

Instructional Review Rubric (Basic NAEP Level) – (Session – High Achieving High Schools)

NAEP Level	Bloom Level	Description	Useful Verbs	Sample Question Stems for Assessments	Potential Assignments and Products
BASIC	KNOWLEDGE	REMEMBERING	tell list describe relate locate write find state name	What happened after...? How many...? Who was it that...? Name the...? Describe what happened at... Who spoke to...? Tell me why...? Find the meaning of...? What is it...? Which is true or false...?	<ul style="list-style-type: none"> ▪ List the story's main events ▪ Make timeline of events. ▪ Make a facts chart. ▪ List any pieces of information you can remember. ▪ Recite a poem. ▪ List all the animals in the story. ▪ Make a chart showing... ▪ Remember an idea or fact ▪ Question and answer sessions ▪ Workbooks and worksheets ▪ Remember things read, heard, saw ▪ Information searches ▪ Reading Assignments ▪ Drill and practice ▪ Finding definitions ▪ Memory games Quizzes ▪ Forming relationships (analogies, similes) ▪ Predicting effects of changes ▪ Dramatization ▪ Peer teaching Show and tell ▪ Estimating ▪ Story problems ▪ Cut out or draw pictures to show a particular event ▪ Illustrate the main idea. ▪ Make a cartoon strip showing the sequence of events. ▪ Write and perform a play based on the story. ▪ Retell the story in your own words. ▪ Paint a picture of some aspect of the story you like. ▪ Write a summary of the event. ▪ Prepare a flow chart to illustrate the sequence of events.
	COMPREHENSION	EXPLAINING	explain interpret outline discuss distinguish predict restate translate compare describe	Write in your own words...? Write a brief outline... What do you think could have happened next...? Who do you think...? What was the main idea? Who was the main character? Distinguish between...? What differences exist between...? Provide an example of what you mean by...? Provide a definition for...?	

Instructional Review Rubric (Advanced NAEP Level)

NAEP Level	Bloom Level	Description	Useful Verbs	Sample Question Stems for Assessments	Potential Assignments and Products
ADVANCED	SYNTHESIS	CREATE	<p>create invent compose predict plan construct design imagine improve propose devise formulate</p>	<p>Design a...to...? What is a possible solution to...? What would happen if...? If you had access to all resources, how would you deal with...? How would you design your own way to...? How many ways can you...? Create new and unusual uses for...? Develop a proposal which would...? How would you compose a song about...? Write a new recipe for a tasty dish? Is there a better solution to...?</p>	<ul style="list-style-type: none"> ▪ Invent a machine to do a specific task. ▪ Design a building. ▪ Create a new product. Give it a name and plan a marketing campaign. ▪ Write your feelings in relation to... ▪ Write a TV show, play, puppet show, role-play, song, or pantomime about... ▪ Design a record, book, or magazine cover for... ▪ Create a language code. ▪ Sell an idea to a billionaire. ▪ Compose a rhythm or put new words to a known melody. ▪ Hypothesize ▪ Write a creative story, poem or song ▪ Propose a plan for an experiment ▪ Integrate the learning from different areas into a plan for solving a problem ▪ Formulate the new scheme for classifying objects ▪ Identify goals and objectives ▪ Show how an idea or product might be changed ▪ Prepare a list of criteria to judge a...show. ▪ Conduct a debate about an area of special interest. ▪ Make a booklet about 5 rules you value. ▪ Make judgments about data or ideas based on either internal or external conditions or criteria ▪ Accept or reject ideas based on standards ▪ Judge the logical consistency of written material ▪ Judge the adequacy with which conclusions are supported with data ▪ Judge the value of a work or art, music, writing, by using internal criteria or external standards of excellence ▪ Generate criteria for evaluation ▪ Evaluating one's own products and ideas ▪ Form a panel to discuss a topic. State criteria. ▪ Write a letter to...advising changes needed.
	EVALUATION	EVALUATE	<p>judge select choose decide justify debate verify argue discuss determine prioritize</p>	<p>Judge the value of... Defend your position about... Do you think...is a good or bad thing? Explain How would you have handled...? What changes to...would you recommend? Are you a...person? Why? How would you feel if...? How effective are...?</p>	

Instructional Review Rubric (Proficient NAEP Level)

NAEP Level	Bloom Level	Description	Useful Verbs	Sample Question Stems for Assessments	Potential Assignments and Products
PROFICIENT	APPLICATION	APPLYING	<p> solve show use illustrate calculate construct complete examine classify </p>	<p> Do you know another instance where...? Could this have happened in...? Group by characteristics such as...? What factors would change if...? Apply the method used to some experience of your own...? What questions would you ask of...? From the information given, develop a set of instructions about...? Would this information be useful if you had a...? </p>	<ul style="list-style-type: none"> ▪ Construct a model to demonstrate how it will work. ▪ Make a diorama to illustrate an important event. ▪ Compose a book about... ▪ Make a scrapbook about the areas of study. ▪ Make a paper-mache map showing information ▪ Make a puzzle game using ideas from the study area. ▪ Make a clay model of... ▪ Paint a mural. ▪ Design a market strategy for your product. ▪ Design an ethnic costume. ▪ Use knowledge from various areas to find solutions ▪ Role playing/role reversal ▪ Producing a newspaper, stories, etc. ▪ Interviews ▪ Experiments ▪ Solving problems by use of known information ▪ Practical applications of learned knowledge ▪ Suggest actual uses of ideas ▪ Design a questionnaire to gather information. ▪ Make a flow chart to show critical stages. ▪ Write a commercial for a new / familiar product. ▪ Review a work of art in terms of form, color, and texture. ▪ Construct a graph to illustrate selected information. ▪ Uncover unique characteristics ▪ Distinguish between facts and inferences ▪ Evaluate the relevancy of data ▪ Recognize logical fallacies in reasoning ▪ Recognize unstated assumptions ▪ Analyze the structure of a work of art, music or writing ▪ Compare and contrast ▪ Attribute listing ▪ Construct a jigsaw puzzle. ▪ Analyze a family tree showing relationships.
	ANALYSIS	ANALYZING	<p> analyze distinguish examine compare contrast investigate categorize identify explain separate advertise </p>	<p> Which event could not have happened if...? If...happened, what might the ending have been? How was this similar to...? What was the underlying theme of...? What do you see as other possible outcomes? Why did...changes occur? Compare your...with that presented in...? What must have happened when...? How is...similar to...? What are some of the problems of...? What was the turning point in the story? What was the problem with...? </p>	

Depth of Knowledge Levels

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Levels		Depth of Knowledge Levels				
		Language Arts		Mathematics	Science	Social Studies
		Reading	Writing			
1		<p>Level 1 requires students to receive or recite facts or to use simple skills or abilities. Oral reading that does not include analysis of the text as well as basic comprehension of a text is included. Items require only a shallow understanding of text presented and often consist of verbatim recall from text or simple understanding of a single word or phrase. Some examples that represent but do not constitute all of Level 1 performance are:</p> <ul style="list-style-type: none"> • Support ideas by reference to details in the text. • <ul style="list-style-type: none"> • Use a dictionary to find the meaning of words. • Identify figurative language in a reading passage. 	<p>Level 1 requires the student to write or recite simple facts. This writing or recitation does not include complex synthesis or analysis but basic ideas. The students are engaged in listing ideas or words as in a brainstorming activity prior to written composition, are engaged in a simple spelling or vocabulary assessment or are asked to write simple sentences. Students are expected to write and speak using Standard English conventions. This includes using appropriate grammar, punctuation, capitalization and spelling. Some examples that represent but do not constitute all of Level 1 performance are:</p> <ul style="list-style-type: none"> • Use punctuation marks correctly. • Identify Standard English grammatical structures and refer to resources for correction. 	<p>Level 1 (Recall) includes the recall of information such as a fact, definition, term, or a simple procedure, as well as performing a simple algorithm or applying a formula. That is, in mathematics a one-step, well-defined, and straight algorithmic procedure should be included at this lowest level. Other key words that signify a Level 1 include "identify," "recall," "recognize," "use," and "measure." Verbs such as "describe" and "explain" could be classified at different levels depending on what is to be described and explained.</p>	<p>Level 1 is the recall of information (fact, definition, term, or a simple procedure, as well as performing a simple science process or procedure) and only requires students to demonstrate a rote response, use a well-known formula, follow a set procedure (like a recipe), or perform a clearly defined series of steps. A "simple" procedure is well-defined and typically involves only one-step. Verbs such as "identify," "recall," "recognize," "use," "calculate," and "measure" generally represent cognitive work at the recall and reproduction level. Simple word problems that can be directly translated into and solved by a formula are Level 1. Verbs such as "describe" and "explain" could be classified at different DOK levels, depending on the complexity of what is to be described and explained.</p> <p>A student either knows the answer or does not: that is, the answer does not need to be "figured out" or "solved." In other words, if the knowledge necessary to answer an item automatically provides the answer to the item, then the item is at Level 1. If the knowledge necessary to answer the item does not automatically provide the answer, the item is at least at Level 2. Some examples that represent but do not constitute all of L1 performance are: 1. Recall or recognize a fact, term, or property, 2. Represent in words or diagrams a concept or relationship, 3. Provide or recognize a standard scientific representation for simple phenomenon, 4. Perform a routine procedure such as measuring length.</p>	<p>Level 1 asks students to recall facts, terms, concepts, trends, generalizations and theories or to recognize or identify specific information contained in graphics. This level generally requires students to identify, list, or define. The items at this level usually ask the student to recall who, what, when and where. Items that require students to "describe" and "explain" could be classified at Level 1 or 2 depending on what is to be described and explained. A Level 1 "describe or explain" would recall, recite or reproduce information. Items that require students to recognize or identify specific information contained in maps, charts, tables, graphs or drawings are generally level 1.</p>

Depth of Knowledge Levels

Levels	Language Arts		Mathematics	Science	Social Studies
	Reading	Writing			
2	<p>Includes the engagement of some mental processing beyond recalling or reproducing a response; it requires both comprehension and subsequent processing of text or portions of text. Intersentence analysis of inference is required. Some important concepts are covered but not in a complex way. Standards and items at this level may include words such as summarize, interpret, infer, classify, organize, collect, display, compare, and determine whether fact or opinion. Literal main ideas are stressed. A Level 2 assessment item may require students to apply some of the skills and concepts that are covered in Level 1. Some examples that represent but do not constitute all of Level 2 performance are:</p> <ul style="list-style-type: none"> • Use context cues to identify the meaning of unfamiliar words. • Predict a logical outcome based on information in a reading selection. • Identify and summarize the major events in a narrative. 	<p>Requires some mental processing. At this level students are engaged in first draft writing or brief extemporaneous speaking for a limited number of purposes and audiences. Students are beginning to connect ideas using a simple organizational structure. For example, students may be engaged in note-taking, outlining or simple summaries. Text may be limited to one paragraph. Students demonstrate a basic understanding and appropriate use of such reference materials as a dictionary, thesaurus, or web site. Some examples that represent but do not constitute all of Level 2 performance are:</p> <ul style="list-style-type: none"> • Construct compound sentences. • Use simple organizational strategies to structure written work. • Write summaries that contain the main idea of the reading selection and pertinent details. 	<p><i>(Skill/Concept)</i> (beyond a habitual response) Requires students to make some decisions as to how to approach the problem or activity (Level 1 requires students to demonstrate a rote response, perform a well-known algorithm, follow a set procedure, like a recipe, or perform a clearly defined series of steps.) Keywords (classify, organize, estimate, make observations, collect and display data, and compare data. These actions imply more than one step. (To compare data requires first identifying characteristics of the objects or phenomenon and then grouping or ordering the objects.) Action verbs, such as explain, describe, or interpret could be classified at different levels depending on the object of the action. <u>Interpreting information from a simple graph, requiring reading information from the graph. Interpreting information from a complex graph that requires some decisions on what features of the graph need to be considered and how information from the graph can be a Level 3. Caution is warranted in interpreting Level 2 as only skills because some reviewers will interpret skills very narrowly, as primarily numerical skills, and such interpretation excludes from this level other skills such as visualization skills and probability skills, which may be more complex simply because they are less common.</u> Other activities include explaining the purpose and use of experimental procedures; carrying out experimental procedures; making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables/graphs/charts.</p>	<p>Level 2 includes the engagement of some mental processing beyond recalling or reproducing a response. The content knowledge or process involved is more complex than in level 1. Items require students to make some decisions as to how to approach the question or problem. Keywords that generally distinguish a Level 2 item include "classify," "organize," "estimate," "make observations," "collect and display data," and "compare data." These actions imply more than one step. (To compare data requires first identifying characteristics of the objects or phenomenon and then grouping or ordering the objects.) Level 2 activities include making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables, graphs, and charts. The action verbs explain, describe, or interpret could be classified at different DOK levels, depending on the complexity of the action. (Interpreting information from a simple graph, requiring reading information from the graph, is a Level 2.) An item that requires interpretation from a complex graph, such as making decisions regarding features of the graph that need to be considered and how information from the graph can be aggregated, is at Level 3. Some examples that represent, but do not constitute all of Level 2 performance, are: Specify and explain the relationship between facts, terms, properties, or variables. Describe and explain examples and non-examples of science concepts. Select a procedure according to specified criteria and perform it. Formulate a routine problem given data and conditions. Organize, represent and interpret data.</p>	<p>Level 2 includes the engagement of some mental processing beyond recalling or reproducing a response. This level generally requires students to contrast or compare people, places, events and concepts; convert information from one form to another; give an example; classify or sort items into meaningful categories; describe, interpret or explain issues and problems, patterns, reasons, cause and effect, significance or impact, relationships, points of view or processes. A Level 2 "describe or explain" would require students to go beyond a description or explanation of recalled information to describe or explain a result or "how" or "why."</p>

Depth of Knowledge Levels					
Levels	Language Arts		Mathematics	Science	Social Studies
	Reading	Writing			
3	<p>Deep knowledge becomes more of a focus at Level 3. Students are encouraged to go beyond the text; however, they are still required to show understanding of the ideas in the text. Students may be encouraged to explain, generalize, or connect ideas. Standards and items at Level 3 involve reasoning and planning. Students must be able to support their thinking. Items may involve abstract theme identification, inference across an entire passage, or students' application of prior knowledge. Items may also involve more superficial connections between texts. Some examples that represent but do not constitute all of Level 3 performance are:</p> <ul style="list-style-type: none"> Determine the author's purpose and describe how it affects the interpretation of a reading selection. Summarize information from multiple sources to address a specific topic. Analyze and describe the characteristics of various types of literature. 	<p>Level 3 requires some higher level mental processing. Students are engaged in developing compositions that include multiple paragraphs. These compositions may include complex sentence structure and may demonstrate some synthesis and analysis. Students show awareness of their audience and purpose through focus, organization and the use of appropriate compositional elements. The use of appropriate compositional elements includes such things as addressing chronological order in a narrative or including supporting facts and details in an informational report. At this stage students are engaged in editing and revising to improve the quality of the composition. Some examples that represent but do not constitute all of Level 3 performance are:</p> <ul style="list-style-type: none"> Support ideas with details and examples. Use voice appropriate to the purpose and audience. Edit writing to produce a logical progression of ideas. 	<p>Level 3 (Strategic Thinking) requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. In most instances, requiring students to explain their thinking is a Level 3. Activities that require students to make conjectures are also at this level. The cognitive demands at Level 3 are complex and abstract. The complexity does not result from the fact that there are multiple answers, a possibility for both Levels 1 and 2, but because the task requires more demanding reasoning. An activity, however, that has more than one possible answer and requires students to justify the response they give would most likely be a Level 3. Other Level 3 activities include drawing conclusions from observations; citing evidence and developing a logical argument for concepts; explaining phenomena in terms of concepts; and using concepts to solve problems.</p>	<p>Level 3 requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. The cognitive demands at Level 3 are complex and abstract. The complexity does not result only from the fact that there could be multiple answers, a possibility for both Levels 1 and 2, but because the multi-step task requires more demanding reasoning. In most instances, requiring students to explain their thinking is at Level 3; requiring a very simple explanation or a word or two should be at Level 2. An activity that has more than one possible answer and requires students to justify the response they give would most likely be a Level 3. Experimental designs in Level 3 typically involve more than one dependent variable. Other Level 3 activities include drawing conclusions from observations; citing evidence and developing a logical argument for concepts; explaining phenomena in terms of concepts; and using concepts to solve non-routine problems. Some examples that represent, but do not constitute all of Level 3 performance, are:</p> <ul style="list-style-type: none"> Identify research questions and design investigations for a scientific problem. Solve non-routine problems. Develop a scientific model for a complex situation. Form conclusions from experimental data. 	<p>Level 3 requires reasoning, using evidence, and a higher level of thinking than the previous two levels. Students would go beyond explaining or describing "how and why" to justifying the "how and why" through application and evidence. The cognitive demands at Level 3 are more complex and more abstract than Levels 1 or 2. Items at Level 3 include drawing conclusions; citing evidence; applying concepts to new situations; using concepts to solve problems; analyzing similarities and differences in issues and problems; proposing and evaluating solutions to problems; recognizing and explaining misconceptions or making connections across time and place to explain a concept or big idea.</p>

Depth of Knowledge Levels

Levels	Language Arts		Mathematics	Science	Social Studies
	Reading	Writing			
4	<p>Higher order thinking is central and knowledge is deep at Level 4. The standard or assessment item at this level will probably be an extended activity, with extended time provided. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. Students take information from at least one passage and are asked to apply this information to a new task. They may also be asked to develop hypotheses and perform complex analyses of the connections among texts. Some examples that represent but do not constitute all of Level 4 performance are:</p> <ul style="list-style-type: none"> Analyze and synthesize information from multiple sources. Examine and explain alternative perspectives across a variety of sources. Describe and illustrate how common themes are found across texts from different cultures. 	<p>Higher-level thinking is central to Level 4. The standard at this level is a multi- paragraph composition that demonstrates synthesis and analysis of complex ideas or themes. There is evidence of a deep awareness of purpose and audience. For example, informational papers include hypotheses and supporting evidence. Students are expected to create compositions that demonstrate a distinct voice and that stimulate the reader or listener to consider new perspectives on the addressed ideas and themes. An example that represents but does not constitute all of Level 4 performance is:</p> <ul style="list-style-type: none"> Write an analysis of two selections, identifying the common theme and generating a purpose that is appropriate for both. 	<p>Level 4 (Extended Thinking) requires complex reasoning, planning, developing, and thinking most likely over an extended period of time. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. For example, if a student has to take the water temperature from a river each day for a month and then construct a graph, this would be classified as a Level 2. However, if the student is to conduct a river study that requires taking into consideration a number of variables, this would be a Level 4. At Level 4, the cognitive demands of the task should be high and the work should be very complex. Students should be required to make several connections—relate ideas <i>within</i> the content area or <i>among</i> content areas—and have to select one approach among many alternatives on how the situation should be solved, in order to be at this highest level. Level 4 activities include designing and conducting experiments; making connections between a finding and related concepts and phenomena; combining and synthesizing ideas into new concepts; and critiquing experimental designs.</p>	<p>High cognitive demands/very complex. Students are required to make several connections—relate ideas <i>within</i> the content area or <i>among</i> content areas—and have to select or devise one approach among many alternatives on how the situation can be solved. Many on-demand assessment instruments will not include any assessment activities that could be classified as Level 4 (L4). However, standards, goals, and objectives can be stated in such a way as to expect students to perform extended thinking. "Develop generalizations of the results obtained and the strategies used and apply them to new problem situations," is an example of a Grade 8 objective that is a L4. Many, but not all, performance assessments and open-ended assessment activities requiring significant thought will be L4. <u>L4 requires complex reasoning, experimental design and planning, and probably will require an extended period of time either for the science investigation required by an objective, or for carrying out the multiple steps of an assessment item.</u> However, the extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. (If a student has to take the water temperature from a river each day for a month and then construct a graph, this would be classified as a L2 activity. If the student conducts a river study that requires taking into consideration a number of variables, this would be a L4.) Some examples that represent but do not constitute all of a L4 performance are: 1. Based on provided data from a complex experiment that is novel to the student, deduct the fundamental relationship between several controlled variables. 2. Conduct an investigation, from specifying a problem to designing and carrying out an experiment, to analyzing its data and forming conclusions.</p>	<p>Requires the complex reasoning of Level 3 with the addition of planning, investigating, or developing that will most likely require an extended period of time. The extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking. At this level the cognitive demands should be high and the work should be very complex. Students should be required to connect and relate ideas and concepts <i>within</i> the content area or <i>among</i> content areas in order to be at this highest level. The distinguishing factor for Level 4 (L4) would be evidence through a task or product that the cognitive demands have been met. A L4 performance will require students to analyze and synthesize information from multiple sources, examine and explain alternative perspectives across a variety of sources and/or describe and illustrate how common themes and concepts are found across time and place. In some L4 performance students will make predictions with evidence as support, develop a logical argument, or plan and develop solutions to problems. (Many on-demand assessment instruments will not include assessment activities that could be classified as L4. However, standards, goals, and objectives can be stated so as to expect students to perform thinking at this level! On-demand assessments that do include tasks, products, or extended responses would be classified as L4 when the task or response requires evidence that the cognitive requirements have been met.)</p>