Teaching Statement

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My teaching philosophy is grounded in Self-Determination Theory (SDT), a framework that explains how people are oriented towards a particular task. SDT describes how fulfillment of autonomy, competence, and relatedness can foster greater levels of self-determined behavior and perceptions of independence, both of which can have significant positive effects on student success and learning in the classroom. My experience in mentoring and teaching students, my Ph.D. dissertation research, and my formal training in the *Fundamentals of Scientific Teaching and Pedagogy* at Worcester Polytechnic Institute (WPI) have all influenced my teaching philosophy.

Emphasizing Autonomy in Project-based Learning

I prioritize student autonomy by allowing students to choose meaningful problems to solve and select their personal learning goals. In addition to setting general learning objectives, I help students develop critical thinking skills by asking them to identify problems in the field and build arguments based on research. During this process, I provide regular feedback to help students refine their problem statements. I actively adjust the learning plan for each individual student to ensure that everyone receives the support, advice, and resources they need as they progress through the project. When I was mentoring the Massachusetts Digital Games Institute (MassDigi) Summer Innovation Program, I met with the students individually at the beginning, middle, and end to review both the short-term and long-term learning goals and assess their progress in skill development. The project-based learning structure has ensured that students are provided with only high-level constraints on the game engine, duration, and operating platform, leaving considerable freedom in designing the game. Through mentorship and question-guided iteration, the students were able to balance the technical and computational challenges in game design while also enjoying the creative freedom to tell an engaging story that they wanted to express. Students were able to make well-informed decisions and choose a plan that they were eager to complete, while also developing and expanding their critical thinking abilities.

Building An Inclusive and Welcoming Peer-Learning Community

I encourage students to recognize their unique backgrounds and skills, understand their place in the broader community, and build the confidence to pursue their goals alongside their peers. In my guest lectures, in addition to whole-class discussions, I often break students into smaller, randomly assigned groups, which are intentionally different from their usual seating arrangements. This gives quieter students, or those who may be less comfortable speaking in a large group, a chance to share their thoughts and opinions. I have found this approach especially effective

in helping shy or soft-spoken students gain confidence, practice giving and receiving feedback, and becoming more confident in public speaking.

My Ph.D. research in game development identified that early-stage game developers benefit from peers in the same discipline as well as from other disciplines [2]. The diverse perspectives not only enrich in-class projects but often lead to new collaborations beyond the classroom. Especially in the interdisciplinary field of video games, interactive media, and installation art, I have witnessed numerous student collaborative projects carried out based on a great match between artistic skills and abilities in creative technology, spanning from game jams to larger-scale, professional-level collaborations after graduation.

Highlighting The Value of Prototyping, Reflection, and Iteration

I encourage students to experiment, tinker, and learn by practicing in a safe and supportive environment through reflection and iteration. Building an initial prototype helps validate the research direction at an early stage. I have learned about it through my research on exploring stacking fiducial markers as a tangible input mechanism for augmented reality (AR) [1]. As a proof of concept, I built a music synthesis game in which players are expected to manipulate markers to create different combinations, experimenting with the intuitiveness and systematic considerations for building tangible AR input. When mentoring undergraduate research projects, I often encourage my students to build a minimal viable product as soon as possible, often low-fidelity digital prototypes, to test the expected flow of interactions. These tangible early prototypes offer students the opportunity to reflect on and iterate on the design, ensuring that further research and development are on track.

More importantly, creating prototypes involves utilizing and improving creative and technical skills that may later prove useful in other problem-solving settings. I encourage my students to acquire new skills during the process and experiment with new technology, so that they are not limited to the familiar skills they already have. This has proven helpful for expanding the toolkit and possibilities in later projects, as the creator can apply the skill sets and knowledge when encountering new challenges.

I also encourage students to engage with the social, technological, and cultural contexts in positioning technological artifacts. Instead of treating technical intervention as a definitive solution or enhancement, I ask students to situate the work by critically examining the context. I have mentored a student group project that tackles real-life problems and challenges where science, technology, and social issues intersect with human needs. The student team has created an arcade game that utilizes currency mechanics to encourage players to reflect on consumerism. The critical examination has not only broadened our perspective on identifying problems but has also contributed to the creation of an entertaining game that has a meaningful impact conveyed to the world and the gaming community.

As a first-generation college student and international graduate student in the US, I experienced the challenges of navigating new subject matter, adapting to a different academic culture, and building a network from scratch. This taught me resilience, adaptability, and the importance of following my passion. These experiences also shape my teaching: I strive to create a welcoming environment where students feel supported to challenge the norms, build confidence, and engage fully in learning.

Ultimately, I strive to help students discover and nurture their deeper motivations for learning and career success. Education is not confined to the classroom; creative thinking, problem solving, public speaking, and critical analysis are lifelong skills. I believe that learning should be a fulfilling journey, where every step brings joy and growth.

References

[1] Max Chen, Shano Liang, and Gillian Smith. 2023. Stackable Music: A Marker-Based Augmented Reality Music Synthesis Game. In *Companion Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (*CHI PLAY Companion '23*), October 06, 2023. Association for Computing Machinery, New York, NY, USA, 22–28. https://doi.org/10.1145/3573382.3616071

[2] Max Chen and Gillian Smith. 2024. Game Development as Project-Based Learning: Synthesizing Postmortems of Student-Created Mobile Games. In *Proceedings of the 19th International Conference on the Foundations of Digital Games* (*FDG '24*), July 05, 2024. Association for Computing Machinery, New York, NY, USA, 1–11. https://doi.org/10.1145/3649921.3649999