Kansas Effective Practices
Instructional Toolkit

Implementing Research and Resources Into Action
Research Lesson 1: Daily Challenges

Higher Order Thinking Skills

Higher order thinking skills are questioning in discussions or providing activities based on processing that requires analysis, synthesis, evaluation, or other critical thinking skills. The infusion of higher order thinking skills into instruction can be a valuable tool for teachers in planning discussion questions, in organizing learning tasks, in planning literature and writing assignments, and in the development of challenging curriculum.

The results support student learning with meaning, transfer of knowledge, and a grasp of higher level cognitive strategies which will serve students in all curricular areas. For students representing underserved populations, a bridging or transition curriculum (Kaplan, 2004) which infuses higher order thinking into student learning raises the bar, especially when connected to specific, content-related instruction. Students learn that facts don't exist in isolation, but are always related to other information and that there are alternative ways of expressing information.

Click here to view Cognitive Processes That Can Be Used to Design Learning Activities.

Suggestions for District Leaders Education

• Become familiar with research regarding effective strategies and models for higher order thinking skills.
• Observe instruction and provide teacher feedback and coaching regarding questioning levels, problem solving, and critical thinking.
• Provide and support faculty dialogue about higher order thinking skills instruction, in particular when relative to low socio-economic and minority students.
• Provide and support on-going appropriate professional development across all grade levels for teachers of gifted students to receive training in best teaching practices regarding the teaching of higher order thinking skills.
• Monitor and provide feedback to students regarding higher order thinking skills.
• Build capacity for teachers to foster enhanced student questioning and reflection.

Parent Involvement

• Provide parents with information about and models of questioning techniques and levels.
• Collaborate with parents in using higher order thinking skills at home.
• Practice shared problem solving with a real problem.

Special Considerations:

Children of Poverty: Provide exposure, practice, and bridging or transitional activities which lead into higher order thinking skills.

Linguistically and Culturally Diverse Learners: Provide ways to transition into higher order thinking skills through content specific work.

Twice Exceptional: Provide higher order thinking skills which challenge thinking and are adapted to the learning strengths of the student. Supply scaffolding support. Use models, diagrams, and hands-on thinking challenges to encourage higher order thinking and problem solving.

Underachieving Gifted Learners: Encourage students to use higher order thinking skills by challenging their thinking, providing support in strength areas, and stressing real world connections to their school experiences. Supply scaffolding support.

Cognitive Processes That Can Be Used to Design Learning Activities

Analytical Thinking
Critical Thinking
Creative Thinking
Executive Processes

Higher Order Thinking Skill: Analytical Thinking

Various thinking skills that deepen understanding of knowledge and skills.

Thinking Skill	Definition
Identifying characteristics	The ability to identify distinct, specific, and relevant details that characterize an object, an event, or a phenomenon.
Recognizing attributes	The facility to discern and label general or common features of a set of objects.
Making observations	The capability to perceive and select attributes of an object or experience.
Discriminating between same and different	The ability to make fine discriminations among objects, events, and people.
Comparing and contrasting	The facility to see similarities and differences among objects, events and people.
Categorizing	The ability to group objects or events according to some preconceived classification scheme.
Classifying	The capability to extract relevant attributes of a group of objects, people, or phenomena that can be used to sort or organize the same.
Ranking, prioritizing, and sequencing	The facility to place objects, events, or phenomena in hierarchical order according to some quantifiable value.
Seeing relationships	The ability to see a connection or interaction between two or more objects or phenomena.
Finding patterns	The ability to perceive and extract a repeating scheme in objects or phenomena.
Determining cause and effect	The ability to see and extract the most powerful reasons or results for a given event or action.
Predicting	The ability to see patterns, compare and contrast, identify relationships, determine cause and effect, and anticipate likely events in the future.
Making analogies	The ability to identify a relationship between two familiar items or events and similar items and events in order to problem-solve or initiate creative productivity.

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Higher Order Thinking Skill Definition: Critical Thinking

Various thinking skills that are used to analyze and evaluate data and evidence in order to develop, judge the effectiveness of, or respond to an argument or position.

Thinking Skill	Definition
Inductive thinking	The ability to draw an inferential conclusion based on repeated observations that yield consistent but incomplete data.
Deductive thinking	The ability to draw a logical conclusion from premises.
Determining benefits and drawbacks	The ability to weight the advantages and disadvantages of a given idea or action.
Determining reality and fantasy	The ability to distinguish between that which is fanciful and that which is true or actual.
Identifying value statements	The ability to recognize statements that reflect appraisals of worth that cannot be supported through objective means.
Identifying points of view	The ability to recognize that individuals and groups may have values and beliefs that influence their perspective on issues.
Determining bias	The ability to ascertain information that is value laden.
Identifying fact and opinion	The ability to distinguish between statements that can be proven and statements that reflect personal beliefs or judgments.
Judging essential and incidental Evidence Identifying missing information	The ability to assess information and categorize it into useful and less useful categories. The ability to determine essential information that is not given or provided.
Judging the accuracy of information	The ability to determine the precision of evidence that is presented.
Judging the credibility of a source	The ability to assess whether the given information is believable, valid, and worthy to be considered.
Recognizing assumptions	The ability to distinguish between information that is commonly accepted as true and information that is conjecture.
Determining the strength of an argument	The ability to extract the reasons for an argument and evaluate the evidence as worthy.
Identifying exaggeration or overstatement of what is fact	The ability to extract statements that magnify.

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Higher Order Thinking Skill Definition: Creative Thinking

Various cognitive skills that are involved in creative production.

Thinking Skill	Definition
Fluency	The ability to generate numerous ideas or alternatives to solve a problem that requires a novel solution.
Flexibility	The ability to generate a wide variety of ideas to solve a problem that requires a novel solution.
Originality	The ability generate novel or unique alternatives to solve a problem that requires a novel solution.
Elaboration	The ability to create a large number of details that explain a novel solution to a problem.
Imagery	The ability to visualize a situation or object and to manipulate various alternatives for solving a problem without benefit of models, props, or physical objects.
Using idea/product modification techniques	The ability to use techniques such as substituting, combining, adapting, modifying, making larger or smaller, putting to new uses, eliminating, reversing, or rearranging parts to make a more useful whole.

Higher Order Thinking Skill Definition: Executive Processes

Various cognitive skills that are involved in organizing, synthesizing, generalizing, or applying knowledge.

Thinking Skill	Definition
Executive Processes	
Summarizing	The ability to reduce a written or oral narrative to its essential components.
Metacognition	The ability to consciously monitor, describe, and reflect upon one's thinking.
Setting goals	The ability to set desirable outcomes in any situation.
Formulating questions	The ability to develop relevant and precise queries related to any endeavor.

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Possible Strategies for Higher Order Thinking Skills

Anderson's Revised Taxonomy
Six Types of Socratic Questions
CAMPER - for the Internet
SCAMPER
Introduction to Socratic Questioning
The Williams Model
Random Picture Technique
Six Thinking Hats

Resources

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