

Teaching Statement

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My teaching philosophy is that students learn best in a structured, inquiry based environment. The balance between direct instruction and student inquiry in teaching falls in a continuum which can be adjusted for courses, class periods, class rosters, and individual students. There must be a balance between student freedom and instructor teaching. Students respond best when motivated by the material of the class, rather than by the instructor. As a result, my teaching style is material centered, with the instructor serving a supporting role to the material. The specifics of this role can be adjusted according to the course specifics, class makeup, and lesson details. This flexibility allows me to diversify my instruction to suit individual classrooms and students.

Placing the Material First

When teaching mathematics, it is imperative that the instructor set measurable and attainable goals for each lesson. In order to give students a holistic understanding of the course structure, these goals can be communicated to the class in non-threatening ways. This allows the students to view the course as centered upon the material and take ownership of their understanding of the material. One way I communicate these goals to the students is by presenting the material in worksheets. By including section titles and built in review sections into the worksheets, I encourage students to evaluate their understanding of the material with concrete questions as well as provide a stable point of reference for the expectations of the course. These questions can be procedurally based “What are the steps for completing the square?” or conceptual, “Can a polynomial of degree 4 have only one extrema?” Grouping students in pairs for the purpose of discussion on these questions allows students to fill in any gaps in their understanding and allows me to assess how well the class has understood the material presented.

Another aspect in which I center my class on the material is through tasks. When creating a lesson plan, I incorporate a plethora of problems and examples related to the material to reinforce student learning. The purpose of these formative assessments is twofold: First, it allows me to assess student understanding both for the class as a whole as well as on an individual level. And second, it allows students to check their own understanding of topics and procedures. Depending on the class and the material presented, these tasks may be assigned for groups and may vary in open-endedness.

Metacognitive Tasks

After completing tasks, I direct students towards metacognition. Both in prepared worksheets and verbally, I ask students to evaluate not only the question, but their ability to recognize patterns and make connections between topics, leading to a more holistic learning experience. This directed questioning helps to create a classroom environment where students are routinely asked to evaluate their understanding and are encouraged to ask questions. This organically generates a more focused classroom and hones student's critical thinking skills. Additionally, the questioning helps me identify shortcomings in student understanding both from direct questions from students as well as from my observation of class discussion.

Including metacognitive tasks sets a precedent of active learning in the classroom. To further motivate discussion on metacognitive tasks, formative tasks may be assigned during which pairs of turn in written descriptions of the difficult portions of a problem completed in class. These assessments may vary in length depending on the course and material covered.

Connections Between Topics

Many students view mathematics as a series of arbitrary rules conjured for no useful reason. This attitude is most prevalent among students in entry level college math classes. As a math teacher, it is my responsibility to provide students not only with the tools to be able to apply procedural tasks, but also establish a framework for students to make connections between mathematical concepts. For example, when introducing factoring, I first allow the class to examine quadratic equations and direct students towards formulating the zero product property. This allows class sessions to be devoted to more general and applicable concepts, rather than viewing each class period as a self-contained lesson.

Teaching mathematics from a more holistic approach also prepares students for future mathematics classes. When teaching simplification and factoring, the tools and techniques are presented with the motivation of creating simple expressions for manipulations and solving equations. This prepares students for future mathematical concepts such as limit definition of a derivative and solving systems of equations.

Teaching mathematics is as varied as mathematical topics. To create an environment promoting student questioning and metacognition, it is important to generate a classroom setting which places the material in the most accessible light for students. By creating multifaceted lessons, I endeavor to encourage students to develop their mathematical reasoning both through direct instruction and inquiry based learning.