FACTORS AFFECTING PARTICIPATION OF PRESERVICE TEACHERS IN E-DEMOCRACY

By

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ABSTRACT

This study aimed to reveal the factors associated with the participation of preservice teachers in e-democracy. It was designed as a correlational study and 1,519 preservice teachers from a teacher preparation program in Turkey participated in it by completing a 54-item questionnaire. As a result, three major factors for involvement in e-democracy emerged: knowledge and environment, ethics, and anxiety. In addition, two types of participation were revealed: anonymous and onymous. The results of the study showed that anonymous participation correlates positively with Political Knowledge, and negatively with Current State of Politics and Digital Integrity. Those who have mobile technologies with internet connection are more likely to participate anonymously in e-democracy. On the other hand, Onymous participation, correlates positively with Fear of Self-expression, and negatively with Political Knowledge and Digital Citizenship. Males were shown to be more prone to both types of participation than females. Internet usage frequency was a common variable triggering both types of participation. The paper ends with recommendations for further research.

Keywords: E-Democracy, E-Participation, Preservice Teachers, Explanatory Higher-Order Factor Analysis, Multiple and Quantile Regression.

INTRODUCTION

Now-a-days, several factors are urging higher education institutions to change, such as internalization, massification, globalization, competition, and technology (Altbach, Reisberg, & Rumbley, 2009; Cetinsaya, 2014; Şendağ, 2014). Technology, particularly, may either damage the current democratic practices or promote better approaches for the utilization of democracy (Dahl, 1989).

Moreover, technology can also create new problems as an addition to the current ones in both representative and direct democracies (Kampen & Snijkers, 2003). E-democracy has a potential to facilitate this required transformation. Indeed, the ease of participation offered by Information and Communication Technologies (ICTs) and the interaction it enables between end-users have made e-democracy a promising construct. Each citizen's participation in democracy at the parliamentary level can be supported by the Internet, which will alter representation as well as politicians' attitudes toward the public (Cardoso, Cunha & Nascimento, 2006). Even though there have been several studies offering guidelines and pathways for enabling participation in democracy as well as empirical models for the delivery of participatory democracy (Weeks, 2000), the efficacy of application is mostly dependent on the media used in delivering democracy. Recent discussions in today's globalized information technology realm have offered an opportunity to revitalize the Athenians' sense of democracy owing to the high participation environment enabled by ICTs. On the other hand, Shirazi, Ngwenyama and Morawcynski (2010) pointed out that there are few efforts to demonstrate the relationship between rapid advancement of ICT and democracy. Moreover, they found that, a digital divide is currently emerged in democratic freedoms among

countries, and they indicated that, internet filtering was significantly impacting on democratic freedoms. The advancement of ICT may have a potential for either promoting or hindering democracy. The term e-democracy lies at the heart of the current discussion. Even though it is simply a sample implementation of ICT in democracy, e-democracy should not be considered in relation only to technology, but also to contextual, theoretical, political culture, technologically mediated political practices, rules, resources, and human agency (e.g., access to ICT, willingness to participate, technology literacy, usable interfaces, costs, etc.) (Parvez & Ahmed, 2006). Moreover, cultural values were shaping horizontal communication technologies (e.g., telephone, cell phones, internet, etc.), which in turn impacted positively effective practices of democracy as well as nations' economic competitiveness (Skoric & Park, 2014).

As Watson and Mundy (2001) suggest, "implementing a true e-democracy requires a careful and comprehensive plan for citizens to learn how to use it" (p. 27). A critical point in e-democracy is the role of teachers. Their role in teaching, learning and modeling issues related to e-democracy is vital. As teachers usually teach in the ways that they themselves have been taught, it makes sense to include e-democracy in preservice teacher preparation programs to encourage future teachers to adopt and disseminate it as a problem-solution and decision-making tool (Moursund & Bielefeldt, 1999). Creating an e-democracy environment in teacher preparation programs would therefore help the diffusion of e-democracy throughout the community. When pre-service teachers started their career at schools, they will reflect the culture of e-democracy in terms of both cognitively and affectively. This critical role of teachers will help youngsters to start practicing e-democracy during their education, which was indicated as the best way to teach e-democracy to young people already competent with new technologies (Macintosh, A., Robson, E., Smith, E., & Whyte, A., 2003). This study focuses on ways of promoting participation in e-democracy among preservice teachers. In response to this, the authors have examined constructs that lead to participation in e-democracy among preservice teachers.

Conceptual Framework

E-democracy

The concept of e-democracy has been extensively discussed. Yet, no precise and overarching definition has arisen for the concept (Grönlund, 2003a). The term is generally used to explain the implementation of ICTs to enrich public participation to democratic processes (Grönlund, 2003b). E-democracy is perceived as a subordinate of democracy, and without it, one cannot talk about e-democracy (Macintosh, Coleman & Schneeberger, 2009; Hacker & van Dijk, 2000; Lidén, 2012). Moreover, the theoretical foundation of e-democracy is not clear and solid. Chadwick (2003) stated that "The field is crying out for theoretically informed, empirically rich comparative study of these and other developments,. . ." (p. 453). Supporting this notion, Lidén (2015) argued two critical problems in e-democracy research: (1) no common grounds for operationalization, and (2) untrustworthy literature by questioning the current international indices and suggesting a new scale for the measurement of variables. These earlier applications of e-democracy included e-voting, using the Internet as a tool for political propaganda, sending emails to politicians, using ICTs in communicating with administrators, and using e-government applications (Berghel, 2000; Gil de Zúñiga, Veenstra, Vraga, & Shah, 2010; Wattal, Schuff, Mandviwalla, & Williams, 2010). This type of e-democracy use is associated with e-politics. A general definition for this common view of e-democracy involves the interactions between the representative and citizen, citizen and citizen, and representative and representative during decision-making (Şendağ, 2010, Coleman & Norris, 2005).

On the other hand, models of e-democracy offer a structured and formulated path to implementing e-democratic activities. Such an implementation of e-democracy usually has more complicated goals, such as participation, deliberation, decision-making, and bringing into action (Şendağ, 2014).

Participation in E-democracy

Participation lies at the heart of e-democracy activities even in non-formal forms. Hence, an ideal e-democracy demands that all stakeholders participate and interact.

There are certain ways of participation in e-democracy, such as e-mailing, e-forums, e-consultation, e-referenda, e-voting, e-discussions, online decision-making, e-activism, e-campaigning, and e-petitioning (Coleman & Norris, 2005; Şendağ, 2010, 2014). People may take advantage of all of these means to get involved in e-democracy. For instance, virtual communities played a critical role to assist low-income, older and technology-challenged citizens to support their e-participation (Bailey & Ngwenyama, 2011). The frequency and quality of their participation is usually determined by whether they disclose their identity when they participate. Saebo and Paivarinta (2005) concluded that using an identity while participating in e-democracy determines whether there will be any participation. In other words, when people use their actual identity during participation, it affects the way they participate. It might even influence their decisions about whether or not to participate and interact. Those who disclose their names may not express themselves openly due to reservations about sharing their political views. Thus, being anonymous emerges as a determining factor in certain types of participant behavior.

As type of participation is an important indicator for e-democracy and constitutes a critical part of the authors' study, the authors would like to distinguish anonymous from onymous participation. In anonymous participation, people do not reveal their identity, and use nicknames rather than real names. In contrast, people participating onymously are willing to share their real identity (full name, occupation, e-mail, etc.).

Factors Affecting Participation in E-democracy

The authors' effort here was to conduct a comprehensive initial study to transfer the current theory of participation in e-democracy to the field of teacher preparation. Therefore, the results of any previous research focusing on and suggesting possible factors are significant for the current study and included below.

E-democracy has been linked to many other concepts, such as e-citizenship, e-politics, egovernment, online civic engagement and social networking (Şendağ, 2010). Among these, e-citizenship (digital citizenship) is the most comprehensive as it covers numerous actions, such as being aware of e-government applications, public matters, and joining e-polls. In order to cover all of these actions, the authors have included "digital citizenship" as a factor that might be associated with participation in e-democracy.

Previous research also showed evidence of significant correlations with age and education level.

Younger age and higher levels of education both increased e-political involvement (Shelley II, Thrane, & Shulman, 2006). Based on previous research findings that suggested males have more positive attitudes towards technology than females (Durndell & Haag, 2002; Levin & Gordon, 1989), the authors also decided to include gender as a factor in the study. In addition, Shelley II, et al. (2006) revealed a significant negative relationship between computer apathy and e-political involvement, and a positive one between positive attitudes toward IT and involvement. Mahrer and Krimmer's (2005) and Coleman and Norris' (2005) emphasis on the crucial role of technological barriers for e-democracy also encouraged the authors to include Internet usage and having a computer or a mobile device with Internet as variables that may be associated with participation in e-democracy. Security and privacy issues, and risk of manipulation were stated as major factors related to "digital integrity" (Breindl & Francq, 2008; Mahrer & Krimmer, 2005; Şendağ, 2010). Similarly, social exclusion and digitally excluded groups (Coleman & Norris, 2005; Mahrer & Krimmer, 2005; Şendağ, 2014) may be seen as a "social pressure" issue. Previous research also suggests attitude toward technology, technology anxiety, and computer apathy as possible factors for online participation (Durndell & Haag, 2002; Levin & Gordon, 1989; Thrane, et al., 2005). Therefore, the authors also included "technology apprehension" as a factor in this study. The existence of a significant relationship between voting and participation in e-democracy (Şendağ, 2010; Shelley II, et al., 2006) led the authors to also include "democratic rights and responsibilities" as another factor for participation. Many researchers have discussed the associations between having trust in politics, politicians, political system, political talk and participation in e-democracy (Curtice & Norris,

2004; Wattal, et al., 2010; Weeks, 2000). You, Lee, Kang, & Go (2015) indicated that, social trust, which identified as a term overarching trust in politics, significantly predicted political participation. Therefore, two major factors, political knowledge and beliefs on current politics also entered the authors' study. According to a recent study on e-democracy decision-making at a higher education institution by Şendağ's (2014), participants agreed that their opinions and ideas would not be taken seriously by government officials. This is beyond disbelieving in politics and the political system and, therefore, the authors also decided to include "undervaluation of others" as another factor. For instance, Susha and Grönlund (2014) investigated the development of an innovative participatory mechanism launched by European Union. It provides an opportunity for its citizens across Europe get together and set the agenda for policy-making in Brussels. They found that, failures to the participatory actions happened due to dissonant stakeholder perceptions about the tool. As Şendağ (2010) found, Internet use skills are a significant factor for participation in e-democracy. Internet use was also shown to increase the contact between local elected officials and stakeholders during policymaking processes (Garrett & Jensen, 2011). Therefore, "technology literacy" became another significant factor in the authors' study. Jho and Song (2015) recently pointed out that, both high technology level and strong political institutions, aforementioned as disbelieving in politics and the political system, in a country was strongly and positively emerged e-participation. Coleman and Norris (2005) mentioned technological barriers to e-democracy. Moreover, e-participation in e-democracy was more observed in democratic countries compared to non-democratic countries, and economic globalization was the main underlying reason for the development and e-participation (Åström, Karlsson, Linde, & Pirannejad, 2012). As a result, the importance of environment in participation to e-democracy urges the authors to consider "environment" as another possible factor. Last but not least, people may refrain from online participation for fear of certain online behaviors (Breindl & Francq, 2008) stemming from their personal traits (Şendağ, 2014). In this sense, "Fear of self-expression" might be another factor associated with participation in e-democracy.

Literature Review on Participation in E-democracy among Preservice Teachers

The power of democracy as a management tool should not be less than the power of democracy as a governing tool. This power would originate from educational institutions. First, the sense of democracy in educational institutions should be improved by facilitating negotiation, human interaction and agreement. However, there are still discussions that cannot be reached a consensus related to democratic practices in teacher education, e.g., Karickhoff and Howley (1997) revealed a difference among teacher education faculties' opinions regarding the equality of opportunities for all teacher candidates or excellence in teaching performance when there are preservice teachers with special needs. Second, in order to provide a healthy democracy culture based on empathy as mentioned by Morrell (2010), educational institutions should utilize e-democracy. Moreover, if there is an eager to revitalize direct democracy through e-democracy, the crucial role of teachers should be recognized. Hence, teacher preparation programs should seek means of integrating e-democracy into their curricula and institutions. Teachers need e-democracy knowledge and skills (Şendağ, 2010) as they have a key role in modelling and disseminating it. They may not be readily able to do this with their current knowledge and capabilities. A study conducted in a Greek secondary school by Vasilis and Dimitris (2010) revealed that, students felt more confident with technology and democracy than their teachers did. The study emphasized the importance of teaching and learning e-democracy in preservice teacher education programs and the crucial role of preservice teacher education. Consequently, there is a need for including e-democracy in preservice teacher education as it has a huge potential to facilitate e-democracy movements.

In Turkey, a study conducted by Oral (2008) found a significant positive correlation between preservice teachers' Internet use in teaching and research and their attitudes towards democracy. Şendağ's (2010) study with Turkish preservice teachers showed that, even though participants found e-democracy important, they rarely

participated in it. The same study also revealed that, highly competent computer and Internet users and members of civic organizations were more likely to participate in e-democracy. In addition, voting in elections also emerged as a significant factor, highlighting the importance of knowledge of e-citizenship and e-politics, e-government applications, and civic engagements, ethical issues to enable participation in e-democracy activities. Yiğit and Çolak's (2010) study revealed that, preservice teachers dwelled on ethical issues such as fear of subjectivity, and emphasized infrastructure problems such as Internet access. The study also stressed the unawareness of preservice teachers about the concept of e-democracy. In Şendağ's (2014) study with higher education students in Turkey, the participants did not want to participate in an e-democracy application because of three reasons: (a) the belief that their opinions would not be taken seriously, (b) personal reasons and reasons related to personality traits, and (c) their thoughts having already been voiced by others. Participants also agreed that the level of participatory democracy in Turkey was not satisfactory. It seems that, interest in politics, beliefs on current state of politics and democracy, knowledge about digital citizenship, politics and technology, social and psychological issues such as undervaluation of views by others/administrators, and ethical and infrastructural problems are important factors to increase the participation of Turkish preservice teachers in e-democracy. Even though the aforementioned studies suggest many factors that might be associated with the participation of preservice teachers in e-democracy, they did not focus on participation as their primary goal.

Purpose of the Study

In order to understand the participation of preservice teachers in e-democracy, there is a need to focus on possible factors that might be associated with it. Studying the factors possibly affecting participation in e-democracy is considered crucial by Chadwick (2008), who pointed out the limited numbers of citizens choosing to participate in e-democracy. Another study by Cullen and Sommer (2011) compared the satisfaction level of participants' civic actions via offline and online groups. They found that, the participants in online group were less satisfied than he participants in offline groups, and they concluded that, development of civic engagement in online communities were not demonstrated by their study. Due to the high level of advancement in technology may be changed this situation. However, studies directly addressing e-democracy and participation have been limited. The factors mentioned above were derived from studies that mostly did not collect data from preservice teachers. The authors aimed to investigate these possible factors within the scope of preservice teacher education, as preservice teacher programs might benefit from e-democracy as a problem-solving and decision-making tool. Therefore, after reviewing the literature, the authors developed a questionnaire including the factors mentioned above. The authors examined whether there were associations between preservice teachers' participation in e-democracy and these possible factors.

Consequently, the authors' study aimed to investigate the factors that contribute to e-democracy participation of preservice teachers in Turkey by considering the aspects stated in the aforementioned studies.

Research Questions

The authors' research questions were as follows:

1. What are the possible factors that might be associated with participation in e-democracy?

2. What are the significant factors the can affect different types of participation in e-democracy?

Method

This study was designed as a correlational study (Creswell, 2012), which allowed the researchers to evaluate the relationships and impacts among independent and dependent variables.

Participants

In this study, the authors aimed to reach the whole target population, which includes Faculty of Education students at a university in southwest Turkey. The university is one of the largest teacher education institutions in the country, having 12 major fields of study. A total of 1,519 preservice teachers (76% of all students) participated in the study, representing all available departments and grade levels.

Variable/levels	f	%
Gender		
Male	578	38.13
Female	938	61.87
Total	1516	100.00
Major		
Sport Education	101	6.65
Computer Education	129	8.50
Science Education	154	10.14
Math Education	132	8.70
Foreign Language Education	172	11.33
Music Education	71	4.68
Preschool Education	129	8.50
Psychological Counseling and Guidance	83	5.47
Fine Arts Education	98	6.46
Primary School Education	124	8.17
Social Studies Education	165	10.87
Turtosh Education	160	10.54
Total	1518	100.00
Grade Level		
Freshman	477	31.46
Sophomore	410	27.04
Junior	353	23.28
Senior	276	18.21
Total	1516	100.00

Table 1. Demographics of Participants

Table 1 presents the demographic information of the participants.

As the authors' sample consisted of undergraduate students, they were similar in age and education level. Therefore, the authors did not include age and education level as possible variables due to the possibility of low variance among the participants. Instead, the authors included gender, grade level, and major field of study.

Instruments

The authors utilized two questionnaires as the authors' instruments in the study: "Possible Factors that Might be Associated with Participation in E-democracy" and "Participation in E-democracy". The items in these instruments were developed after thorough literature review.

Factors Affecting Participation in E-Democracy Questionnaire

The validity and reliability of the instrument are explained here. Specifically, the authors examined construct validity via factor analysis, and reliability via Cronbach's α. Factor analysis is necessary to demonstrate the construct validity of a scale. It may be used to determine the theoretical constructs that govern a given data set. Here, the authors performed higher-order factor analysis for this purpose. Higher-order factor analysis is done with alternative techniques to examine data from different levels and perspectives. It is also a powerful tool in explaining and emerging complex theories (Thomas, 1995). While first-order factor analysis focuses on details of data, such as details of valleys or peaks of mountains, higher-order factor analysis searches for broader and more general explanation of the same data, such as looking at a mountain from a greater distance and getting a different perspective due to the view range. Using both approaches on the same data and observing pros and cons may enrich the understanding of these data (Brown, 2006; Gorsuch, 1983).

Schmid and Leiman (1957) proposed a method to produce higher-order factor analysis. First, the items in a questionnaire are included in a factor analysis with an oblique rotation, presuming that factor solutions are interrelated or, technically, correlated (Brown, 2006). Second, the correlation matrix produced from the first analysis is used to run another oblique rotated factor analysis solution. The second step continues to the third, fourth, etc. until only one factor analysis solution remains. The authors applied the aforementioned procedures for the analysis of the questionnaire. The first factor analysis was performed using Principal Axis Factoring and Promax Oblique Rotation. There were 44 items in the Factors Affecting Participation in E-democracy. The KMO measure

Factors	# of Items*	Min and Max Loadings
1. Beliefs on Current State of Politics	8	.484 -.751
2. Digital Integrity	5	.358 -.849
3. Political Knowledge	4	.452 -.903
4. Social Pressure	4	.525 -.921
5. Fear of Self-Expression	3	.714 -.922
6. Digital Citizenship	5	.303 -.898
7. Under valuation on Internet	5	.420 -.873
8. Technology Literacy	2	.887 -.902
9. E-political Environment	4	.397 -.863
10. Democratic Rights and Responsibilities	2	.834 -.854
11. Technology Apprehension	2	.770 -.845

* Items are not presented here due to space Limitations. They may be provide upon Request.

Table 2. Eleven Factors, their Items, and the Minimum and Maximum Factor Loadings of the Items

of sampling adequacy value was .860, and Bartlett's Test of Sphericity yielded a significant result, X^2 (946) = 30832.114, p < .01, meaning that the data were appropriate for factor analysis (Tabachnick & Fidell, 2001). Eleven factors, which had Eigenvalue more than one, were extracted and these explained 63.28% of the total variance. Table 2 illustrates the eleven factors, number of corresponding items, and minimum and maximum factor loadings.

Analysis

In the first factor analysis, the correlations among eleven factors were also calculated (Table 3). This table was used to run the second-order factor analysis, which used Principal Axis Factoring and Promax Rotation. Three second-order factors, which had Eigenvalue more than one, were extracted, and they explained 60.20% of the total variance. Table 4 illustrates three second-order factors, their corresponding first-orders factors, and the minimum and maximum loadings of each.

As in the first-order factor analysis, the correlations of second-order factors were calculated (Table 5). Since there were still three factors, a third-order factor analysis was performed. The results in Table 5 were entered to another Principle Axis Factoring and Promax Rotation analysis. One third-order factor, which had Eigenvalue

Second-Order Factors	First-Order Factors	Min and Max Loadings
Knowledge & Environments	Political Knowledge, Digital Citizenship, E-political Environment, Technology Literacy, Democratic Rights and Responsibilities.	.526 - .683
Ethics	Beliefs on Current State of Politics Digital Integrity, Undervaluation on Internet.	.654 - .794
Anxiety	Social Pressure, Fear of Self-expression, Technology Apprehension.	.478 - .829

Table 4. Second-order Factors, their First-order Factors, and Loadings of Each Factor

Factors	1	2	3	4	5	6	7	8	9	10	11
Beliefs on Current State of Politics	1										
Digital Integrity	.514**	1									
Political Knowledge	.151**	.079*	1								
Social Pressure	.211**	.171**	.276**	1							
Fear of Self -Expression	.275**	.257**	.185**	.581**	1						

Factors	1	2	3	4	5	6	7	8	9	10	11
Beliefs on Current State of Politics	1										
Digital Integrity	.514**	1									
Political Knowledge	.151**	.079*	1								
Social Pressure	.211**	.171**	.276**	1							
Digital Citizenship	.336**	.347**	.352**	.187**	.262**	1					
Undervaluation on Internet	.628**	.470**	.137**	.256**	.292**	.332**	1				
Technology Literacy	.138**	.145**	.286**	.287**	.300**	.364**	.130**	1			
E-political Environment	.282**	.254**	.378**	.287**	.275**	.384**	.236**	.380**	1		
Democratic Rights and Responsibilities	.250**	.196**	.335**	.322**	.330**	.502**	.214**	.415**	.377**	1	
Technology Apprehension	.055**	-.015**	.238**	.366**	.260**	.068**	.083**	.360**	.265**	.250**	1

Note: N = 1519, *P < .05, **P < .01

Table 3. Correlation among Eleven First-order Factors

Second-Order Factors	1	2	3
Knowledge & Environments	1		
Ethics	.436**	1	
Anxiety	.491**	.284**	1

Note : N = 1519, *P < .05, **P < .01

Table 5. The Correlation among Three Second-Order Factors

Third-Order Factors	Second-Order Factors	Loadings
E-Democracy	Knowledge & Environments	.865
	Ethics	.567
	Anxiety	.504

Table 6. Third-order Factor and Second-order Factor Loadings

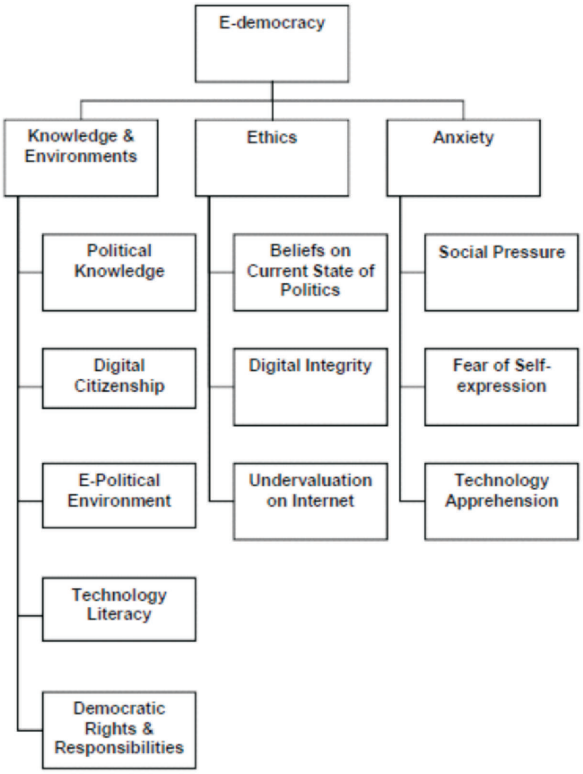

Figure 1. The Higher-order Structure for Factors affecting Participation in E-democracy

more than one, was produced, and it explained 60.45% of the total variance. Table 6 illustrates the third-order factor and the loadings of the second-order factors.

The overall procedure of high-order factor analysis was completed at the third level. There were eleven factors in the first-order; three factors in the second-order; and only one in the third-order. The analysis was completed at the third level, as suggested by Schmid and Leiman (1957). Figure 1 demonstrates the complete model. Cronbach's α was .904 confirming that the instrument had a satisfactory level of reliability.

Participation in E-democracy Questionnaire

For the construct validity of the questionnaire, factor analysis was performed using Principal Axis Factoring and Promax Oblique Rotation. There were 10 items in the participation in E-democracy questionnaire. The KMO measure of sampling adequacy value was .886, and Bartlett's Test of Sphericity yielded a significant result, $X^2(45) = 6468.121$, $p < .01$, meaning that the data were appropriate for factor analysis (Tabachnick & Fidell, 2001). Two factors, which had Eigenvalue of more than one, were extracted, and these explained 60.033% of the total variance. Since only two factors were extracted, higher-order analysis was not performed. Table 7 illustrates the two factors, number of items, and minimum and maximum factor loadings. Cronbach's α was .870 confirming that the instrument had satisfactory reliability measure.

Variables of the Study

Three groups of variables were examined. As the independent variables of the study, the first group consisted of demographic questions and the second group consisted of the sub-factors generated from third-order factor analysis of the Factors Affecting Participation in E-Democracy Questionnaire. As the dependent variable in the study, the third group consisted of the sub-factors revealed from first-order factor analysis of the Participation in E-democracy Questionnaire.

Demographic Variables

These variables were gender, Internet usage, computer ownership with Internet, laptop ownership with Internet, and cell phone ownership with Internet. Internet usage had six categories from none to several times every day. The authors created six dummy-coded variables out of these categories. The rest of the demographic variables were dichotomous.

Factors	# of Items*	Min and Max Loadings
Onymous Participation	3	.618 -.675
Anonymous Participation	7	.593 -.784

* Items are not presented here due to space limitations. They may be provided upon request.

Table 7. Two Factors, their Items, and Loadings of the Items

Model		B	Se[a]	B
1st block	Constant	2.455**	.140	
	Political Knowledge (Knowledge & Environments)	- .353**	.020	- .438
	Digital Citizenship (Knowledge & Environments)	- .145**	.024	- .164
	Beliefs on Current State of Politics (Ethics)	.086**	.027	.089
	Digital Integrity (Ethics)	.151**	.030	.154
2nd block	Constant	2.652**	.144	
	Political Knowledge (Knowledge & environments)	-.317**	.019	- .393
	Digital Citizenship (Knowledge & Environments)	-.080**	.022	- .091
	Beliefs on Current State of Politics (Ethics)	.075**	.025	.078
	Digital Integrity (Ethics)	.130**	.027	.133
	Gender	-.384**	.039	.227
	Internet usage – Once a day	.162**	.058	.061
	Internet usage – Several times a day	.189**	.045	.109
	Ownership of desktop with Internet	.113**	.040	.063
	Ownership of laptop with Internet	.132**	.040	.078
	Ownership of cell phone with Internet	.139**	.035	.084

Note : N = 1515, 1st block R^2 = .255, Adjusted R^2 = .253, 2nd block R^2 = .344, Adjusted R^2 = .339[a]. Due to heteroscedasticity, White Standards Errors was reported, and significance tests were run based on them for the coefficients. *p < .05, ** p < .01

Table 8. The Coefficients of the Anonymous Participation Regression Model

Factors Associated with Participants Variables

The first-order factors illustrated in Table 8 were the factor variables. They were measured on a Likert scale (Strongly Disagree – 1 to Strongly Agree – 5). The first-order factor values, used as measures in analyses, were generated from the total scores of corresponding items.

Participation in E-democracy Variables

There were two variables under this category. First, anonymous participation means participation in which participants do not reveal their identity. The authors measured it by asking the frequency of behaviors (Never to Always) related to anonymous participation. The authors used the total scores of these frequencies. In contrast to anonymous participation, onymous participation is defined as participation in which participants reveal their identity, such as full names, occupation, etc. The authors measured it in the same way as anonymous participation.

Results

Anonymous Participation

A hierarchical regression was run to observe the impact of possible factors that might be associated with anonymous participation in e-democracy. Demographics of the participants were also included. There are several assumptions which need to be checked while running a regression analysis.

Assumptions

Residuals or errors must be normally distributed and random in a vigorous regression analysis (Field, 2009). This assumption is usually checked using the histogram and normal probability of residuals. In anonymous participation, residuals were normally distributed; therefore, this assumption was met. All factors and demographic variables were checked for their potential multi-collinearity effect on the regression model. Field (2009) explains that, the symptoms of multi-collinearity are threefold:

- High and significant correlation, which is more than .80, between predictors,
- Either predictors with Variance Inflation Factors (VIF) values higher than ten or the average value of VIF of all predictors deviated from one substantially, and
- Predictors with tolerance lower than either .2, meaning possible collinearity, or .1, meaning firm collinearity.

In the anonymous participation model, none of the predictors produced any significant Pearson-Product Moment correlation coefficient above .80. All results ranged from -.462 to .469. The average of VIF of the predictors was 1.22 which did not deviate from one, nor were there tolerance scores lower than .2 for all predictors. They varied from .709 to .976. Multi-collinearity was not an issue here. In a regular proper regression model, the variance of residuals must be distributed equally over all levels of predictors (aka homoscedasticity). When this is not true, it is called heteroscedasticity, which may bias the results of a regression model. To check heteroscedasticity, the patterns are initially controlled in the scatterplot between regression standardized residuals and regression standardized predicted values. This pattern was observed as "fans-out", an indication of heteroscedasticity, in the current model (Field, 2009). To confirm this result, the White test was run (White, 1980). It produced significant results, X^2 (58) = 215.698, $p < .01$, confirming that there was a heteroscedasticity issue. Therefore, White Standards Errors, suggested as a solution for heteroscedasticity (Long & Ervin, 2000), was utilized to report the regression results. White Standard Errors helps researchers control negative effects of heteroscedasticity when there is not much information about it, as in the present study. Case-wise diagnostics were performed to check whether any outliers impact the present model. Field (2009) and Stevens (2001) emphasizes that, the most critical criteria is Cook's distance for outliers. They suggest that, if there is a case with Cook's distance value higher than one, it needs to be taken care of before any further analysis. In the present model, none of the selected cases had any Cook's distance value more than one. There was no case influencing the current model adversely; all cases in the dataset were included. In short, most of the assumptions were met except for heteroscedasticity. For this reason, the standard errors of the coefficients from the Ordinary Least Squares (OLS) were replaced with White Standard Errors, which minimizes the adverse effects of heteroscedasticity. Moreover, the significant tests of the coefficients were performed based on White Standard Errors. The next section will present the coefficients and other related statistics.

Coefficients

Two blocks of predictors were selected for hierarchical regression. The first block included the sub-components of the Factors Affecting Participation in E-democracy Questionnaire; while the second encompassed the demographic variables in addition to the first block variables. The main reason for running the hierarchical procedure was to ensure whether the factors may explain anonymous participation as well as the presence of the demographics. For each block, stepwise regression was performed. In the first block, the researchers entered eleven factors into the analysis, and four variables were left. In the second block, there were nine demographic variables; six of these were left in addition to the four from the first block. As a result, a total of ten variables explained anonymous participation. The results are illustrated in Table 8.

The first and second block regression models were significant, $F(4.1511) = 129.024$, $p < .01$ and $F(10, 1505) = 78.825$, $p < .01$, respectively. The first block accounted for 25.5% of the total variance while the second accounted for 34.4%. There was 8.9% increase after demographic variables were entered into the model, and the four factors affecting e-democracy remained significant. The Political Knowledge sub-component of Knowledge & Environments factors had the highest impact among other variables. When all of the other variables are constant, a one-point escalation in Political Knowledge increased anonymous participation by .317 points. The second highest variable was gender. Males had more intention for participating in e-democracy anonymously than females. Beliefs on Current State of Politics, and Digital Integrity, sub-components of Ethics factors, predicted anonymous participation significantly. When they decreased, anonymous participation increased. When participants used the Internet once a day, it increased their anonymous participation. On the other hand, when they used it several times a day, it had more impact on anonymous participation than using it once a day. If they used the Internet more frequently, their anonymous participation escalated. Another demographic variable that predicted anonymous participation was ownership of a technological device with Internet. The most impactful was

the cell phone, and the least impactful the desktop computer. The more mobility these technological devices had, the more anonymous participation there was.

Onymous Participation

A multiple linear regression analysis was conducted; however, one of the most critical assumptions, the normal distribution and randomness of residuals was not satisfied. Several transformations were tried (Field, 2009); however, the issue was not resolved. The authors made a decision to use alternative regression techniques. Koenker and Bassett, Jr. (1978) advise using quantile regression analysis when the normality of error terms is not met. It focuses on certain point(s) of the distribution of dependent variable, whereas Ordinary Least Squares (OLS) consider mean and standard deviation in normal distribution (Buchinsky, 1994, 1995; Koenker & Bassett, Jr., 1978). Therefore, OLS only scrutinizes one point on dependent variables making the understanding and interpretation of distribution usually incomplete (Mosteller & Tukey, 1977).

Coefficients

The model was estimated with quantiles .74, .92, .98, and .995. These quantiles were chosen since they stand for the last participants within the frequency of onymous participation, which are, respectively, 1.33 – slightly higher than never, two - rarely, three - sometimes, and four – often. The results are presented in Table 9.

Political Knowledge had significant impact on all quartiles of onymous participation. Its impact increased until the last quartile. This means political knowledge became slightly less critical when onymous participation increased. Digital citizenship had a similar impact on onymous participation except for its constant increase. Gender had a very similar pattern to the Digital citizenship factor. Males were onymously involved in e-democracy more frequently than females. Fear of Self-expression influenced onymous participation at only the .995 quantile level. When Fear of Self-expression increased, onymous participation increased as well. At other levels, it had small and insignificant associations. Democratic Rights and Responsibilities had two significant coefficients, which were .92 and .995 quantiles. When the participants had more knowledge about Democratic Rights and Responsibilities, they were involved in onymous participation more frequently. Even though other coefficients were insignificant, there was an increasing trend. Technology Literacy had a low and insignificant impact on the .74 and .92 quantiles, while it was associated significantly with onymous participation at the .98 quantile. However, it decreased slightly at the .995 quantile. Although the coefficient value was not significant, it was higher than both of the coefficients of the .74 and .92 quantiles. Technology

Predictors	Quantile							
	.74 (Slightly higher than never)		0.92 (Rarely)		.98 (Sometimes)		.995 (Often)	
	B	SE	B	SE	B	SE	B	SE
Constant	1.658**	.140	2.948**	.170	3.893**	.279	3.920**	.396
Political Knowledge (Knowledge & Environments)	-.069**	.015	-.151**	.032	.237**	.074	.177*	.080
Digital Citizenship (Knowledge & Environments)	-.099**	.029	-.338**	.044	.530**	.090	-.608**	.076
Technology Literacy (Knowledge & Environments)	-.001	.001	.025	.029	.179**	.059	.155	.086
Democratic Rights and Responsibilities (Knowledge & Environments)	.010	.007	.084**	.023	.100	.061	.163*	.079
Fear of Self - expression (Anxiety)	-.004	.002	-.009	.022	.031	.058	.230**	.072
Gender	.215**	.042	.285**	.081	.676**	.186	.739**	.176
Internet usage - Several times a day	.124**	.047	.283**	.075	.383	.213	.420	.249

*p < .05, **p < .01

Table 9. The Coefficients of the Onymous Participation Regression Model

Literacy demonstrated a vital influence on onymous participation when the participants actively contributed to e-democracy at the medium level. Nevertheless, when they started contributing more frequently, Technology Literacy was not as notable as Political Knowledge, Digital Citizenship, Gender, Democratic Rights and Responsibilities, or Fear of Self-expression. Usage of Internet several times a day significantly promoted onymous participation at the lower level quantile. After a while, it lost its significant impact; however, the coefficients continued to increase.

Discussion

The results of higher-order factor analysis showed that, three overarching factors for participation were explained by the data: (a) Knowledge & Environments, (b) Ethics, and (c) Anxiety. These three major factors and their first-order factors, as well as some of the demographics, significantly predicted both anonymous and onymous participation to a certain extent. More specifically, without the existence of demographics, Political Knowledge (Knowledge & Environments) had the highest impact among the three other factors: Digital Citizenship, Beliefs on Current State of Politics, and Digital Integrity of Knowledge and Environments. The more Political Knowledge the preservice teachers had, the more they participated in e-democracy anonymously. Similarly, the more awareness about Digital Citizenship (Knowledge & Environment) they had, the more anonymous participation occurred. This result shows the positive effect of knowledge about e-democracy issues on anonymous participation. It also supports Watson and Mundy's (2001) and Şendağ's (2010) suggestions on the key role of teaching and learning issues related to e-democracy. Beliefs on Current State of Politics and Digital Integrity (Ethics) had significant negative associations with anonymous participation. When they decreased, anonymous participation increased. This indicates that, preservice teachers tend to participate anonymously when they have a negative perception about the current situation of democracy, politics, and integrity. In Turkey, undergraduate students and their faculty do not participate in an e-democracy application using Facebook as a platform because they believe that, their opinions would not be taken seriously and the level of the democracy was not satisfactory in the country (Şendağ, 2014). Obviously, Facebook requires onymous participation. It seems that, preservice teachers do not choose to participate onymously when they feel there are ethical problems. This also supports the authors' result on onymous participation that when knowledge on politics and digital citizenship increase, onymous participation decreases. In the case of high level knowledge, preservice teachers may be more aware of the negative sides of ethical issues related to e-democracy. That is, more knowledge may lead preservice teachers to a higher level of awareness about ethical problems related to e-democracy. Thus, they might think that revealing their identity can pose a problem. It may be concluded that, teacher preparation programs should provide anonymous participation where ethical problems might occur. Moreover, they should strive to provide an environment where ethical issues are eliminated or minimized for participation in e-democracy.

Yiğit and Çolaks (2010) study with Turkish preservice teachers showed that, when they participated in e-democracy, they feared other peoples' subjectivity. The current study added that, Fear of Self expression increased onymous participation. This result implies that, preservice teachers with a high level of Fear of Self-expression preferred onymous participation. Fear might give the participants sensitivity about expressing themselves. This feeling may encourage them to reveal their identity in order to be differentiated from others and avoid being misunderstood. This must once again be related to ethical issues. In addition, it may imply certain psychological, social, and cultural issues beyond the scope of this study. Further research may therefore be needed to provide more insight into these. An awareness of democratic rights and responsibilities also significantly increased onymous participation, as the more knowledgeable preservice teachers are about their democratic rights and responsibilities, the more they participate in e-democracy onymously. Teacher preparation institutions may benefit from considering this while designing their curricula and programs. When the authors included demographics, the first-order factors related to Knowledge and Environment,

and Ethics were still significant, but had relatively small impact compared to first regression model. It was obvious that, demographics reduced the impact of Political Knowledge, Digital citizenship, Beliefs on Current State of Politics, and Digital Integrity on anonymous participation. Gender had highest impact after the second model was run. Males had more intention of participating in e-democracy anonymously than females. Ownership of a technological device with Internet also predicted anonymous participation significantly. The most impactful was the cell phone, and the least impactful was the desktop computer. The laptop fell between the two. The increasing mobility of these technological devices increased anonymous participation. As Şendağ (2010) found previously, preservice teachers with a high level of computer and Internet use competency tended to participate in e-democracy more frequently. Therefore, having Internet access on a mobile device may be an indicator of high level technology engagement. It may also explain the relative positive effect of Technology Literacy at the medium level of onymous participation as well as the result that males had more positive attitudes toward technology compared to females (Durndell & Haag, 2002; Levin & Gordon, 1989). Feeling uncomfortable with technology may hinder female participants' involvement as technological barriers can be an issue for females (Coleman & Norris, 2005; Mahrer & Krimmer, 2005). The cultural implications of this result, also beyond the scope of this study, may be an issue for further research. However, it may be stated here that teacher preparation programs should seek ways to promote female involvement. The present study also suggested some findings for the general understanding of e-democracy and e-participation. The authors empirically found that there were two types of e-participation; this distinction played a critical role to reveal the underlying factors affecting them. The type of participation shaped the behaviors of participants along e-democracy. Any initiative related to e-democracy should consider what types of participation they are aiming for. Moreover, there were different and wide spectrum of factors revealed in the present study, such as demographics (gender, technology competency, etc.), knowledge and environment related to politics, ethical practices, and anxieties. These factors may illuminate e-democracy field at people or citizens level. The authors' study suggested a empirically proven comprehensive and integrative model of previous works done to date (Åström, Karlsson & Pirannejad, 2012; Breindl & Francq, 2008; Curtice & Norris, 2004; Coleman & Norris, 2005; Coursey & Norris, 2008; Durndell & Haag, 2002; Garrett & Jensen, 2011; Gathegi, 2005; Jho & Song, 2015; Levin & Gordon, 1989; Mahrer & Krimmer, 2005; Schwester 2011; Shelley II, et al., 2006; Susha & Grönlund, 2014; Şendağ, 2014; Şendağ, 2010; Thrane, et al., 2005; Wattal, et al., 2010; Weeks, 2000, You, et al., 2015).

Recommendations

Initially, e-democracy can be either taught or embedded to the curriculum to support main subject matters in teacher preparation programs in not only Turkey, but also other countries. The present study may illuminate curriculum development process. Moreover, if teacher preparation programs intend to make efficient teaching, learning, and use of e-democracy, they should offer the knowledge and environments required, specifically, for the anonymous participation of preservice teachers. If teacher educators are not sufficiently competent to teach or use e-democracy, they are also required a comprehensive training program. However, further research needs to be conducted in order to investigate how such a knowledge-based environment can be designed and supported. The antecedent characteristics of preservice teachers, e.g. gender, access to technology, technology competency, and technology anxiety, should be considered by the institutions before starting e-democracy education. Hence, these factors are triggering when they exist; however, they have a hindering impact when they do not exist. If students are low for these factors, the gap should be closed with extracurricular activities, trainings, facilities, or financial programs to increase the access to technologies.

Furthermore, the outcomes of e-democracy education should be monitored via evaluating in service teachers' implementation in their professional life. Since the main argument of this article is that the inclusion of e-democracy in teacher education may trigger the transformation of the students as well as the society. A program evaluation

model may be utilized for this.

Conclusion

Anonymous and onymous participation in e-democracy may be promoted in preservice teacher education by providing an appropriate environment enriched with knowledge, minimizing ethical issues, and considering participants' specific anxieties. Preservice teachers trained in such environments will be more likely to teach e-democracy to their students, thus disseminating e-democracy throughout the society. Finally, the authors specifically focused on preservice teachers as a prospective triggering forces to enable the dissemination of e-democracy, the study can be replicated with different types and cohorts of participants. This may illuminate the factors, the types of e-participation and their association under the umbrella of e-democracy in a broader sense.

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