

Problem Solving Assessment for the 2015 LA&S Review

Summary:

Beginning in 2009 Problem Solving in Math and Science was assessed with a rubric that contained 13 different criteria, and asked faculty to rate student work as proficient, sufficient or deficient for each criterion. In Spring 2009 and 2010 as well as Fall of 2010, exam questions from 1000 level math and science courses and one 200 level science course were assessed using this rubric.

In the spring of 2011 Fitchburg State University revamped the Problem Solving rubric, creating two separate rubrics, each containing some criteria from the original rubric, leaving off others and providing descriptive language for each criterion at each level of proficiency drawn in part from the AAC&U LEAP VALUE rubrics. Artifacts of student work from Mathematics were now scored on a "Problem Solving through Quantitative Literacy rubric with only 6 criteria. The second rubric, Problem Solving through Inquiry and Data Analysis, was designed for use with artifacts from science courses with 7 different criteria. These rubrics were used to generate data from Fall 2011, Spring 2012, Fall 2012, Spring 2013, and Fall 2013. Artifacts from mathematics courses continued to be drawn from exams or quizzes in 1000 level courses. On the other hand, artifacts from science courses included a number of lab reports and student projects from 1000 level courses and one 2000 level course.

The changes to the rubric were driven by a combination of the data being generated and the priorities identified by faculty members. The initial data clearly showed that math exam questions and science exam questions tended to address different criteria on the initial rubric suggesting the need for two different rubrics. As the new rubrics were developed the rubric for math continued to focus on correct and complete calculations as well as appropriate use of formulas, which had been consistently assessed in math artifacts. Because these had not been consistently assessed in the science artifacts they were removed in favor of criteria on research topic selection, integrating outside sources, and analyzing pros and cons of an argument. However, both rubrics retained criteria related to creating figures, tables or statistics from data, explaining patterns in the data, using the data to support arguments and applying the content to new situations.

Analysis of the data from the new rubrics reveals that there continues to be variation for math assessments in terms of which criteria can be assessed and how students are scored as performing on criteria across assessments. This may be caused in part by the ongoing reliance on exam questions for the math assessments. On the other hand, particularly when lab reports are used in the sciences, there is greater consistency in the range of criteria that can be assessed and there is consistent data suggesting students struggle more with describing patterns and supporting arguments with numerical data than they do with representing the data as figures, tables or statistics. To the extent that faculty continue to value the criteria as laid out in the rubrics, there appears to be a need to focus on student projects including lab reports as a means to both teach students these skills and assess their progress in these skills, and to provide an increased emphasis in our courses on describing patterns in data and supporting arguments with data.

Analysis of Data:

In Spring 2009 98 artifacts of student work were collected with 49 coming from 3 1000 level math courses and another 49 coming from 3 100 level Biology courses and science and Chem 2400. Faculty scorers judged each artifact as proficient, sufficient, deficient or not applicable (no response) for each criterion. Results were not disaggregated by course or discipline, but the number of artifacts deemed not applicable for each criterion was disaggregated by discipline (Table 1). Students were most frequently scored as deficient in the areas of giving explanations, defending arguments, explaining patterns or trends, and applying content to new situations. Other than giving explanations, each of these criteria was more frequently represented as not applicable in the math assessments than in the science assessments. The science assessments were less likely to be able to be assessed for whether the work was correct and whether formulas were used properly. Neither science nor math work was able to be assessed for using appropriate methodology, integrating information from outside sources, identifying the pros and cons of arguments, or analyzing outcomes from multiple perspectives.

Table 1
Problem Solving
Spring 2009

Criteria	Proficient	Sufficient	Deficient	Science No Response	Math No Response
Work is correct	10%	66%	24%	75%	0%
Work is organized	21%	77%	2%	8%	0%
Work is complete	24%	67%	9%	2%	0%
Uses formulas properly	64%	25%	11%	75%	35%
Creates graphs, tables, and/or statistics	-	-	-	100%	100%
Gives clear, precise and relevant explanations, identifies causes	11%	53%	36%	27%	0%
Uses appropriate methodology	-	-	-	100%	100%
Integrates information from outside sources	-	-	-	100%	100%
Uses numerical data to defend argument(s)	16%	53%	31%	2%	35%
Explains patterns or trends in observations, data, graphs or tables	13%	43%	44%	27%	65%
Identifies pros and cons of argument(s), including biases and/or limitations	-	-	-	100%	100%
Analyzes outcomes from multiple perspectives	-	-	-	100%	100%
Applies content knowledge, methods and/or results to new situations	23%	38%	39%	27%	67%

The data for the spring 2010 Fitchburg State Problem Solving assessment were based on 21 students' exam questions in Introduction to Functions (Table 2). Each artifact was assessed by only one faculty member. As in the prior mathematics assessment, it proved difficult to assess the work for creating graphs, tables or

statistics, using appropriate methodology, integrating information from outside sources, explaining patterns or trends, identifying pros and cons, analyzing from multiple perspectives, and applying content to new situations. This particular artifact also was not assessed for the organization of the work. Students performed better in using numerical data to defend arguments in this assessment both in terms of its ability to be assessed for math and a decrease in deficient scores. They also performed somewhat better on giving explanations, but performed worse on using formulas properly.

Table 2
Problem Solving
Spring 2010

Criteria	Proficient	Sufficient	Deficient	No Response	Mean
Work is correct	14%	62%	24%	0%	1.90
Work is organized	-	-	-	100%	NA
Work is complete	29%	57%	14%	0%	2.14
Uses formulas properly	19%	57%	24%	0%	1.95
Creates graphs, tables, and/or statistics	-	-	-	100%	NA
Gives clear, precise and relevant explanations, identifies causes	19%	57%	24%	0%	1.95
Uses appropriate methodology	-	-	-	100%	NA
Integrates information from outside sources	-	-	-	100%	NA
Uses numerical data to defend argument(s)	57%	29%	14%	0%	2.43
Explains patterns or trends in observations, data, graphs or tables	-	-	-	100%	NA
Identifies pros and cons of argument(s), including biases and/or limitations	-	-	-	100%	NA
Analyzes outcomes from multiple perspectives	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations	-	-	-	100%	NA

In fall 2010 math problem solving artifacts were collected in the form of 32 students' exam word problems from Introduction to Functions (Table 3). Each artifact was assessed by two different faculty members. Once again the math artifact could not be assessed for creating graphs, tables or statistics, using appropriate methodology, integrating information from outside sources, explaining patterns or trends, identifying pros and cons, analyzing from multiple perspectives, and applying content to new situations. These artifacts were also not assessed for whether the work was complete. Students did not perform as well in this assessment on using numerical data to defend arguments, performing similarly to the 2009 assessment, and students performed even worse on using formulas properly, at least in terms of an increase in deficient ratings. Finally, students performed very poorly on whether the work was correct. However, it is impossible

to separate out differences in student performance from differences in the challenge level of the question posed.

Table 3
Problem Solving
Fall 2010 - Math

Criteria	Proficient	Sufficient	Deficient	No Response	Mean
Work is correct	28%	19%	53%	0%	1.75
Work is organized	48%	28%	24%	9%	2.24
Work is complete	-	-	-	100%	NA
Uses formulas properly	32%	34%	34%	0%	1.97
Creates graphs, tables, and/or statistics	-	-	-	100%	NA
Gives clear, precise and relevant explanations, identifies causes	40%	40%	20%	6%	2.20
Uses appropriate methodology	-	-	-	100%	NA
Integrates information from outside sources	-	-	-	100%	NA
Uses numerical data to defend argument(s)	47%	20%	33%	6%	2.13
Explains patterns or trends in observations, data, graphs or tables	-	-	-	100%	NA
Identifies pros and cons of argument(s), including biases and/or limitations	-	-	-	100%	NA
Analyzes outcomes from multiple perspectives	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations	-	-	-	100%	NA

For the fall of 2010 problem solving artifacts were also collected from a General Biology II course (Table 4). Each of the 23 student quiz problem responses was scored by two faculty members. As in the 2009 science assessment, the artifacts could not be scored for whether the work was correct, uses formulas properly, creates, graphs, tables or statistics, uses appropriate methodology, integrates information from outside sources, identifies pros and cons of arguments and analyzes outcomes from multiple perspectives. The artifacts were also not scored for whether the work was organized. Students performed most poorly in terms of giving explanations, explaining patterns or trends, and applying content knowledge to new situations, in each case exhibiting more scores of deficient than in prior assessments. The only two criteria that were consistently assessable for both math and science artifacts were gives explanations and uses numerical data to defend arguments. Whether the work was correct and proper use of formulas were only consistently assessed in the math artifacts, while explaining patterns or trends and applying content to new situations were only consistently assessed in the science artifacts. Creates graphs, tables or statistics, uses appropriate methodology, integrates information from outside sources, identifies pros and cons of argument, and analyzes from multiple perspectives were never assessed.

Table 4
Problem Solving
Fall 2010 - Biology

Criteria	Proficient	Sufficient	Deficient	No Response	Mean
Work is correct	-	-	-	100%	NA
Work is organized	-	-	-	100%	NA
Work is complete	17%	61%	22%	0%	1.96
Uses formulas properly	-	-	-	100%	NA
Creates graphs, tables, and/or statistics	-	-	-	100%	NA
Gives clear, precise and relevant explanations, identifies causes	26%	17%	57%	0%	1.70
Uses appropriate methodology	-	-	-	100%	NA
Integrates information from outside sources	-	-	-	100%	NA
Uses numerical data to defend argument(s)	17%	30%	52%	0%	1.65
Explains patterns or trends in observations, data, graphs or tables	26%	44%	30%	0%	1.96
Identifies pros and cons of argument(s), including biases and/or limitations	-	-	-	100%	NA
Analyzes outcomes from multiple perspectives	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations	17%	39%	44%	0%	1.74

Based on the challenges involved in using the 13 criteria rubric and the apparent differences in its applicability to math and science coursework, the LA&S council developed two separate rubrics. For the math rubric named Problem Solving through Quantitative Literacy they merged the work is correct and work is complete criteria into a single criterion and removed the work is organized criterion. The uses formulas and gives explanations criteria that had been consistently assessable for math artifacts were also retained. The uses appropriate methodology, integrates information from outside sources, identifies pros and cons of argument(s), and analyzes outcomes from multiple perspectives that had never been assessed were dropped from the rubric. While math artifacts had yet to yield any data on creates graphs, tables or statistics, explains patterns or trends, and applies content to new situations, those 3 criteria were kept in the rubric as they were seen as important elements of quantitative literacy.

The science rubric named Problem Solving through Inquiry and Data analysis was designed to share the creates figures, tables or statistics, explains patterns or trends, uses numerical data to defend arguments and applies content to new situations with the Problem Solving through Quantitative Literacy rubric. However, it excluded the work is correct and complete and uses formulas properly criteria as those had never been assessed for science artifacts. It also excluded the gives clear explanations criterion in favor of identifies pros and cons of argument(s), because while the latter had not been assessed, it was deemed important that students be asked to weigh the strengths and weaknesses of the arguments they generate using

scientific data. A new criterion was added on topic selection, to assess the extent to which students could formulate research questions. The results from the subsequent years of analysis using the two separate rubrics are provided below:

Problem Solving through Quantitative Literacy

For the Fall 2011 assessment, mathematics artifacts were collected from the course Informal Mathematical Modeling. Artifacts from 21 students' take home quizzes were each assessed by two faculty using the new Problem Solving through Quantitative Literacy rubric (Table 5). Students performed most poorly in creating figures (which was required in the problem) and even worse in explaining patterns or trends. The artifacts could not be assessed for giving clear explanations or applying content to new situations as they were not asked to do so in the question. Students scored well overall on the accuracy of their work and their use of formulas for the problem which involved using calculations with fractions to solve a word problem.

Table 5
Problem Solving through Quantitative Literacy
Fall 2011 (n=21, each reviewed by 2 faculty)

Problem Solving through Quantitative Literacy	Proficient	Sufficient	Deficient	No Response	Mean
Work is correct and complete.	61%	36%	3%	7%	2.6
Uses formulas properly, where and when appropriate.	68%	25%	7%	2%	2.6
Creates figures, tables and/or statistics to summarize data.	43%	36%	21%	0%	2.2
Explains patterns or trends in observations, data, figures and/or tables.	7%	71%	22%	0%	1.9
Gives clear, precise and relevant explanations	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations.	-	-	-	100%	NA

For the Spring 12 assessment, mathematics artifacts were collected from the course Applied Statistics. Artifacts from 25 students' exam questions were each assessed by two faculty members (Table 6). Students performed more poorly on whether the work was correct and most poorly on using formulas properly. The problem involved using a formula to calculate the 90% confidence interval. While this is a statistic, they were not calculating it from original data but only a mean, sample size and standard deviation provided, so scorers did not feel it could be assessed for creating figures tables or statistics, explains patterns or trends, or applies content to new situations. As both this and the prior semester's assessments were from 1000 level math courses, the difference in the scores for accuracy of the work and the use of formulas is striking. However, it should be noted that while the word problem from informal mathematical modeling was challenging it represents the type of work students might have encountered previously in high school, while

students are unlikely to have learned how to calculate confidence intervals prior to applied statistics. It may prove difficult to compare results for the accuracy of the work and use of formulas across different assessments given that the complexity and novelty of this work may vary from assignment to assignment.

Table 6
Problem Solving through Quantitative Literacy
Spring 2012 (n=25, each reviewed by 2 faculty)

Problem Solving through Quantitative Literacy	Proficient	Sufficient	Deficient	No Response	Mean
Work is correct and complete.	30%	38%	32%	0%	2.0
Uses formulas properly, where and when appropriate.	22%	0%	78%	0%	1.4
Creates figures, tables and/or statistics to summarize data.	-	-	-	100%	NA
Explains patterns or trends in observations, data, figures and/or tables.	-	-	-	100%	NA
Gives clear, precise and relevant explanations	20%	52%	28%	0%	1.9
Applies content knowledge, methods and/or results to new situations.	-	-	-	100%	NA

For the fall 2012 assessment 33 artifacts drawn from individual student exams in the course Informal Mathematical Modeling were each assessed by two faculty members (Table 7). Students performed the most poorly in using formulas properly, but better than they had in the spring 12 assessment. In this case students were asked to interpret a graph of speed of a car over time and tell a story of what was happening to the car. The formulas involved were open to the student to select. They could calculate acceleration for the car or simply calculate differences in speed. Given that there was no one correct “story” scorers elected not to rate the work for being correct and complete. There was also no requirement to create figures, tables and/or statistics to summarize data, and no requirement to apply the content knowledge to a new situation. Students performed fairly well in explaining the pattern or trend, better than they had in the prior Informal Mathematical Modeling. However, in that case students were explaining patterns in a figure they created themselves, while this assessment involved a figure provided for them. Therefore, it is once again worth considering whether the complexity and novelty of that task assigned to students may impact the scores in ways that make it difficult to detect patterns across years. The one criterion on which results were most consistent with prior years was on giving explanations with only 23% of students scored as deficient.

Table 7
Problem Solving through Quantitative Reasoning
Fall 2012 (n=33, each reviewed by 2 faculty)

Problem Solving through Quantitative Literacy	Proficient	Sufficient	Deficient	No Response	Mean
Work is correct and complete.	-	-	-	100%	NA
Uses formulas properly, where and when appropriate.	38%	22%	40%	2%	2.0
Creates figures, tables and/or statistics to summarize data.	-	-	-	100%	NA
Explains patterns or trends in observations, data, figures and/or tables.	73%	7%	20%	0%	2.5
Gives clear, precise and relevant explanations	26%	51%	23%	0%	2.0
Applies content knowledge, methods and/or results to new situations.	-	-	-	100%	NA

After several applications of the new rubric there were still no artifacts of student work in mathematics in which the students were expected to apply the content to new situations. There was also a great deal of variability in whether they were expected to create figures, tables or statistics, explain patterns or trends, and give clear explanations. These findings along with the inconsistency seen in the scores that might potentially be attributed to variation in problem complexity and novelty suggest that exam questions may not be the most appropriate way to assess the criteria in the Problem Solving through Quantitative Reasoning rubric. Additional assessments of exam questions, including one from a Physics exam, both using this rubric and in a collaborative project with MWCC using a different variation on the AAC&U LEAP VALUE rubric for Quantitative Fluency yielded similar issues (Berg et al. 2014). Subsequent efforts to assess Problem Solving through Quantitative Fluency may need to focus on more substantive student projects, rather than exam questions, which may further require an analysis of where such projects occur in the LA&S curriculum

Problem Solving through Inquiry and Analysis

For the Fall 2011 assessment in science, 17 student lab reports from Oceanography were assessed by two faculty members with the Problem Solving through Inquiry and Analysis rubric (Table 8). Students were the weakest in terms of using numerical data to defend arguments. The assignment did not require students to select their own research topic, integrate information from outside sources, identify the pros and cons of their conclusions or apply the content to new situations. However, unlike prior science assessments based on exam questions, these lab reports insured that students were required to use appropriate methodology to collect data and create figures, tables and/or statistics to summarize data.

Table 8
Problem Solving through Inquiry and Data Analysis
Fall 2011 (n=17, each reviewed by 2 faculty)

Problem Solving through Inquiry and Data Analysis	Proficient	Sufficient	Deficient	No Response	Mean
Topic selection.	-	-	-	100%	NA
Integrates information from outside sources.	-	-	-	100%	NA
Uses appropriate methodology to collect data.	3%	79%	18%		1.85
Creates figures, tables and/or statistics to summarize data.	3%	62%	35%	0%	1.68
Explains patterns or trends in observations, data, figures and/or tables.	6%	65%	29%	0%	1.76
Uses numerical data to defend argument(s).	0	59%	41%	0%	1.59
Identifies pros and cons of argument(s), including biases and/or limitations.	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations.	-	-	-	100%	NA

The spring 2012 assessment of Science was conducted on 12 student lab reports from General Biology II (Table 9). Four faculty members were involved and each artifact was scored by two of them. Students were once again weak in using numerical data to defend arguments, but over 50% of them were also deficient in explaining patterns or trends. In this lab report assignment students were expected to use outside sources and over 70% of ratings were deficient for this criterion. The only criterion that could not be assessed from these artifacts was identifying pros and cons of argument(s).

Table 9
Problem Solving through Inquiry and Data Analysis
Spring 2012 (n=12, each reviewed by 2 faculty)

Problem Solving through Inquiry and Data Analysis	Proficient	Sufficient	Deficient	No Response	Mean
Topic selection.	0%	88%	12%	0%	1.88
Integrates information from outside sources.	4%	25%	71%	0%	1.33
Uses appropriate methodology to collect data.	0%	67%	33%	0%	1.67
Creates figures, tables and/or statistics to summarize data.	8%	67%	25%	0%	1.83
Explains patterns or trends in observations, data, figures and/or tables.	4%	38%	58%	0%	1.46
Uses numerical data to defend argument(s).	0%	50%	50%	0%	1.50
Identifies pros and cons of argument(s), including biases and/or limitations.	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations.	0%	75%	25%	0%	1.75

Student scores for explaining patterns or trends and using numerical data to defend arguments were weaker than in the lab report from the Oceanography course. While this may reflect real differences in the students, or differences in scorers, one important difference in the assignment was that students in General Biology had to select their own research topic and manner of collecting data for that topic. This added layer of complexity may have contributed to the weaker scores.

The Fall 2012 assessment involved 2 faculty members each scoring 46 students' Environmental Science Exam questions (Table 10). Students exhibited similar low scores in explaining patterns or trends and using numerical data to defend arguments as were observed in the General Biology lab reports. Students were not scored for topic selection, integrating information from outside sources, using appropriate methodology, creating figures or tables or identifying pros and cons of argument(s) as these questions involved students interpreting a graph to answer questions. These questions included making judgments about how to use the data to draw broader conclusions, so the artifacts could be assessed for applying content to new situations. In contrast to the General Biology lab reports, students were by far the weakest in this area. However, because this question asked them to discuss the implications of data they were given on a test, whereas the General Biology lab report involved discussing the implications of data they generated from an experiment they designed, some of this difference may be attributed to these different assignment contexts. As with the math data this assessment reveals some of the limitations of using exam questions to evaluate students as they are often narrow in scope and do not touch on many of the criteria, and may vary widely in the complexity and novelty of the tasks involved.

Table 10
Problem Solving through Inquiry and Data Analysis
Fall 2012 (n=46, each reviewed by 2 faculty)

Problem Solving through Inquiry and Data Analysis	Proficient	Sufficient	Deficient	No Response	Mean
Topic selection.	-	-	-	100%	NA
Integrates information from outside sources.	-	-	-	100%	NA
Uses appropriate methodology to collect data.	-	-	-	100%	NA
Creates figures, tables and/or statistics to summarize data.	-	-	-	100%	NA
Explains patterns or trends in observations, data, figures and/or tables.	16%	33%	51%	2%	1.63
Uses numerical data to defend argument(s).	5%	35%	60%	29%	1.02
Identifies pros and cons of argument(s), including biases and/or limitations.	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations.	9%	12%	79%	3%	1.3

The Spring 2013 assessment involved two faculty assessing 31 Nutritional Analysis projects from Health and Fitness (Table 11). Students did not really demonstrate any one or two areas of pronounced weakness. This may in part be because with the exception of the criterion creating figures, tables or statistics, for which they showed the most success with 43% proficient, students were only assessed in areas that had been identified as weaknesses in prior assessments: integrating information from outside sources, explaining patterns or trends, and using numerical data to defend arguments. Students were not assessed for topic selection, using appropriate methodology, identifying pros and cons of arguments and applying content to new situations as the assignment did not ask them to do those things. Students performed better in the areas in which they were assessed than they had on any of the prior year's assessments with this rubric. As always this may be a function of scorer variation, student variation or assignment variation.

Table 11
Problem Solving through Inquiry and Data Analysis
Spring 2013 Data (n=31, each reviewed by 2 faculty)

Problem Solving through Inquiry and Data Analysis	Proficient	Sufficient	Deficient	No Response	Mean
Topic selection.	-	-	-	100%	NA
Integrates information from outside sources.	20%	52%	28%	29%	1.93
Uses appropriate methodology to collect data.	-	-	-	100%	0
Creates figures, tables and/or statistics to summarize data.	43%	31%	26%	6%	2.17
Explains patterns or trends in observations, data, figures and/or tables.	19%	56%	25%	5%	1.93
Uses numerical data to defend argument(s).	31%	44%	25%	16%	2.06
Identifies pros and cons of argument(s), including biases and/or limitations.	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations.	-	-	-	100%	NA

The final problem solving assessment for the program review involved 2 faculty assessing 25 Applied Statistics papers (Table 12). While this was a math rather than a science course, the Problem Solving through Inquiry and Data Analysis rubric was used because the assignment supplied students with data and required them to create figures, explain the patterns and use the data to defend arguments. Those were the only three rubric criteria that applied to these papers as the assignment did not involve students selecting their own topic, integrating information from outside sources, using appropriate methodology to collect data, identifying the pros and cons of argument(s), or applying content to new situations.

The data showed a similar pattern to what had been observed in prior assessments that involve creating, explaining and defending arguments with figures, tables and/or statistics. In almost all cases students are better at creating the figures, tables and/or statistics than they are at explaining the patterns, and in all cases students are better at creating them than they are at using this numerical data to defend an argument. Overall this data suggests that much if not all of the criteria can be observed in student laboratory experiments, but that as we try to help students develop these skills through the curriculum, greater emphasis must be placed on the analysis of patterns in data and its use in building arguments, including bringing outside sources to bear when building these arguments and explaining the broader implications of the data in situations beyond the narrow scope of the experiment.

Table 12
Problem Solving through Inquiry and Data Analysis
Fall 2013 Data (n = 25 each reviewed by 2 faculty)

Problem Solving through Inquiry and Data Analysis	Proficient	Sufficient	Deficient	No Response	Mean
Topic selection.	-	-	-	100%	NA
Integrates information from outside sources.	-	-	-	100%	NA
Uses appropriate methodology to collect data.	-	-	-	100%	NA
Creates figures, tables and/or statistics to summarize data.	68%	28%	4%	0%	2.63
Explains patterns or trends in observations, data, figures and/or tables.	25%	53%	22%	2%	2.02
Uses numerical data to defend argument(s).	8%	50%	42%	0%	1.53
Identifies pros and cons of argument(s), including biases and/or limitations.	-	-	-	100%	NA
Applies content knowledge, methods and/or results to new situations.	-	-	-	1100%00%	NA

References:

Berg J., Grimm L.M., Wigmore D., Cratsley C.K., Slotnick R.C., Taylor S. 2014. Quality Collaborative to Assess Quantitative Reasoning: Adapting the LEAP VALUE Rubric and the DQP. *Peer Review*. 16 3): 17-21.