

Analytical Thinking Skills: Cognitive processes that deepen understanding of knowledge and skills

THINKING SKILL	DESCRIPTION	21 st CENTURY SKILL/OBJECTIVE	DESCRIPTION
Identifies characteristics	Identifies distinct, specific, and relevant details that characterize an object, event or phenomenon	Digital-Age Literacy	Basic, scientific, economic and technological literacies; Visual and information literacies; Multicultural literacy and global awareness
Recognizes attributes	Discerns and labels general or common features of a set of objects		
Makes observations	Perceives and selects attributes of an object or experience		
Discriminates between same and different	Makes fine discriminations among objects, ideas, or events	Inventive Thinking	Adaptability, managing complexity, and self-direction; Curiosity, creativity, and risk-taking; Higher-order thinking and sound reasoning
Compares and contrasts	Sees similarities and differences among objects, events and people		
Categorizes	Groups objects or events according to some preconceived classification scheme		
Classifies	Extracts relevant attributes of a group of objects, people, or phenomena that can be used to sort or organize the same		
Ranks, prioritizes, and sequences	Places objects, events, or phenomena in hierarchical order according to some quantifiable value	High Productivity	Prioritizing, planning and managing for results; Effective use of real-world tools; Ability to produce relevant, high-quality products
Sees relationships	Sees a connection or interaction between two or more objects or phenomena		
Finds patterns	Perceives and extracts a repeating scheme in objects or phenomena		
Determines cause and effect	Sees and extracts the most powerful reasons, or results for a given event or action		
Predicts	Sees patterns, compares and contrasts, identifies relationships, determines cause and effect, and anticipates likely events in the future	Effective Communication	Teaming, collaboration, and interpersonal skills; Personal, social, and civic responsibility; Interactive communications
Makes analogies	Identifies a relationship between two familiar items or events and similar items and events in order to problem-solve or initiate creative productivity		

Critical Thinking Skills: 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	DESCRIPTION	21 st CENTURY SKILL/OBJECTIVE	DESCRIPTION
Engages in inductive thinking	Draws an inferential conclusion based on repeated observations that yield consistent but incomplete data	Digital-Age Literacy	Basic, scientific, economic and technological literacies; Visual and information literacies; Multicultural literacy and global awareness
Engages in deductive thinking	Draws a logical conclusion from premises		
Determines benefits and drawbacks	Weighs the advantages and disadvantages of a given idea or action		
Determines reality and fantasy	Distinguishes between that which is fanciful and that which is actual or true	Inventive Thinking	Adaptability, managing complexity, and self-direction; Curiosity, creativity, and risk-taking; Higher-order thinking and sound reasoning
Identifies value statements	Recognizes statements that reflect appraisals of worth that cannot be supported through objective means		
Identifies points of view	Recognizes that individuals and groups may have values and beliefs that influence their perspective on issues		
Determines bias	Ascertains information that is value laden		
Identifies fact and opinion	Distinguishes between statements that can be proven and statements that reflect personal beliefs or judgments	High Productivity	Prioritizing, planning and managing for results; Effective use of real-world tools; Ability to produce relevant, high-quality products
Judges essential and incidental evidence	Assesses information and categorizes it into useful and less useful categories		
Identifies missing information	Determines essential information that is not given or provided		
Judges the accuracy of information	Determines the precision of evidence that is presented		
Judges the credibility of a source	Assesses whether the given information is believable, valid, and worthy to be considered	Effective Communication	Teaming, collaboration, and interpersonal skills; Personal, social, and civic responsibility; Interactive communications
Recognizes assumptions	Distinguishes between information that is commonly accepted as true and information that is conjecture		
Determines the strength of an argument	Extracts the reasons from an argument and evaluates the evidence as worthy		
Identifies exaggeration	Extracts statements that magnify or overstate what is accepted as fact		

From: Burns, D. (1993). A six-phase model for the explicit teaching of thinking skills. University of Connecticut, National Research Center on the Gifted and Talented

From: North Central Regional Educational Laboratory (NCREL)

Executive Processes: Cognitive skills that are involved in organizing, synthesizing, generalizing, or applying knowledge

THINKING SKILL	DESCRIPTION	21 st CENTURY SKILL/OBJECTIVE	DESCRIPTION
Summarizes	Reduces a written or oral narrative to its essential components	Digital-Age Literacy	Basic, scientific, economic and technological literacies; Visual and information literacies; Multicultural literacy and global awareness
Uses metacognition	Consciously monitors, describes, and reflects upon one's thinking		
Sets goals	Sets desirable outcomes in any situation		
Formulates questions	Develops relevant and precise queries related to any endeavor	Inventive Thinking	Adaptability, managing complexity, and self-direction; Curiosity, creativity, and risk-taking; Higher-order thinking and sound reasoning
Develops hypotheses	Uses prior observations to develop a possible explanation for an apparent relationship between two variables		
Generalizes	Uses repeated, controlled, and accurate observations to develop a rule, principle, or formula that explains a number of situations	High Productivity	Prioritizing, planning and managing for results; Effective use of real-world tools; Ability to produce relevant, high-quality products
Problem solves	Describes a problem, identifies an ideal outcome and selects and tests possible strategies and solutions		
Makes decisions	Creates and uses appropriate criteria to select the best alternative in a given situation	Effective Communication	Teaming, collaboration, and interpersonal skills; Personal, social, and civic responsibility; Interactive communications
Plans	Develops a detailed and sequence series of actions to achieve an end		

Creative Thinking Skills: Engages in Creative Production

THINKING SKILL	DESCRIPTION	21 st CENTURY SKILL/OBJECTIVE	DESCRIPTION
Demonstrates Fluency	Generates numerous ideas or alternatives to solve a problem that requires a novel solution	Digital-Age Literacy	Basic, scientific, economic and technological literacies; Visual and information literacies; Multicultural literacy and global awareness
Demonstrates Flexibility	Generates a wide variety of ideas to solve a problem that requires a novel solution		
Demonstrates Originality	Generates novel and unique alternatives to solve a problem that requires a novel solution		
Elaborates	Creates a large number of details that explain a novel solution to a problem	Inventive Thinking	Adaptability, managing complexity, and self-direction; Curiosity, creativity, and risk-taking; Higher-order thinking and sound reasoning
Demonstrates Imagery	Visualizes a situation or object and manipulates various alternatives for solving a problem without benefit of models, props, or physical objects		
Uses idea/product modification techniques	Uses techniques such as substituting, combining, adapting, modifying, making larger or smaller, putting to new uses, eliminates, reverses or rearranges parts to make a more useful whole	High Productivity	Prioritizing, planning and managing for results; Effective use of real-world tools; Ability to produce relevant, high-quality products
Lists attributes	Identifies appropriate improvements to a process or product by systematically considering modification to the original product's attributes		
Brainstorms	Works with others to withhold judgment while identifying varied, innovative and numerous alternatives for solving a problem	Effective Communication	Teaming, collaboration, and interpersonal skills; Personal, social, and civic responsibility; Interactive communications
Engages in creative problem solving	Identifies, researches and plans to solve a problem that requires a novel, systematic solution		