

Cognition

Learning Objectives

- Identifies and evaluates factual evidence in problem analysis and formulates logical conclusions (Inquiry and analysis)
- Appropriately calculates, uses and represents quantitative information (Quantitative literacy)
- Identifies and examines ethical issues and applies appropriate principles and concepts to address them (Ethical issues)
- Designs solutions by integrating information and concepts from different subject areas and contexts (Transfer)
- Pursues learning independently from the demands of classes and reflects upon the learning (Life-long learning)

Glossary

Prior learning – past experiences both inside and outside the classroom.

Cross-relationships among the issues - obvious or subtle connections between/among the sub-parts or situational conditions of the issues present in a scenario (e.g., relationship of production of corn as part of climate change issue).

Complex, multi-layered (gray) context - The sub-parts or situational conditions of a scenario that bring two or more ethical dilemmas (issues) into the mix/problem/context/ for student's identification.

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

	Beginning/Unsatisfactory	Developing/Satisfactory	Proficient	Exemplary/Advanced
Inquiry and analysis	Information is taken from source(s) without any interpretation /evaluation. Viewpoints of experts are taken as fact, without question. Conclusion is inconsistently tied to some of the information discussed; related outcomes are oversimplified.	Information is taken from source(s) with some interpretation /evaluation, but not enough to develop a coherent analysis or synthesis. Viewpoints of experts are taken as mostly fact, with little questioning. Conclusion is logically tied to information; some related	Information is taken from source(s) with enough interpretation /evaluation to develop a coherent analysis or synthesis. Viewpoints of experts are subject to questioning. Conclusion is logically tied to a range of information, including opposing viewpoints;	Information is taken from source(s) with enough interpretation /evaluation to develop a comprehensive analysis or synthesis. Viewpoints of experts are questioned thoroughly. Conclusions and related outcomes are logical and reflect student's informed

		outcomes are identified clearly.	related outcomes are identified clearly.	evaluation and ability to place evidence and perspectives discussed in priority order.
Quantitative literacy	Calculations are attempted but are both unsuccessful and less than comprehensive. Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. Representations of findings are absent or inappropriate for the problem.	Calculations attempted only represent a portion of those required to comprehensively solve the problem. Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. Presents findings in a less than optimal manner or format.	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Provides accurate explanations of information presented in mathematical forms. Presents findings in an effective manner and in an appropriate format.	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented clearly and concisely. Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. Presents findings in an effective and compelling manner and in an appropriate format.
Ethical issues	Recognizes basic and obvious ethical issues but fails to grasp complexity or interrelationships. Applies ethical perspectives / concepts to an ethical question with support but is unable to apply ethical perspectives /concepts independently.	Recognizes basic and obvious ethical issues and incompletely grasps the complexities or interrelationships among the issues. Applies ethical perspectives / concepts to an ethical question, independently (to a new example) and the application is inaccurate.	Recognizes ethical issues when issues are presented in a complex, multilayered context or can grasp cross-relationships among the issues. Independently applies ethical perspectives / concepts to an ethical question, accurately, but does not consider the specific implications of the application.	Recognizes ethical issues when presented in a complex, multilayered context and can recognize cross-relationships among the issues. Independently applies ethical perspectives / concepts to an ethical question, accurately, and is able to consider full implications of the application.
Transfer between areas	Relies on a single area or context of information to	Recognizes the existence of multiple contexts and	Integrates information from more than one	Integrates information from multiple appropriate

	solve a problem, even if the solution is functional.	areas of information, but depends primarily on one in effecting a functional solution to a problem.	appropriate context or area to develop an effective solution to a problem.	contexts and areas to formulate thorough and perceptive solutions to problems.
Life-long learning	Reviews prior learning at a surface level, without revealing clarified meaning or indicating a broader perspective about educational or life events.	Reviews prior learning with some depth, revealing slightly clarified meanings or indicating a somewhat broader perspectives about educational or life events.	Reviews prior learning in depth, revealing fully clarified meanings or indicating broader perspectives about educational or life events.	Reviews prior learning in depth to reveal significantly changed perspectives about educational and life experiences, which provide foundation for expanded knowledge, growth, and maturity over time.

Rubric evaluation criteria were adapted from VALUE rubrics published by the Association of American Colleges and Universities