

ILO Quantitative Reasoning Assessment Faculty Survey

Twelve Faculty whose course sections were identified for assessment also assessed their own courses after receiving calibration and assessment training by a trained colleague. This survey was completed by those faculty at the conclusion of the assessment in May 2020.

1. Do you have any suggestions to clarify or change the ILO QR rubric?

- I did not find 'Overall Communication' very useful, perhaps because the assignment provided the sequence - the other parts of the rubric are good.
- I found the "starting with 3" idea very helpful. Thank you!
- When grading work of your own students, it is hard to put aside "is this RIGHT". I definitely found myself looking at my actual assignment again and again to make sure what I asked them to do :).
- I thought the rubrics were very effective.
- The comment regarding starting with a midpoint value was helpful. I tend to start with a perfect score and subtract based on issues. The midpoint forced me to think about both the plus and minuses of the responses. I feel that the rubrics were good -clear!
- I feel that there was some overlap between the categories, particularly with Overall communication. Sometimes I felt that I was evaluating the same skill twice because of this overlap.
- It looks great! I appreciate all your effort and work. It was a great experience for me too! One small comment here: It might be better to consider zero point if the response is missing to separate from the case where the student receives 1 point due to an incomplete and mostly incorrect effort.
- It is hard to separate assessment of course material from assessment of the ILOs. Some of the course material in my particular course is particularly difficult for some students. That being said, they would probably be more successful in assessment with a less difficult topic like in a different class. Should we modify the course or assessment based on the difficulty?
- I strongly believe that there must be a professionalism category in the rubric. I do have it in my own rubric which requires professional formatting in the paper, based on the APA style or any other styles. Students need to learn how to professionally format their papers/reports with consistent formatting, indentation, title styles, etc. Having professional formatting in their final assignment means a lot, not just a paper layout. It means their sincerity and effort to the assignment but also the class. And, students need to learn the importance of making the papers/reports professional when they are in the real world workplace.

2. Did you notice any patterns such as common strengths, challenges, or how students performed on the assignment compared to your expectations? Do you have any other comments on student learning?

- As I had predicted, very few students were able to successfully complete and demonstrate understanding of this assignment. To me, this is valuable data, as it will help to inform how this (or related scaffold) assignment(s) are formulated and presented.
- While final products had good outcomes for visualization and analysis, initial attempts would have received 1 or 2 scores.
- Using Excel to do the arithmetic cuts down on errors and allows students to focus on higher order things like interpretation and implications.
- My students did very well with Problem Formulation and Visualizations, however, they performed consistently lower on Implications and Interpretations, which I thought was interesting. -
- Students seem to be proficient at interpreting experimental results from a single experiment, but have a hard time putting the experiment into the context of a larger study, and even more trouble connecting it to the larger body of scientific literature that's out there. It suggests an area that I can teach more on in the future. The assignment needs to be better scaffolded so they know how to interpret their results, not just show them.
- Students seem to have difficulty knowing the difference between "results" and "data." Many students show their raw data as a "result."
- Yes... but not unexpected. This was an extensive Excel modeling and optimization problem, which forces students to organize a lot of information, determine objectives, formulate a set of equations, code them, and then interpret the final results. The formulation is traditionally a challenge, but the formulation scores of this group overall was higher than expected. Limitation and interpretation category was generally lower, as expected.
- The use of Excel was very helpful to the students for visualization. Some of the students seemed to have trouble with an overall formulation of the problem. That was a theme I saw several times.
- The main trend is limitations and implications. It seems that these are the categories that students have most difficulty with.
- My students look better in following a logical sequence and presenting a chain of reasoning even if I do not clearly ask for that. However, if I do not transparently ask for other criteria, for example, problem formulation and limitations, I will probably not get any such a response. (I second this comment.
- My students had the hardest time on "implications" for which I had asked a pretty "easy" question in the context of the more complicated overall situation. Many of them took the question at face value and answered it without consideration for the context ... getting a lower score :
- Sometimes students would fail to complete the assignment which made it difficult to assess student ability. This could have been a combination of issues with COVID-19 impact, student projects or other classes taking priority, my effectiveness teaching, the time it took to understand and complete the assignment, or the relative light weight towards the course grade. Would dropping an incomplete assignment be in order? -
- I found that students were able to figure out how to analyze the data, and how to report it. However, most students had a hard time making connections between the results of data analysis and implication & conclusions. Trying to make a valuable contribution to the community is one of

the most important reasons why we conduct research, but students usually do not see the connections or fail to provide valuable information at the end of the project.)

3. Is there anything else you would like to share about this work such as the impact of COVID-19, the rubric, the assignment you used, or the process?

- My assignment was intended to be 'hands on'; instead students watched a video of the experiment; however, this did not seem to affect their ability to do the visualization or analysis; possibly lower outcome for interpretation than if they had done the experiment themselves -
- One student wrote "I know these graphs should have axis titles, etc., but I'm working on an ipad and don't know how to make them", so hard to assess -
- The impact of COVID-19 was huge to this assignment. This was a simulated 'drylab' version of what we would have done in lab, consisting of cobbled together youtube videos of the methods, and extra lecture time being spent on the chemistry that would have happened had there been no pandemic. Overall, I'm impressed that they appeared to understand as much as they did, despite the lack of lab practice, but I know that critical objectives of this assignment could not be met in a drylab setting.
- It might be useful to have a place to make a comment or two about the assignment as a whole, rather than just about the student work.
- I mentioned, the overall project and rubric forced me to think more creatively about a summative assessment for my students. So, that was fun.
- I think most of the students made a good attempt at this project which was a little demanding. A lot of them were taking quite a few units in order to graduate and that may have affected their performances.
- I think that a second set of eyes looking at the same artifact would be very useful. I find it hard sometimes to assess students based on my own assignment. Not sure how unbiased that becomes.
- I am really satisfied with the course assignment project that I used for this ILO session. It is very well organized and well prepared for students learning experience. I am just thankful to have this opportunity for Quantitative reasoning ILO session with everyone since it was a really valuable experience. And I am excited to research the COVID-19 impact on our academia next semester in the same class. If you want, let me let you know later what the students' research project results show. Thanks for the opportunity.