Narrative Reflection, Spring 2020
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To say this term has been challenging would be an understatement. We have witnessed events unprecedented in living memory. The effects of the pandemic will likely remain with us for the rest of our lives. These events will change us in lasting, profound, and subtle ways.

This has been a term of compromise; it has demanded that we accept ourselves and to be content with our best efforts in spite of the knowledge that more work will bear less fruit. As with any trial of our collective spirit, the events of this term have also brought our best nature out as both instructors and students; we are caring, compassionate, flexible, understanding, resilient, resourceful, helpful, kind, loyal, and loving.

The reflections below detail some of the changes I have made in response to a fully-online course load as well as the usual efforts toward self improvement.

What Went Well

Oral Exams: One of the challenges we all faced this term is how to gauge student understanding in the online setting. In light of human nature and the temptations inherent to our present situation, I opted not to deal with take-home exams or online testing software. I opted to use, as effectively as possible, the technologies available to us: the ability to converse virtually online via ZOOM. This is all to say that I opted to conduct oral exams via ZOOM this term. These ZOOM Online Knowledge Checks (ZOKC for short) have taken the place of in-class exams for all of my online courses.

Naturally, stepping out of one's comfort zone can be a terrifying prospect. Despite my trepidation at never having conducted oral exams, I am so pleased that I tried it. The ZOKC has completely changed how I think about traditional methods of assessing student knowledge.

I was pleasantly surprised by the following:

1. During the first round, I quickly found my bearings for how to conduct the ZOKC. As the reader can imagine, there are many ancillary details to consider which I will not go into here. These details aside, what to do when working directly with students was surprisingly intuitive.

2. The ZOKC brought me closer to my students. Moreover, in ways that I'm still trying to wrap my mind around, it feels as if the ZOKC brought the entire class closer together. The ZOKC was not received as an adversarial move as I expected it would with some students. On the contrary, students seemed to very much appreciate the individual attention.

3. Students seemed to be more understanding and accepting of their results than with a paper exam. The simple act of articulating knowledge orally reveals how deeply we know something, and students seemed to grasp this immediately. When a student did well or poorly, they knew exactly why.

Adding to point 2. above, online proctoring services, both human and AI-based, are arguably more adversarial. (See the article "Big Proctor" by Colleen Flaherty, *Inside Higher Ed*, May 11, 2020.) Furthermore, for users of OERs, it is worth noting that online proctoring services generally incur additional costs on the part of students.

Oral exams have offered me a simple solution to evaluating student progress that maintains academic integrity. They can be conducted using technology that is now commonplace, free, and relatively available [1] to students.

MTH 105: As was the case with MTH 243, I was fortunate to have had experience teaching this course online given the difficult situation we have been faced with this term. Due to the small amount of student feedback, it's not easy to gauge if the changes I've made last summer to this course have paid dividends for the online version of the course. The written feedback offers some evidence that things went at least alright. Overall, the numerical feedback suggests this as well since my averages compared favorably with department-wide averages in most categories. Thus, I have some evidence that the changes are working in the online setting too. Again, the reason I believe this is that the course really does strive to make substantial and meaningful connections between mathematical ideas and topics that affect society.

MTH 243: I am continuing to perfect this course. All the written feedback from students who chose to respond was quite positive, and, overall, the numerical feedback also compared well to department-wide averages. I will take this as a postive sign that I am doing something right.

Finding that line between too easy and too difficult is, well... not easy! Based upon student feedback this term I gather that I am getting a bead on that just-right level.

Another point from the written feedback that feels validating is an acknowledgment of the unrelenting effort I put in to being available, communicative, and supportive with students. This is especially important to me not only in the usual online setting, but also in the context of the present situation we are dealing with; I am very pleased to see students who, despite their fear and dread of taking an online course, were pleasantly surprised and relieved to have a good experience.

Many of the students I had this term were absolutely marvelous. The sense I get is that my students worked hard, they felt challenged by the course, but overall they felt supported and rewarded for their hard work. I couldn't ask for more in a course.

MTH 253: The written and numerical feedback for this course are also quite good. While the response rate was still quite low, I take the consistency of the feedback in all my courses this term as a good sign. Both in this class and overall, I have a feeling that the reason for the positive feedback is that students consistently felt supported this term.

For this particular course, another component of this term's success is the videos I made for the course. When I flipped my MTH 251 course, I used videos made by another instructor. Based upon my feedback for MTH 251, I believe that because the material in the videos wasn't taught

[1] There are access issues here that instructors must be willing to be flexible with.

or explained by me (even though I instructed on an individual basis in the classroom), students felt like they were at the mercy of an instructor who wasn't teaching them. I knew I would have to make my own videos for this course. It seems that the videos I made for this course helped to alleviate some of the negative perceptions caused by using another instructor's videos. I believe that creating my own videos sent the message that the instructor is more invested in their courses and students.

What Needs to Improve

The Level of Feedback: Despite my repeated attempts to get students to participate in the course surveys, the response was quite low. Improving courses with scant feedback is a considerably more dubious prospect. Thus, one of my goals for the future is to try ways to improve course survey response rates.

MTH 105: The written feedback did not contain any concrete suggestions, so I'll turn to the numerical feedback to give me some clues as to where I can make improvements. A decile rank of less than five tells me that for a particular aspect of the course, I am not in the upper half when compared to my colleagues and is thus a place I can focus on for future courses.

For this course there were two points which received lower-half decile ranks:

Q2: This course increased my understanding of the subject.

The reported mean rating among my students for this survey item was 4.3 out of 5 which is in the 4th decile. Since we know the mode, 5, the high, 5, and the low, 3, we can deduce from the report that the raw data set of scores of these four students is 3,4,5,5. Out of four students who responded, one student felt neutral toward how well the course helped them to better understand the material.

When I think about ways to get students to learn more deeply, connecting the material to personal experience has always worked well for me. Projects are a great way for students to engage with the material on a more personal level. The first term I taught MTH 105, it seemed clear from student feedback that I needed to reconsider how students do projects, and so I decided to put projects on hold. In ruminating on this point, however, I may consider reintroducing projects to this group when I get to the fine-tuning phase of the course in its present form.

Q5: My grade reflects how much I learned.

The mean rating among my students for this survey item was 3.8 out of 5 which is in the 3rd decile. Since we know the mode, 4, the high, 5, an the low, 2, we can deduce from the report that the raw data set of scores of these four students is 2, 4, 4, 5. With such a small data set, one student's score had an inordinate effect on the mean rating. This is all the more reason to find ways to motivate students to step up participation.

In giving this point its due diligence, however, I need to think more deeply about it. I will think

more deeply about what kinds of knowledge the course grade is measuring, and I will seek to glean the insights of my colleagues on this point.

MTH 243: Although the feedback has been positive overall, we shall again consult the numerical feedback to find where we can make things better. In this case, when students rating of my course when asked if

Q4: I understood the grading policies and procedures that were detailed in the syllabus,

my mean rating (4.5 out of 5) for this item was in the 4th decile (still in the middle, but in the lower half). Thus, I should work on making the grading policies clearer to students. In addition to measures I have already taken, such as a syllabus quiz, I may consider creating an extra credit assignment which requires the student to calculate a grade based upon scores of a theoretical student.

MTH 253: I need to more thoroughly vet the questions which make it onto homework assignments. The biggest complaint students had here is that some of the questions from the textbook, particularly the more advanced problems, were worded either too vaguely or poorly. It is a longer-term goal of mine to edit the textbook questions (which I converted into an online, electronic question bank accessible to students) for clarity and do-ability.

To choose a representative homework problem set, I generally put every 3rd problem on the each assignment. I may need to revise this approach and be more selective of the problems which appear in homework.

Another, more particular, point I will need to improve on is how I thoroughly I cover multiplying power series. I may need to create a supplementary video which goes into more detail and includes more examples.

What Lies Ahead

The Level of Feedback: It is clear to me this term that the low level of participation in course surveys has hampered my efforts to improve my courses. In this new fully-online setting, feedback is more important that it has ever been. In the future I am going to offer extra credit for students to respond to the course survey. This extra credit will be an assignment worth an entire homework grade to really make it worth the students' effort. Moreover, I will offer full credit on the assignment to everyone in the course ONLY if 80% of students in the course respond. Otherwise, the assignment will remain ungraded, and no extra credit will be awarded. It is my hope that this will create further incentive for the entire group to participate. It is my hope that peer pressure to participate will be strong among students.

MTH 105: In future sections of this course, I am going to consider reintroducing a project in some form. The project may replace the *Problem of the Week* (POW). The purpose of the POW is to offset the effect of online homework; the POW requires students to write out solutions to problems similar to online homework problems.

The purpose of reintroducing a project or culminating experience is to help students connect with the material on a deeper and more personal level. In doing this, it would be my hope that students form a better sense of their own knowledge of the material, thus addressing the disconnect some students seem to feel between what they think they know and what they actually know.

MTH 243: In order to address that some students have expressed that their understanding of the grading policy outlined in the syllabus is less than complete, I am considering introducing an assignment which requires students to compute a course grade for a theoretical student.

MTH 253: For future sections of this course, I will edit questions from the bank of textbook problems to make the wording more precise.

I will also include more materials (examples, videos, etc.) to help students with the process multiplying power series.