The Transformative Games Initiative: Blending Undergraduate Research with Games-Based Learning

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INTRODUCTION
The National Council for Undergraduate Research encourages faculty to mentor students or involve classrooms with research-like experiences. However, faculty members are typically overwhelmed with requests for mentorship, and student-faculty interests do not always align. The Transformative Games Initiative provides students with opportunities to design games for education, behavioral intervention, or social impact. The design of each game is rooted in the Learning Sciences. Games are excellent learning management systems that are capable of teaching and assessment. Many games were designed to benefit matriculating freshmen who are underrepresented in STEM and who might be the first in their family to attend college. An iterative design-based research program was developed to answer the following foundational questions: (1) What can be learned about the process of learning by blending game-based learning with undergraduate research? (2) What skills can be taught; and (3) What data need to be collected to assess learning outcomes?

The Transformative Games Initiative benefits freshmen, undergraduate research students, and research faculty. By designing behavioral interventions or games for social impact, undergraduate research students may deepen their understanding of domain-specific problems, applied behavioral design, programming, and design-based research. Matriculating freshmen may benefit when Informative games are incorporated into freshmen orientation programs and seminars. Research faculty can create a pedagogic research program that complements their primary research program. Game-based learning allows faculty to work with more students on a wider number of topics without jeopardizing their primary research program. These experiences may be scaled to prepare students for the primary research program.

METHODS
The overall effectiveness of the program was evaluated from the perspective of faculty members, undergraduate researchers, and participating freshmen. Satisfaction in undergraduate researchers was assessed using a nationally recognized survey for faculty members. The program was completed thus far, which will be used to guide the next iteration of program development. Immediate plans include designing interdisciplinary courses in game design. Each course will provide much needed structure for the program.

RESULTS
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