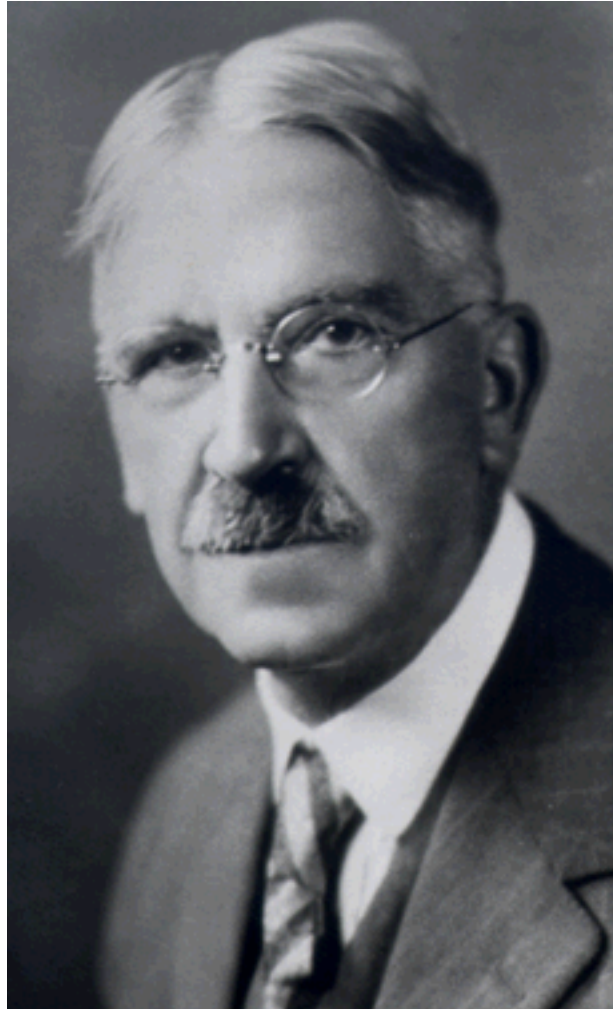


# Teaching for Understanding



Pete Watkins  
Temple University

# Knowledge or Understanding



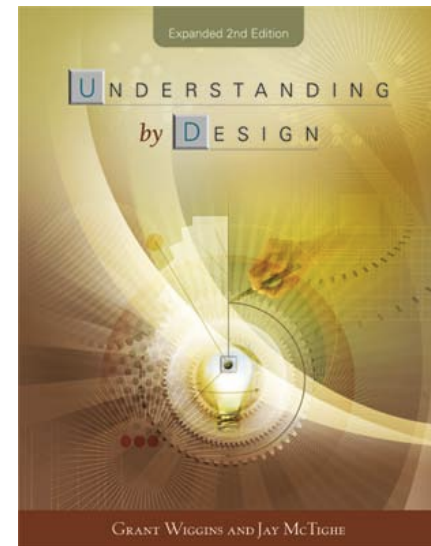
Expanded 2nd Edition

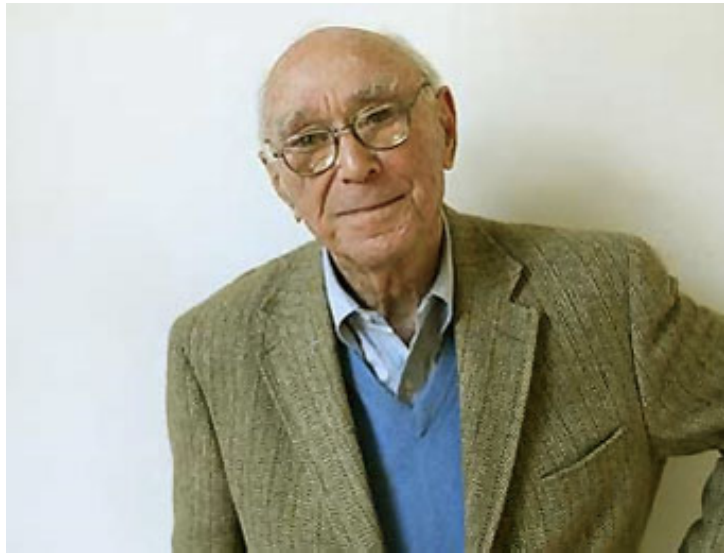
# U N D E R S T A N D I N G *by* D E S I G N

GRANT WIGGINS AND JAY MCTIGHE

# Understanding Understanding

You only understand it, we say, if you can teach it, use it, prove it, connect it, explain it, defend it, read between the lines and so on. (Wiggins and McTighe p.82)





“**Being able to ‘go beyond the information’**  
given to ‘figure things out’ is one of the  
few untarnishable joys of life.”

*Jerome Bruner, The Culture of Education*

# But can you apply it?

1. Round the number 16.847 to nearest hundredth
2. In a swim meet the top three times were:  
First place: 2 minutes and 49.812 seconds  
Second place 2 minutes and 49.814 seconds  
Third place 2 minutes and 49.835 seconds

If the timer only counted hundredths of a second, would the result of the race be different.



# What are the twin sins of curriculum design?

- Coverage model



- Activity model



## Teacher as conveyer of information



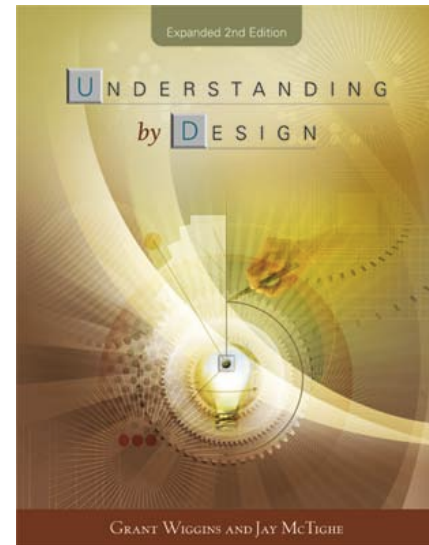
## Teacher as designer



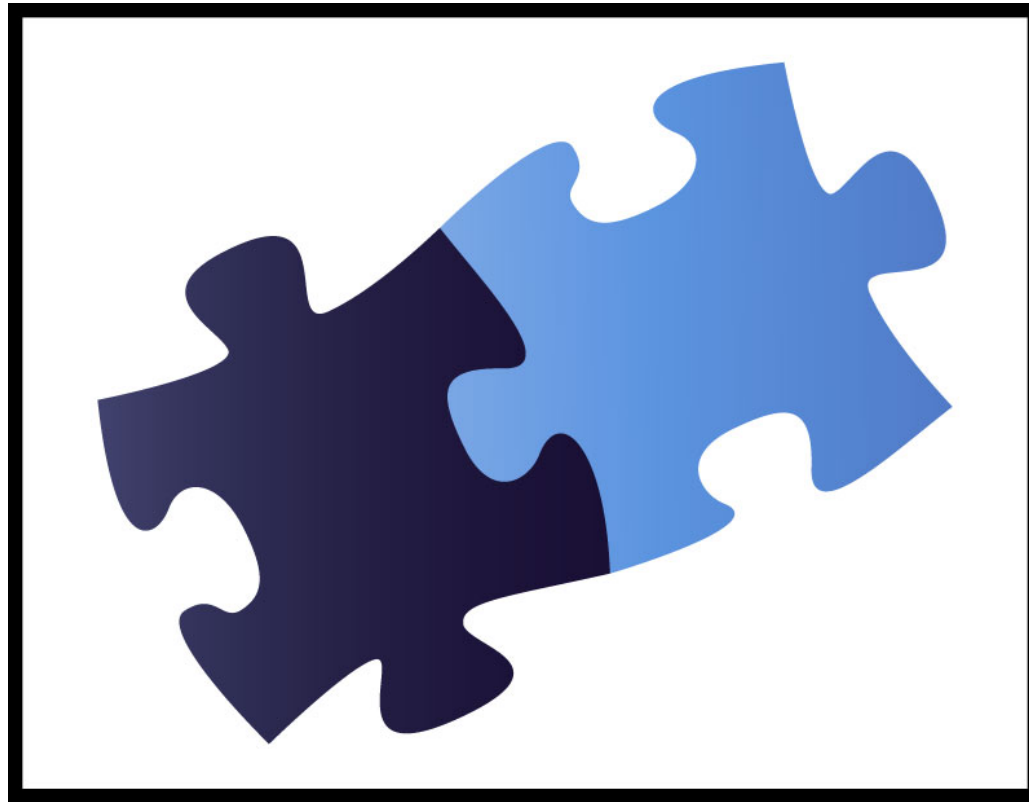
Think of some ways that these roles differ.



“You cannot understand without subject matter knowledge” (p. 10 UbD)



# Direct Instruction & Active Learning



# When to use each

Figure 10.3

## Content of Teaching

---

Column A	Column B
<ul style="list-style-type: none"><li>• <i>Facts</i></li><li>• <i>Discrete knowledge</i></li><li>• <i>Definitions</i></li><li>• <i>Obvious information</i></li><li>• <i>Literal information</i></li><li>• <i>Concrete information</i></li><li>• <i>Self-evident information</i></li><li>• <i>Predictable result</i></li><li>• <i>Discrete skills &amp; techniques</i></li><li>• <i>Rules &amp; recipes</i></li><li>• <i>Algorithm</i></li></ul>	<ul style="list-style-type: none"><li>• <i>Concepts &amp; principles</i></li><li>• <i>Systemic connections</i></li><li>• <i>Connotations</i></li><li>• <i>Subtlety, irony</i></li><li>• <i>Symbolism</i></li><li>• <i>Abstraction</i></li><li>• <i>Counterintuitive information</i></li><li>• <i>Anomaly</i></li><li>• <i>Strategy (using repertoire &amp; judgment)</i></li><li>• <i>Invention of rules &amp; recipes</i></li><li>• <i>Heuristic</i></li></ul>

BIG IDEAS

ESSENTIAL QUESTIONS

ENDURING UNDERSTANDINGS

# Example

BIG IDEA

Supply and Demand

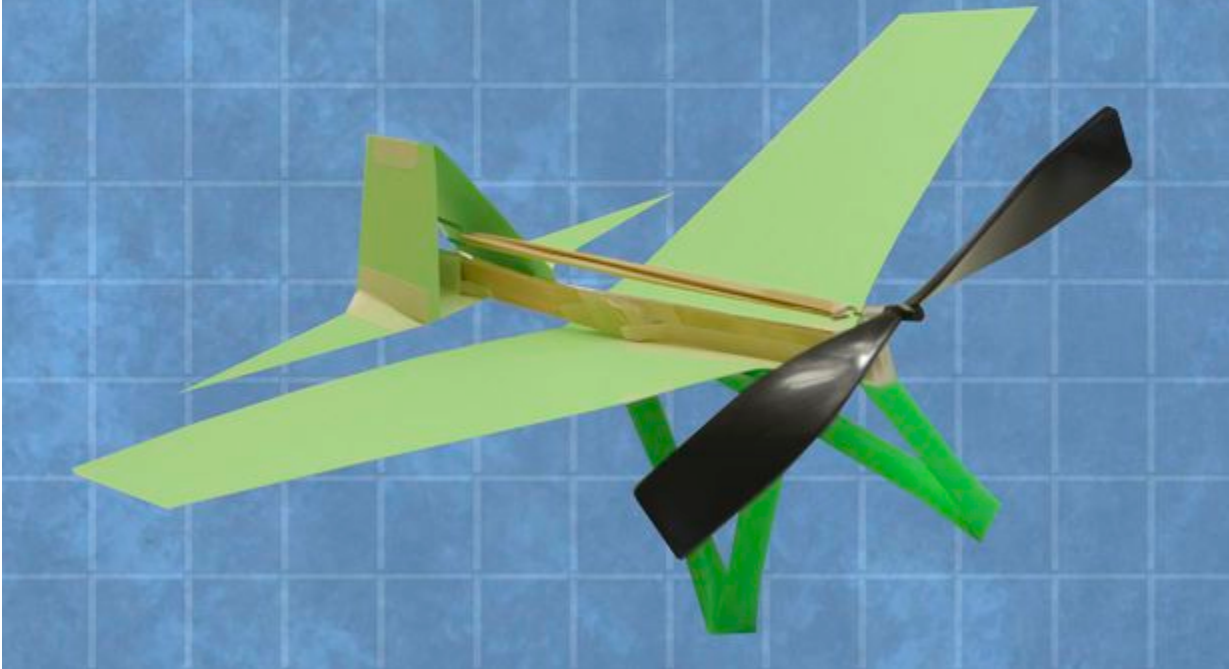
ESSENTIAL  
QUESTION

How do markets  
determine what something  
is worth?

ENDURING  
UNDERSTANDING

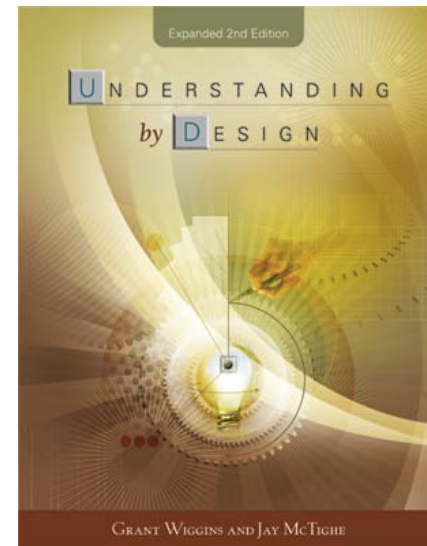
Students will understand  
that price is where supply  
meets demand

# Propeller Plane

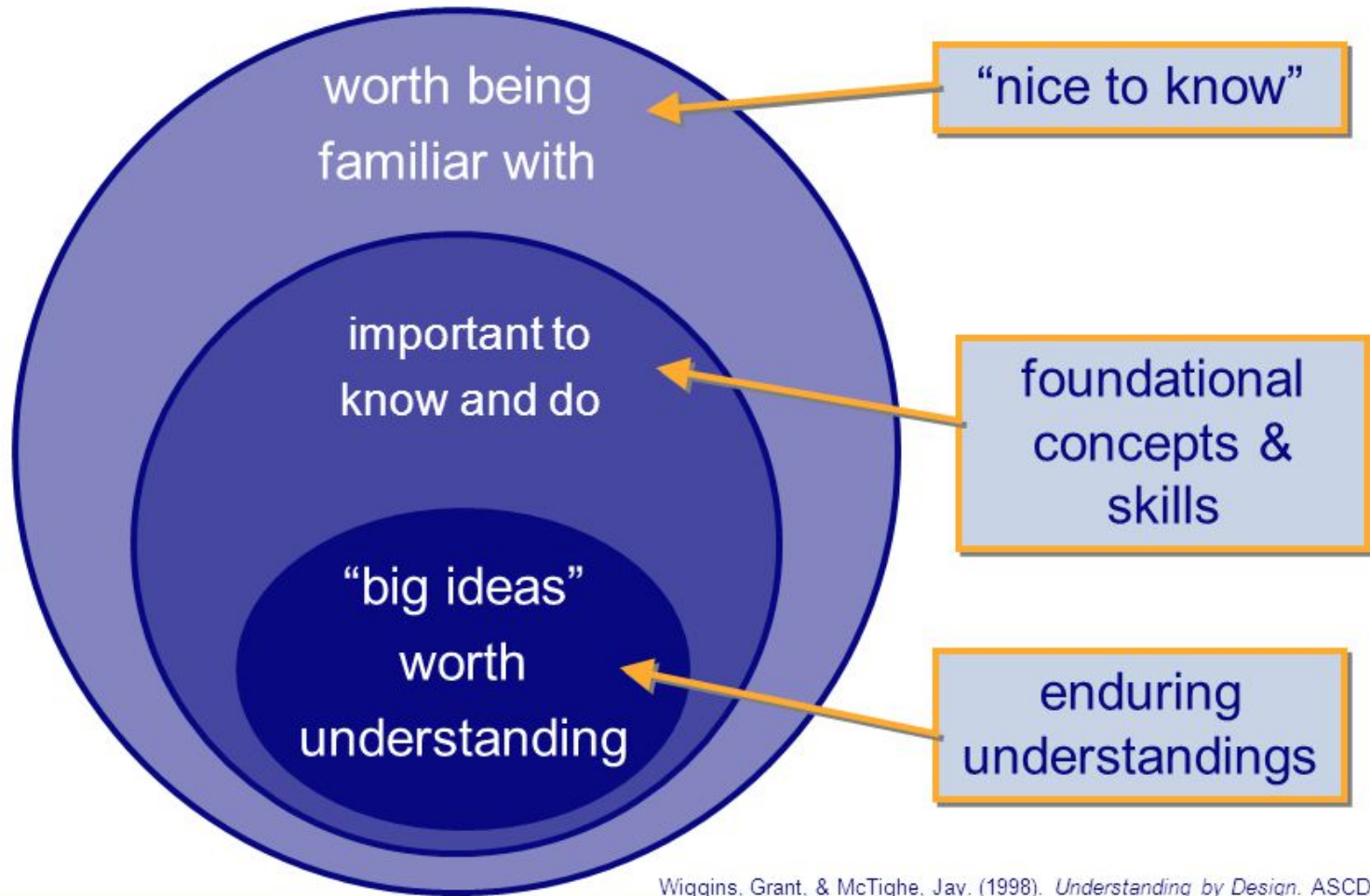


BIG IDEAS

The greatest defect in teacher lesson plans and syllabi, when looked at en masse, is that the key intellectual priorities—deep understanding of transferable big ideas, and competence at core performance tasks—are falling through the cracks of lessons, units, and courses devoted to developing thousands of discrete elements of knowledge and skill, unprioritized and unconnected. (Wiggins and McTighe p. 58)



# Establishing Curricular Priorities



Wiggins, Grant, & McTighe, Jay. (1998). *Understanding by Design*. ASCD.

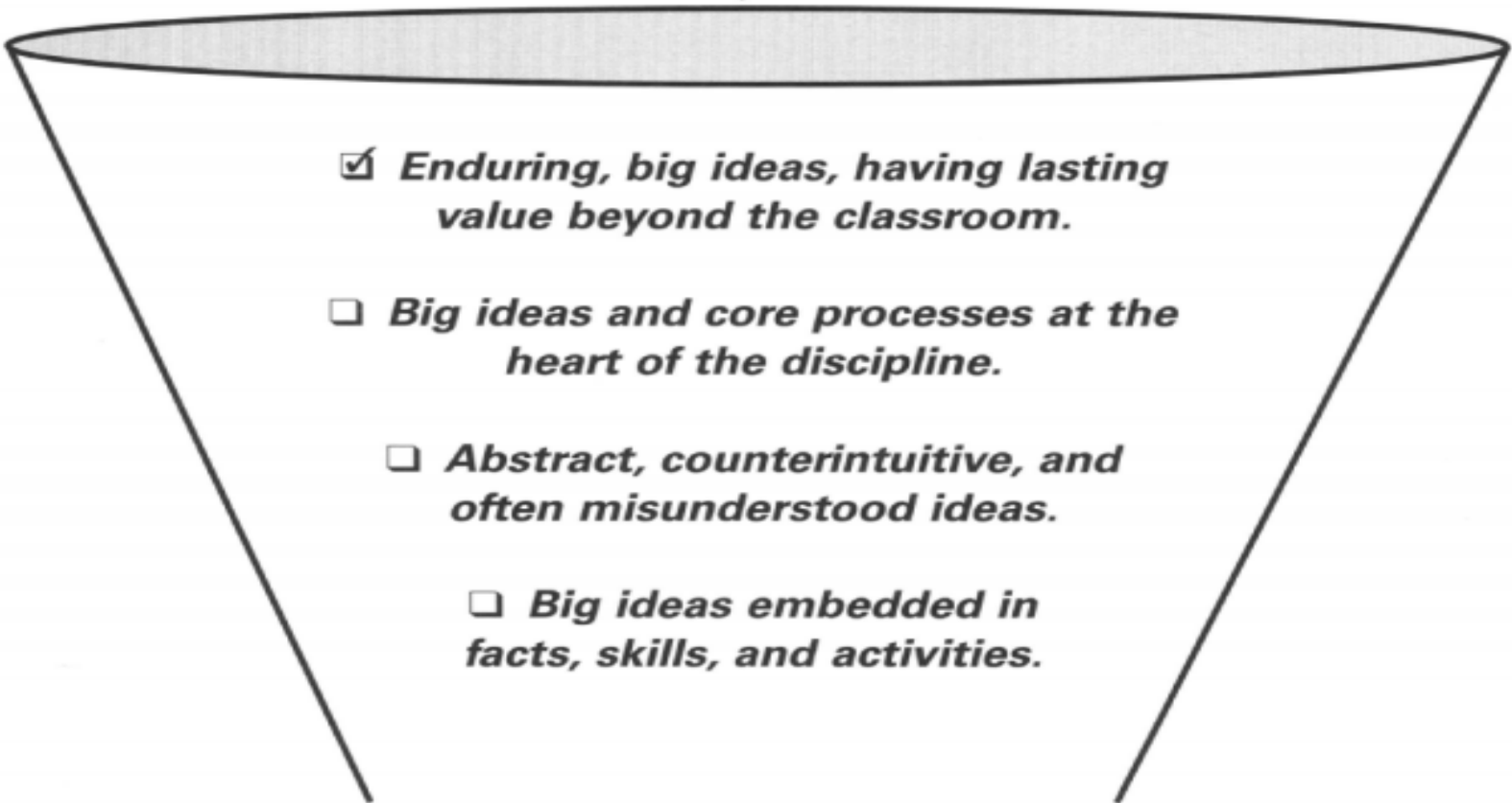


Unit Topics

Content Standards

Goals and Objectives

The Magna Carta was established on June 15, 1215.



☒ ***Enduring, big ideas, having lasting value beyond the classroom.***

☐ ***Big ideas and core processes at the heart of the discipline.***

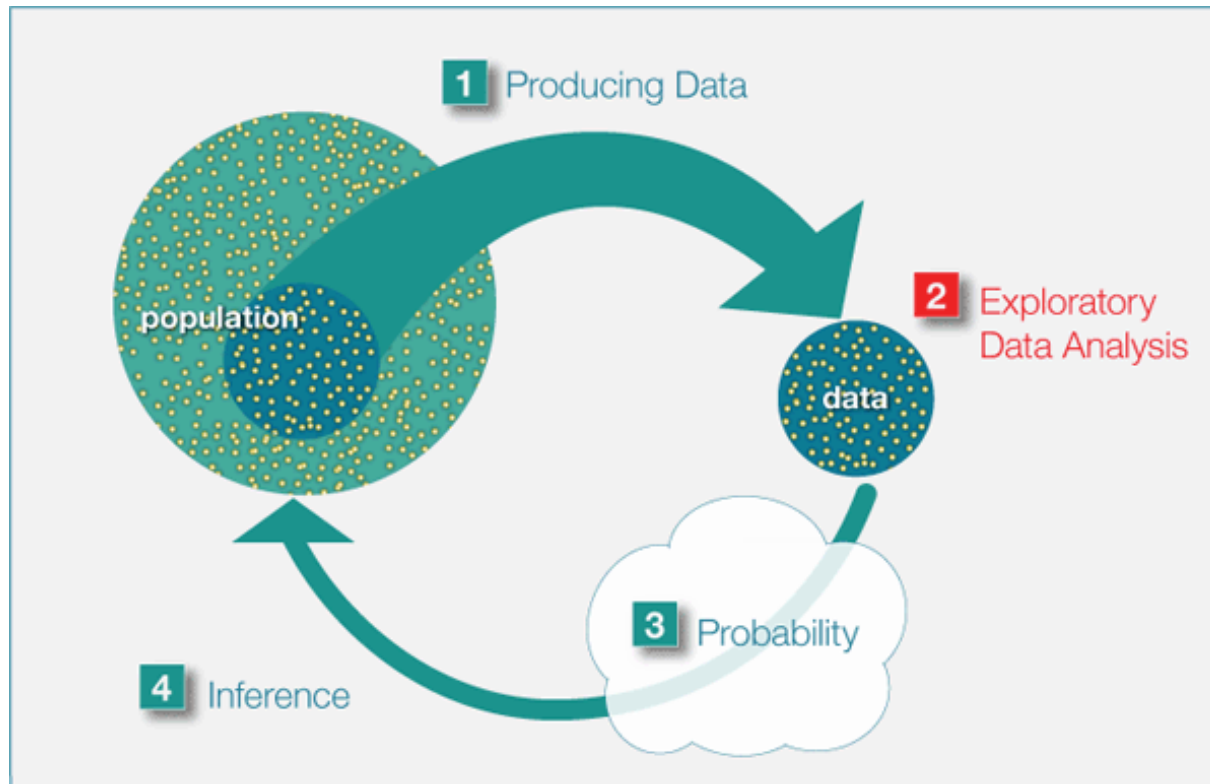
☐ ***Abstract, counterintuitive, and often misunderstood ideas.***

☐ ***Big ideas embedded in facts, skills, and activities.***

**Possible enduring understandings**

- Democratic governments must balance the rights of individuals with the common good.
- A written constitution sets forth the terms and limits of a government's power.

# Big Idea from Statistics



Source: Marsha Lovett, CMU

# Big Ideas



What makes something a Big Idea?

# Big Ideas

What are some Big Ideas from your course?

Come up with one or more and then explain to the person next to you why it's a Big Idea



# ESSENTIAL QUESTIONS



# Journey of mutual exploration

- Students wrestle with the Essential Questions



# Essential questions

- How do nature and nurture contribute to behavior? (Psychology)
- How do artistic works reflect the culture in which they were created? (Art History)
- How does an organism's structure help it survive in its environment? (Biology)
- How do governments balance the rights of individuals with the common good? (Poli Sci)

# Features of Essential Questions

- Have no one obvious right answer
- Raise other important questions often across boundaries
- Address the philosophical or conceptual foundations of a discipline
- Recur naturally
- Are framed to provoke and sustain student interest



# Example

BIG IDEA

Supply and Demand

ESSENTIAL  
QUESTION

How do markets  
determine what  
something is worth?

ENDURING  
UNDERSTANDING

Students will understand  
that price is where supply  
meets demand

# Overarching and Topical Questions

## Overarching

How do markets determine what something is worth?

## Topical

- What causes gas prices to fluctuate?
- How do zoning restrictions affect housing prices?
- Why does LeBron James make so much money?

# Essential Questions Chart

Figure 5.1  
Overarching and Topical Essential Questions

Overarching	Topical
<ul style="list-style-type: none"> <li>In what ways does art reflect, as well as shape, culture?</li> <li>From whose perspective is this, and what difference does it make?</li> <li>How do our various body systems interact?</li> <li>To what extent do we need checks and balances on government power?</li> <li>Are there useful ways for distinguishing inherent error from avoidable error in the sciences?</li> <li>What are common factors in the rise and fall of powerful nations?</li> <li>How do authors use different story elements to establish mood?</li> </ul>	<ul style="list-style-type: none"> <li>What do ceremonial masks reveal about the Inca culture?</li> <li>How did Native Americans view the "settlement" of the West?</li> <li>How does food turn into energy?</li> <li>To what extent does separation of powers (e.g., three branches of government, two houses of Congress) cause deadlock in U.S. government?</li> <li>What are possible sources of measurement error in this experiment?</li> <li>Is there a greater margin of error in this experiment than the last one?</li> <li>Why did the Roman Empire collapse?</li> <li>Why did the British Empire end?</li> <li>What explains the United States' rise to world prominence?</li> <li>How does John Updike use setting to establish a mood?</li> <li>How does Ernest Hemingway use language to establish a mood?</li> <li>How does Toni Morrison use images and symbols to establish mood?</li> </ul>

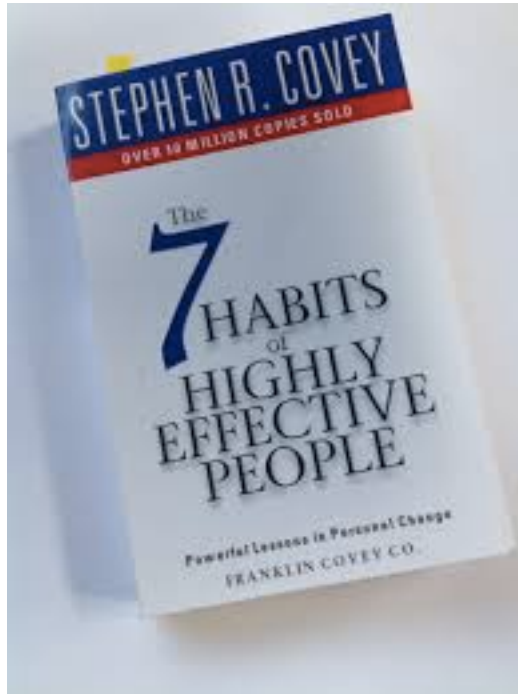
Figure 5.2  
An Essential Question Chart

Intent	Scope	
	Overarching	Topical
<p><b>Open:</b> To challenge students to think more deeply and creatively about important recurring and unsettled issues.</p> <p>Teachers pose these arguable questions as a means of engaging students in thinking like experts in the field. No definitive answer is expected.</p>	<p>These are broad and deep questions that remain open and alive in the discipline—perhaps forever. They cut across unit, course, and (sometimes) subject boundaries.</p> <ul style="list-style-type: none"> <li>To what extent is U.S. history a history of progress? What is "progress"?</li> <li>To what extent is DNA destiny?</li> <li>Who is a true friend?</li> </ul>	<p>These questions stimulate inquiry and deepen understanding of important ideas within the unit. It is not expected that they will be answered by unit's end.</p> <ul style="list-style-type: none"> <li>How might Congress have better protected minority rights in the 1950s and 1960s?</li> <li>Should we require DNA samples from every convicted criminal?</li> <li>Should Frog have lied to Toad?</li> </ul>
<p><b>Guiding:</b> To guide student inquiry toward a deeper understanding of a big idea.</p> <p>Teachers pose these questions as a means of uncovering desired understandings. Students construct meaning as they wrestle with the question.</p>	<p>These are general questions that cut across unit, course, and subject boundaries but that yield one or more desired understandings.</p> <ul style="list-style-type: none"> <li>How much progress in civil rights has the United States made since the founding of the country?</li> <li>How do recent developments in genetics affect the nature/nurture argument?</li> <li>What are the signs of a "fair weather" friend?</li> </ul>	<p>These are unit-specific questions that converge toward one or a few settled understandings of important ideas.</p> <ul style="list-style-type: none"> <li>What were the defining moments of the civil rights movement?</li> <li>How is reliability ensured in DNA testing?</li> <li>In what ways was Frog acting like a friend in the story?</li> </ul>

**ACTIVITY: IDENTIFY SOME OVERARCHING AND TOPICAL QUESTIONS FOR YOUR COURSE.**

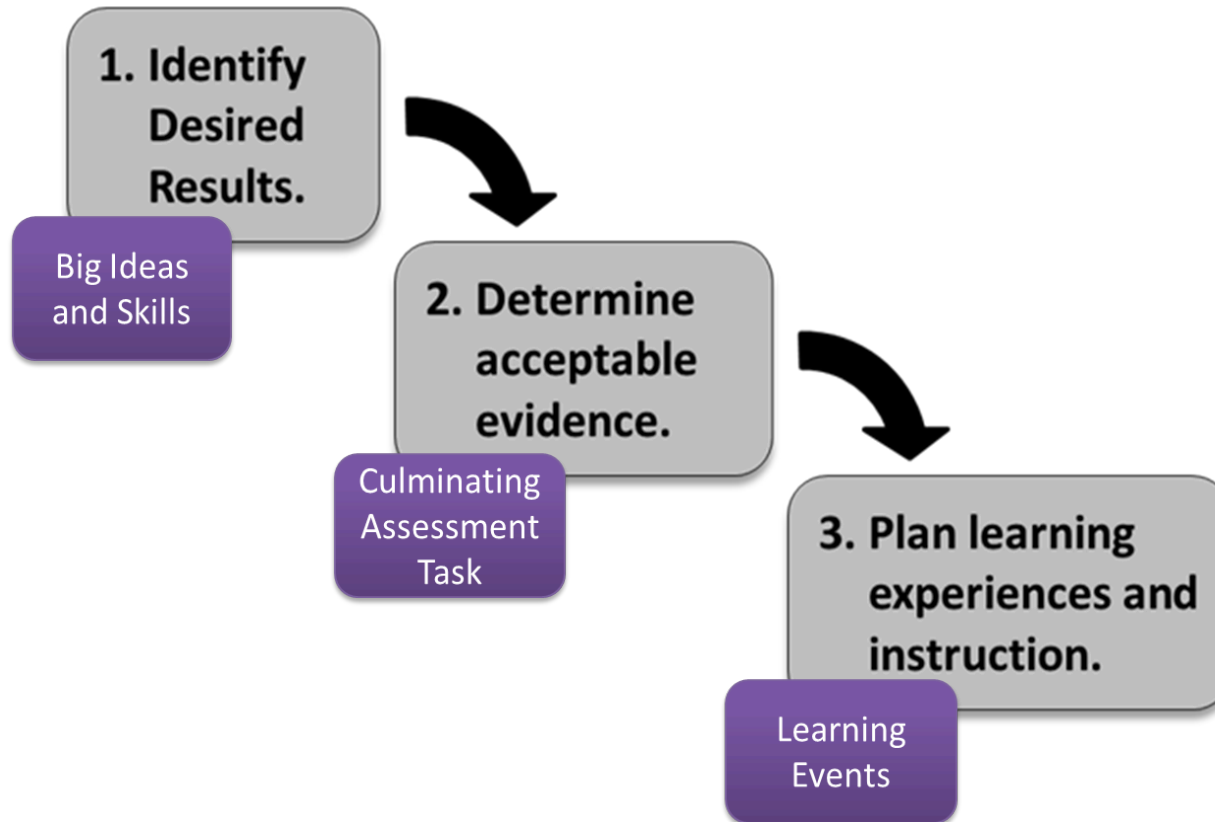
# BACKWARD DESIGN

# 1. What does it mean to work backward?

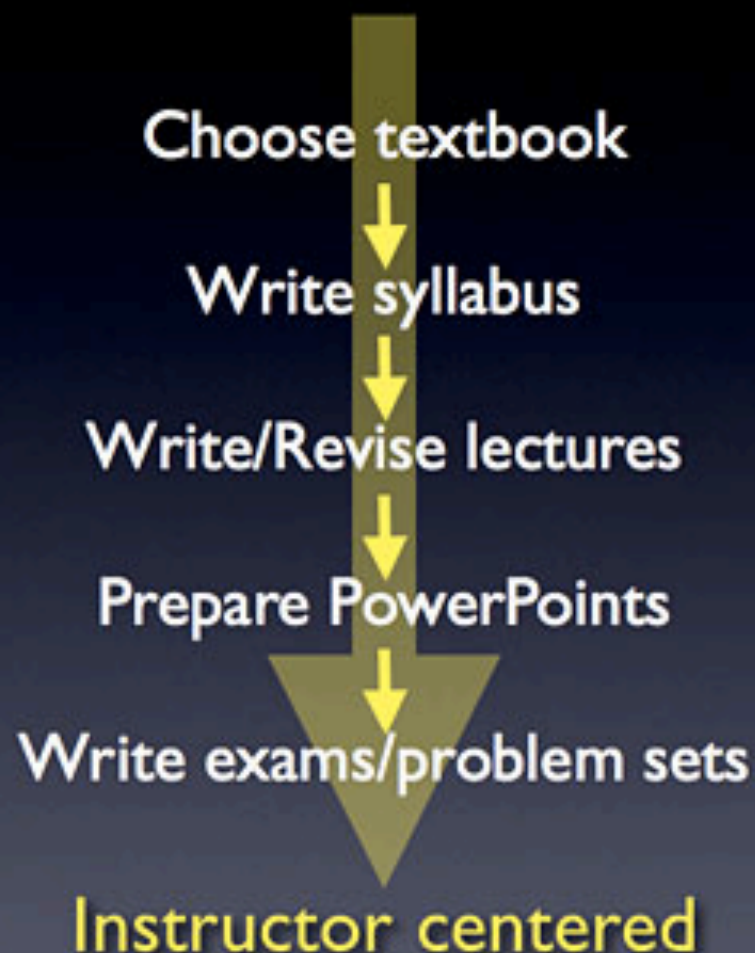


# Outcomes-Assessment-Activities

## Backward Design



## Standard Course Planning



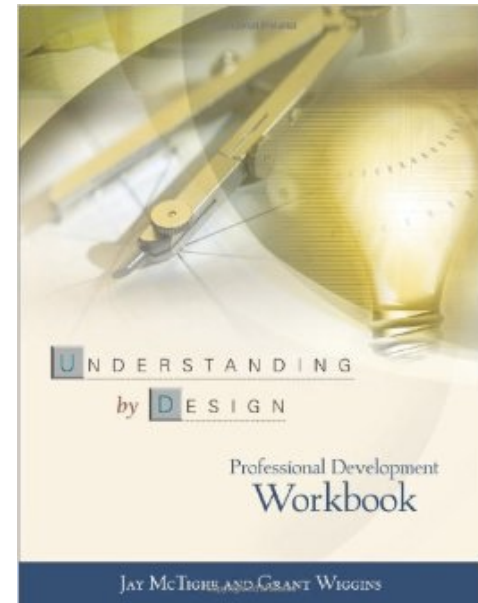
## vs. Backward Design



# Designing is not a linear process

“The process is inherently non-linear with various entry points that lead to an organized product.”

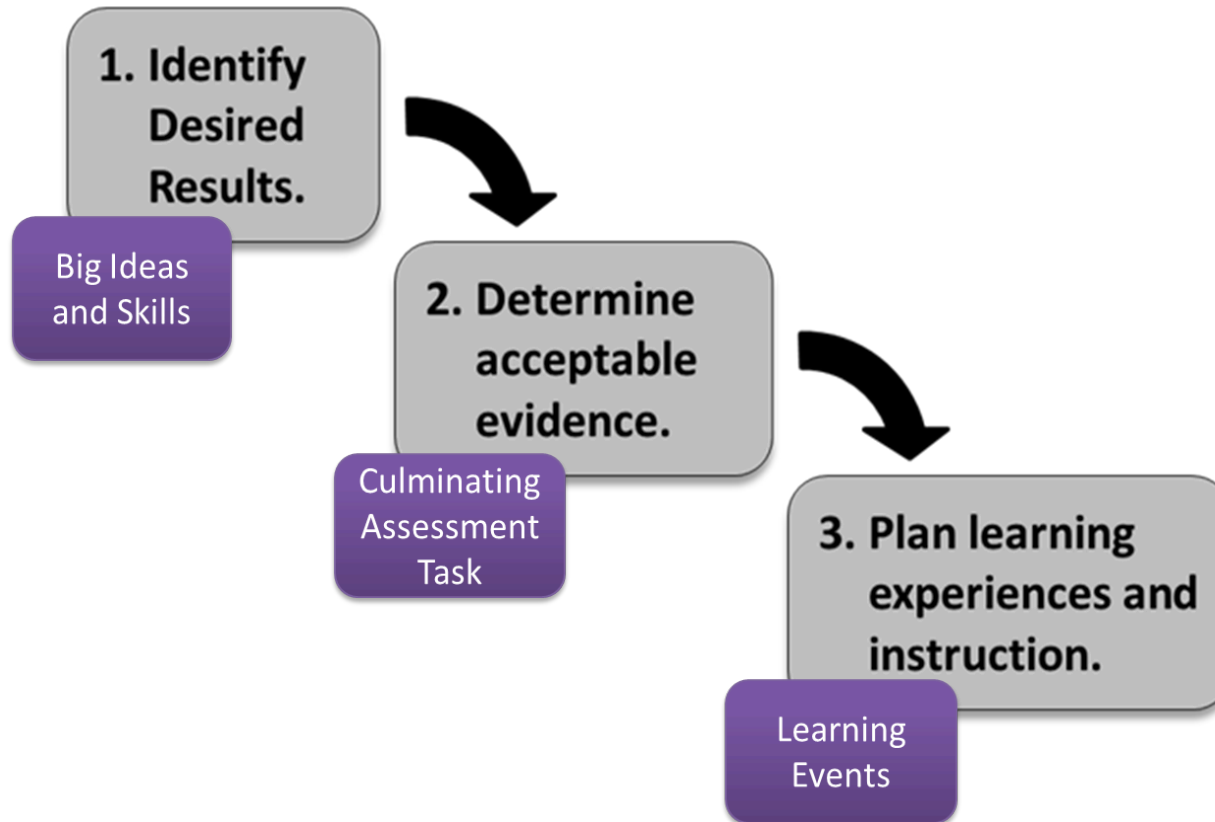
(UbD Workbook p. 25)





# Outcomes-Assessment-Activities

## Backward Design



# Three Column Table (Fink)



Goals/Outcomes	Assessments	Activities
1.		
2.		
3.		

# Three Column Table (Fink)

Goals/Outcomes	Assessments	Activities
1.		
2.		
3.		

- Not always a one-to-one relationship across the table
- One activity (e.g. project) can relate to multiple outcomes
- One outcome can involve multiple activities or assessments
- As assessment can also be an activity

# Fictional Course

Goals/Outcomes	Assessments	Activities
1. Analyze how technological advances over the past approx. 40 years have changed society e.g. changes to communication, transportation, commerce, production, and civic and family life.		
2. Evaluate the benefits and drawbacks of major technological advances of the past approx. 40 years.		
3.	FILL IN THESE TWO COLUMNS	

# Column One Goals/Outcomes

- Go beyond foundational knowledge
- Higher order thinking
- Many course involve the affective domain (caring, self-awareness, ethical behavior etc.)

# Column Two-Assessment

- Frequent
- Diagnostic
- Low Stakes/Formative
- Authentic

# Column Three-Activities

- Mix of direct instruction and active learning
- Aligned with the goal.
  - If a student does these activities will they achieve the desired result?

# Three Column Table (Fink)

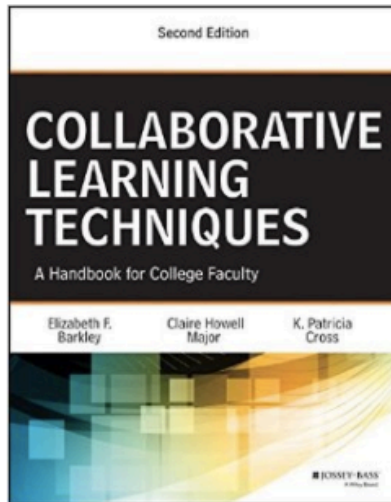
Goals/Outcomes	Assessments	Activities
1.		
2.		
3.		

**NOW FILL OUT THE TABLE  
FOR A COURSE THAT YOU  
WILL TEACH IN JANUARY**

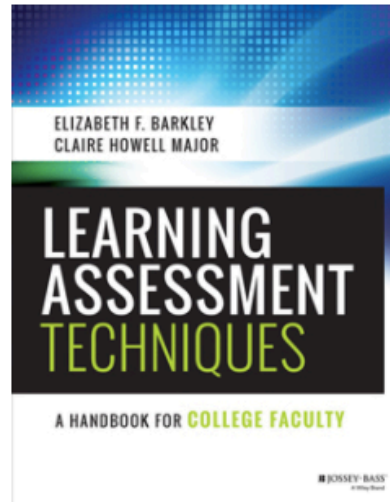


# College Teaching Techniques

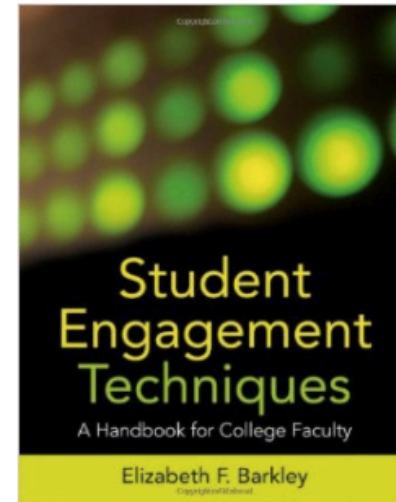
## COLLABORATIVE LEARNING TECHNIQUES



## LEARNING ASSESSMENT TECHNIQUES



## STUDENT ENGAGEMENT TECHNIQUES



[www.collegeteachingtechniques.com](http://www.collegeteachingtechniques.com)

# Take Away

## Big Ideas/Enduring Understandings

- How experts organize information
- Aid in retention, retrieval and transfer

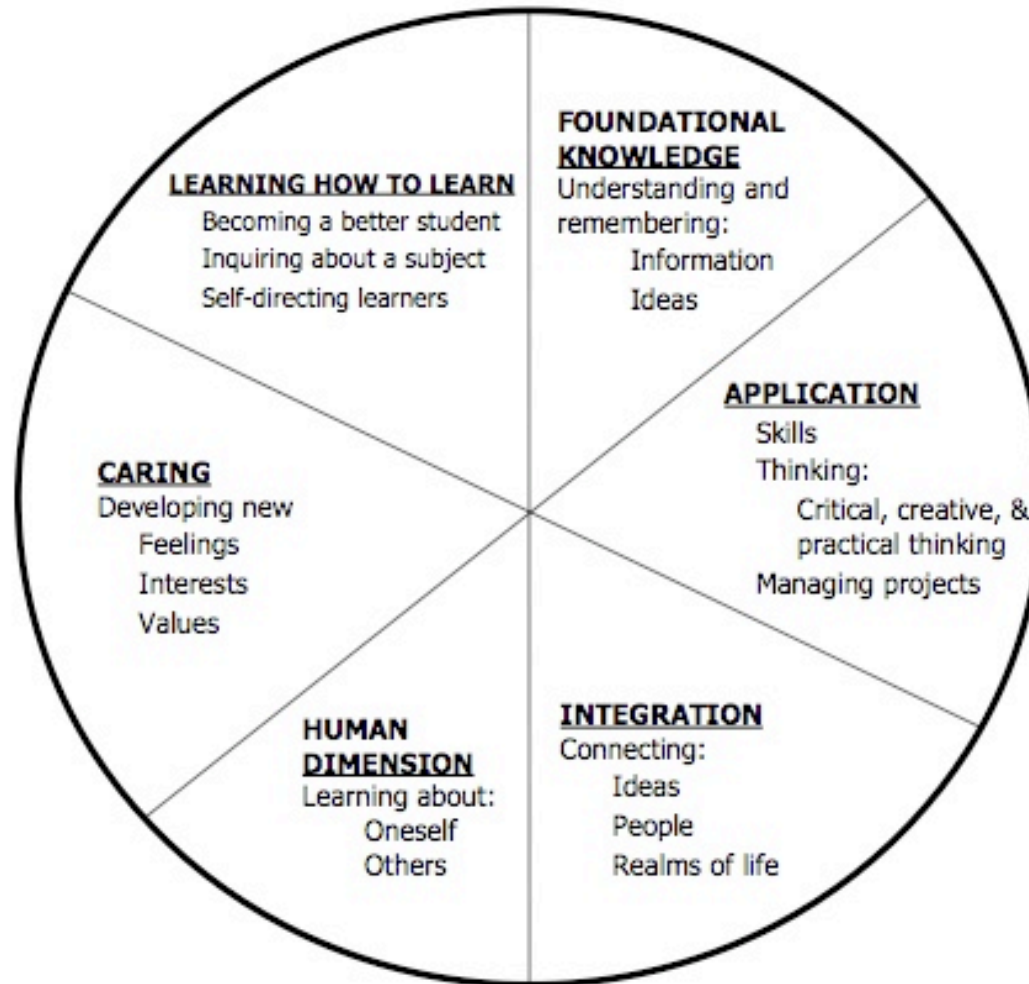
## Essential questions

- Provoke thought
- Help students to understand the nature of inquiry
- Overarching questions -> topical questions
- Work backwards
- Use direct instruction to convey information and active learning to help them truly understand it.

*Thank  
you*

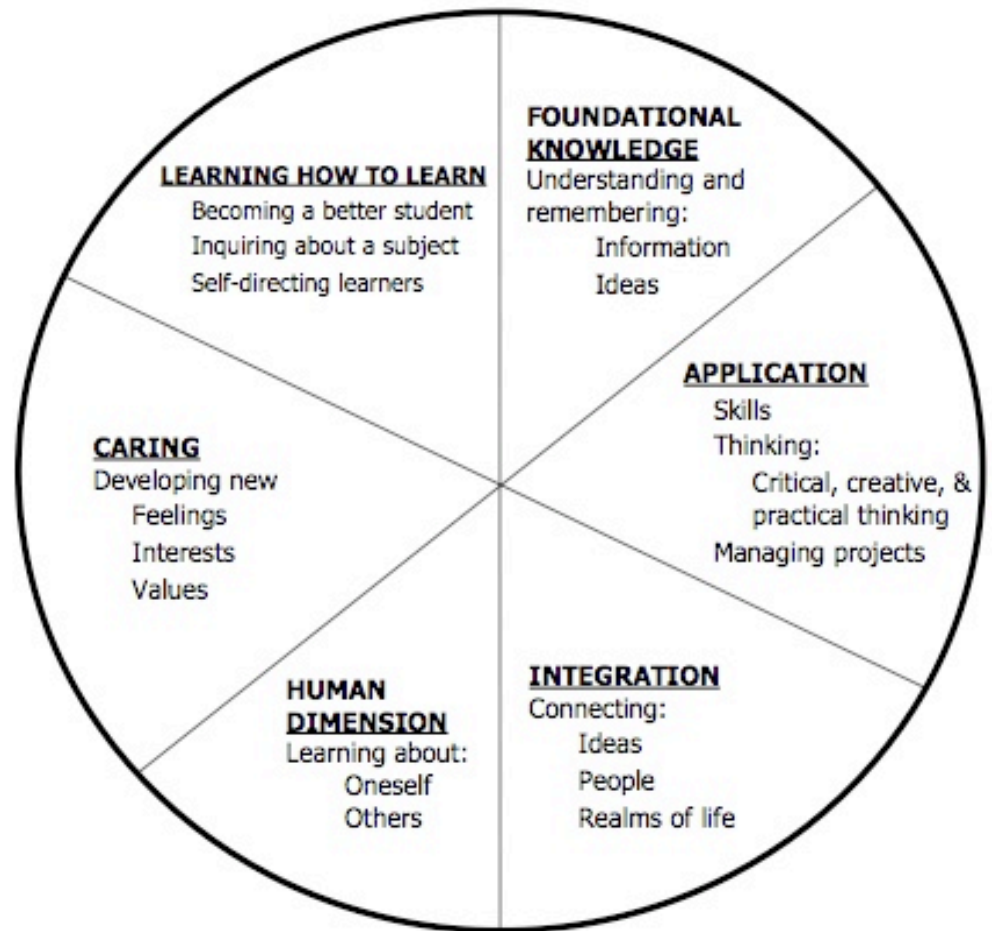


# Fink's Taxonomy of Significant Learning



# Match the Outcome to the Piece of Pie

Analyze how technological advances over the past approx. 40 years have changed society e.g. changes to communication, transportation, commerce, production, and civic and family life.



# Match the Outcome to the Piece of Pie

Evaluate the benefits and drawbacks of major technological advances of the past approx. 40 years.

