

Voting and Political Information Gathering On Paper and Online

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ABSTRACT

Electronic voting is slowly making its way into American politics. At the same time, more voters and potential voters are using online news and political information sources to help them make voting choices. We conducted a mock-voting study, using real candidates, issues, and campaign materials. Political information was browsed either online or on paper, and participants marked electronic ballots either while they browsed or later, in a separate step. Our initial data shows that voters prefer electronic browsing although they are no faster or slower with paper materials. Voters felt that they understood the issues best when they voted during browsing, and they felt most confident about their decisions when they studied electronic campaign materials alongside an active electronic ballot.

Author Keywords

Electronic voting, digital government, voter support system, user studies

ACM Classification Keywords

H.5.m. Information interfaces and representation (HCI): Miscellaneous; K.4.1. Computers and society: Public policy issues.

INTRODUCTION

The Internet plays an increasingly important role in supporting political life. Sixty eight million Americans used government agency websites to obtain information or to get access to services in 2001, and 21% of those users

sought information that helped them to make a voting decision [3]. In November 2002, 40% of Internet users in the United States reported searching for political news and information and 56% reported visiting government websites [6].

While considerable attention is being given to the design and evaluation of electronic voting systems, there has been little research on systems to support other aspects of participation in the voting process. Robertson [9] argues that designers should be thinking in terms of “voter support systems” that include information browsing, deliberation, and voting in one interface. He proposes that an electronic ballot could provide hyperlinks to information sources that are categorized and available for viewing in an information window, as shown in Figure 1. The information window would be supplied by search tools which used terms relevant to the candidate or issue in the hyperlink, and possibly other terms relevant to a voter’s customized interest profile. The system could be used by a voter for a considerable period before an election in order to browse relevant information and make decisions. Ballot choices could be made at any time and submitted prior to the end of an election-day deadline.

In this study, we directly tested Robertson’s [9] claim that there would be an advantage to integrating information gathering with ballot markup in an electronic voter portal. Reading information with voting in mind is a purposeful, strategic type of browsing [1,7] that makes demands on memory and processing [4,5]. We predicted that an integrated voting/browsing portal would be preferred and lead to better understanding of issues when compared to a system in which browsing is separated from voting.

We also tested electronic information delivered through a portal to the same information delivered on paper. Comparisons of paper versus electronic delivery of information vary considerably depending on the task [2]. Generally, paper has an advantage because it is easily annotated and navigated [8]. In this case, however, we

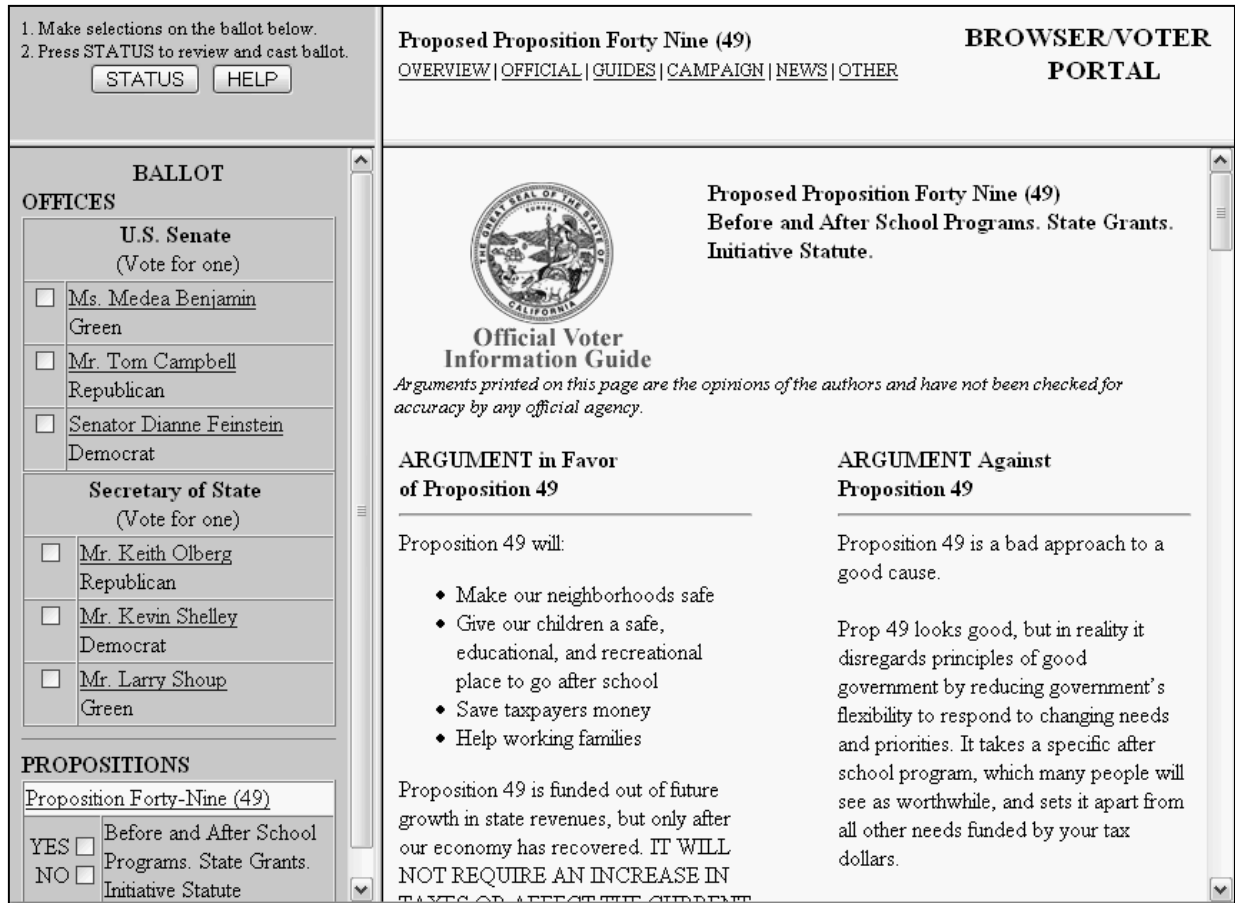


Figure 1. In the Browser/Voter Portal, a hypertext ballot controls information in several categories.

hoped to show that an electronic portal which is attached to ballot items and supports navigation that is consistent with the problem-solving activities of voters would be superior to equally well-organized paper materials.

METHOD

Subjects

Twenty one eligible voters, nine females and twelve males, from the student population at Drexel University served as subjects. They were recruited by advertisement and came from a variety of backgrounds. Subjects were assigned randomly to one of four conditions described below.

The subjects ranged in age from 18 to 50, with a mean age of 24.3 years (one subject did not report age). Seventeen subjects indicated that they had voted in the November, 2004 election (nine for the first time), which had just finished at the time data was collected. Four subjects identified themselves as Republicans, seven identified themselves as Democrats, and the remaining ten indicated that they were independents.

Materials

Online official materials, campaign materials, voter guides, and some news items for past elections about two California offices and one California proposition were obtained from the UCLA Online Campaign Literature Archive [10].

The materials were organized into five categories. The category names and the number of individual items across all candidates and the proposition were: Official (12 items), Voter Guides (15 items), Campaigns and Parties (14 items), News (31 items), and Other (26 items). Items varied considerably in length from one-paragraph descriptions of an issue to multi-page candidate websites. Official information was from California’s *Official Voter Information Guide* (see Figure 1). Voter Guides were from The League of Women Voters. Campaign and party materials were from candidate and party websites. News items related to these races were obtained from a Google News search, and other “miscellaneous” materials were obtained from a general Google search. All materials were real information items from the appropriate time period.

Design

Two factors were manipulated: Presentation Mode and Ballot Integration. These factors were crossed in a 2x2 between-subjects design.

In the Electronic Presentation conditions, the materials were presented via the Browser/Voter Portal shown in Figure 1. When a subject selected a candidate name or the proposition label on the ballot, the information categories appeared in the large information window with an indication of the number of items in each category. By clicking on an information category, the subject would see the titles of the items available for the selected candidate/issue in that category. Clicking on a title would result in the display of the actual information item. Candidate and the proposition links were always available in the ballot column, and information category links were always available along the top of the information screen.

In the Paper Presentation conditions, the same materials were printed on paper and organized into notebooks. There was a separate notebook for each ballot item, and the notebooks were tabbed by candidate and by information category. The names of the categories and the titles of the articles were available at the front of the notebooks. Although the materials were on paper, all subjects voted on a computer screen using the same ballot as shown in the left column of Figure 1 (without hyperlinks).

In the Ballot Integrated conditions, the ballot was available for markup while the subjects looked at materials, either online or in the notebooks. In these cases, subjects could mark checkboxes and press a *Status* button at any time to view a summary of their current choices. They could return to browsing, change choices, or cast the ballot. In the Ballot Not-Integrated conditions, the left column of hyperlinks looked exactly the same as Figure 1 except that it was not labeled "Ballot," there were no checkboxes, and the *Status* button was labeled *Vote*. In this condition, the checkboxes became available and the hyperlinks were disabled when the subject pressed the *Vote* button. This forced subjects to vote after studying the materials.

Procedure

The subjects' task was to study the election-related materials and then vote on the two offices and one proposition. The candidates being voted on were a subset of the real candidates in California from the November 2000 race for U.S. Senate and the November 2002 race for Secretary of State. The issue being voted on was California Proposition 49 from November 2002, the "After School Education and Safety Program Act." Subjects were previously unfamiliar with these campaigns.

Each subject sat at a computer and received instructions. They were told that they had one hour to study the election materials and vote. Subjects in the Electronic Presentation conditions were familiarized with the portal whereas

subjects in the Paper Presentation conditions were familiarized with the notebooks. Subjects next began the study and vote period, taking as long as they needed. Students with the notebooks were videotaped, and subjects using the portal were timed and monitored by the computer.

When each subject finished, an online survey appeared. Here we report results from the following survey questions, all of which used a 1-7 scale:

- How much would you like to use an information and voting system like the one in this study in a real election?
- In this study, how easy was it to browse information?
- In this study, how easy was it to move between items on the ballot?
- How much do you feel that you understand the issues regarding:
 - U.S. Senate
 - Secretary of State
 - Proposition 49
- How confident do you feel about the choices you made for:
 - U.S. Senate
 - Secretary of State
 - Proposition 49

RESULTS

All analyses were 2x2 ANOVAs with Presentation Mode as one factor (Paper vs. Electronic) and Ballot Integration as the second factor (Integrated vs. Not-Integrated). The three confidence questions and three understanding questions were treated as a third, repeated measures factor. All hypotheses were tested at $p < .05$.

Time

The mean time spent on tasks was 24m,18s with a range of 9m,54s to 55m,50s. Task time did not differ significantly among groups.

Ease of Use

Subjects showed a clear preference for the electronic format versus the paper format in terms of their overall liking ratings (means=5.9 vs. 4.0 respectively), $F(1,17)=6.01$, $p < .05$, $MSE=2.98$, but there was no clear preference for integrated versus not-integrated ballots in either presentation format. Subjects reported that the electronic materials were easier to browse than the paper materials (means=5.8 vs. 3.4 respectively), $F(1,17)=15.29$, $p < .05$, $MSE=1.63$. They rated ease of navigation high (mean=6.0) with no differences among the conditions.

Understanding

Subjects gave an overall good rating of their understanding of the issues for all three ballot items (mean=5.2) and their understanding did not differ among the three ballot items.

Understanding was significantly better when ballot items were integrated with the materials vs. when they were not (means=6.1 vs. 4.3 respectively), $F(1,17)=7.0$, $p<.05$, $MSE=2.54$.

Confidence

Subjects gave an overall good rating of their confidence about their choices for all three ballot items (mean=5.4) and their confidence did not differ among the three ballot items. There was a significant interaction between Presentation Mode and Ballot Integration, $F(1,17)=5.26$, $p<.05$, $MSE=2.72$, with confidence higher for integrated vs. not integrated for subjects using the portal (means=6.0 vs. 4.1 respectively) but not for subjects using the notebooks (means=5.5 vs. 5.7 respectively).

Browsing and Voting Patterns

We examined the browsing patterns of voters using the electronic portal. In both integrated and nonintegrated conditions, virtually every subject went through the ballot in order, browsing material about each candidate and then the proposition. Sixty three percent of the subjects in the not-integrated condition made several returns to candidates that they browsed earlier, but only 14% of subjects in the integrated condition did so.

Seventy one percent of the subjects in the integrated condition chose a strategy of intermixing voting and browsing, reading about all of the candidates for an office and then voting on that office before continuing to the next.

Subjects looked at all categories of information, but spent the largest proportion of their time on official information and news items. Subjects did not spend much time on voter guides and spent almost no time looking at candidate and party information.

DISCUSSION

In this study, eligible voters used either an electronic portal or a set of notebooks to study real campaign materials. They voted on two offices and one proposition using an electronic ballot which was available either during the study phase or after. The presentation mode and degree of ballot integration had no effect on the time spent on task. Voters liked the electronic portal better than the notebooks and rated the portal as easier to browse, but not because of better ease of navigation in the electronic condition. Voters felt that they understood the materials better when the ballot was integrated with the campaign materials, and they felt most confident about their decisions only when using the electronic portal that was integrated with the electronic ballot. Integration resulted in intermixing of voting and browsing, and resulted in fewer returns to "re-browse."

We interpret these findings as support for the integrated ballot and information-browsing environment. Future user-centered design sessions will address several research

questions including what information categories are appropriate, how best to support a lengthy and complicated ballot, how to update and integrate material as it comes into the system in real time, how to incorporate annotation and information sharing, and how voters might profile themselves. Subject interviews revealed concerns about privacy and trust that also will be investigated.

Designers of electronic voting systems should think beyond the ballot metaphor. Systems that support all aspects of voters' behavior – before, during, and after elections – will be the future of digital democracy.

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