Problem Solving through Inquiry and Data Analysis

	Proficient 3	**Sufficient** 2	**Deficient** 1	**No attempt 0**
Research question	Identifies a creative, focused, and manageable topic that addresses potentially significant yet previously less-explored aspects of the topic.	Identifies a focused and manageable/doable topic that appropriately addresses relevant aspects of the topic.	Identifies a topic that is far too general and wide-ranging as to be manageable and doable.	No attempt to identify a topic
Integrates information from outside sources	Synthesizes in-depth information from relevant sources representing various points of view/approaches.	Presents information from relevant sources representing limited points of view/approaches.	Presents information from irrelevant sources representing limited points of view/approaches.	No resources provided when they were clearly expected in the assignment
Uses appropriate methodology to collect the data	All elements of the methodology or theoretical framework are skillfully developed and described. Appropriate methodology or theoretical frameworks may be synthesized from across disciplines or from relevant subdisciplines.	Critical elements of the methodology or theoretical framework are appropriately developed and described, however, more subtle elements are ignored or unaccounted for.	Description of inquiry design demonstrates a misunderstanding of the methodology or theoretical framework.	No methods described
Creates figures, tables and/or statistics to summarize data.	Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding.	Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate.	Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate.	No attempt

Data description: Explains patterns from observations or data presented as graphs, tables, equations, etc.	Provides thorough and accurate descriptions of patterns or trends in data. Skillfully uses numerical information in those descriptions. For example, differences in means are quantified, with units. Or the slope of a line is used to describe a pattern in a graph.	Provides simple and mostly accurate descriptions of patterns or trends in data.. A simple description would be qualitative but not quantitative. Or there are occasional, minor errors in computations, units, etc.	Draws fundamentally incorrect conclusions about what the data mean.	No attempt
Judgments/ Conclusions: Draws appropriate conclusions based on the quantitative analysis of data	Uses the quantitative analysis of data as the basis for thoughtful judgments, drawing insightful, carefully qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work. No attempts to qualify the conclusions, OR minor errors exist in the conclusions.	Conclusions are not appropriate or are clearly incorrect for the data.	May restate a pattern in data/observations, but no attempt is made to draw any conclusions or judgments from the patterns.
Identifies pros and cons of argument(s), including biases and/or limitations.	Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions.	Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate.	Attempts, but fails to accurately describe assumptions as sources of bias or limitations.	
Applies content knowledge, methods and/or results to new situations.	Successfully applies content knowledge by insightfully discussing implications of content knowledge, methods and/or results.	Presents basic, relevant implications of content knowledge, methods and/or results.	Any implications are irrelevant and/or unsupported.	No attempt to discuss the implications of this study.