Hess' Cognitive Rigor Matrix & Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions - *Reading*

Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify	o Recall, recognize, or locate basic facts, details, events, or ideas explicit in texts o Read words orally in connected text with fluency & accuracy o Define terms			
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion), predict, compare/contrast, match like ideas, explain, construct models	o Identify or describe literary elements (characters, setting, sequence, etc.) o Select appropriate words when intended meaning/definition is clearly evident o Describe/explain who, what, where, when, or how	o Specify, explain, show relationships; explain why, cause-effect o Give non-examples/examples o Summarize results, concepts, ideas o Make basic inferences or logical predictions from data or texts o Identify main ideas or accurate generalizations of texts o Locate information to support explicit-implicit central ideas	o Explain, generalize, or connect ideas using supporting evidence (quote, example, text reference) o Identify/ make inferences about explicit or implicit themes o Describe how word choice, point of view, or bias may affect the readers' interpretation of a text	o Explain how concepts or ideas specifically relate to *other* content domains or concepts o Develop generalizations of the results obtained or strategies used and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	o Use language structure (pre/suffix) or word relationships (synonym/antonym) to determine meaning of words	o Use context to identify the meaning of words/phrases o Obtain and interpret information using text features	o Apply a concept in a new context	o Illustrate how multiple themes (historical, geographic, social) may be interrelated
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view)	o Identify whether specific information is contained in graphic representations (e.g., map, chart, table, graph, T-chart, diagram) or text features (e.g., headings, subheadings, captions)	o Categorize/compare literary elements, terms, facts, details, events o Identify use of literary devices o Analyze format, organization, & internal text structure (signal words, transitions, semantic cues) of different texts o Distinguish: relevant-irrelevant information; fact/opinion o Identify characteristic text features; distinguish between texts, genres	o Analyze information within data sets or texts o Analyze interrelationships among concepts, issues, problems o Analyze or interpret author's craft (literary devices, viewpoint, or potential bias) to critique a text o Use reasoning, planning, and evidence to support inferences	o Analyze multiple sources of evidence, or multiple works by the same author, or across genres, time periods, themes o Analyze complex/abstract themes, perspectives, concepts o Gather, analyze, and organize multiple information sources o Analyze discourse styles
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			o Cite evidence and develop a logical argument for conjectures o Describe, compare, and contrast solution methods o Verify reasonableness of results o Critique conclusions drawn	o Evaluate relevancy, accuracy, & completeness of information from multiple sources o Draw & justify conclusions o Apply understanding in a novel way, provide argument or justification for the application
Create Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, produce		o Generate conjectures or hypotheses based on observations or prior knowledge and experience	o Synthesize information within one source or text o Develop a complex model for a given situation o Develop an alternative solution	o Synthesize information across multiple sources or texts o Articulate a new voice, alternate theme, new knowledge or perspective

Hess' Cognitive Rigor Matrix & Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions - *Writing*

Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify				
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion), predict, compare/contrast, match like ideas, explain, construct models	o Describe or define facts, details, terms o Select appropriate words to use when intended meaning/definition is clearly evident o Write simple sentences	o Specify, explain, show relationships; explain why, cause-effect o Give non-examples/examples o Take notes; organize ideas/data o Summarize results, concepts, ideas o Identify main ideas or accurate generalizations of texts	o Explain, generalize, or connect ideas using supporting evidence (quote, example, text reference) o Write multi-paragraph composition for specific purpose, focus, voice, tone, & audience o	o Explain how concepts or ideas specifically relate to *other* content domains or concepts o Develop generalizations of the results obtained or strategies used and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	o Apply rules or use resources to edit specific spelling, grammar, punctuation, conventions, word use o Apply basic formats for documenting sources	o Use context to identify the meaning of words/phrases o Obtain and interpret information using text features o Develop a text that may be limited to one paragraph o Apply simple organizational structures (paragraph, sentence types) in writing	o Revise final draft for meaning or progression of ideas o Apply internal consistency of text organization and structure to composing a full composition o Apply a concept in a new context o Apply word choice, point of view, style to impact readers' interpretation of a text	o Select or devise an approach among many alternatives to research a novel problem o Illustrate how multiple themes (historical, geographic, social) may be interrelated
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias, point of view)	o Decide which text structure is appropriate to audience and purpose	o Compare literary elements, terms, facts, details, events o Analyze format, organization, & internal text structure (signal words, transitions, semantic cues) of different texts o Distinguish: relevant-irrelevant information; fact/opinion	o Analyze interrelationships among concepts, issues, problems o Apply tools of author's craft (literary devices, viewpoint, or potential dialogue) with intent o Use reasoning, planning, and evidence to support inferences made	o Analyze multiple sources of evidence, or multiple works by the same author, or across genres, or time periods o Analyze complex/abstract themes, perspectives, concepts o Gather, analyze, and organize multiple information sources
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			o Cite evidence and develop a logical argument for conjectures o Describe, compare, and contrast solution methods o Verify reasonableness of results o Justify or critique conclusions	o Evaluate relevancy, accuracy, & completeness of information from multiple sources o Draw & justify conclusions o Apply understanding in a novel way, provide argument or justification for the application
Create Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, produce	o Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept	o Generate conjectures or hypotheses based on observations or prior knowledge and experience	o Develop a complex model for a given situation o Develop an alternative solution	o Synthesize information across multiple sources or texts o Articulate a new voice, alternate theme, new knowledge or perspective

Hess' Cognitive Rigor Matrix & Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions - *ELA*

Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/ Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify	o Recall, recognize, or locate basic facts, details, events, or ideas explicit in texts o Read words orally in connected text with fluency & accuracy			
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion), predict, compare/contrast, match like ideas, explain, construct models	o Identify or describe literary elements (characters, setting, sequence, etc.) o Select appropriate words when intended meaning/definition is clearly evident o Describe/explain who, what, where, when, or how o Define/describe facts, details, terms, principles o Write simple sentences	o Specify, explain, show relationships; explain why, cause-effect o Give non-examples/examples o Summarize results, concepts, ideas o Make basic inferences or logical predictions from data or texts o Identify main ideas or accurate generalizations of texts o Locate information to support explicit-implicit central ideas	o Explain, generalize, or connect ideas using supporting evidence (quote, example, text reference) o Identify/ make inferences about explicit or implicit themes o Describe how word choice, point of view, or bias may affect the readers' interpretation of a text o Write multi-paragraph composition for specific purpose, focus, voice, tone, & audience	o Explain how concepts or ideas specifically relate to *other* content domains or concepts o Develop generalizations of the results obtained or strategies used and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	o Use language structure (pre/suffix) or word relationships (synonym/antonym) to determine meaning of words o Apply rules or resources to edit spelling, grammar, punctuation, conventions, word use o Apply basic formats for documenting sources	o Use context to identify the meaning of words/phrases o Obtain and interpret information using text features o Develop a text that may be limited to one paragraph o Apply simple organizational structures (paragraph, sentence types) in writing	o Apply a concept in a new context o Revise final draft for meaning or progression of ideas o Apply internal consistency of text organization and structure to composing a full composition o Apply word choice, point of view, style to impact readers' /viewers' interpretation of a text	o Illustrate how multiple themes (historical, geographic, social) may be interrelated o Select or devise an approach among many alternatives to research a novel problem
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view)	o Identify whether specific information is contained in graphic representations (e.g., map, chart, table, graph, T-chart, diagram) or text features (e.g., headings, subheadings, captions) o Decide which text structure is appropriate to audience and purpose	o Categorize/compare literary elements, terms, facts/details, events o Identify use of literary devices o Analyze format, organization, & internal text structure (signal words, transitions, semantic cues) of different texts o Distinguish: relevant-irrelevant information; fact/opinion o Identify characteristic text features; distinguish between texts, genres	o Analyze information within data sets or texts o Analyze interrelationships among concepts, issues, problems o Analyze or interpret author's craft (literary devices, viewpoint, or potential bias) to create or critique a text o Use reasoning, planning, and evidence to support inferences	o Analyze multiple sources of evidence, or multiple works by the same author, or across genres, time periods, themes o Analyze complex/abstract themes, perspectives, concepts o Gather, analyze, and organize multiple information sources o Analyze discourse styles
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			o Cite evidence and develop a logical argument for conjectures o Describe, compare, and contrast solution methods o Verify reasonableness of results o Justify or critique conclusions drawn	o Evaluate relevancy, accuracy, & completeness of information from multiple sources o Apply understanding in a novel way, provide argument or justification for the application
Create Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, produce	Brainstorm ideas, concepts, problems, or perspectives related to a topic or concept	o Generate conjectures or hypotheses based on observations or prior knowledge and experience	o Synthesize information within one source or text o Develop a complex model for a given situation o Develop an alternative solution	o Synthesize information across multiple sources or texts o Articulate a new voice, alternate theme, new knowledge or perspective

Hess' Cognitive Rigor Matrix & Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions – *Math/Science*

Revised Bloom's Taxonomy	Webb's DOK Level 1 Recall & Reproduction	Webb's DOK Level 2 Skills & Concepts	Webb's DOK Level 3 Strategic Thinking/Reasoning	Webb's DOK Level 4 Extended Thinking
Remember Retrieve knowledge from long-term memory, recognize, recall, locate, identify	o Recall, observe, & recognize facts, principles, properties o Recall/ identify conversions among representations or numbers (e.g., customary and metric measures)			
Understand Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion (such as from examples given), predict, compare/contrast, match like ideas, explain, construct models	o Evaluate an expression o Locate points on a grid or number on number line o Solve a one-step problem o Represent math relationships in words, pictures, or symbols o Read, write, compare decimals in scientific notation	o Specify and explain relationships (e.g., non-examples/examples; cause-effect) o Make and record observations o Explain steps followed o Summarize results or concepts o Make basic inferences or logical predictions from data/observations o Use models /diagrams to represent or explain mathematical concepts o Make and explain estimates	o Use concepts to solve non-routine problems o Explain, generalize, or connect ideas using supporting evidence o Make and justify conjectures o Explain thinking when more than one response is possible o Explain phenomena in terms of concepts	o Relate mathematical or scientific concepts to other content areas, other domains, or other concepts o Develop generalizations of the results obtained and the strategies used (from investigation or readings) and apply them to new problem situations
Apply Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	o Follow simple procedures (recipe-type directions) o Calculate, measure, apply a rule (e.g., rounding) o Apply algorithm or formula (e.g., area, perimeter) o Solve linear equations o Make conversions among representations or numbers, or within and between customary and metric measures	o Select a procedure according to criteria and perform it o Solve routine problem applying multiple concepts or decision points o Retrieve information from a table, graph, or figure and use it solve a problem requiring multiple steps o Translate between tables, graphs, words, and symbolic notations (e.g., graph data from a table) o Construct models given criteria	o Design investigation for a specific purpose or research question o Conduct a designed investigation o Use concepts to solve non-routine problems o Use & show reasoning, planning, and evidence o Translate between problem & symbolic notation when not a direct translation	o Select or devise approach among many alternatives to solve a problem o Conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results
Analyze Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct	o Retrieve information from a table or graph to answer a question o Identify whether specific information is contained in graphic representations (e.g., table, graph, T-chart, diagram) o Identify a pattern/trend	o Categorize, classify materials, data, figures based on characteristics o Organize or order data o Compare/ contrast figures or data o Select appropriate graph and organize & display data o Interpret data from a simple graph o Extend a pattern	o Compare information within or across data sets or texts o Analyze and draw conclusions from data, citing evidence o Generalize a pattern o Interpret data from complex graph o Analyze similarities/differences between procedures or solutions	o Analyze multiple sources of evidence o analyze complex/abstract themes o Gather, analyze, and evaluate information
Evaluate Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			o Cite evidence and develop a logical argument for concepts or solutions o Describe, compare, and contrast solution methods o Verify reasonableness of results	o Gather, analyze, & evaluate information to draw conclusions o Apply understanding in a novel way, provide argument or justification for the application
Create Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, construct, produce	o Brainstorm ideas, concepts, or perspectives related to a topic	o Generate conjectures or hypotheses based on observations or prior knowledge and experience	o Synthesize information within one data set, source, or text o Formulate an original problem given a situation o Develop a scientific/mathematical model for a complex situation	o Synthesize information across multiple sources or texts o Design a mathematical model to inform and solve a practical or abstract situation

Applying Webb's Depth of Knowledge Levels for Social Studies

(Based on Webb and Wixson, K. Hess, Center for Assessment/NCIEA, 2004)

Webb's DOK Levels			
Recall and Reproduction (DOK 1)	**Skills and Concepts/ Basic Reasoning (DOK 2)**	**Strategic Thinking/ Complex Reasoning (DOK 3)**	**Extended Thinking/ Reasoning (DOK 4)**
• Identify who, when, what where, and why • Recall facts, terms, concepts, trends, generalizations and theories •Use a variety of tools • Recognize or identify specific information contained in graphics. • Identify specific information in maps, charts, tables, graphs or drawings • Define • Identify cause and effect • Describe (recall, recite or reproduce information) • Identify purposes	• Describe or explain how or why • Give an example • Describe and explain issues and problems, purposes, patterns, sources, reasons, cause and effect, multiple causation, significance or impact, relationships, points of view or processes • Compare/contrast people, places, events, purposes, and concepts • Classify, sort items into meaningful categories • Convert information from one form to another	• Use concepts to solve problems • Use evidence to justify • Propose and evaluate solutions to problems • Recognize and explain misconceptions • Cite evidence and develop a logical argument for concepts • Reason and draw conclusions • Discriminate among plausible answers • Analyze similarities and differences in issues and problems • Apply concepts to new situations • Make connections across time and place to explain a concept or big idea • Recognize and explain patterns • Make and support decisions • Evaluate effectiveness and impact	• Connect and relate ideas and concepts within the content area or among content areas • Examine and explain alternative perspectives across a variety of sources • Describe and illustrate how common themes and concepts are found across time and place • Make predictions with evidence as support • Develop a logical argument • Plan and develop solutions to problems • Analyze and synthesize information from multiple sources • Complex reasoning with planning, investigating or developing that will most likely require an extended period of time-must require applying significant conceptual understanding and higher-order thinking • Apply and adapt information to real-world situations • Participation in simulations and activities requiring higher-level thinking (e.g., Mock Trial, Mock Congress, Project Citizen)

FINE ARTS

MUSIC

DOK 1
Students at DOK 1 are able to recall facts, terms, musical symbols, and basic musical concepts, and to identify specific information contained in music (e.g., pitch names, rhythmic duration, voice and instrument classification, music history).

DOK 2
Students at DOK 2 engage in mental processing beyond recalling or reproducing a response. Students begin to apply pitch relationships while singing (e.g., so-do), perform accurately on an instrument, and begin to self-assess their own performance. They apply correct fingerings, bowings and stickings, and interpret notation. They can explain and interpret contrasting styles and genres. Students can hear and recognize basic forms (e.g., ABA, strophic), intervals, and rhythmic patterns. Students will sight-read independently.

DOK 3
In DOK 3, students demonstrate more complex and abstract thinking in their musical performance. Students play or sing in a group, responding to the cues of the conductor. In this situation, they will use aural skills to blend, balance, and sing/play in-tune; apply pitch and rhythmic accuracy; express elements, articulation, diction, and phrasing. Students begin to play independent parts in an ensemble. They can compose a simple melody in a given key, and improvise over static harmony (e.g., play mallet instruments over a bordun or improvise over a single chord). Students use music theory knowledge to analyze chords/harmonies, realize figured bass and interpret jazz chords.

DOK 4
DOK 4 requires complex reasoning that includes planning, investigating, and/or analyzing results. Students compose in two or more voices, which requires the application of harmony, voice leading, and chord progressions. When improvising, students respond to chord changes and develop complex phrases. They rehearse and perform solos with or without accompaniment or in non-conducted ensembles, in which they are required to make individual informed decisions about style, balance, and expressive elements.

DANCE

A variety of dance genres (e.g., folk, ballroom/social, square, contra, ballet, modern, jazz, tap, hip hop, ethnic) can be used to develop depth-of-knowledge at any grade or ability level.

DOK 1
Students may be asked to perform basic dance movements in a variety of genres or mimic the teacher or electronic media/video. These types of movement do not require previous dance training.

DOK 2

Students may apply concepts of proper movement technique as it relates to the style of dance. Students develop body awareness (e.g., shape, space, timing, rhythm and force). Students explore how to alter movements so kinesthetic and visual differentiation is felt and viewed. Students begin to describe the movement they are seeing.

DOK 3

Students utilize more independent thinking and action to execute dance movement with proper technique and qualitative distinction (e.g., elements and qualities of movement). Improvisation may be performed as an individual, with a partner, or in a group. Students are able to make assessments of self and others through value statements.

DOK 4

Students use awareness of physical movement and aspects of dance as an art from to create and critique original choreographed dances. Movement expresses meaning of ideas, themes and concepts. Students address how movement choices clarify expression of ideas. Students may incorporate use of music/sound, costuming, props, and lighting to support their solo or group work. Students review and revise their work throughout the creative process to enhance the final choreography.

VISUAL ART

DOK 1

Students at DOK 1 are able to define and describe the use of art elements, principles, style, media, and/or techniques. They can identify the function of art in a culture, and make connections between visual art and other content areas.

DOK 2

Students at DOK 2 can make examples of and compare and contrast art elements, principles, style, media, and/or techniques through guided practice. They can compare and contrast art elements, principles, style, subject matter, theme, media, and techniques in two works of art.

DOK 3

Students at DOK 3 create original artwork within a set of teacher-directed parameters which could include subject matter, theme, historical style, elements and principles, media, and/or technique. They can express a personal point of view through the creation of artwork, and create art that serves a purpose in society (e.g., fine crafts, graphic design; group identity; social, cultural or political commentary. Students justify artistic decisions and analyze and evaluate the effectiveness of communicating meaning in art.

DOK 4

Students at DOK 4 select a topic of personal interest as a theme/subject for creation of art and define an artistic problem. The conduct research using a variety of sources (e.g., print materials, photographs, internet, and historical exemplars) and develop ideas through a series of studies. They choose and use elements, principles, style, media, and techniques   that will best express the intended meaning. Students can write an artist's statement that explains and defends artistic decisions. Students develop and defend personal answers to aesthetic questions: "What is the nature of art?" "What is beauty?" and "Who decides what makes something art?" They draw and defend conclusions about how art is influenced by and influences culture/history.

THEATRE

DOK 1
Students at DOK 1 will be asked:
- Parts of the stage; theatre terminology; general theatre safety; theatre hierarchy; basic rules of audience etiquette
- To perform in front of the class, creating a stereotypical or previously seen character (not themselves)

DOK 2
Students at DOK 2 will:
- Compare and contrast styles of acting; identify technical problems on stage and formulate desired outcomes; recognize basic elements of major theatrical time periods; recognize and follow basic script formatting; demonstrate proper audience etiquette;
- Perform in front of class, creating an original character in scene work

DOK 3
Students performing at DOK 3 will be able to:
- Complete basic character analysis and perform said character; perform the required tasks for a technical theatre crew; demonstrate basic playwriting skills; direct a scene with characterization and blocking
- Perform short form improvisational format (scene games, line games, head to head, extraordinary, etc.)

DOK 4
Students performing at DOK 4 will be able to:
- Create an in-depth character analysis, including textural and historical support for choices and perform said character;
- Perform the functions of a technical element, serving as a designer, stage manager or crew chief;
- Write a script, in proper format, with contextual support of historical theme, characterization, and technical direction;
- Direct a one-act with script analysis, characterization, blocking, and technical elements to support the playwright's intent