

**Forthcoming (2019) *Journal of Political Science Education***

**vMOBilize:**

**Gamifying Civic Learning and Political Engagement in a Classroom Context**

**Dannagal G. Young**

University of Delaware

**Matthew A. Baum**

Harvard University

**Duncan Prettyman**

Texas Tech University

Abstract

This study presents the results of a quasi-experiment ( $N = 307$ ) conducted over the course of 10 weeks in Spring of 2016 to assess the effectiveness of a game platform designed to facilitate political engagement, attention, efficacy, knowledge, and participation among college students. Results indicate positive effects of gameplay on several key dimensions of political engagement, including voter registration, virtual political participation (following a candidate on Twitter, liking a candidate on Facebook, and watching debates), and consumption of public affairs information (including National Public Radio, non-NPR political talk radio, and online news aggregator sites). Additionally, gameplay provided significantly greater benefits to students with the lowest rates of political knowledge at baseline. Overall, participants reported high rates of game satisfaction, with 79% of participants reporting being very to somewhat pleased if they were asked to play the game again. These results are discussed in terms of the implications for civics education, pedagogy, and political engagement among young people.

**Acknowledgements.** The creation and maintenance of the vMOBilize game platform was made possible by funding from The Ash Center for Democratic Governance and Innovation, the Center for Political Communication at the University of Delaware and from Mr. Bob Suh.

## Introduction

Only a little over half of all eligible voters in the United States turn out to vote. Among the groups least likely to vote, or otherwise participate in the political process, are younger voters (Esser and De Vreese 2007, Wattenberg 2008). Only 46% of eligible voters ages 18-29 voted in 2016, the lowest percentage of any age group. Ironically, at the very time when typical individuals are forming their political identity, they are particularly likely to tune out and be turned off. Political habits developed during early adulthood, in turn, can last a lifetime (Plutzer 2002, Gerber, Green & Shachar 2003). A key to raising the political and civic engagement among Americans is thus to reach them before they develop a lifelong habit of non-participation.

Scholars have long sought to understand the factors that lead individuals to engage with politics (Powell, 1986; Blais, 2006). Yet despite all of the scholarly attention heaped upon the topic, a basic problem remains unresolved: we can lead the horse to water (by making information and opportunities to participate available), but we cannot reliably make it drink (that is, induce people to take advantage of such information and opportunities and actually participate). This study proposes a new approach to addressing this age-old conundrum, applied particularly to younger voters, the group arguably most amenable to pro-engagement interventions and upon which the longer-term trajectory of political participation in America rests. We do so through a process known as gamification: using a structured game to engage young potential voters in the political process, thereby increasing their political knowledge and engagement. Toward this end, we developed a web-based political participation game platform, which we named vMOBilize. We administered the game to students in a large undergraduate class during the 2016 presidential primaries, surveyed the students both prior to and following

their participation in the game. We also surveyed a control group of students in a comparable course who did not participate in the game.

We begin by reviewing the literatures on political participation, with an emphasis on younger voters, and gamification. We then describe vMOBilize. Next, we present the results from our controlled experiment aimed at assessing the effects of participation in vMOBilize. The final section discusses the implications of our results to date and offers conclusions.

### **The Challenge of Youth Political Engagement**

Over the past half century, scholars have grown increasingly concerned about the lack of political engagement among young people in the United States (Delli Carpini, 2000; Galston, 2004; O'Toole, Lister, Marsh, Jones, & McDonagh, 2003; Raphael, Bachen, Lynn, Baldwin-Philippi, & McKee, 2010; The Institute of Politics at Harvard University [IOP], 2016; Zukin, Keeter, Andolina, Jenkins, & Carpini, 2006). The Center for Information and Research on Civic Learning and Engagement (CIRCLE) reports that the 2014 federal election had the lowest youth turnout rate ever recorded. It also featured the lowest proportion of young people reporting that they were registered to vote in the past forty years (*2014 Youth Turnout*, n.d.). CIRCLE argues that American youths were “under-mobilized” in 2014 in the sense that a number of young people that did register did not actually vote in the election.

Unfortunately, it's not just at the polls that youths are not participating. According to a 2016 poll conducted by the Institute for Politics at Harvard University (IOP), 91% of the young people surveyed had never participated in a “government, political, or issue-related organization” (p. 13). Additionally, when young people were asked about their participation in other political activities, such as attending a political/demonstration or liking a political candidate/issue on

Facebook, the majority of young people had never participated in these activities, either (IOP, 2016). Young people's lack of political participation may stem from a lack of political efficacy (Manganelli, Lucidi, & Alivernini, 2014; Moeller, de Vreese, Esser, & Kunz, 2014). Many respondents to the IOP's (2016) poll reported feeling that their political efforts did not yield "tangible results" and that they felt that they did not have a say in what the government does (p. 21-22). Respondents also seemed to have little faith in government and government officials (IOP, 2016). Sixty percent felt that government officials are "motivated by selfish reasons" and 48% believe that politics are "no longer able to meet the challenges [the] country is facing" (IOP, 2016, p. 24). These results are consistent with analyses of political interest and participation among various generations. Dalton, for example, highlights the relatively high levels of political interest among millennials at the same time that they illustrate lower participation in electoral politics than other generations did at this same age. Writes Dalton, "Millennials in 2016 are significantly less likely to vote or try to influence others vote than were the '80s generation in the 1987 survey, or the first wave of postwar baby boomers in 1967" (Dalton, 2016).

In addition to their lack of political efficacy, young people tend to lack political knowledge – possibly contributing to a sense that they do not know enough to participate in political life. CIRCLE reports in its 2013 factsheet on political knowledge among young people that only 24% of twelfth graders had "proficient" scores in civics on the National Assessment of Educational Progress (NAEP). CIRCLE (2013) also found in its own survey of young people's political knowledge in 2013 that there was an overall need for better informing youth about political topics (p. 4).

These patterns suggest that the relative dearth of engagement with electoral politics combined with low political efficacy among America's young people are significant issues that merit scholarly attention – and possible intervention.

### **Gamification, game-based learning (GBL), and civic engagement**

The term 'gamification' is a contested term within the scholarly community (Brigham, 2015; Deterding, Dixon, Khaled, & Nacke, 2011; Jagoda, 2013; Nicholson, 2015; Seaborn & Fels, 2015; Werbach, 2014). Scholars have offered many different definitions since the term came into vogue in 2010 (Deterding et al., 2011). For example, Jagoda (2013) defines gamification as a kind of "seepage" of game mechanics and objectives into our everyday lives (p. 116). Werbach (2014), on the other hand, defines it as "the process of making activities more game-like" (p. 266). Nicholson (2015) offers yet another definition of what he calls "meaningful gamification" which he describes as "using game design elements to help build intrinsic motivation [...] in non-game settings" (p. 4). Still another definition is provided by Seaborn and Fels (2015) who define gamification as "the intentional use of game elements for a gameful experience of non-game tasks and contexts," and attempts to combine three of the most popular definitions of gamification (p. 17).

Despite the variety of available definitions, Deterding et al. provide the most widely employed definition (Seaborn & Fels, 2015): "the use of game design elements in non-game contexts" (p. 2). To further complicate matters gamification is often confused with similar yet distinct terms such as serious games. Serious games are fully developed games for non-entertainment purposes (Deterding et al., 2011) For example, a video game that was designed to teach math and required players to solve math problems to progress would be a serious game.

Gamification is distinct because it only utilizes game elements in non-game contexts. In other words, it is only using parts of games and applying them outside of the game. Regardless of the definition, however, the goal of gamification remains the same: to alter people's behavior through game play.

In recent years teachers in higher education have increasingly embraced new technologies and experiential approaches to learning - including game-based learning (GBL). GBL describes the use of actual games (digital or non-digital) to “enhance learning and teaching” (Wiggins, 2016, p. 18). Wiggins (2016) reports that in a survey of instructors in higher education 83% used some form of GBL in their courses. Furthermore, Wiggins (2016) reports that 39% of surveyed instructors reported that they would likely use GBL in the next academic year. Gamification has also become increasingly popular among educators in higher education (Morford et al., 2014; Seaborn & Fels, 2015; Wiggins, 2016). The use of gamification in education has seen a number of notable successes. In their meta-analysis of gamification in education, Dicheva, Dichev, Agre, and Angelova (2015) found that a majority of the surveyed articles reported “encouraging results” from the integration of games into course curricula (p. 83). Additionally, the majority of the authors believed that “gamification has the potential to improve learning” (Dicheva et al., 2015, p. 83).

Given the promise of gamification in educational contexts, the success of similar applications in civic education and political engagement shouldn't come as a surprise. In fact, long before the advent of computer games and computer simulations, Vogel (1973) found that role-playing a politician as part of a live simulation game increased participants' political efficacy. In the context of a longitudinal study of a political simulation, Bernstein and Meizlish (2003) found that three years after playing the simulation game, participants displayed greater

political efficacy and knowledge, and less political cynicism than the control group (Bernstein & Meizlish, 2003). Gamification can also increase political knowledge and encourage citizens to stay informed. Sotirakou and Mourlas (2015) report the effectiveness of a gamified news reading application designed to encourage people to read the news. Initial evaluation of the prototype was generally positive with participants interested in the app and what it had to offer (Sotirakou & Mourlas, 2015). The results of these studies suggest that games and gamification can help to increase civic knowledge.

Gamification can also promote concrete aspects of political participation and civic involvement. Several studies have used gamification to increase citizens' involvement with their neighborhood and local governments (Coenen, 2014; Gordon & Baldwin-Philippi, 2014; Oliveira & Petersen, 2014). Gordon and Baldwin-Philippi (2014) found that a "well-designed game can ... encourage people to reflect on specific policy and planning decisions" (p. 779). Similar studies by Oliviera and Petersen (2014) and Coenen (2014) report equally successful results. In addition to encouraging engagement on the local level, gamification can also facilitate attaining citizens' input on policy matters (Hu & Chen, 2015; Parycek, Sachs, Sedy, & Schossböck, 2014; Santos, Zambalde, Veroneze, Botelho, & De Souza Bermejo, 2015). Hu and Chen (2015) interviewed users of a gamified public forum designed to encourage public input on policy matters. They found that gamification effectively encouraged the exchange of information and engagement among users (Hu & Chen, 2015). Parycek et al. (2014) investigated the effectiveness of a gamified social media platform designed to bring politicians and citizens together, and found that the platform was particularly well-received by young people. In a case study of a mobile game designed to increase civic engagement in Brazil, Santos et al. (2015) found significant effects on key outcomes, including on the generation and implementation of

projects and policies that had been crowdsourced through the platform. Clearly, gamified online platforms can be effective in increasing citizens' knowledge, efficacy, political engagement and participation.

### **Putting it together: vMOBilize**

The current project employs gamification to help combat low rates of political engagement and participation among young Americans, in a way that avoids the partisan identity-politics that often accompany political engagement. As a supplement to university coursework in communication, we created a non-partisan online team-based civics engagement platform, called vMOBilize. The platform builds upon the demonstrable benefits of gamification on pro-social outcomes and expands upon novel uses of technology and gaming in educational settings.

**Goal 1:** Increase democratically healthy outcomes such as political participation and engagement among college students.

**Goal 1a:** Stimulate political engagement among the least politically knowledgeable and the least politically engaged.

**Goal 2:** Increase these outcomes in a way that is enjoyable, rewarding, and socializes students into an appreciation for politics and current events.

### **vMOBilize**

vMOBilize (vMOB) is a social network web-based civic participation game created to engage young people in politics and civic life. We designed the game as a supplement to coursework in a high school or college-level class. Players can join the game as either a team



captain and start their own teams or they can join an already existing team. Players work to complete challenges from four different categories and earn points for their teams by doing so. They can also earn virtual rewards, such as badges, for their efforts. For the game evaluation process discussed here, interested students signed up as “captains” and were assigned teams of six to eight students each. Students were incentivized with extra credit that would be added to their final exam score at the end of the semester based on both their individual *and* team gameplay. Using a scoring algorithm that included both students’ individual *and* team scores, at the end of the semester, students were ranked for gameplay across the class. The top fifth received 5 points extra added to their exam, the next fifth received 4 points, the next 3 ...and so on.

### **Weekly Challenges**

The internal workings of the game are driven by the completion of weekly challenges made available to players on a rolling basis. Each week, the game offers three to four new challenges that a team of research assistants working behind the scenes create and upload. Challenges made available to players fall into four different categories” 1) article challenges, 2) survey challenges, 3) photo upload challenges, and 4) “check in” location challenges.

**Article challenges.** For the “article challenges,” players are brought to a website featuring an article, news report, or other content to view. After viewing the content and closing the pop-up window, players are then issued a multiple-choice question on the content of the media they consumed. Once they provide the correct answer, they earn points.

**Survey challenges.** For the “survey challenges,” players complete an embedded Qualtrics survey that includes both closed- and open-ended questions on varied topics. Topics include opinions on public policy, candidates, and institutions; thoughts on current events and

news headlines, and open-ended questions like “which candidate would you like to dine with and why?” Upon completion of the survey, players earn points.

In a secondary set of related challenges, the vMOB assistants analyze survey responses, and used *those* responses as stimuli for a survey the following week. For example, after surveying students on the most important issues facing the nation, vMOB staff summarized those results, and presented them to players in the form of a bar graph, along with the prompt, “are you surprised by your classmates’ opinions on this issue? Why or why not?” In this way, the game capitalizes on interactivity and feedback as player responses from one week are the subject of a survey the next.

**Photo upload challenges.** In the photo upload challenge, using a photo function through Twitter, players take a picture (for example, of themselves at a political event) and upload the photo for points added to their scores.

**“Check in” challenges.** Similar to a Facebook or FourSquare “check-in” feature, a check-in challenge identifies a particular location (latitude and longitude) and a time frame during which players can “check in,” within a certain distance radius. Using GPS and location services within a player’s smart phone, the player can then indicate he/she is “present” at the given location at a given time. This is particularly useful as a verifiable way of indicating attendance at a political event occurring on campus or elsewhere.

### **Game Interface**

Upon registering (either with Facebook/Twitter or with an email address and unique password), the game collects information on what vMOBilize-eligible course the student is enrolled in, and his/her zipcode. The zipcode is collected to facilitate the generation of a visual

map of players, and also to help customize challenges such as information on voter registration deadlines and primary dates. As noted, players either join the game as a team captain starting a new team (for which they are able to provide a team name and logo) or join an existing team. Once in the game, players are brought to their team page (shown in Figure 1) where challenges are visually presented in a table form with colorful icons and graphics that illustrate the number of points each challenge is worth, the percent of team members completing each challenge, and the number of days left to complete each one. As players complete challenges they see their points accrue on their team's page and their team total updated with the new points. The team page also features a "leader board" that shows what teams have the highest point totals, as well as an active "newsfeed" through which team members can "chat" with their teammates. Players can also view individual "player pages" (shown in Figure 2) where they can see any badges they have earned for particular achievements.

[INSERT FIGURE 1 HERE]

[INSERT FIGURE 2 HERE]

## METHODS

We conducted a controlled study in spring 2016 to assess the impact of gameplay on key outcomes: knowledge, efficacy, participation (on and offline), and specific behaviors illustrative of participation, including registering to vote<sup>1</sup>. Although the study was controlled, it was not a true experiment as participants were not randomized into groups. Instead, the experimental ( $n = 126$ ) and control groups ( $n = 168$ ) were comparably sized mass media-oriented communication classes at one Mid-Atlantic university. The control group was unaware of vMOBilize and never

---

<sup>1</sup> This project was approved by the Institutional Review Boards at [REDACTED] University.

saw the game or completed any challenges. We invited the experimental group to register for vMOBilize and participate in challenges to earn points towards extra credit. We issued a baseline survey at the beginning of the semester (last week of February) to both groups followed by a post-study survey approximately ten weeks later (first week of May). Final *N*s in the two groups were contingent on the number of respondents who completed both the baseline survey and the exit survey. Due to attrition of 16% of the experimental group and 12% of the control group, the final samples sizes were: experimental ( $N = 105$ ) and control ( $N = 149$ ).<sup>2</sup>

## MEASURES

In this section, we define our dependent variables.

### **Dependent Variables measured at periods T1 (prior to participating in vMOBilize) and T2 (following completion of participation in vMOBilize):**

- **Following the Campaign.** Question: “Would you say you are following the 2016 campaign for President of the United States...” Responses were measured using a five-point scale ranging from 1 “not at all” to 5 “extremely closely.” T1 ( $M = 3.06$ ,  $SD = 1.05$ ), T2 ( $M = 3.104$ ,  $SD = 1.02$ ).
- **Political Knowledge.** Participants’ political knowledge was measured using a five-item index consisting of a series of multiple-choice questions, such as “How much of a majority is required for the U.S. Senate and House to override a presidential veto?” and “Do you happen

---

<sup>2</sup> One to three observations are dropped from most of the reported models due to listwise deletion, attributable to missing values on at least one variable included in the model. Testing indicated that variations in missing data across models do not materially influence the reported results. Participants in the experimental group were asked to report the extent of their participation in the game. To assess how the “extent of game play” affected our outcome measures, we included this measure as a covariate in our models, but it did not change any of the relationships observed. Finally, the implications of the modest attrition over the course of the project in terms of treatment effects is ambiguous, since we do not know whether these students would or would not have demonstrated effects of game play.

to know what political job or political office is now held by Paul Ryan?” Participants choose their answer from three possible options including a fourth “I don’t know” option. For the posttest, we added a sixth question: “Do you happen to know which of the following political figures endorsed Donald Trump for President?”. Incorrect and don’t know responses were coded “0” and correct responses coded “1.” We calculated the average number correct for each respondent, T1 (Cronbach’s  $\alpha = .67$ ,  $M = .56$ ,  $SD = .31$ ), T2 (Cronbach’s  $\alpha = .69$ ,  $M = .61$ ,  $SD = .29$ ).

- Political Participation.** We measured participants’ political participation using a 10-item index, consisting of a list of activities such as “Donated money to a campaign” and “Followed a candidate on Twitter.” In each case, we asked participants to indicate whether they have participated in the activities by selecting “yes” (coded 1) or “no” (coded 0). We calculated the mean of these items. , T1 (Cronbach’s  $\alpha = .72$ ,  $M = .21$ ,  $SD = .18$ ), T2 (Cronbach’s  $\alpha = .73$ ,  $M = .28$ ,  $SD = .15$ ). We also created a “virtual participation” subscale based on mediated and online forms of participation, including “liking” a candidate on Facebook, “following” a candidate on Twitter and watching the debates, T1 (Cronbach’s  $\alpha = .62$ ,  $M = .43$ ,  $SD = .932$ ), T2 (Cronbach’s  $\alpha = .58$ ,  $M = .60$ ,  $SD = .28$ ).
- Political Efficacy.** We measured political efficacy using a 3-item index, index consisting of the following statements: 1) “I consider myself to be well-qualified to participate in politics,” 2) “I feel that I have a pretty good understanding of the important political issues facing our country,” 3) “I think that I am better informed about politics than most people.” Participants rated each item on a five-point scale ranging from 1 “strongly disagree” to 5 “strongly agree.” These items were combined by taking their mean, T1 (Cronbach’s  $\alpha = .89$ ,  $M = 3.07$ ,  $SD = 1.13$ ), T2 (Cronbach’s  $\alpha = .89$ ,  $M = 3.04$ ,  $SD = 1.10$ ).

- **Media Use.** We measured participants' media use using 7 items asking participants to indicate how often they read/watched/listened to various media sources in the past week on a four-point scale ranging from 1 "not at all" to 4 "every day." The index consists of a list of news media such as "A 24-hour cable news channel (like CNN, MSNBC, or FOX)" and "An online news aggregator site (like Huffington Post or Yahoo news)." We combined these media use items by calculating their average, T1 (Cronbach's  $\alpha = .77$ ,  $M = 11.42$ ,  $SD = 3.50$ ), T2 (Cronbach's  $\alpha = .81$ ,  $M = 11.17$ ,  $SD = 3.55$ ). We also created a 4-item radio and online subscale, consisting of news aggregator use, online newspaper reading, NPR and political talk radio use T1 (Cronbach's  $\alpha = .65$ ,  $M = 1.51$ ,  $SD = .48$ ), T2 (Cronbach's  $\alpha = .68$ ,  $M = 1.52$ ,  $SD = .47$ ).
- **Registered to Vote.** Respondents were asked at both T1 and T2 if they were currently registered to vote in the United States "yes" (coded 1), "no" (coded 0), (T1  $M = .70$ ,  $SD = .46$ ; T2  $M = .74$ ,  $SD = .44$ ).

### Post-test Only Dependent Variables

- **Political Discussion.** We measured participants' political discussions using a 3-item index. We asked participants to indicate on a four-point scale ranging from 1 "not at all" to 4 "every day" how often they discussed politics or the election with "family members," "friends," and "social media." We combined these items by taking their mean (Cronbach's  $\alpha = .70$ ,  $M = 1.85$ ,  $SD = .57$ ).
- **Intention to vote in Presidential Election.** We asked participants how likely they were to vote in the presidential election in November. We measured responses using a five-point scale ranging from 1 "I will definitely not vote in the election in November" to 5 "I will definitely vote in the election in November." ( $M = 4.09$ ,  $SD = 1.18$ ).

**Game-specific measures.**

For respondents in the vMOBilize treatment condition only, the post-test survey included items designed to capture their experience playing the game and their attitude and beliefs about the game.

- **Pleased to play again.** As part of the posttest, we asked participants if they would be “pleased or displeased” if they were asked to play vMOBilize in a future class. We measured responses using a seven-point Likert scale ranging from 1 “very pleased” to 7 “very displeased agree” (rev) ( $M = 5.62$ ,  $SD = 1.06$ ).
- **Game Perceptions.** We assessed vMOBilize participants’ perceptions of the vMOBilize game using a six-item index. The index consists of the following statements “vMOBilize challenges were a good test of my knowledge of politics and current events,” “I felt like there was a lot of variety in the kinds of challenges available,” “I felt excited to complete the challenges each week,” “I felt a sense of accomplishment when earning points,” “vMOBilize challenges made me pay more attention to the presidential campaign,” “vMOBilize challenges caused me to pay more attention to the news and current events,” Participants rated each item on a five point scale ranging from 1 “strongly disagree” to 5 “strongly agree.” (Cronbach’s  $\alpha = .82$ ,  $M = 3.5$ ,  $SD = .63$ ).
- **Game Enjoyment.** We asked vMOBilize participants about their overall favorability and enjoyment of the game using a 4-item index. The index consists of the following statements “vMOBilize is a game that I could imagine myself playing just for fun,” “vMOBilize is easy to understand,” “vMOBilize's website is pleasing to the eye,” and “Playing vMOBilize is fun.” Participants rated each item by participants on a five-point scale ranging from 1 “strongly disagree” to 5 “strongly agree.” (Cronbach’s  $\alpha = .74$ ,  $M = 3.25$ ,  $SD = .57$ ).

- **Participation in Challenges.** In addition to the system-captured data on participants' completion of challenges, the survey asked respondents to self-report the extent of their participation in the challenges: "Some students had time to complete many of the vMOBilize challenges while others found they did not have time to complete very many. How about you? Would you say you..." We measured responses using a five-point scale ranging from 1 "none of the challenges" to 5 "all of the challenges." ( $M = 3.59$ ,  $SD = 1.09$ ).
- **Game Comments.** As part of the posttest, we asked participants to provide any additional thoughts they had regarding the vMOBilize game via an open-ended question.

### Control Variables

- **Party.** Question: "Which of the following best describes your political party affiliation?" Responses range from "Strong Democrat" (coded 1) to "Strong Republican" (coded 6). (T1  $M = 2.79$ ,  $SD = 1.10$ ; T2  $M = 2.81$ ,  $SD = 1.00$ )
- **Ideology.** Question: "Which of the following best describes your political ideology?" Responses range from "Extremely Liberal" (coded 1) to "Extremely Conservative" (coded 5) (T1  $M = 2.65$ ,  $SD = .86$ ; T2  $M = 2.67$ ,  $SD = .87$ ).
- **Gender.** Question: "What is your gender?" Men were coded 1 and women were coded 0 (T1 males, 32%,  $n = 93$ ; females, 67%,  $n = 196$ ; T2 males, 29%,  $n = 84$ ; females, 62%,  $n = 183$ ).

## RESULTS

We begin by checking the correlations of baseline measures with the treatment condition to identify factors conflated with condition. Since this is not a randomized experiment, understanding how individual-level factors correlate with condition is important in order to



reduce the likelihood that we attribute post-test differences to spurious confounding variables. We used the Generalized Linear Model (GLM)<sup>3</sup> to test differences between the vMOBilize and control groups in t1 measures of efficacy, political knowledge, media use, political participation, virtual participation, following the campaign, being registered to vote, party, ideology, and gender. Of those, the only factors statistically significantly ( $p < .05$ ) associated with the experimental condition were political ideology, being registered to vote and gender, with the vMOB condition being significantly more Democratic, liberal, female, and less likely to have already registered to vote at T1 compared to the control group. Based on these findings, we include these constructs as controls in the models (see Appendix A for descriptive statistics of baseline constructs with condition).

To assess goal 1 (whether game play affected any of the positive dimensions of engagement or participation articulated in the measures section), we tested the effects of the experimental condition on ten political outcomes. We first calculated change scores ( $t2 - t1$ ) for eight proposed dependent variables: political knowledge, efficacy, participation (and virtual participation), media use (both scales), following the campaign, and registering to vote (with 10 weeks between baseline and the final week of gameplay). We ran GLM regressions with robust errors, predicting each change score as a function of experimental condition, controlling for baseline party, ideology, gender, and having registered to vote. In addition to the change scores discussed above, we ran models predicting two additional dependent variables that were only measured at Time 2: political discussion and intention to vote in the general election.

---

<sup>3</sup> The Generalized Linear Model is a statistical analysis that allows for the simultaneous testing of the effects of a set of independent variables on one or more dependent variables. It is more flexible than standard linear regression in that it allows specification of multiple error distributions and estimators (e.g., OLS, logistic regression, Poisson regression). It can thus be useful for estimating groups of models that mix continuous, binary, or scaled dependent variables.

Regression results for the main effects models indicate significant (or nearly so) differences in the expected directions for three of our dependent variables: T1 to T2 change in the 4-item media use measure, in virtual political participation, and in registering to vote (See Table 1). In each case, the change in the vMOBilize treatment condition was more positive (literally and figuratively) than the change witnessed in the control group, with participants in the vMOBilize game reporting greater increases in talk radio, *NPR* and online news use, as well as greater increases in virtual political participation and voter registration.

[INSERT TABLE 1 HERE]

Looking at the three dependent variables for which game play produced significant direct effects, we find that vMOBilize is associated with an increase in election-related radio/online news consumption of about .11, equivalent to .31 standard deviations on the radio/online news consumption scale ( $p < .05$ ). This compares to a statistically insignificant secular change of less than one percentage point among participants in the control condition. The .12 difference between treatment and control conditions is significant at  $p < .05$ . vMOBilize participants' virtual participation in the campaign increased by about .09, equivalent to about a quarter of a standard deviation on the virtual participation scale ( $p < .05$ ). This compares to about a .02 *decrease* in virtual participation among participants in the control condition. The .11 difference between treatment and control conditions is again significant at  $p < .05$ . Finally, participating in vMOBilize is associated with a .11 increase in the probability of reporting being registered to vote ( $p < .05$ ). This compares to a statistically insignificant secular increase of 5 percentage points among those in the control condition. The .06 difference between the control and treatment conditions approaches, but does not quite reach, standard levels of statistical significance ( $p < .10$ ).

Next, to understand whether the effects of vMOBilize varied as a function of participants' baseline political knowledge or political engagement (Goal 1a), we interacted the treatment condition with two different baseline measures: political knowledge and following politics. We then added these interactions as predictors to the regression analyses described above, along with lower order terms. Results (See Table 2) indicate that in several key respects the effects of participating in vMOBilize are significantly stronger (and more positive) among respondents who were less politically knowledgeable or who reported following the 2016 campaign less closely than among their counterparts who were more knowledgeable or who reported following the campaign more closely ( $p < .05$  or better). Specifically, we find two significant and substantively consequential interactions, both in the desired direction. The first concerns consuming campaign-related information seeking and the second concerns voting behavior. Beginning with the former, when predicting changes in media use over the course of the project (measured two different ways), those people least likely to be following politics (relatively low knowledge or self-reported extent of following the campaign) at the start experienced significantly greater beneficial effects of gameplay than those with higher baseline political knowledge or extent of following the campaign ( $p < .05$  or better). Turning to the latter category of effects, looking at how gameplay shapes the likelihood of registering to vote, and self-expressed intent to vote, as a function of individual level characteristics, we again find that the effects of the treatment condition are significantly greater (and, again, more positive) for those participants with the lowest rates of following the campaign or political knowledge at baseline ( $p < .05$  or better). In each instance, we observe the greatest increases in politically healthy outcomes among those respondents lowest in political knowledge and attention to the election at baseline – indicating some success in achieving Goal 1a.

[INSERT TABLE 2 HERE]

[INSERT FIGURE 3 HERE]

Figure 3 illustrates these relationships in the context of change in the probability of registering to vote.<sup>4</sup> The lines indicate the difference in the predicted change in whether people report being registered to vote between the treatment versus control condition at various levels of baseline political knowledge (x-axis). As shown here, the least politically knowledgeable participants experienced the greatest benefits of the vMOBilize treatment, looking dramatically different from their control condition counterparts in their increased reports of voter registration over the 10-week game. For instance, comparing the change from t1 to t2 (from pre- to post-participation in vMOBilize), participants in the treatment condition *increased* their probability of being registered to vote by 24 percentage points more than their counterparts in the control condition ( $p < .05$ ), while *decreasing* their probability of indicating no change in their registration status by 26 percentage points more than the control condition ( $p < .05$ ).<sup>5</sup> Statistically significant differences along these lines persist among respondents who offered zero, one, or two, out of five correct responses to the factual political knowledge battery of questions. Among those higher in baseline political knowledge (those offering 3 to 5 correct responses), participation in the game did not statistically significantly affect reported registration status.

---

<sup>4</sup> Note that because this outcome variable consists of three discrete categories (became registered, became unregistered, or did not change registration status), we employ unordered multinomial logit (which, is not supported by GLM, and which, unlike ordered logit, makes no assumptions regarding ordinal or cardinal distances between categories).

<sup>5</sup> Unsurprisingly, there are very few cases (9 in total) of respondents reporting that they moved from registered to unregistered status from pre- to post-treatment. Consequently, the change in the likelihood of having done so is statistically significant.

Looking at the relationships between the vMOBilize treatment and political knowledge or following the campaign in the context of political participation and media use (virtual only, and including both on- and off-line media), we see strikingly similar patterns (see Figures 4 and 5). The least politically knowledgeable or engaged participants benefited most from the vMOBilize treatment. For instance, among the least knowledgeable respondents (see Figure 4), participants in vMOBilize were 8 percentage points more likely than their counterparts in the control condition to indicate that they had participated in the election campaign on- or off-line. They were also 19 points more likely than those in the control condition to report participating online only, and 23 points more likely than the control condition to report consuming news about the campaign online or via radio. All of these differences are statistically significant at  $p < .05$  or better. As with registering to vote, among highly knowledgeable respondents (those offering 4 or 5 out of 5 possible correct responses to factual knowledge questions), respondents in the treatment and control conditions are statistically indistinguishable.

At Figure 5, in turn, we see that respondents who indicated that they were not following the election closely (scores of 1-2 or 1-3, depending on the dependent variable, on the 5-point scale running from “not at all” to “extremely” closely), participating in vMOBilize was associated with greater consumption of radio/online news. Among the least attentive respondents (those who report following the campaign “not at all”), vMOBilize participation yields a .24 percentage point increase in radio/online news consumption, equivalent to a .62 standard deviation difference from non-participants ( $p < .05$ ). We observe similar positive effects for overall news consumption. In this case the least attentive respondents who participated in vMOBilize reported consuming .19 points more news than their non-participating counterparts, equivalent to half a standard deviation difference on the news consumption scale ( $p < .05$ ).

Finally, among those who reported following the campaign *not at all* or *not too* closely in the pre-test, participating in vMOBilize is associated with a statistically significant ( $p < .05$ ) increase in the probability of expressing an intent to vote in the presidential election. Among the least attentive respondents, vMOBilize participants are 43 percentage points more likely than non-participants to indicate in the post-treatment survey that they intend to vote, a difference of .36 standard deviations.

[INSERT FIGURE 4 HERE]

### **Exploring game enjoyment.**

While we do not have the capacity to *compare* enjoyment of the game to participation in some *other* political intervention, we can explore univariate descriptives of vMOBilize participants' self-reported assessments of the game. In response to the question, "Would you be pleased or displeased if you were asked to play vMOBilize in a future class?" 79% of respondents reported they would be somewhat pleased, pleased, or very pleased to play the game again ( $M = 5.59$ ,  $SD = 1.13$  on scale from 1 to 7).

Looking at the items designed to assess players' perceptions of vMOBilize and the weekly challenges, we see consistent agreement that the game was understandable, relatively fun, gave students a sense of accomplishment, and made them feel like they wanted to pay more attention to current events and the campaign (see Table 3). Obviously, the game could be even more fun, as evidenced by the fact that only about a fifth of respondents could imagine playing the game just for fun or outside of the context of a class. But, for a successful classroom-based intervention that showed significant increases in political engagement, these numbers provide reason for optimism.

Finally, as part of the post-test, we asked participants to provide any additional thoughts they had regarding the vMOBilize game via an open-ended question. Below is a representative sample of player comments:

- *I really enjoyed the different challenges and thought the website ran very smoothly.*
- *I enjoyed thinking about my political orientation from different perspectives and this helped me to pay more attention to the campaign.*
- *It was intriguing to learn about the current news this way*
- *I think VMOBilize did a good job of including many aspects of US politics and really got us thinking about all parts to the government.*
- *It was a great way to keep up with politics and the presidential campaigns.*
- *vMOBilize was an enjoyable game that forced me to discover where I identify politically, and be more aware of current events and the presidential election.*
- *I thought vmobilize kept me in the know with the campaign*
- *It was a great tool to get students more interested in the political world around them*
- *I think using extra credit to motivate kids to play MOBilize is great because when you do play it encourages you to want to learn more about politics.*
- *Videos were nice to watch too. This was a cool way to get us involved overall*
- *This helped me engage myself in politics. It was a positive experience that i did not mind doing outside of class*
- *I really liked it. The game even made me consider doing something with politics after college*

## Discussion

This project presents the results of a non-randomized experimental evaluation of an online civic engagement game on political engagement among college students. Given the low rates of political participation and attention among younger Americans, our goal was to create a fun and interactive platform through which students could engage in political life in a non-partisan way, by incentivizing political attention and participation through challenge-oriented game play. The goals of the game were twofold: 1) to increase healthy democratic behaviors and characteristics among college students, particularly among the least politically engaged, and 2) to do so in a way that users considered enjoyable.

The evaluation presented here shows moderate, but promising, results. In terms of increasing healthy democratic behaviors and characteristics, we see significantly greater increases being registered to vote, and in certain kinds of media use and political participation in the vMOBilize condition compared to the control group. These results are especially encouraging when we consider the conditional effects of gameplay on healthy democratic outcomes as a function of baseline political knowledge and following politics. Here we see gameplay contributed in a compensatory way to help mitigate the gap in participation and engagement between political haves and have nots in terms of general political participation, overall news consumption, and intending to vote in the general election. Put simply, the students with the least political expertise and interest experienced the greatest benefits of gameplay.

While this finding is positive on its own, it is especially good news given literature on how information and engagement interventions often result in exacerbating gaps between the information haves and have-nots. According to the knowledge gap hypothesis (Tichenor,



Donohue, and Olien, 1970) information is more readily acquired among those at the socioeconomic top than at the bottom. "... as the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease" (p. 159 – 160). Due to various systemic, resource, social and cognitive-related factors, interventions tend to benefit the people who need it the *least*. vMOBilize demonstrates the possibility of incorporating gamification in a classroom in a way that changes the incentive structure, and reframes political engagement into something enjoyable. Rather than widening the gap between the information haves and have nots, making political engagement "fun" helped to mobilize those with the most to gain. This finding in many ways parallels research into the differential effects of consuming soft news among individuals with differing levels of political sophistication and engagement. For instance, Baum (2003) finds that consuming politics via soft news increases political knowledge and attentiveness among the least politically engaged and educated individuals, but not among their more engaged or educated counterparts.

The final goal of this game-based intervention, of course, was to promote healthy democratic outcomes in a way that participants considered enjoyable. On this latter outcome, vMOBilize was a clear success. Overall, participants considered the game enjoyable, rated the challenges positively, and overwhelmingly reported that they would be pleased to play the game again. The open-ended comments were almost unanimously positive, with multiple students self-reporting increased campaign attention and interest, even though the direct change-measures did not statistically significantly corroborate that story.

While incentivizing students in a college course to play vMOBilize in exchange for extra credit was a convenient way to run and evaluate the game, the lack of randomization hinders our ability to draw causal claims with high confidence. Identifying baseline differences between the vMOBilize and control groups helps mitigate the effects of potential confounds, but the possibility still exists that systematic differences between the two courses, the instructors, and materials covered could have added to the differences we are attributing to “game-play.” The increases we witness could also be a result of the kind of students in the game condition at this particular university. They might also result from differential attrition among certain *kinds* of students over the course of the game. Implementing the game more broadly, across more diverse campuses will allow us to better determine whether or not if the beneficial effects of gameplay are generalizable.

It is important to recognize that we only observed statistically significant direct effects of gameplay on three of our dependent variables. This suggests, perhaps unsurprisingly, that there are some limitations to the efficacy of this type of gamification of political engagement. That said, each of the outcomes that benefited most from gameplay were those most closely tied to actual challenges issued through the game. The type of media use that benefited the most consistently from gameplay was talk radio and internet-based political news. Several of the challenges issued through the game instructed players to listen to a story on *NPR* or read an online newspaper story from the *Washington Post* or *USA Today*. Second, virtual political participation (liking a candidate on Facebook, Following a candidate on Twitter, or watching the presidential debates) experienced a significantly greater bump among vMOBilize players than the control. While the game did not instruct players to engage in any of these specific behaviors, seems likely that playing the political game in an online context rendered online and mediated

kinds of behaviors most salient. They are also exceptionally “easy” behaviors, with lower barriers to entry, compared to, say, volunteering, acquiring/wearing a t-shirt, or donating money. This is also the most common form of participation among younger citizens (Moffett and Rice, 2016).

Finally, we see an important increase in voter registration and intent to vote in the vMOBilize group compared to the control – findings that hold when controlling for baseline vote registration (which is crucial given the lower baseline vote registration in the gameplay condition). With respect to registering in particular, early in the semester students were issued custom reminders as a part of their weekly challenges indicating that the deadline to register to vote was approaching, and informing them of their own state’s primary date. Hence, this increase can be directly tied to aspects of game content.

These findings suggest that gamification of political engagement in tandem with a classroom experience holds promise as means of promoting political participation and engagement. The benefits experienced among our least politically knowledgeable and engaged participants enhance our confidence in the promise of this platform as a mechanism to mobilize our most politically inattentive students. Moreover, by activating dimensions of political life not centered on tribal partisan identities, we hope to create positive associations with thoughtful, even-handed aspects of political engagement. Based on the combination of high ratings from students in terms of their enjoyment of the game, and positive democratic outcomes observed in our quasi-experiment, we tentatively conclude that, on balance, vMOBilize appears capable of meeting our twin goals as outlined in this study. The next step will be to replicate these findings across a broader range of classroom contexts, as well as political and policy circumstances.

**TABLE 1. GLM Estimation Main Effects of vMOBilize on Political Participation and News Consumption, Vote Registration and Intent to Vote Relative to Control Group (Change from Pre- to Post-Treatment)**

	(1)	(2)	(3)	(4)		(5)	(6)
VARIABLES	Change in Full Participation	Change in Virtual Participation	Change in Online/Radio News Consumption	Change in Reporting Registered to Vote		Change in All Media Consumption	Intent to Vote <sup>y</sup>
				<i>Unregistered</i>	<i>Registered</i>		
vMOB Treatment	0.007 (0.015)	0.116* (0.046)	0.117* (0.051)	-0.382 (0.764)	0.951^ (0.555)	0.017 (0.048)	0.358 (0.467)
Political Knowledge (t1)	0.017 (0.026)	0.042 (0.066)	-0.123 (0.084)	-0.909 (1.040)	-0.856 (1.026)		
Ideology (t1)	-0.011 (0.014)	-0.025 (0.036)	0.026 (0.042)	-0.197 (0.564)	0.112 (0.459)	0.011 (0.049)	-0.765^ (0.447)
Registered to Vote (t1)	0.025 (0.015)	0.006 (0.043)	-0.088^ (0.051)			0.025 (0.051)	-1.009* (0.398)
Gender: male (t1)	-0.048* (0.020)	-0.058 (0.047)	-0.032 (0.057)	-1.515* (0.679)	0.149 (0.654)	0.022 (0.056)	0.334 (0.532)
Party ID (t1)	0.016	0.019	-0.020	-0.122	-0.447	-0.016	0.340

	(0.013)	(0.032)	(0.040)	(0.451)	(0.333)	(0.042)	(0.339)
Follow Campaign (t1)						0.022	1.256***
						(0.023)	(0.267)
Constant 1	0.017	0.059	0.213	0.549	-1.850	-0.100	-0.434
	(0.057)	(0.130)	(0.167)	(1.551)	(1.824)	(0.116)	(1.176)
Observations	252	252	252	251		254	252

---

Robust standard errors in parentheses

\*\*\*p<0.001, \*\* p<0.01, \* p<0.05, ^ p<0.10: <sup>‡</sup>Measured only during post-treatment period

Note that we employ unordered multinomial logit, with *no change* as the base category, for the change in voter registration status model.

**TABLE 2. GLM Estimation of Effects of vMOBilize on Political Participation and News Consumption, and Vote Registration Relative to Control Group (Change from Pre- to Post-Treatment)**

	(1)	(2)	(3)	(4)		(5)	(6)	(7)
VARIABLES	Change in Full Participation	Change in Virtual Participation	Change in Online/Radio News Consumption	Change in Reporting Registered to Vote		Change in All News Consumption	Change in Online/Radio News Consumption	Intent to Vote <sup>y</sup>
				<i>Unregistered</i>	<i>Registered</i>			
vMOB Treatment	0.077**	0.197*	0.226*	0.609	2.651*	0.275*	0.337*	3.520**
	(0.030)	(0.089)	(0.103)	(1.002)	(1.283)	(0.121)	(0.135)	(1.328)
Political Knowledge (t1)	0.063^	0.094	-0.053	-0.526	0.907			
	(0.035)	(0.075)	(0.102)	(1.268)	(1.662)			
vMOB Treatment x Political Knowledge (t1)	-0.129**	-0.149	-0.201	-2.061	-3.294			
	(0.049)	(0.145)	(0.172)	(1.331)	(2.061)			
Follow Campaign (t1)						0.049^	0.046	1.778***
						(0.029)	(0.030)	(0.372)
vMOB Treatment x Follow Campaign (t1)						-0.086*	-0.076^	-1.280**
						(0.040)	(0.045)	(0.497)

Ideology (t1)	-0.012	-0.026	0.024	-0.196	0.075	0.006	0.016	-0.768
	(0.014)	(0.037)	(0.041)	(0.572)	(0.474)	(0.049)	(0.051)	(0.530)
Registered to Vote (t1)	0.025 <sup>^</sup>	0.006	-0.087 <sup>^</sup>			0.032	0.065	-1.019*
	(0.015)	(0.044)	(0.051)			(0.050)	(0.051)	(0.401)
Gender: male (t1)	-0.047*	-0.056	-0.029	-1.513*	0.195	0.016	0.005	0.328
	(0.020)	(0.047)	(0.057)	(0.691)	(0.673)	(0.056)	(0.058)	(0.489)
Party ID (t1)	0.016	0.018	-0.021	-0.143	-0.473	-0.020	-0.020	0.202
	(0.012)	(0.032)	(0.040)	(0.467)	(0.345)	(0.042)	(0.046)	(0.446)
Constant 1	-0.007	0.032	0.177	0.387	-2.770	-0.162	-0.184	-1.259
	(0.058)	(0.129)	(0.165)	(1.611)	(2.321)	(0.122)	(0.128)	(1.346)
Observations	252	252	252	251		254	254	252

---

Robust standard errors in parentheses

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, ^ p<0.10; <sup>ψ</sup>Measured only during post-treatment period

Note that we employ unordered multinomial logit, with *no change* as the base category, for the change in voter registration status model.

Table 3. Participants' perceptions of game play and challenges

	% saying Agree or Strongly Agree
<b>Game-related items</b>	
vMOBilize is easy to understand	85.0%
vMOBilize site is pleasing to the eye	59.2%
challenges were a good test of my knowledge of current events	73.5%
I can imagine playing vMOBilize just for fun	17.7%
I would enjoy playing this outside of the context of a class	21.7%
Playing vMOBilize is fun	42.8%
vMOBilize is only enjoyable for people really interested in politics	45.6%
vMOBilize is confusing	4.8%
<b>Challenge-related items</b>	
There was a lot of variety in the kinds of challenges	66.6%
Felt excited to complete the challenges	31.3%
Felt a sense of accomplishment earning points	75.5%
Challenges made me pay more attention to the campaign	57.2%
Challenges made me pay more attention to current events	52.4%
Challenges took too long	4.1%



Figure 1. vMOB game interface: Sample team page

The screenshot displays the vMOBilize team page interface. At the top, the vMOBilize logo is on the left, and navigation links for TEAM, PROFILE, LEADERBOARD, and ADMIN are in the center. A user profile picture and a SIGN OUT button are on the right.

**Team Information**

**TEAM CAP** (with a shield icon) | Team Captain: **tsmith** | Total Team Points: **295**  
 Established: Jul 07, 2015 | Members: 8 | Your Points: 90  
 [Edit] | [Quick Invitation Link]

**Challenges** |  Complete |  Expired

\* Click a column heading to sort. \*

Type	Challenge	Total Team Points	% Team completing challenge	Availability
Article (Star icon)	Important Dates for New York Voters	15	12%	
Article (Person icon)	Is There Any Chance of a Third Party Candidate Becoming President?	5	12%	
Article (Play button icon)	This Election May Be Determined by Something That Hasn't Happened in Over Fifty Years	5	12%	
Article (Megaphone icon)	Jeb Bush's Endorsement	0	0%	
Article (Globe icon)	Everything You Need to Know About the Brussels			

**Leaderboard** [See More]

1. COMMUNISTS 2950
2. Comm Kids 2760
3. Dream Team 2735
4. Comm Crushers 2725
5. The Communications Party 2665

**Members**

Grid of member profile pictures.

**Player Locations** [+]  
All Teams

Map showing player locations with a legend for Players and Points.

Figure 2. Sample individual player page showing badges that players can earn. Badges change from B/W to color once earned.

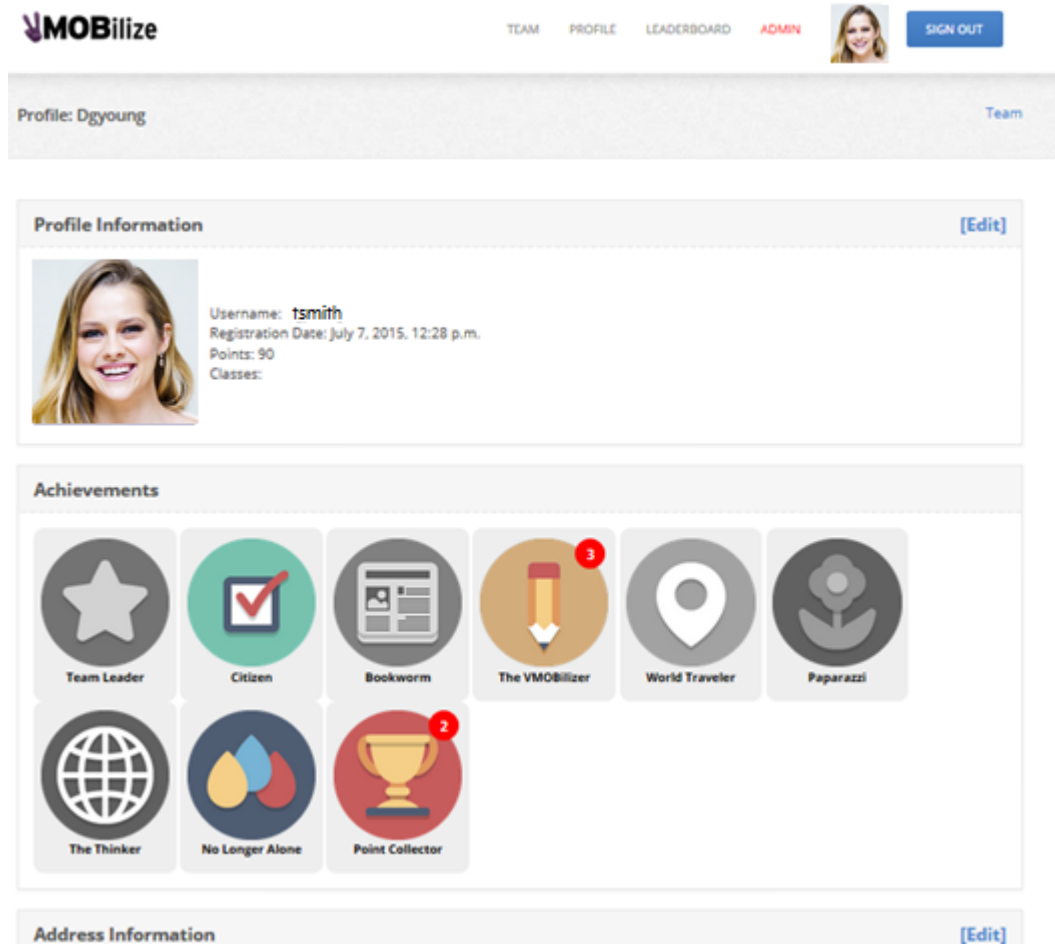
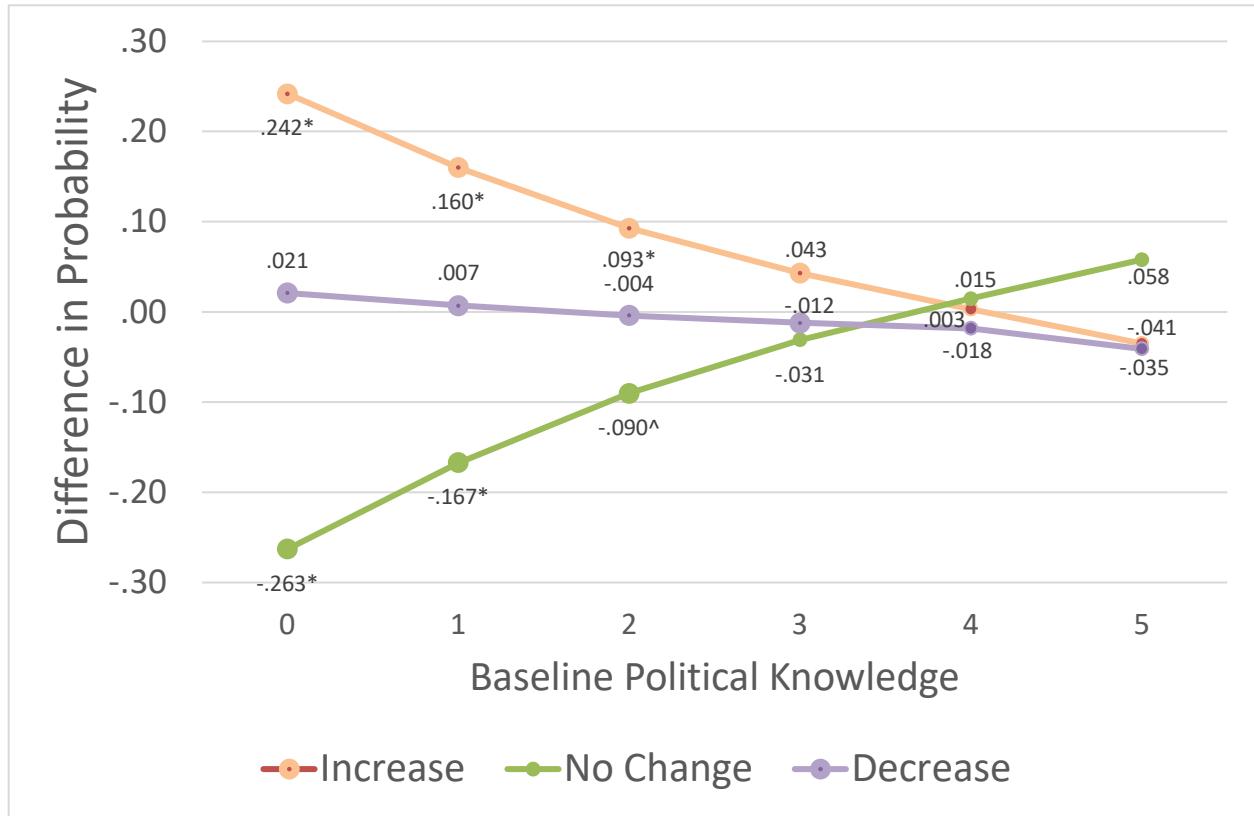
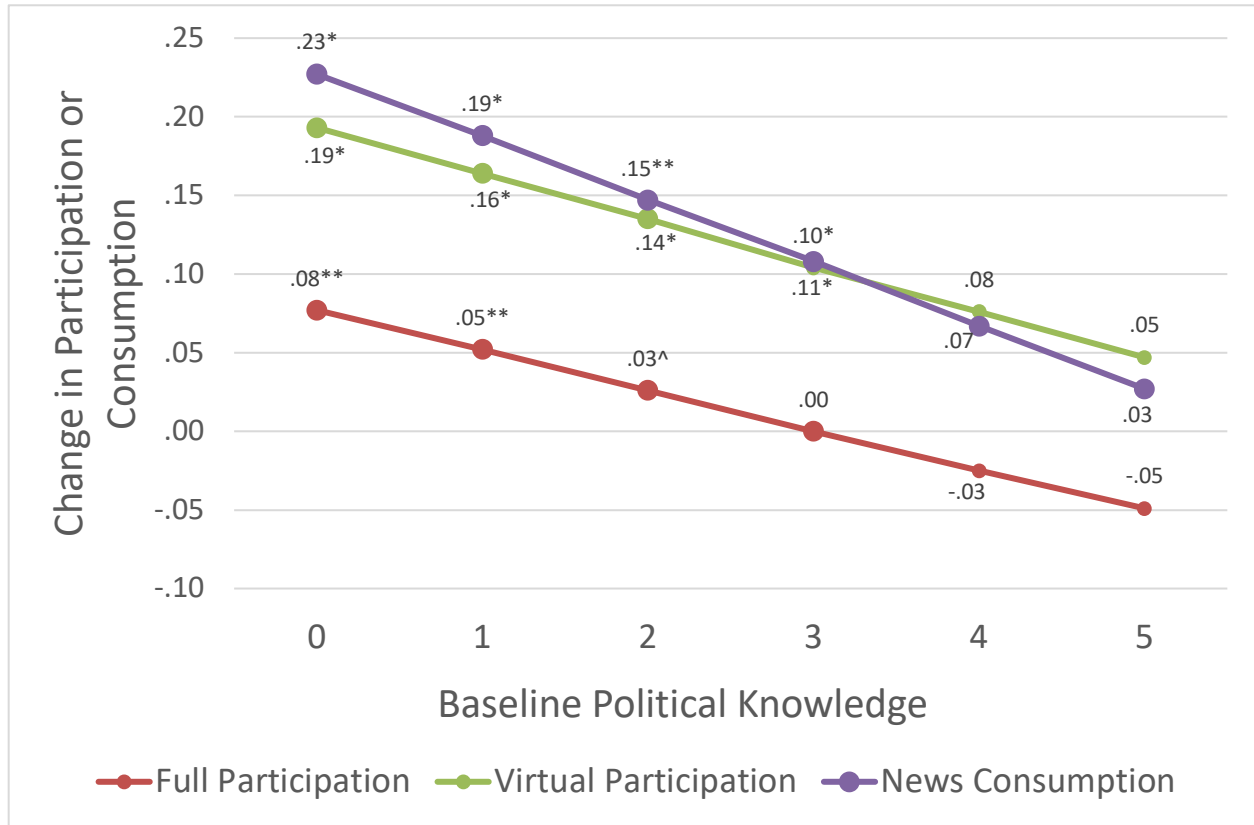


Figure 3. Difference between vMOBilize Treatment versus Control Condition in Probability of Registering to Vote as a function of Baseline Political Knowledge (Increase means vMOB > control group. Decrease means vMOB < control group.)



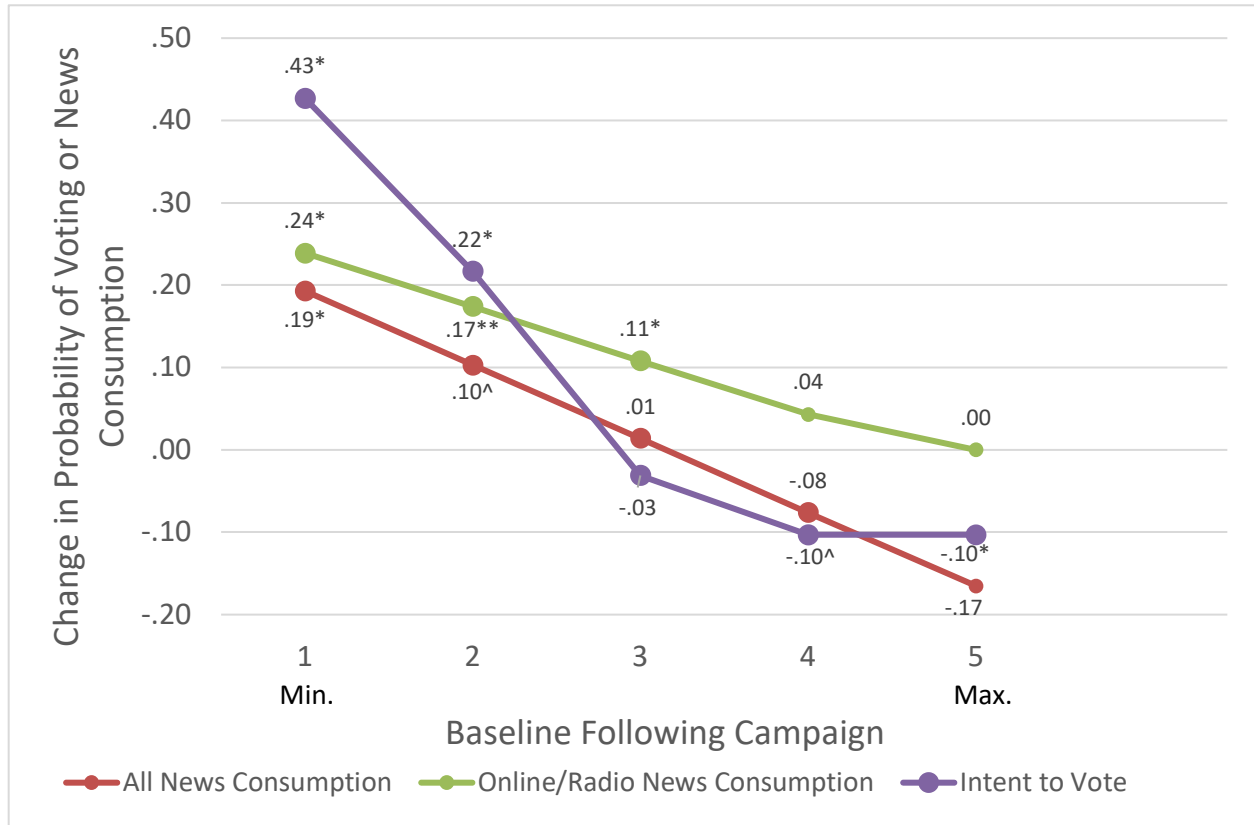
\*p<.05; ^p<.10

Figure 4. Difference between vMOBilize Treatment versus Control Condition in Participation and Media Consumption (online or both on- and off-line) as a function of Baseline Political Knowledge



\*\*p<.01; \*p<.05; ^p<.10

Figure 5. Difference between vMOBilize Treatment versus Control Condition in Probability of Voting and in Media Consumption (online or both on- and off-line) as a function of Baseline Following Campaign



\*\*p<.01; \*p<.05; ^p<.10

## REFERENCES

- 2014 Youth Turnout and Youth Registration Rates Lowest Ever Recorded; Changes Essential in 2016.*  
(n.d.) Center for Information and Research on Civic Learning and Engagement. Retrieved December 27, 2017 from: <https://civicyouth.org/2014-youth-turnout-and-youth-registration-rates-lowest-ever-recorded-changes-essential-in-2016/>
- Abramowitz, A., & Saunders, K. (2005, June). Why can't we all just get along? The reality of a polarized America. *In The Forum* (Vol. 3, No. 2).
- Baldassarri, D., & Gelman, A. (2008). Partisans without constraint: Political polarization and trends in American public opinion. *American Journal of Sociology*, 114(2), 408-446.
- Baum, M. A. (2003). Soft news and political knowledge: Evidence of absence or absence of evidence? *Political Communication*, 20(2), 173-190.
- Bernstein, J. L., & Meizlish, D. S. (2003). Becoming congress: A longitudinal study of the civic engagement implications of a classroom simulation. *Simulation & Gaming*, 34(2), 198-219.  
doi:<http://dx.doi.org.udel.idm.oclc.org/10.1177/1046878103034002003>
- Blais, A. (2006). What affects voter turnout? *Annual Review of Political Science*, 9, 111-125.
- Brigham, T. J. (2015). An introduction to gamification: Adding game elements for engagement. *Medical Reference Services Quarterly*, 34(4), 471-480. doi:10.1080/02763869.2015.1082385
- Coenen, T. (2014). The design and evaluation of a pervasive engagement game in a city neighborhood  
doi:10.1145/2676467.2676495
- Delli Carpini, M. X. (2000). Gen. com: Youth, civic engagement, and the new information environment. *Political communication*, 17(4), 341-349.

Carpini, M. X. D., & Keeter, S. (1996). *What Americans know about politics and why it matters*. Yale University Press.

Dalton, R. (2016). Why don't millennials vote? Monkey Cage, Washington Post. March 22.

[https://www.washingtonpost.com/news/monkey-cage/wp/2016/03/22/why-dont-millennials-vote/?utm\\_term=.864bbe71abd5](https://www.washingtonpost.com/news/monkey-cage/wp/2016/03/22/why-dont-millennials-vote/?utm_term=.864bbe71abd5)

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011, September). From game design elements to gamefulness: defining gamification. In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (pp. 9-15). ACM.

Deterding, S., O'Hara, K., Sicart, M., Dixon, D., & Nacke, L. (2011). Gamification: Using game design elements in non-gaming contexts. Paper presented at the Conference on *Human Factors in Computing Systems - Proceedings*, 2425-2428. doi:10.1145/1979742.1979575

Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. *Journal of Educational Technology & Society*, 18(3), 75-88. Retrieved from

<http://search.proquest.com.udel.idm.oclc.org/docview/1712594797?accountid=10457>

Esser, F., & De Vreese, C. H. (2007). Comparing young voters' political engagement in the United States and Europe. *American Behavioral Scientist*, 50(9), 1195-1213.

Fiorina, M. P., & Abrams, S. J. (2008). Political polarization in the American public. *Annu. Rev. Polit. Sci.*, 11, 563-588.

Galston, W. A. (2004). Civic education and political participation. *PS: Political science and politics*, 37(2), 263-266.

- Gerber, A. S., Green, D. P., & Shachar, R. (2003). Voting may be habit-forming: evidence from a randomized field experiment. *American Journal of Political Science*, 47(3), 540-550.
- Gordon, E., & Baldwin-Philippi, J. (2014). Playful Civic Learning: Enabling Reflection and Lateral Trust in Game-based Public Participation. *International Journal Of Communication (19328036)*, 8759-786.
- Harvard Institute of Politics (2016). *Spring 2016 Poll Topline Report*. Retrieved December 27, 2017 from:  
[http://iop.harvard.edu/sites/default/files/content/160423\\_Harvard%20IOP\\_Spring%202016\\_TOPLINE\\_u.pdf](http://iop.harvard.edu/sites/default/files/content/160423_Harvard%20IOP_Spring%202016_TOPLINE_u.pdf)
- Hu, S. -, & Chen, I. -. (2015). A gamified online forum inspiring group intelligence distillation for policy making doi:10.1007/978-3-319-20472-7\_46
- Jagoda, P. (2013). Gamification and other forms of play. *Boundary 2*, 40(2), 113-144.  
doi:10.1215/01903659-2151821
- Lenhart, A., Kahne, J., Middaugh, E., Macgill, A. R., Evans, C., & Vitak, J. (2008). Teens, video games, and civics: teens' gaming experiences are diverse and include significant social interaction and civic engagement. *Pew Internet & American Life Project*.
- Manganelli, S., Lucidi, F., & Alivernini, F. (2014). Adolescents' expected civic participation: The role of civic knowledge and efficacy beliefs. *Journal of adolescence*, 37(5), 632-641.
- McCarty, N., Poole, K. T., & Rosenthal, H. (2016). *Polarized America: The dance of ideology and unequal riches*. MIT Press.
- Moffett, Kenneth W. and Laurie L. Rice. 2016. *Web 2.0 and the Political Mobilization of College Students*. Lexington Studies in Political Communication. Lanham, MD: Lexington Books.



- Moeller, J., de Vreese, C., Esser, F., & Kunz, R. (2014). Pathway to political participation: The influence of online and offline news media on internal efficacy and turnout of first-time voters. *American Behavioral Scientist*, 58(5), 689-700.
- Morford, Z. H., Witts, B. N., Killingsworth, K. J., & Alavosius, M. P. (2014). Gamification: The intersection between behavior analysis and game design technologies. *The Behavior Analyst*, 37(1), 25-40. doi:<http://dx.doi.org/udel.idm.oclc.org/10.1007/s40614-014-0006-1>
- Nepal, S., Paris, C., & Bista, S. (2015). Gamification on the social web. Social media for government services (pp. 197-220) doi:10.1007/978-3-319-27237-5\_10
- Nicholson, S. (2015). A recipe for meaningful gamification. Gamification in education and business (pp. 1-20) doi:10.1007/978-3-319-10208-5\_1
- Oliveira, M., & Petersen, S. (2014, October). The Choice of Serious Games and Gamification. In *International Conference on Serious Games Development and Applications* (pp. 213-223). Springer, Cham.
- O'Toole, T., Lister, M., Marsh, D., Jones, S., & McDonagh, A. (2003). Tuning out or left out? Participation and non-participation among young people. *Contemporary politics*, 9(1), 45-61.
- Paris, C., & Nepal, S. (2015). Next step: An online community for delivering human services. *Social media for government services* (pp. 169-196) doi:10.1007/978-3-319-27237-5\_9
- Parycek, P., Sachs, M., Sedy, F., & Schossböck, J. (2014). Evaluation of an E-participation Project: Lessons Learned and Success Factors from a Cross-Cultural Perspective. In *Electronic Participation* (pp. 128-140). Springer Berlin Heidelberg.

- Plutzer, E. (2002). Becoming a habitual voter: Inertia, resources, and growth in young adulthood. *American Political Science Review*, 96(1), 41-56.
- Powell, G. B. (1986). American voter turnout in comparative perspective. *American Political Science Review*, 80(1), 17-43.
- Prior, M., & Stroud, N. J. (2015). Using mobilization, media, and motivation to curb political polarization. *Solutions to political polarization in American*, 178-194.
- Raphael, C., Bachen, C. M., & Hernández-Ramos, P. F. (2012). Flow and cooperative learning in civic game play. *New Media & Society*, 14(8), 1321-1338.  
doi:<http://dx.doi.org.udel.idm.oclc.org/10.1177/1461444812448744>
- Raphael, C., Bachen, C., Lynn, K., Baldwin-Philippi, J., & McKee, K. A. (2010). Games for civic learning: A conceptual framework and agenda for research and design. *Games and Culture: A Journal of Interactive Media*, 5(2), 199-235.  
doi:<http://dx.doi.org.udel.idm.oclc.org/10.1177/1555412009354728>
- Santos, A. C. D., Zambalde, A. L., Veroneze, R. B., Botelho, G. A., & De Souza Bermejo, P. H. (2015). Open innovation and social participation: A case study in public security in brazil  
doi:[10.1007/978-3-319-22389-6\\_12](https://doi.org/10.1007/978-3-319-22389-6_12)
- Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*, 74, 14-31.  
doi:<http://dx.doi.org.udel.idm.oclc.org/10.1016/j.ijhcs.2014.09.006>
- Sinclair, B. (2014). *Party wars: Polarization and the politics of national policy making* (Vol. 10). University of Oklahoma Press.

- Sotirakou, C., & Mourlas, C. (2015). Designing a gamified news reader for mobile devices. Paper presented at the Proceedings of 2015 International Conference on *Interactive Mobile Communication Technologies and Learning*, IMCL 2015, 332-337.  
doi:10.1109/IMCTL.2015.7359614
- Stroud, N. J. (2011). *Niche news: The politics of news choice*. Oxford University Press.
- Tichenor, P.A.; Donohue, G.A.; Olien, C.N. (1970). "Mass media flow and differential growth in knowledge". *Public Opinion Quarterly*. **34** (2): 159–170. doi:[10.1086/267786](https://doi.org/10.1086/267786).
- Vogel, R. (1973). The effect of a simulation game on the attitude of political efficacy. *Simulation & Games*, 4(1), 71-79.
- Wattenberg, M. P. (2008). Is voting for young people? With a postscript on citizen engagement. *Pearson PTR*.
- Werbach, K. (2014). (Re)defining gamification: A process approach. In international conference on persuasive technology (pp. 266 – 272). Springer, Cham. doi:10.1007/978-3-319-07127-5\_23
- Wiggins, B. E. (2016). An Overview and Study on the Use of Games, Simulations, and Gamification in Higher Education. *International Journal of Game-Based Learning*, 6(1).
- Zukin, C., Keeter, S., Andolina, M., Jenkins, K., & Carpini, M. X. D. (2006). *A new engagement?: Political participation, civic life, and the changing American citizen*. Oxford University Press.

## APPENDIX A.

**T1. Descriptive Statistics of Constructs Correlated with Experimental Condition At Baseline**

Experimental Condition		Party identification	Male	T1 Registered to vote	Political ideology
vMOBilize	<i>M</i>	2.60	.16	.61	2.52
	<i>(SD)</i>	(.99)	(.37)	(.49)	(.81)
	<i>N</i>	126	126	126	126
CONTROL	<i>M</i>	2.79	.45	.78	2.75
	<i>(SD)</i>	(.99)	(.50)	(.42)	(.88)
	<i>N</i>	163	163	157	163