The purpose of this guide is to help you choose the routine that most meets your students’ needs based on where they need support. This guide provides a brief description of each routine. For additional information, see <http://sim.kucrl.org/products>. Detailed information can be found in each routine’s guidebook. Routines are organized into categories based on purpose for use.

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| **CER** | **Device** | **Purpose/ When Used** | **Impact** |
| Concept Comparison Routine | Comparison Table  \*format may vary slightly based on the number of concepts to be compared | To analyze the characteristics of two or more important and related concepts, categorize the like and unlike characteristics, and develop a summary. To support comparison and contrast in applied settings.  After instruction on similar but important concepts. | Students without disabilities correctly answered an average of 23.8% more items correctly on tests and students with disabilities answered an average of 14.8 % more items correctly on tests.\*\* |
| Cause-and-Effect Routine | Cause-and-Effect Guide | To help students engage in thinking about a relationship in which one thing either leads to another or results from another  Before a unit test or during instruction throughout the unit. | Students in the experimental group significantly outperformed students in the control group and were better able to learn the strategic steps designed to analyze a cause-and-effect relationship, apply the steps as they analyzed a cause-and-effect relationship, and take better notes.\*\* |
| Question Exploration Routine | Question Exploration Guide  \*format may vary slightly (landscape vs. portrait) | To unpack critical questions of the course, performance tasks, or higher order questions with students and to support development of through written answers to complex questions.  Before a unit test or during instruction throughout the unit. | Students who were taught a lesson using QER earned an average test score of 70 percent, while traditionally taught students scored an average of 48 percent.\*\* |
| Scientific Argumentation Routine | Scientific Argumentation Guide  Cola 2015 AEG Cola 1.19.15docx copy 4.pdf | To support students in accepting, rejecting or withholding judgment about (arguing on) a claim based on the scientific evidence provided.  When students are reviewing evidence as part of instruction such as in preparation for writing or discussing the results of an experiment. | Students instructed with the Scientific Argumentation Routine performed significantly better (effect size of 1.7) when asked to identify the relevant information on and argue for or against a claim.\*\* |
| Teaching Cross-Curricular  Argumentation | Cross-Curricular Argumentation Guide  Version A or B to differentiate | To support students in clarifying, analyzing, and evaluating arguments around a claim, then accepting, rejecting or withholding judgment based on the evidence and reasoning for it.  When students are reviewing evidence as part of instruction such as in preparation for writing or discussion. | Argumentation reasoning components and procedures of the routine have an extensive evidence and research base including published research on specific instructional graphics and procedures e.g., Scientific Argumentation (Bulgren, Ellis & Marquis, 2014), as well as overviews of a wide range of research on argumentation e.g., Driver, R., Newton, P., & Osborne, D. (2000);  Duschl, R.A., & Osborne, J. (2002); Linn, M.C., Clark, D., & Slotta, J.D. (2003). |
| Teaching Decision Making | Decision Making Guide | To support students in exploring, analyzing and evaluating an issue with multiple viewpoints, then choosing and defending an option.  In preparation for discussing or writing about the issue and the options. | Students in the experimental group significantly outperformed the control group in analyzing a content-based issue, applying the steps for a decision-making challenge, and improving critical thinking skills.\*\* |

A screenshot of a cell phone

Description automatically generated