# Increasing Access and Engagement Through Iterative Design

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**Abstract:** In this poster presentation we describe methods and data used to increase access and engagement through our iterative design and development process for PurpleState Solutions. PurpleState, a Virtual Internship that utilizes an immersive computer supported collaborative learning environment (Shaffer, 2006), places students in the role of interns at a strategic communications firm. The goal of the simulation is to increase students' skills and knowledge needed to engage actively as democratic citizens in the current media driven US context. Here we describe the iterative design model that allowed us to reach our goals of maximizing access and engagement through utilizing data gathered in the online environment.

## Introduction

The use of role-plays and simulations in civics and government classes is far from new. However, opportunities to participate in high-quality simulations are often limited to more affluent populations, used as part of AP Government Courses (e.g., Parker, et al., 2013), or are limited by the digital divide in terms of access to these high-quality learning environments (Margolis, et al., 2008). Also, these simulations often model official roles within the government hierarchy, or are designed to align with state standards and textbooks rather than reflect the dynamic nature of how government processes occur that may be more relevant for students from marginalized backgrounds (Raphael, et al., 2011). These simulations also do not necessarily model the dynamic and media rich world in which today's citizens inhabit (Stoddard, 2014). This poster describes the development process of PurpleState Solutions, a Virtual Internship simulation focused on developing student skills, knowledge, and values related to media and civic education (Gould, 2011). We focus here on an design-based process over three iterations to increase access and engagement.

## Theory and design framework

PurpleState was designed using the model of Virtual Internships developed by Shaffer (2006) that employs epistemic frames and communities of practice from professions as models of learning. The Epistemic Games Group at the Wisconsin Center for Education Research (UW- Madison) have developed Virtual Internships modeled on the work of engineers, journalists, and urban planners. For PurpleState, student interns collaborate to learn core concepts and skills related to political communications, research a controversial public policy issue (e.g., fracking), and then develop a media campaign to help PurpleState voters based on their assigned client (i.e., one of two opposing special interest groups). All activities take place in WorkPro, an online productivity suite that includes email and chat functions, a notebook, and all the tools and resources that students need to complete the internship. Students use WorkPro to interact with other students in the simulation and also their supervisor and online mentors. For example, the supervisor sends tasks to students and evaluates their work products; the mentor answers questions, offers suggestions, guides reflective conversations, facilitates team collaboration, and provides support. The WorkPro online environment was developed by the Epistemic Games Group and is now available to others to design simulations as part of their NSF supported authorware project.

## Methods and design process

We worked closely with teacher-collaborators, content and design experts, and professionals from the field for this design-based research (Brown, 1992; Dede, 2004). A design-based approach allows for ongoing development of the simulation in response to the data being collected live in the WorkPro environment. A design-based research model resulted in a more robust simulation and a broader array of rich data for measuring the effects of the simulation. We implemented the simulation in three iterations from 2016 to 2017. With these iterations were also three rounds of data collection, analysis, and simulation revision to attempt to reach our goals of maximum participation and engagement through making the materials and simulation structure as accessible as possible.

We utilized data collected in the WorkPro environment, including team chat data, task deliverables (assessments), and descriptive statistics generated on task completion, the breakdown of individual participation

in team chats (by % of utterances), as well as data from our mentors and our teacher collaborators. We used this data to identify: 1) tasks, interactions, or instances in the simulation where students were confused, frustrated, or spending a significant amount of time on trivial tasks, 2) any technical or structural issues with the simulation that could be addressed, 3) assessments that had common misconceptions or were completed poorly consistently, and 4) mentor-intern and intern-intern interactions in chat that were on the high or low end of engagement and quality of substantive conversation measures (Newmann, King, and Carmichael, 2007). In the final round of implementation, which was done with 9th grade rather than 12th grade students, we also engaged in a higher and more frequent level of continuous interaction with our collaborating teacher to identify students who seemed disengaged, frustrated, or who were struggling so that we could collaborate to support the students' successful participation in the simulation.

## Results and implications

Utilizing data generated in WorkPro, we identified several areas for revision to increase access and engagement in each round of implementation. After our first implementation, we adjusted: wording in emails and task descriptions, rubrics for feedback and instructions for mentors, discussion questions and prompt scripts for mentors to support greater participation (e.g., more explicit questions to guide student thinking), and the elimination of tasks or the implementation of tasks that were not core to the intellectual work (e.g., parts of tasks that caused confusion but were not necessary to the main goal). These changes resulted in reduced confusion and higher levels of engagement (in the form of more equal levels of participation in the chat discussions) among team members. During the second implementation, we identified additional areas for revision, including refining discussion questions, creating training and scripts for online mentors to help them provide more aggressive supports, and the need to make simulation resources more aligned with the tasks and to attempt to reduce the reading level and amount while maintaining the level of sophistication. During the final round of implementation, we focused our revisions on making the role of the online mentors more active during the sessions, providing daily tip sheets and scaffolding ideas for mentors and the collaborating teacher to employ based on needs that were identified, and implemented more individualized student support both online in the simulation and in the classroom through our collaborating teacher. The poster presentation will illustrate our methods, process, and findings and the resulting simulation revisions over three iterations of development as a model for other simulations to apply in similar design-based research projects.

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