PROBLEM SOLVING VALUE RUBRIC

(BVU adaptation of AAC&U VALUE Rubric)

The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can by shared nationally through a common dialog and understanding of student success.

Definition

Problem solving is the process of designing, evaluating and implementing a strategy to answer an open-ended question or achieve a desired goal.

Framing Language

Problem-solving covers a wide range of activities that may vary significantly across disciplines. Activities that encompass problem-solving by students may involve problems that range from well-defined to ambiguous in a simulated or laboratory context, or in real-world settings. This rubric distills the common elements of most problem-solving contexts and is designed to function across all disciplines. It is broad-based enough to allow for individual differences among learners, yet is concise and descriptive in its scope to determine how well students have maximized their respective abilities to practice thinking through problems in order to reach solutions.

This rubric is designed to measure the quality of a **process**, rather than the quality of an **end-product**. As a result, work samples or collections of work will need to include some evidence of the individual's thinking about a problem-solving task (e.g., reflections on the process from problem to proposed solution; steps in a problem-based learning assignment; record of think-aloud protocol while solving a problem). The final product of an assignment that required problem resolution is insufficient without insight into the student's problem-solving process. Because the focus is on institutional level assessment, scoring team projects, such as those developed in capstone courses, may be appropriate as well.

Glossary

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- Contextual Factors: Constraints (such as limits on cost), resources, attitudes (such as biases) and desired additional knowledge which affect how the problem can be best solved in the real world or simulated setting.
- Critique: Involves analysis and synthesis of a full range of perspectives.
- Feasible: Workable, in consideration of time-frame, functionality, available resources, necessary buy-in, and limits of the assignment or task.
- "Off the shelf"solution: A simplistic option that is familiar from everyday experience but not tailored to the problem at hand (e.g. holding a bake sale to "save" an underfunded public library).
- Solution: An appropriate response to a challenge or a problem.
- Strategy: A plan of action or an approach designed to arrive at a solution. (If the problem is a river that needs to be crossed, there could be a construction-oriented, cooperative (build a bridge with your community) approach and a personally oriented, physical (swim across alone) approach. An approach that partially applies would be a personal, physical approach for someone who doesn't know how to swim.
- Support: Specific rationale, evidence, etc. for solution or selection of solution.

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Evaluators are encouraged to assign a zero to any work or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	**Milestones** 3	 2	**Benchmark** 1
Identify Problem	Explains the problem with insight, detail and consideration of all relevant contextual factors.	Explains the problem with insight, detail and consideration of most relevant contextual factors.	Explains the problem with some insight or detail and some consideration of the relevant contextual factors.	Explanation of the problem lacks detail and/or consideration of relevant contextual factors.
Identify Strategies	Identifies potential strategies or a single correct strategy that indicates a deep comprehension of the problem and all of its contextual factors.	Identifies potential strategies or single correct strategy that indicates comprehension of the problem and some contextual factors.	Identifies potential strategies that do not address relevant contextual factors of the problem or that are incorrect for this problem.	Identifies strategies that are out of context or difficult to evaluate because they are vague or only indirectly addresses the problem.
Evaluate Solutions	Evaluation of solutions include thorough reviews of logic/reasoning, feasibility, and potential impacts/results.	Evaluation of solutions include some review of logic/reasoning, feasibility and/or potential impacts/results.	Evaluations of solutions are brief and lack consideration of logic/reasoning, feasibility or potential impacts/results.	Evaluation of solutions are superficial (for example, contain only cursory, surface level consideration of logic/reasoning, feasibility, or potential impacts/results.
Implement Solution	Implements the solution in a manner that addresses thoroughly and deeply multiple contextual factors of the problem.	Implements the solution in a manner that addresses multiple contextual factors of the problem in a surface manner.	Implements the solution in a manner that addresses the problem but ignores relevant contextual factors.	Implements the solution in a manner that does not directly address the problem.
Evaluate Outcomes	Reviews results relative to the problem including thorough, specific analysis of the accuracy and effectiveness of the solution and, if appropriate, any need for further work.	Reviews results relative to the problem including analysis of the accuracy and effectiveness of the solution and, if appropriate, any need for further work.	Reviews results relative to the problem including minimal analysis of the accuracy and effectiveness of the solution or little, if any, consideration, if appropriate, of need for further work.	Reviews results superficially including little, if any, analysis of the accuracy and effectiveness of the solution or consideration, if appropriate, of need for further work.