

Taxonomy

Adapted from: Dimensions of Learning (Marzano & Pickering); The New Taxonomy of Educational Objectives (Marzano & Kendall)

USING KNOWLEDGE: Generating & Testing Hypotheses to...								
...Address Situations & Issues				...Clarify Phenomena & Events				
Decision Making Select from among seemingly equal alternatives	Situational Problem Solving Accomplish a goal for which obstacles exist	Invention Develop a new product/process that fulfills a perceived need		Experimental Inquiry Offer and test explanations for what is observed	Investigation Historical-Projective-Definitional Resolve confusions related to concepts or events	Systems Analysis Explain parts of a system and how changing one part influences others		
<ul style="list-style-type: none"> Select the best alternative Generate criteria to select What is the best way Which has the most suitable 	<ul style="list-style-type: none"> Figure out a way to Given the conditions/obstacles, how will you reach your goal 	<ul style="list-style-type: none"> Create a new way to Devise something that will Change the way Improve this situation with a new 		<ul style="list-style-type: none"> If...then... What can be predicted What would happen if How would you determine if How can this be explained 	<ul style="list-style-type: none"> What actually happened when What would have happened if Resolve the confusion about What will happen if Construct a definition of 	<ul style="list-style-type: none"> Explain purpose of system Describe how parts affect each other What would happen if this part changes 		

ANALYZING KNOWLEDGE: Examining & Generating...							
...Similarities & Differences			...Arguments & Assertions			...Logical Inferences	
Comparing Identify similarities & differences among items and ideas	Classifying Group items according to similarities	Analogical Thinking Show similar relationships for items across domains	Analyzing Perspectives Identify reasons & logic for perspectives on an issue	Constructing Support Build support for assertions or opinions	Analyzing Errors in Reasoning Identify logical or factual errors	Deductive Reasoning Apply general statements to specifics; draw conclusions	Inductive Reasoning Draw general conclusions from multiple specifics
<ul style="list-style-type: none"> Compare Contrast Differentiate Discriminate Distinguish 	<ul style="list-style-type: none"> Sort Categorize Organize 	<ul style="list-style-type: none"> Create an analogy for ___ is to ___ as ___ is to ___ Show the same pattern in both 	<ul style="list-style-type: none"> Clarify the reasons for Identify the logic behind Find out why someone might think 	<ul style="list-style-type: none"> Take a position on Defend your position on Explain your reasons Offer arguments for 	<ul style="list-style-type: none"> Question the validity of Listen to insure Assess Expose fallacies in 	<ul style="list-style-type: none"> Make and defend Predict what will happen Complete: If...then Because this is A, what do you know 	<ul style="list-style-type: none"> Create a principle Create a rule What conclusions can be drawn

COMPREHENDING KNOWLEDGE			
Symbolizing: Construct symbolic representations of information		Integrating: Identify basic elements/structure of knowledge	
<ul style="list-style-type: none"> Symbolize Represent Draw/Illustrate 	<ul style="list-style-type: none"> Show the organizational patterns in Diagram to highlight Chart 	<ul style="list-style-type: none"> Describe how or why Identify the key parts of Trace the development of ideas in 	<ul style="list-style-type: none"> Describe in your own words the effects Explain ways in which Paraphrase, Summarize

RETRIEVING KNOWLEDGE					
Recognizing: Identify information related to targeted knowledge		Recalling: Produce information related to targeted knowledge		Executing: Carry out a mental or physical procedure	
<ul style="list-style-type: none"> Select True, False Match 	<ul style="list-style-type: none"> Identify Point to 	<ul style="list-style-type: none"> State Describe Explain the major 	<ul style="list-style-type: none"> Who, what, when where How, why List, name 	<ul style="list-style-type: none"> Read Write Demonstrate 	<ul style="list-style-type: none"> Add, Subtract Multiply, Divide Solve for Complete Use Perform

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...Address Situations 81 Issues ...Clarify Phenomena & Events

' Select the best alternative - Figure out a way to - Create a new way to 1f.....then... - What actually happened when

- Figure out a way to - Create a new way to I if.....then... - What actually happened when - Explain purpose of system Generate criteria to select - Given the conditions] Devise something that will ' What can be predicted What would have happened if - Describe how parts affect - What is the best way obstacles, how will you Change the way ' What would happen if - Resolve the confusion about each other

- Which has the must reach your goal

- Improve this situation with a new

' How would you determine if

' What will happen if

- What would happen if

suitable How can this be explained - Construct a definition of this part changes

...Similarit'ies & Differences ...Arguments & Assertions ...Logical Inferences

Comparing Classifying Analogical Analyzing Constructing Analyzing Errors Deductive Inductive Group-items Thinking Perspectives Support in Reasoning Reasoning Reasoning 8' dwgences ac'cof'dfq-a: to Show simiior identify reasons

8: logic Huiid sooport for identify logicoi or Appiy generoi Draw generoi among“ items and Similarities relationships for for perspectives on on osserrions or opinions factual errors statements to specifics; conciusions from “1905 items across domains issue draw conciusions muit'ipie specifics

- Compare Sort - Create an analogy Ciarify the reasons for ' Take a position on I Question the ' Make and defend '
Create a principle Contrast ' Categorize for Identify the logic ' Defend your validity-of Predict what will - Create a rule -
Differentiate - Organize i is to i as behind position on - Listen to insure happen I What conclusions Discriminate is to
Find out why someone - Expiain your reasons - Assess Complete: tf...then can be drawn Distinguish - Show the
same might think - Offer arguments for Expose fallacies in Because this is A,

pattern in both what do you know

I Symbolize - Represent I Draw/Illustrate

- Show the organizational patterns in - Diagram to highlight

Chart

I Describe how or why I Identify the key parts of I Trace the development of ideas in

I Describe in your own words the effects I Explain ways in which I Paraphrase, Summarize

' Select ' Identify I State - Who, what, when where Read ' Add, Subtract ' Complete True, False ' Pu'mtto - Describe -
How, why - Write - Multiply, Divide '. Use

- Match - Explainthernajor - Listr name - Demonstrate - Solvefor ' Perform

Planning (Stimulus) Questions for Structured Tasks



Analysis

<p>Comparing</p> <ul style="list-style-type: none"> • Would it be useful to show how things are similar and/or different? • Would it be useful for students to focus on identifying how similar things are different and how different things are similar? <p>Classifying</p> <ul style="list-style-type: none"> • Would it be helpful to have students group things? • Would it be beneficial for students to generate a number of ways to group the same list of things? <p>Analogical Thinking</p> <ul style="list-style-type: none"> • Is there a relationship in one domain that could be used to understand something in a very different domain? • Could something complex or unfamiliar be understood better by connecting it to a relationship from something simple or more familiar? <p>Constructing Support</p> <ul style="list-style-type: none"> • Are there important claims to be refuted or supported? • Would it be important to examine existing arguments that support or refute a claim? <p>Analyzing Errors in Reasoning</p> <ul style="list-style-type: none"> • Are there situations in which it would be beneficial to identify errors in reasoning? <p>Analyzing Perspectives</p> <ul style="list-style-type: none"> • Would it be useful to identify and understand the reasoning or logic behind a perspective on a topic or issue? • Would it be useful to analyze opposing perspectives on a topic or issue? <p>Inductive Reasoning</p> <ul style="list-style-type: none"> • Are there important unstated conclusions that could be generated from observations or facts? • Are there situations for which probable or likely conclusions could be generated? • Are there issues or situations for which students could examine the inductive reasoning used? <p>Deductive Reasoning</p> <ul style="list-style-type: none"> • Are there generalizations (or rules or principles) that could be applied to reach conclusions and make predictions? • Are there topics or issues for which students could examine the validity of the deductive reasoning used? 	
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Using Knowledge

<p>Decision Making</p> <ul style="list-style-type: none"> • Is there an unresolved decision important to the unit? • Is there an unresolved issue about who or what <ul style="list-style-type: none"> • has the most or least? • is the best or worst? <p>Problem Solving</p> <ul style="list-style-type: none"> • Is there a situation in which a goal cannot be achieved because of a major constraint or limiting condition? • Is there a situation or process that could be better understood if constraints or limiting conditions were placed on it? <p>Invention</p> <ul style="list-style-type: none"> • Is there a situation that can and should be improved on? • Is there something new that should be created? <p>Experimental Inquiry</p> <ul style="list-style-type: none"> • Is there an unexplained phenomenon (physical or psychological) for which students could generate explanations that can be tested? <p>Investigation</p> <ul style="list-style-type: none"> • Is there an unresolved issue about something for which a resolution could be posed? For example, are there unresolved issues about <ul style="list-style-type: none"> • the defining characteristics of something? (Definitional) • how or why something occurred? (Historical) • what would happen if or what would have happened if? (Projective) <p>Systems Analysis</p> <ul style="list-style-type: none"> • Is there a system for which the interaction of parts could be clarified? • Is there a system for which parts could be altered and then conclusions drawn about potential effects? 	
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Debra Pickering; Senior Scholar, Marzano Research Lab, MCCL Reasoning Processes Training 2013

Planning (Stimulus) Questions for Structured Tasks

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Comparing

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Is there a relationship in one domain that could be used to understand something in a very different domain? I Could something complex or unfamiliar be understood better by connecting it to a relationship from something simple or more familiar? Constructing Support

Are there important claims to be refuted or supported? - Would it be important to examine existing arguments that support or refute a claim?

Analyzing Errors in Reasoning

. Are there situations in which it would be beneficial to identify errors in reasoning?

Analyzing Perspectives

0 Would it be useful to identify and understand the reasoning or logic

behind a perspective on a topic or issue?

- Would it be useful to analyze opposing perspectives on a topic or issue? Inductive Reasoning

Are there important unstated conclusions that could be generated from observations or facts?

Are there situations for which probable or likely conclusions could be generated?

0 Are there issues or situations for which students could examine the inductive reasoning used? Deductive Reasoning

- Are there generalizations (or rules or principles) that could be applied to reach conclusions and make predictions? - Are there topics or issues for which students could examine the validity of the deductive reasoning used?

Content Knowledge

Decision Making

- Is there an unresolved decision important to the unit? - is there an unresolved issue about who or what

' has the most or least?

- is the best or worst?

Problem Solving

is there a situation in which a goal cannot be achieved because of a major constraint or limiting condition? Is there a situation or process that could be better understood if constraints or limiting conditions were placed on it?

Invention

Is there a situation that can and should be improved on? - Is there something new that should be created?

Experimental Inquiry

Is there an unexplained phenomenon (physical or psychological) for which students could generate explanations that can be tested?

Investigation

I Is there an unresolved issue about something for which a resolution could be posed? For example, are there unresolved issues about

' the defining characteristics of something? (Definitional) how or why something occurred? (Historical) - what would happen if or what would have happened if?

(Projective)

Systems Analysis

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