AZ-AAPT meeting, Sept. 26, 2015.

How I increased my physics enrollment: a statement from Melissa Girmscheid, physics teacher at Centennial High School in Peoria Unified School District, Peoria, Arizona.

Date: Sat, 26 Sep 2015, 7:05am

I received notification late yesterday that I need to be downtown earlier than I anticipated, meaning I will not be able to make the Az-AAPT meeting today. I wanted to share all my thoughts on how I have grown the Physics program at my school.

Overall, I have courted the non-traditional physics student. The class has a reputation of being hands-on and collaboration-based, thanks to Modeling Instruction, so I have the high-functioning Special Education students in class.

I have established relationships with the Industrial Arts teachers (Auto, Building Trades, Engineering), and in return they have recruited students for me.

I am very active on campus, so I have students who take the class just because they know me.

I frequently take my students outside to conduct experiments so as to raise visibility on campus. My class is known as one in which students rarely take notes, work in teams and get to move around, not just sit and take notes.

The large projects we do throughout the semester raise awareness for both students and staff. Each time we do something that I feel other classes might see a connection to, I invite those teachers to come out and watch. Dropping eggs off the bleachers onto a moving target ties to quadratic functions in Algebra 1 and 2, testing catapults and trebuchets connects with World History, etc.

I also invite Guidance and Administration to come in to my classroom and to all events. When I was hired, some counselors were still telling students that Physics was hard. I have altered their perception and now they tell students about the style of learning and project-based aspects of the class.

Background:
Melissa Girmscheid teaches physics (AP and 3 sections of regular in 2015) at Centennial High School in Peoria. She began her use of Modeling Instruction in 2000 as a student teacher of Dawn Harman, who was the physics teacher at Moon Valley High School in Glendale UHSD. She re-entered the classroom in 2011 after several years raising her children, and has exerted leadership in the national AAPT and by mentoring a pre-service teacher and a SPED teacher. She completed the ASU Master of Natural Science degree in physics in summer 2014.

On January 12, 2015, Melissa Girmscheid wrote,
... this year I am seeing the largest enrollment of students in physics of my career. My belief is that this is due to my constant education of the guidance counselors and administration. I invite counselors and admin to come to the classroom (wherever that may be for the day) to see students display projects and participate in competitions such as our annual cardboard boat race. I have swayed the opinion of the guidance department, and they now encourage students to enroll in physics. I tried giving them all the AAPT "7 Myths" brochure to no avail, but once I started inviting them to see the class in action, my numbers grew.

Watch 2 minutes of the 3rd Annual Centennial High School Cardboard Boat Regatta (March 2014), presented by Melissa Girmscheid's physics class.

Melissa wrote on Jan. 13, 2015:
I will happily send the instructions that I give to students to anyone who would like to email me directly. Essentially I tie this in with balanced force. We spend a day defining buoyant force, usually in conjunction with an activity using a pie pan "boat" and masses. The students are then given time to build and choose a captain. We put teachers and staff in the boats, since this just makes it more fun for the class. I have students prepare a poster presentation detailing the build and the physics at work in the boat design, and we then display these posters so that they can be viewed as spectators (the stands are normally filled to maximum capacity) enter and exit the pool area. You can check out the video of last year's race on YouTube: https://www.youtube.com/watch?v=zoXGFQRBunc