

# Elizabeth A. K. Adams Teaching Philosophy

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I believe that the fundamental purpose of education is to teach students how to learn - how to find, understand and apply knowledge. The underlying principles of my teaching philosophy are that the classroom should be learner-centered and that assessment should be a learning tool. I outline this philosophy in more detail following. Because student participation is an important part of creating the learning environment I desire in the classroom and transparency is an important part of creating student 'buy-in', I will share the following statement (in an abbreviated form) with my students at the start of each semester. In the following text, I am imagining an Astronomy 101 course, but the statements are generally applicable to any course.

## **Goals**

My primary goals for students are to develop mathematical reasoning and critical thinking skills. While I also want students to gain astronomy knowledge, I place more value on them having the skills to apply and use that knowledge. In addition, mathematical reasoning and critical thinking are life long skills for students who mostly see astronomy as an elective course.

## **My Role and Responsibilities**

As the teacher, my role is to provide learning opportunities for the students. Classroom time should not be focused on me but should be an opportunity for students to engage with the material, explore astronomy concepts and apply them to different scenarios. As the instructor, one of my largest responsibilities is to provide a safe and accessible learning environment for all students. I can do this by making sure my learning opportunities cover a range of activities and acknowledge different backgrounds that the students may have. As the person responsible for the course, I need to ensure that the assessment matches the course learning objectives, constitutes a reasonable load, and is fairly evaluated.

## **Student Role and Responsibilities**

The student is the focus of my teaching as they are the learner. And the focus of class is the existence of learning opportunities for students. In order to create learning experiences in class, students are expected to come to class prepared, having completed required readings and assignments, and actively engage with in-class activities. As I make an effort to ensure that assessment is reasonable and fair, students are expected to make a good-faith effort to engage with all parts of the course.

## **Active Learning and Peer Instruction**

Student learning requires active engagement with the material. They need to make connections and apply knowledge to new situations as opposed to passively regurgitating facts. One of the best ways to create active learning experiences is through peer instruction. Students start to truly understand material when they are forced to explain or defend their ideas to a peer. Group work also provides the opportunity for students to brainstorm and build knowledge together.

## **Implementation**

In order to create the active learning experiences I want in my classroom, I intend for my classroom time to consist of several "mini"-lectures, 5 to 15 minutes in length separated by pair or group activities that engage students with the material. These in-class activities will include Think-Pair-Share (TPS) questions and in-class tutorials, plus other exercises. During TPS questions, students are given a multiple-choice question (thoughtfully designed to get at understanding rather than fact memorization) and are asked to think about it and then answer (either through clickers or flashcards). They then "pair with the person next to them and "share their answer. Specifically, they are told to convince their

partner of their answer, which forces them to articulate their reasoning to another person. Then the students share their answers with me again. The in-class tutorials (developed by the Center for Astronomy Education), are designed to step students through understanding and being able to solve problems in a specific astronomy topic. By working in small groups, the students engage in peer-instruction and help each other learn and understand the material.

### **Assessment**

I intend for assessment to be part of the learning environment. This both creates more learning opportunities and helps to ensure that I am meeting my responsibility of aligning assessment with class material and course objectives.

Part of the grade for students will be determined by preparedness for class (answering reading questions), attendance (low stakes writing every day to be handed in), and participation (occasional in-class activities handed in). As I believe that these are three vital student responsibilities to create the learning environment I want in my classroom, I should offer motivation for students to fulfill them.

My other major assessments will be homeworks and a final project. The homeworks will be completed in groups, further emphasizing the importance of peer interaction. They will consist of both quantitative questions and open-ended questions, requiring students to understand the material and apply it to more realistic scenarios. The final project will ask students (in groups) to apply the knowledge from class to a real world scenario. For example, in an Astronomy 101 course, I want students to argue for the funding of a chosen telescope based mainly on science impacts. This will give students a motivation to synthesize information from the semester and place it in a larger scientific context.

### **Continuing Reflection**

My bedrock philosophy that the classroom should be learner-centered guides my teaching. In order to make sure that my classroom is the environment I want it to be, I will solicit student feedback frequently throughout the semester. The low stakes writing questions for attendance will often be reflections on the classroom that day to see if I accomplished my aim. At the quarter and midway point of the semester, I will hold formal assessment to receive student feedback on the classroom and assessments to date. An important part of receiving this feedback will be responding to it, including letting students know what my responses, or lack thereof, will be and why.

I intend to continue to take advantage of classes and workshops offered by my institution that introduce me to new teaching strategies.