</table>
Three-Minute Pause

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

If the textbook contains the answers, then what were the questions?

How do we develop ESSENTIAL QUESTIONS?
“Unpack” the Standards

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

Content big ideas standards

“Unpacking” – Inside Out Method

standards

nouns and adjectives

verbs

big ideas and essential ?s

assessments

E/LA Standards

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

E/LA Standards

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

Essential Questions

- What makes an argument persuasive?
- How do you support a claim?
- What (and how much) evidence do we need?
Essential Questions

Common Core Standards Mathematics

Model with mathematics.

Mathematical modeling

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

Mathematical modeling

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

**predictive statistics**

‘Big Idea’ 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?*

**world literature**

‘Big Idea’ 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 me?*

**friendship**

‘Big Idea’ Understanding:
True friendship is revealed during hard times, not happy times.

Essential Question:
*Who is a ‘true friend’ and how will you know?*
types of essential questions

Understanding - Living organisms adapt to survive harsh or changing environments.

Overarching - “In nature, do only the ‘strong’ survive? What is survival strength?”

Topical - “How do insects survive so well?”

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types of essential questions

Understanding - True friendship is revealed during difficult times.

Overarching - “Who are your true friends?”

Topical - “Are Frog and Toad really true friends?”

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Overarching EQs for Reading

- What makes a “great” book?
- How do effective writers hook and hold their writers?
- How does what you read influence how you should read it?
Essential Questions

Overarching EQs for Mathematics

1. How is mathematics used to quantify and compare situations, events and phenomena?
2. What are the mathematical attributes of objects or processes and how are they measured or calculated?
3. How are spatial relationships, including shape and dimension, used to draw, construct, model and represent real situations or solve problems?
4. How is mathematics used to measure, model and calculate change?
5. What are the patterns in the information we collect and how are they useful?
6. How can mathematics be used to provide models that help us interpret data and make predictions?
7. In what ways can data be expressed so that its accurate meaning is concisely presented to a specific audience?
8. What do effective problem solvers do, and what do they do when they get stuck?

School Mission

Common Core Standards + Overarching Understanding(s) + Overarching Essential Question(s)

Cornerstone Tasks

Course 1 Course 2 Course 3 Course 4

Three-Minute Pause

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

**swimming**

- The most efficient and effective stroke mechanics involve pulling and pushing the maximum amount of water directly backward.
- A flat (vs. cupped) palm offers the maximum surface area.

Skill area: 

**swimming**

- *How can you swim your fastest?*
practice for skills

‘Big Idea’ 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?

Essential Questions in Skill Areas

Underlying Concept(s) → Purpose, value of the skill

Strategies and Tactics → When to use the skill

Hook ?s vs. EQs

<table>
<thead>
<tr>
<th>Hook Question</th>
<th>Essential Question</th>
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<tbody>
<tr>
<td>“Can your diet help prevent zits?”</td>
<td>“What should we eat?”</td>
</tr>
<tr>
<td>“Are we drinking the same water as our ancestors?”</td>
<td>“Where does water come and where does it go?”</td>
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Essential Questions

U.S. History: WW II to Present

Everything we do in this course addresses one or more of the following questions:

- What is the story of American history?
- How do historians construct and evaluate the stories they tell?
- Why study history?

Tips for Using Essential Questions:

- use E.Q.s to organize programs, courses, and units of study
- “less is more”
- edit to make them “kid friendly”
- post the questions
- use EQs with staff

Sample EQ’s for Educators

- How would people know that we are a “standards-based” school?
- Are we assessing everything we value (or just that which is easiest to test and grade)?
- How can our assessments promote learning, not just measure it?
- Why do we need to differentiate instruction? What’s wrong with “one size, fits all” teaching?