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Reflection on use of the "Reacting to the Past" pedagogy in a History of Mathematics course

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Math 480 - History of Mathematics

Reflection on use of *Reacting to the Past* in this course

“Reacting to the Past (RTTP) is an active learning pedagogy of role-playing games designed for higher education. In Reacting to the Past games, students are assigned character roles with specific goals and must communicate, collaborate, and compete effectively to advance their objectives. Reacting promotes engagement with big ideas, and improves intellectual and academic skills.” (from the [Reacting to the Past website](#)). Having visited some of Dr. Terri Nelson’s classes that used this pedagogy, I was intrigued and wanted to try to use it in a class myself. A mathematics class that seemed a good candidate was History of Mathematics (Math 480), and a game that seemed to fit well, with an increased emphasis on mathematics, was [Building the Italian Renaissance: Brunelleschi's Dome and the Florence Cathedral](#), by Paula K. Lazrus.

The plan for the class in Fall 2019 was to combine the Math 480 class with Interpretation and Values (HUM 340), taught by Dr. Nelson, for game preparations and play, to take place over five weeks, and to conduct a “normal” active learning class for the other five weeks. Campus closures affected this schedule, as the game had to be played out to the end, so there were fewer than planned regular math sessions.

The course was assessed based on observations of student learning during the quarter (in class, on homework assignments, and in quizzes), student engagement (in class, through Slack discussions, and in collaborative take-home work) and students’ responses to a final survey they completed at the end of the quarter. Some representative quotes from the survey (prompts in italics):

Where do you think you made the most improvement during the course? Please explain.

- Honestly I feel that during this course I improved a lot in everything, this course taught me how to work hard, but in a sense that work has to always be done in the proper manner and to always read instructions in order to make the work be complete as well as to not procrastinate and be able to get each assignment done on time.

In class, we had hands-on activities for linear perspective, as well as the construction of arches and domes. What impact did these activities have on your learning?

- I was fascinated doing all these great activities ... I had no clue they could [be] done how we did it during the course.
- These activities heavily influenced my learning of math and physics.

- These activities were useful since it opened my eyes on how math relates to architecture and learning that even if the math we learn seems pointless, it becomes handy in the future.

Is there anything else you would like to tell me about the class?

- I found this class interesting and fun to complete.
- I enjoyed the course very much. I had no idea how a history of mathematics class was going to go but I feel learned a lot of interesting things.
- I felt this class has done a lot for me. Even though it was stressful at times keeping up with two different classes at the same time, I was able to learn from my peers, you, and the book. I would only suggest to do either the game for the whole class or the history of math. I felt that if you just stick to one thing, the experience would be better. Overall, I don't regret taking this class and hope new students come in with an open mind.

Conclusion

Some conclusions regarding use of RTTP, particularly in mathematics classes:

- RTTP successfully engaged students in this class in significant learning both in and outside of class. They conducted research beyond the textbook, and used it to form their own opinions on a variety of topics. They learned to back up their opinions with data, and to deliberate productively with their peers.
- While a great deal of learning took place, insufficient time was devoted to mathematics, partly due to campus closures (we lost 3 of the 15 sessions that were scheduled for non-game mathematics). The RTTP games that involve mathematics or science seem like excellent choices for interdisciplinary courses, for example CAL/CNS courses, but not for courses that are meant to be primarily about mathematics.
- However, the benefits of learning through game play seem worth exploring further for mathematics courses. One possibility might be to design a game for a course in the Teaching concentration. A topic that seems that it might lend itself to such a game would be the Common Core State Standards in Mathematics (CCSS-M). In their professional lives, teachers are expected to be able to engage parents, students, administrators, and each other in conversation about CCSS-M. A short game involving a debate of (for example) CCSS-M vs. “back to basics” could help students prepare for such conversations.