


C | CT Vocabulary and Progression Chart

	Definition	Grades PK to 2	Grades 3 to 5	Grades 6 to 8	Grades 9 to 12
Data Collection	The process of gathering appropriate information	Conduct an experiment to find the fastest toy car down an incline and record the order of cars across the finish line in a chart.	Review examples of writing to identify strategies for writing an essay.	Design survey questions to gather appropriate information to answer questions (e.g., asking fellow students if they were absent from school in the past month and whether they were suffering from the flu).	Students develop a survey and collect both qualitative and quantitative data to answer the question: "Has global warming changed the quality of life?"
Data Analysis	Making sense of data, finding patterns, and drawing conclusions	Make generalizations about the order of finishing a toy car race based on the characteristics of the car with a focus on weight. Test conclusions by adding weight to cars to change results.	Categorize strong and weak examples of writing samples to develop a rubric.	Produce and evaluate charts from data generated by a digital probe and describe trends, patterns, variations, and/or outliers represented in the chart.	Use appropriate statistical methods that will best test the hypothesis: "Global warming has not changed the quality of life." 
Data Representation	Depicting and organizing data in appropriate graphs, charts, words, or images	Create a chart or a line drawing that shows how the speed of a toy car changes when its weight is changed.	Match each writing sample to the rubric and create a chart showing which example best fits in each category of the rubric.	Plot data using different charting formats and select the most effective visual representation strategy.	Groups of students represent the same data in different ways based on a position relating to the question: "Has global warming changed the quality of life?" Different representations may result in varying conclusions.
Problem Decomposition	Breaking down tasks into smaller, manageable parts	Create directions to a location in the school by breaking the directions down into smaller geographical zones. Join the sections of directions together into a whole.	Develop a plan to make the school "green." Separate strategies such as recycling paper and cans, reducing use of electricity, and composting food waste.	In planning the publication of a monthly newsletter, identify roles, responsibilities, timeline, and resources needed to complete the project.	Consider the large-scale problem: "What does it take to become a rock star?" Break it into smaller parts. Discuss what variables are within a student's control and what variables are determined by outside factors.
Abstraction	Reducing complexity to define main idea 	With many sizes and colors of three-sided shapes, the abstract is a triangle. 	Hear a story, reflect on main items, and determine an appropriate title.	After studying a period in history, identify symbols, themes, events, key people, and values that are most representative of the time period (e.g., coat of arms).	Choose a period in politics that was most like the current one by analyzing the essential characteristics of the current period.

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Algorithms & Procedures	Series of ordered steps taken to solve a problem or achieve some end.	Create a set of directions from the school to the major landmarks in the neighborhood.	Design a board game and write instructions to play. Test instructions on peers trying to play the game. Refine instructions with feedback from peers who played the game.	Program a robot to find its way out of a maze such that given any maze, the robot could exit successfully within a specified time period.	Discuss the decision-making process for choosing a college, then create an algorithm that describes that process. The algorithm will be able to handle unknown variables, such as where friends are attending, availability of financial aid, and admission success, to come to an unambiguous decision.
Automation	Having computers or machines do repetitive or tedious tasks.	Converse with a classroom in another state or country to learn about their culture using Internet-based tools to replace writing letters.	Investigate what automation is through real-world examples, like barcodes, teller machines, and library bar codes.	Program a sensor to collect pollution data (set timers with probes) and then use a computer program to sort the readings from maximum to minimum CO ₂ levels.	Debate the merits of learning skills and information that are rarely necessary today because of automation. These skills might include long division, deriving square roots, spelling, statistical formulas, memorizing historic dates, etc.
Simulation	Representation or model of a process. Simulation also involves running experiments using models.	After a set of directions has been created, act out the steps to be sure they are correct.	Create an animation to demonstrate the understanding of a process.	Use a model of a simple ecosystem to conduct experiments that answer what happens to the ecosystem if some percentage of the producers die. The user controls the percentage that dies off.	Create a spreadsheet to simulate the "Birthday Problem" (How many people must be in a room for there to be at least a 50% chance that at least two have the same birthday?). Use the same model to answer the question for three people having the same birthday.
Parallelization	Organize resources to simultaneously carry out tasks to reach a common goal.	Based on a set of criteria, break the class into two groups. Have one group read aloud while the other group provides humming background music. The goal is reached, but the whole is better than the individual parts.	Teachers facilitate in planning team project timelines, roles, and assignments and working together to complete components (how do we break up the tasks, what tasks have to be done sequentially and others simultaneously, check ins, meeting deadlines?).	Student teams plan production of a video, including script, props, and roles of the team in producing the video. Identify tasks that will be carried out simultaneously, and milestones where they check in, and plan, and put things together.	Describe the sequence of activities by each of the armies leading to the Battle of Waterloo. Include both physical activities (e.g., recruit troops) and intellectual activities (e.g., pick troop positions).

