New Teacher Support Process

Annual Review 2017-2018

Warren Smith joined the mathematics department in fall of 2017 to teach Precalculus and AP Calculus AB. He came to Flintridge Preparatory School with limited teaching experience and worked directly with me throughout the fall and spring semesters to hone his craft as a teacher. Warren Smith and I met daily to discuss shared curriculum. We also discussed teaching strategies, assessments, AP review, student conduct, and a variety of other issues that came up in Warren's classes. Some noted episodes in which Warren and I worked closely together are as follows:

(1) I observed Warren's AP Calculus AB class (fall 2017)

(2) Warren and I jointly observed the department chair's Precalculus class (fall 2017)

(3) Warren and I met daily to discuss teaching strategies, test preparation, and lesson preparation (fall 2017 and spring 2018)

(4) Warren guest lectured in my Honors Multivariable Calculus class (spring 2018)

(5) I led a meeting with Warren and the one other AP Calculus AB teacher to map out six weeks of AP exam review (spring 2018)

(6) Warren and I jointly assessed the progress of a student who switched from a section of my AP Calculus AB class into a section of Warren's AP Calculus AB class at the semester due to a scheduling conflict (spring 2018)

At the outset of the year, Warren defined himself as a traditional lecturer. He was concerned about balancing quality of instruction with quantity of content. However, upon observation, it became clear that Warren was not just a lecturer. On the day I visited Warren's class, I saw Warren engaging the students in an exploratory exercise using 3D-printed

manipulatives. The exercise was an optimization problem in which students were asked to find the maximum length of a couch rounding a 90-degree corner in a hallway of a given width. Warren had designed and printed several miniature models of the scenario for use in class. Students started by answering some straightforward questions about the scenario, but were led into deeper, higher-order activities.

For the most part, the class appeared engaged and excited about the math. There was one student who continually spoke out of turn and challenged Warren's teaching methods. This student has a very dominant personality that can change the tone of a class. In my post-observation discussion with Warren, I recommended that Warren pull the disruptive student aside and ask for her help in managing the class. Sometimes it helps to acknowledge that a student is influential in shaping the culture of a classroom. Letting the student know that she is partly responsible for the level of engagement in a class and then asking for her help managing the class puts the student in a position to serve as partner rather than distractor.

Warren and I discussed this particular student at length, and we came back to her several times throughout the year. Warren reported that his ability to manage her improved over the year. As far as I know, he did not necessarily take my advice and pull the student aside. However, through respectful interaction with all his students, he seems to have gained more respect from this wayward individual.

Warren and I also had a good discussion following a joint observation of the department head's problem-based precalculus class. Again we explored the balance between quality of instruction and quantity of content. Dochy, Segers, Van den Bossche & Gijbels (2003) report that "students in PBL [problem-based learning] gained slightly less knowledge, but

remember more of the acquired knowledge" (p. 533).[1] Warren and I acknowledged that the department head struck a nice balance between letting students lead the discussion and intervening to clarify some particular fact or method for the class. This, I observed, is the kind of balance Warren needs to learn how to strike. When to intervene and when to let students struggle is a question that Warren should be considering throughout the year. For example, when I observed Warren's class, Warren did a great job sitting back and letting the students explore the couch problem on their own. But some of my feedback was that Warren could step in more and provide more guidance at key points throughout the lesson to help facilitate the learning. Warren has cast himself so much as the traditional lecturer, I think he tends to overcompensate by letting his students struggle through problems when it might be appropriate to intervene.

Warren and I have been meeting daily to discuss his classes. I have been particularly interested in his use of assessment. He tends to make tests and quizzes that contain only a select few questions, each of which requires deep analysis. The fact that many students do well on Warren's exams suggests that the students are more capable of tackling complex problems in a testing environment than I would have expected. However, Warren has expressed hesitation about adding more questions to a unit assessment because he thinks his students will not be able to complete the tasks in the time allotted. I have suggested that Warren lengthen his tests a bit to cover more scenarios the students may encounter. This will put less weight on each individual question, giving students more room to make mistakes. In AP Calculus AB, more types of questions will also better prepare students for

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[1] Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: a meta- analysis. *Learning and Instruction, 13*, 533-568.

the number of variations they will see on the AP exam. I don't think the questions have to be any less interesting or challenging. Rather, I know from personal experience that students can complete more questions in the short 43-minute periods than Warren thinks they can.

Warren has expressed a lot of interest in my current Honors Multivariable Calculus class. He has mentioned that he would like to teach that class one day, and I think he would do a great job with it given his depth of knowledge in multiple branches of mathematics. In an effort to let him stretch his math legs a bit, I asked Warren to guest lecture in my multivariable calculus class. I specifically needed his help answering a question one of my students posed to me: "Why do we multiply matrices the way we do?"

I didn't have an answer, and Warren suggested that he could help answer the question for the class. So we planned to have him in to guest lecture the next week. In preparation for the lecture, Warren wrote up his lesson plan and gave it to me in advance for feedback. I noted areas where Warren would have to be more detailed, areas of weakness for the students, and topics that the students had not yet covered. Warren honed his lesson and gave it to me a second time for feedback. We talked about how he would walk through the material, and I felt comfortable giving the entire class period over to him.

Throughout his guest lecture, Warren demonstrated his depth of content knowledge, always having an explanation for the steps he was taking. Warren focused on the larger, broader concepts of linear algebra. He explained why matrix multiplication is consistent with linear mappings, and he related the idea of matrix multiplication to derivatives of polynomials, showing how calculus and linear algebra support one another. Warren did a

great job distilling the information down into its most essential forms. He took a very complex topic and made it accessible to amateur mathematicians.

The lecture was pretty self-contained; the students only needed a limited amount of prior knowledge to follow along. Again, Warren demonstrated that he is more than just a lecturer. Throughout the lesson, Warren engaged with the students, asking for their help in moving the lesson forward. The lesson was more of a discussion than a lecture. Dr. Janine Remillard on February 4th, 2018 said, "Curriculum matters *and* teachers matter." Warren's curriculum was airtight. But it was his inquiry approach with the students that made the material so accessible. Warren sells himself short when he describes his teaching skills. He is a dynamic instructor, and he serves as a wonderful mediator to student discovery in the classroom.

Toward the end of third quarter, I called a meeting with Warren and the one other AP Calculus AB teacher, Ken Jones, to map out a game plan for AP exam review. I have been teaching calculus AB for nine years; both Warren and Ken are new, first-year teachers. Since we had finished covering all new material at the end of third quarter, we needed to sit down and discuss how to structure the remaining six weeks of AP review time. I provided a brief overview of how I had previously structured AP review, and then I asked for Warren and Ken's input. Since this was the first time either of them had prepped students for an AP exam, they were mostly content to follow along with the general protocol I had set up. After these next few weeks of AP review, I will solicit feedback from Warren and Ken in order to get a sense of how well the current AP review structure works. I suspect they will have some good recommendations for changes to the protocol for next year.

Finally, Warren and I sat down to discuss a student that started the year in my AP Calculus AB class and switched into Warren's class at the semester. Warren reported that she was earning an 86.5% for the third quarter. I shared that she had earned an 86.1% for the first semester. Warren was particularly happy to learn that our grading schemas resulted in similar grades for the same student. I think part of why the grades for this student in both our classes were so similar is that Warren and I spend a lot of time meeting to talk about assignments and assessment. Due to how closely we have aligned our classes, I'm not surprised to discover that we have similar grading styles. Many of our assignments are the same, and we weight different types of assignments in a similar manner. It feels good heading into the fourth quarter knowing that our partnership has resulted in such close alignment.

I am impressed with Warren's growth over the past year. Not only has he become more confident in his decision-making, but he has also stretched himself by experimenting with interactive, student-led activities in his classroom. He started the year as a traditional lecturer but continued to design new assignments that put the students at the center of the learning experience. He was also concerned that with more student-led assignments, he would not have enough time to cover all the necessary content. That proved to be a moot point; he has completed the year's curriculum with plenty of time left over for AP exam review. Our working relationship will continue through the remainder of this year, and I am sure we will continue to collaborate in the years to come. Working with Warren has made me reflective of my own teaching practice, and I have grown a lot thanks to him.