

PD13887: Understanding the TQE Process in Secondary 4

Project Description

The Galt teachers attending the Summer Math Institute have found the knowledge acquired during the sessions, which focus on the TQE process, to be very beneficial in that it helps them develop tasks that require students to think more deeply since they must discuss their solution with others in the classroom and explain the reasoning they used to come up with the solution to the problem. Allowing students to discuss and learn from others helps them transfer their understanding to novel situations as they acquire a deeper understanding of the subject matter. Since the final exam is set by the Ministry and incorporates many novel situations, we felt that creating unit evaluations that are in line with the Ministry exam and themselves incorporate novel situations, students would be better prepared for the final exam and would be able to better demonstrate their learning. As such, the primary goal of this project was to create common assessments that would allow students to demonstrate their understanding of the subject matter at a deeper level.

The secondary goal of this project was to allow teachers who had not attended the Summer Math Institute to learn about the TQE process and learn about its implementation in the classroom. Teachers who had attended the Summer Math Institute would be expected to explain the TQE process and provide examples of its implementation. By using some of our meeting time to discuss the TQE process and its implementation, the hope is that it will be used by more teachers in their classes and that students will be more successful on the Ministry exam.

Synopsis of Daily Entries

Day 1: We reviewed past ministerial exams in order to better understand the level of difficulty our students could expect on the end-of-year final exam. We also decided on a format (3 multiple choice, 2 short answer, 3 long answer) that closely resembles the exam in order to give students an opportunity to get comfortable with it. By using Google Slides, we were able to complete almost two full unit tests. In our next session we are hoping to examine the TQE process so that we can develop our other tests with this in mind.

Day 2: We also spent time discussing the results of the test which had been created during our last session as it had been used in class as a summative evaluation. We reviewed the results of each question separately in an effort to determine if there were areas in which many students experienced difficulty. We discussed at length whether the difficulties were due to the questions on the test or our teaching methods. We found that in most cases it was a combination of both since our teaching methods and the questions we use in class should sufficiently prepare students for the evaluation, and the evaluation should reflect the tasks students complete in class.

Day 3: Today we spent time working on the next set of summative assessments. Keeping in mind the discussion we had in our previous session about the questions reflecting the classroom tasks, we were able to create evaluations that we believe are representative of the level of difficulty students will encounter on the Ministry exam in June but that are also in line with our teaching practices. We have started to incorporate previous topics into the current questions in the hopes of creating interesting and multi-faceted problems. The challenge is combining new and old topics into questions that represent real-life situations.

Day 4: Through our discussions we realized that a common problem was with the integration of old topics - students did not know how to consolidate previous units with the one currently being evaluated. This relates to the TQE process because the evaluations should reflect the tasks students complete in class. As we often do not incorporate topics outside the current unit we felt that our evaluations shouldn't cover previous units.

Day 5: We spent the time today working on the evaluations for Trigonometry and Statistics. We reviewed the results of previous tests and discussed the difficulties students demonstrated. We hope that in our next session we can carefully review every evaluation we created and rework the questions that proved to be the most difficult so that the new questions better reflect the tasks used in class.

Project Goals

While we were able to create all of the required mathematically rich unit evaluations, there were changes within the school board over the summer which affected our Math

consultants. Because of these changes, our Secondary Math consultant did not attend the sessions but was replaced by the Elementary Math consultant, who had taught math at Galt in previous years. This resulted in less time being spent discussing the TQE process and done in a more informal manner. Teachers were still able to learn about the TQE process but would have benefitted from more formal instruction.

Another issue was that some teachers were not able to attend every session. This meant that they missed beneficial discussions that could potentially lessen the extent to which they implement the TQE process in their classroom. This happened because the days on which the sessions were scheduled coincided with classes that teachers could not miss. This could have been avoided to some extent if the entire team was present when the meeting dates were selected. This will be considered during the planning of all future projects with the understanding that setting a schedule that works for all is very difficult, even with a small group of teachers.

Project Outcomes

By participating in this project, teachers were able to discover the TQE process and its benefits when implemented in the classroom. The discussions about the TQE process led to more general discussions about best practices and desired outcomes. By engaging in professional discussions centered on teaching methods, we were able to learn from each other and having multiple meetings gave us the opportunity to implement new teaching methods and then discuss what worked well and what didn't. We were also able to assess the evaluations we had created and to what extent we had been successful in better preparing our students for similar evaluations. By discussing the results of each evaluation we realized that we need to do a better job in providing students with more complex and mathematically rich tasks in class if we are to properly prepare students for the Ministry exam.

Reinvestment

By engaging in this project we were able to develop common evaluations that were used by teachers of grade 10 CST this year and will be used in future years. The benefit of having this set of common evaluations is that everyone teaching this course has the same evaluation and is well aware of the level of difficulty at which students must be successful. Another advantage is that teachers teaching this course for the first time can spend more time preparing engaging lessons and less time preparing meaningful evaluations.

Teachers often teach a number of different subjects in any given year. This project involved teachers who also teach Science and Physics. By having a diverse group of teachers and not solely math teachers, these teachers can now take what they have learned about the TQE process and spread that knowledge to other departments in the school. The ability to share what we have learned with others helps us to develop common teaching practices and expectations across subjects. This helps students realize that skills used in Math are the same skills they should use in Science, History, English, etc. By using a common set of skills the hope is that students will be more successful because learning will be more organic.