

Edward Melcer Teaching Statement

I believe the most valuable skill we can instill in students is the readiness to learn, explore, and experiment with novel concepts. By overcoming the fear of initial failure in conjunction with the curiosity and confidence to execute upon one's own ideas, students can engage in a continuous examination and refinement of their work. This is a crucial mentality needed to be successful both in the classroom and in everyday life. As a teacher at the intersection of games and physical computing, I aim to provide my students with these valuable skills that are central to maker culture. This includes an emphasis on learning-through-doing and understanding how to learn new technology and information outside of the traditional classroom setting. To that end, I feel it is critical to create a course curriculum that fosters a healthy balance between theory, practical examples, and hands-on projects. In this context, basic skills and principles of physical computing and game design are taught as tools which can be utilized to critically assess existing systems and design/build physical interaction into one's own games, rather than treating such information as a set of facts that students are expected to merely memorize and regurgitate for a grade. Such a combination also offers three major benefits to students: 1) it develops strong fundamentals for designing and creating interactive physical systems; 2) it provides concrete, interactive examples to ground and enhance understanding; and 3) it offers the flexibility to creatively experiment with course material through projects, affording a deeper understanding of underlying concepts. I think this approach is essential for engaging students at various skill levels and conveying how enjoyable it is to "make" and develop one's own indispensable skillset.

While course structure, pedagogy, and content are all important factors in the efficacy of a class, teachers also play an equally vital role in the support of learning. I feel that the most effective teachers engage students by asking questions in the classroom, incorporating projects that encourage experimentation and problem solving, encouraging peer to peer interaction through group work and study, and including a wealth of concrete real-world examples for topics being discussed. Furthermore, the teacher's approachability and accessibility are of central importance to developing an environment that emphasizes discussion, and becomes a mutual learning experience rather than a distant monologue. This requires an important time commitment outside the classroom to meet and interact with students who need extra assistance, as well as with exceptional students who could benefit greatly from potential research opportunities. My perspective on teaching has been strongly influenced by my interactions with outstanding teachers in the computer science department at New York University Tandon School of Engineering where I obtained my B.S./M.S. degrees and am currently completing my PhD.

My teaching/research interests span from introductory programming and physical computing to game design and Human-Computer Interaction (HCI). Over time, the breadth of my teaching positions (i.e., tutor, instructor, and teaching assistant) in these domains have helped me to develop and improve successful educational strategies for various aspects of the classroom. For instance, some of my earliest teaching experience was as a Computer Science tutor at NYU Tandon's tutoring center, working with many students by answering questions and developing mock examinations to help them prepare for upcoming tests. This invaluable experience aided me in learning to understand and address the needs of struggling students, and I received a tutor of the year award for my work there. Similarly, I have worked as a teaching assistant for

introductory computer science, game programming, and artificial intelligence courses which have helped to refine my skillset with grading and administrative qualities. Lastly, my instructor/lecturer experience comes from teaching physical computing and game design concepts to underprivileged middle and high school students throughout the five New York City boroughs. This was through extracurricular outreach programs such as a 60 hour after school Creativity in Engineering, Science, and Technology (CrEST) course and weekend Playable Fashion workshops where I would teach classes ranging from 15 - 30 students.

Ultimately, I greatly enjoy teaching because of the opportunity to connect with people and share my love of programming, games, physical computing, and HCI. Each teaching setting has challenged me to expand my definition of teacher, and my past teaching experiences have both provided me with opportunities to refine my teaching method and introduced me to a variety of people interested in teaching science at all levels of education. Moving forward, I would like to integrate ideas learned through these experiences in conjunction with student feedback to come up with more innovative strategies for teaching computer science, HCI, physical computing, and game design at the university level.