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Research Article

Adaptation of Teachers' Perceptions of Digital Citizenship Scale (T-PODS) into Turkish Culture

Kevser Hava [1] *, Özgür Babayiğit [1]

[1] Yozgat Bozok University, Türkiye.

Abstract – This study aims to culturally adapt the Teachers' Perceptions of Digital Citizenship (T-PODS) to the Turkish context, utilizing a 5-point Likert scale. The survey comprises a total of 14 items that encompass sub-dimensions including digital ethics, engagement and participation, informed citizens, and civic know-how. To ensure the survey's validity, experts in both English and Turkish fields meticulously reviewed and edited the items. A total of 366 teachers participated in the administration of the survey. The data were analyzed utilizing Confirmatory Factor Analysis (CFA) in the AMOS program. The reliability of the scale, as well as its sub-dimensions, was calculated using the SPSS program (Cronbach's alpha). A scale consisting of 13 items was developed, encompassing four sub-dimensions: digital ethics, engagement and participation, informed citizen, and civic know-how. The analysis revealed Cronbach's alpha internal consistency coefficient of 0.85 for the entire scale, indicating a high level of reliability.

Keywords: digital citizenship, teachers, adaptation of scale, confirmatory factor analysis.

Introduction

With the rapid proliferation of technological advancements and digital transformations, the use of digital communication tools and the internet has become widespread. As a result, digital citizenship education has become essential for individuals to effectively engage with these technologies (Dedebali & Dasdemir, 2019). Digital citizenship, which refers to the demonstration of suitable and responsible behavior in the use of digital technology, is a crucial aspect of technology education (Martin, Gezer, & Wang, 2019; Martin et al., 2022). Digital citizens are individuals who adhere to appropriate and responsible behavioral norms in their use of digital technology (Ribble, 2014; Tangül & Soykan, 2021). The responsibility of digital citizens bears resemblance to the conventional notion of citizenship, as it also emphasizes the rights and responsibilities of individuals within a nation-state (Choi, 2016). In Turkey, similar to numerous other countries, electronic government applications and online platforms facilitate the provision of government services to individuals (Erdem & Koçyigit, 2019).

Accordingly, research on the integration of digital citizenship concerns in learning environments has gained prominence due to the increasing access to and usage of digital technology among young individuals (Lauricella et al., 2020; von Gillern, Rose, & Hutchiso, 2024). Teachers' perceptions have a significant impact on their educational objectives, instructional methods, and learning outcomes (Vajen, Kenner, & Reichert, 2023; von Gillern, Rose, & Hutchiso, 2024). The way educators perceive digital citizenship greatly influences students' knowledge and skills in this area (Dedebali & Dasdemir, 2019; von Gillern, Rose, & Hutchiso, 2024). Furthermore, teachers should serve as role models for students in their online behavior (Kim & Choi, 2018; Martin, Gezer, & Wang, 2019). Therefore, it is crucial to understand teachers' perspectives on digital citizenship and digital citizenship education (Vajen, Kenner, & Reichert, 2023). Consequently, various organizations, such as the International Society for Technology in Education [ISTE], have been developing resources to

* Corresponding author: Yozgat Bozok University, Türkiye.
e-mail addresses: kevserhava@gmail.com, ozgur.babayigit@bozok.edu.tr

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support teachers in teaching digital citizenship competencies (Lauricella et al., 2020). The ISTE teacher standards for digital citizenship underscore the significance of responsible online behavior and the cultivation of a positive digital identity among students. These standards serve as a framework for educators to promote an environment in which students can navigate the digital landscape safely and ethically. Educators are urged to instruct students on the importance of ethical online interactions, which encompass respect for intellectual property and an awareness of the ramifications of their digital actions (Aldosari et al., 2020). Also, educators should assist students in comprehending the implications of their online presence and its impact on their reputation. This process should involve conducting online identity assessments to evaluate their digital footprint (Rogers, 2020).

What is Digital Citizenship?

Given the pervasiveness of digital technology in contemporary society, there is a growing concern about adhering to norms and ensuring personal safety when utilizing such technology (Richardson, Martin, & Sauers, 2021). The enhanced availability of technology, both within and outside the school setting, brings about elevated risks of improper utilization of technology (Martin et al., 2022). Merely utilizing the internet is not sufficient to qualify as a digital citizen (Erdem et al., 2023). Technology, particularly digital citizenship, will continue to exert its influence on various spheres of society, including elections, healthcare, education, transportation, communication, and more (Richardson, Martin, & Sauers, 2021). Digital citizenship, characterized by online respect and civic engagement, can foster positive interactions among students in the global community, ultimately enhancing their global competencies such as self-awareness, intercultural communication, and global knowledge (Cleofas & Labayo, 2024). Being a good digital citizen encompasses more than mere participation in established communities. It encompasses the establishment of novel and varied communities, as well as the potential for reshaping community, society, and the world in response to online and offline social injustices (Choi, 216).

Digital citizenship is a theoretical framework that encompasses the moral and ethical obligations individuals must adhere to when using the internet and other information and communication technologies online. It aims to promote the conscious, secure, and ethical use of the internet and digital tools. Digital citizenship involves the proficient use of media platforms and individuals' ability to demonstrate their responsibilities in their daily lives in the digital environment. More specifically, digital citizenship can be defined as individuals' ability to use the internet and access information channels in a manner that is legal, ethical, safe, and responsible (Mossberger, Tolbert, & McNeal, 2007; Ribble & Bailey, 2007). According to Thomas (2018), a digital citizen is someone who regularly and effectively uses the internet and has a comprehensive understanding of their rights and responsibilities in the online environments. Another definition suggests that a digital citizen is someone who has the knowledge and skills to effectively engage with digital technologies, actively participate in society, communicate with others, create digital content, and share and consume it (Soriani, 2018).

When the literature on digital citizenship is examined, there are studies on the conceptual dimension of digital citizenship and digital citizenship education (von Gillern et al., 2024; Webster, 2024; Tomasello, 2023; Casa-Todd, 2018; Dotterer, Hedges, & Parker, 2016; Godfrey, 2016; Hui & Campbell, 2018; Kim & Choi, 2018; Pedersen, Norgaard, & Köppe, 2018; Preddy, 2016; Nebel, Jamison, & Bennett, 2009; Heafner, & Friedman, 2008; Crowe, 2006; Berson & Balyta, 2004; Berson & Berson, 2003). According to Ribble and Bailey (2007), digital citizenship encompasses nine dimensions (digital ethics, digital law, digital access, digital commerce, digital health, digital security, digital literacy, digital health, and digital rights). These nine dimensions address contemporary concerns and possess the adaptability to incorporate technological advancements in the next future. In Choi's (2016) conceptual analysis of digital citizenship, it was found that digital citizenship encompasses four key dimensions: ethics, media and information literacy, participation, and critical resistance (See Figure 1). Although these four categories have unique characteristics, they may not always be easily distinguishable when compared to other categories, primarily due to the multidimensional nature of digital citizenship.

From an ethical perspective, the concept of digital citizenship involves the responsible and ethical use of the internet, a thorough comprehension of the digital environment, and the acquisition of competencies related to digital responsibility and rights (Choi et al., 2018). In terms of participation, digital citizenship encompasses a diverse array of online engagements that encompass the domains of politics, socio-economics, and culture (Choi et al., 2017). Rather than solely relying on traditional methods such as voting in elections, citizens can now express their reactions through various digital media tools and platforms (Erdem et al., 2023). The notion of digital citizenship has started to encompass various concerns, including the promotion of mutual respect, the prevention of cyberbullying, the establishment of safe online communities, and the cultivation of awareness regarding social and global responsibilities in the context of social networking platforms (Choi, 2016). Digital citizens must possess essential skills in utilizing the Internet. This includes the ability to effectively seek out new information that both supports and questions prevailing political, social, economic, and cultural paradigms (Choi et al., 2018). Critical resistance involves the empowerment of Internet communities to operate as autonomous collectives, with the dual purpose of generating informational resources and utilizing online social interactions for analysis and dissent (Choi et al., 2017).

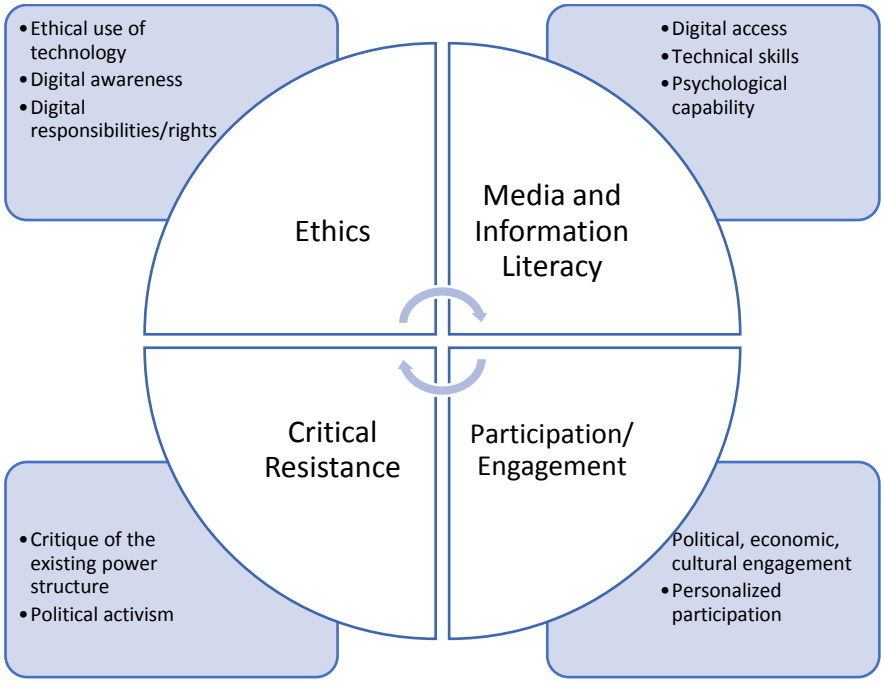

Figure 1. Four categories of digital citizenship (Choi, 2016)

Method

T-PODS was developed by von Gillern, Rose, and Hutchison (2024) to assess teachers' perceptions of digital citizenship. The adaptation of the scale into Turkish culture involved two primary studies: (1) a translation study and (2) a validity and reliability study. The translation study benefited from the expertise of professional linguists. Additionally, the validity study employed confirmatory factor analysis as the method of evaluation. Notably, T-PODS was initially developed using a sample similar to that selected for the current study.

Validity and Reliability Studies on T-PODS

The T-PODS scale was translated into Turkish by a team of researchers. Before translation, permission was obtained from the corresponding author (Sam von Gillern). The researchers each

independently translated the scale into Turkish. Subsequently, the authors came to a consensus on the Turkish translation of the questions. Two experts in the field of education, who were proficient in English, reviewed the Turkish version of the scale. Feedback provided by the experts was taken into consideration and the scale items were edited accordingly. Two Turkish language experts then reviewed the form and made the necessary revisions. The pilot study of the scale was conducted with a sample of 5 teachers to identify areas of misunderstanding. Subsequently, the scale was administered to a total of 366 teachers via online (72%) and hardcopy forms (%28).

All participants provided informed consent prior to their involvement in the study. Furthermore, the guidelines outlined in the Declaration of Helsinki pertaining to data confidentiality and ethical principles in human research were adhered to rigorously. Participation in the data collection process was entirely voluntary.

Confirmatory Factor Analyses were employed to assess the construct validity and factorial structure of the scale. Test-retest and internal consistency coefficient methods were employed to assess the reliability of the scale. Furthermore, the Cronbach Alpha coefficient, which evaluates the internal consistency of the items included in the scale, was calculated. Additionally, item-total correlation was computed to ascertain the characteristics of the individual items.

Participants

A total of 366 teachers employed at public schools in various provinces of Turkey willingly participated in the study. The participants were selected using the convenience sampling method. The majority of the teachers who participated in the study were located in Yozgat Province. Of the participants, 231 teachers were female and 135 were male teachers. The average age of the participants was 37.76 (SD = 8.96), ranging from 22 to 65 years. Although teachers from different departments were included, most were primary school teachers. Seventy-seven-six percent of the participants hold a bachelor's degree, while twenty-one point nine percent possess a master's degree. Additionally, a mere 0.5% of the participants have attained a doctorate. Approximately 54.9% of the participants utilize the Internet for a duration of 1 to 3 hours daily, while 39.1% employ it for more than 3 hours. Merely 6% of the participants access the Internet for less than 1 hour. Half of the participants perceive themselves as proficient in utilizing Information and Communication Technologies, while the remaining half perceive their proficiency as limited. Detailed information about the participants is presented in Table 1.

Table 1. Demographics of the participants

Variable	Subgroups	Frequency	Percent
Gender	Female	321	63,1
	Male	135	36,9
Education level	Undergraduate	280	77,6
	Postgraduate	80	21,9
	Doctorate	2	,5
Daily internet usage	Less than 1 h	22	6
	1-3 h	201	54,9
	More than 3 h	143	39,1
	Total	366	100

Data Collection Tool

T-PODS was developed by von Gillern, Rose, & Hutchison (2024). The scale was distributed among teachers of English language arts and social studies. The inclusion of only English and social studies teachers in the study was predicated on the significant role these educators play in the instruction of media literacy and related disciplines. The survey was conducted online and teachers were asked to complete it. T-PODS comprises four sub-factors, namely digital ethics, engagement and participation, informed citizens, and civic know-how. Each sub-factor consists of 4, 3, 3, and 4 items, respectively. The entire scale encompasses 14 items and follows a 5-point Likert scale. Scale items were formulated based on the findings of various researchers, as derived from a comprehensive literature review, including the scale developed by Choi et al. (2017). The response options are strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). Cronbach's alpha coefficients were calculated for each of the sub-factors, yielding values of 0.72, 0.70, 0.63, and 0.80 for digital ethics, engagement, and participation, informed citizen, and civic know-how, respectively (von Gillern, Rose, & Hutchiso,2024). Examples of items from the scale include (1) it is valuable for students to know how to keep themselves safe in online environments. (2) I think online participation is an effective way for students to make a change to something they believe to be unfair or unjust. (3) Students should become more informed with regard to local and state level political or social issues through using the Internet. (4) It is valuable for students to know how to use the internet to attend political meetings or public forums on local, town or school affairs.

Data Analysis

After completing the aforementioned process, the validity and reliability studies of the T-PODS were conducted. To assess the structural validity of the T-PODS, various statistical analyses were performed, including exploratory factor analysis (EFA), confirmatory factor analysis (CFA), total item-test correlations, and item factor loads. In terms of the reliability studies, a t-test was utilized to examine whether the T-PODS demonstrates differences in internal consistency coefficient (Cronbach's alpha α), test-retest correlation coefficient (one-month interval), and the variance between the top 27% and bottom 27% of each item within a group.

Findings

Assumptions

The KMO (Kaiser Meyer Olkin) value greater than .60 and significant results from the Bartlett test are necessary to ensure the adequacy of the data for factor analysis (Büyüköztürk, 2004). The data analysis was performed using SPSS 20.0 and AMOS 18 software packages.

Results of Reliability Analysis

In this section of the study, the validity and reliability findings of the T-PODS are included. Initially, an examination was conducted to determine its suitability for a multivariate statistical dataset. Consequently, the KMO sampling adequacy coefficient was computed and found to be .866 (>.60). Additionally, Bartlett's Sphericity test, which serves as an indicator of multivariate normal distribution, yielded a $\chi 2$ value of 2006 ($p< 0.001$) for the entire group. These findings demonstrate that the data collected from the research group was suitable for factor analysis.

As a consequence of conducting an exploratory factor analysis (EFA) to assess the construct validity of the T-PODS, Item 7 was excluded from the scale due to its loading on multiple factors. Subsequently, a study was carried out to examine the construct validity of the remaining 13 items. A comprehensive overview of the findings about the reliability of the T-PODS can be found in Table 2.

Testing the statistical significance of the difference scores between the bottom and top 27% of participants was employed as an additional approach to ascertain the discriminatory capability of an item in distinguishing individuals with higher and lower perception levels. The t-test and corrected item-total correlation values, as presented in Table 2, were found to be statistically significant at the 0.01 level.

The Cronbach's alpha values of the scale adapted into Turkish were calculated as follows: 0.78 for digital ethics, 0.67 for engagement, 0.72 for informed citizen and 0.84 for civic know-how. Additionally, the overall Cronbach's alpha value for the scale was found to be 0.85. It is worth noting that four values exceed the threshold of 0.70, indicating high internal consistency.

To assess the reliability of the test-retest method, T-PODS was administered to a group of 38 teachers with a time interval of 1 month. Subsequently, Pearson product-moment correlation coefficients were computed to ascertain the consistency of the results. The obtained correlation coefficients for the entire scale yielded a value of 0.81.

Table 2. The factor loads, item total test correlations, t-test, and internal consistency coefficients

	Items	EFA	Item Total Test Correlations	Upper-Lower Group Difference (t-test)	Internal consistency coefficients
Digital ethics	item 1	.67	.37	6.02	0.78
	Item 2	.54	.49	6.62	
	Item 3	.83	.40	4.90	
	Item 4	.66	.34	4.40	
Engagement	Item 5	.45	.42	11.73	0.67
	Item 6	1.06	.47	13.07	
Informed citizens	Item 8	.57	.54	15.02	0.72
	Item 9	.76	.58	13.55	
	Item 10	.55	.47	10.41	
Civic know-how	Item 11	.73	.62	14.73	0.84
	Item 12	.66	.68	14.78	
	Item 13	.90	.71	17.54	
	Item 14	.41	.60	11.95	

Results of Validity Analysis

To establish the construct validity of the T-PODS, confirmatory factor analysis (CFA) was employed to assess the unimodal structure in its original form. During the CFA, the model's consistency indices were examined, and it was determined that the chi-square value was statistically significant ($\chi 2$= 163.176, N= 366, df= 59, p= 0.00; $\chi 2$/sd=2.76). The consistency index values were as follows: RMSEA=.070, NFI=.91, CFI=.94, TLI=.92, and AGFI=.90 Furthermore, as illustrated in Figure 2, the regression values of the scale items ranged from .57 to .89 (p<.01). According to Kline (2005), the goodness of fit values obtained can be considered satisfactory.

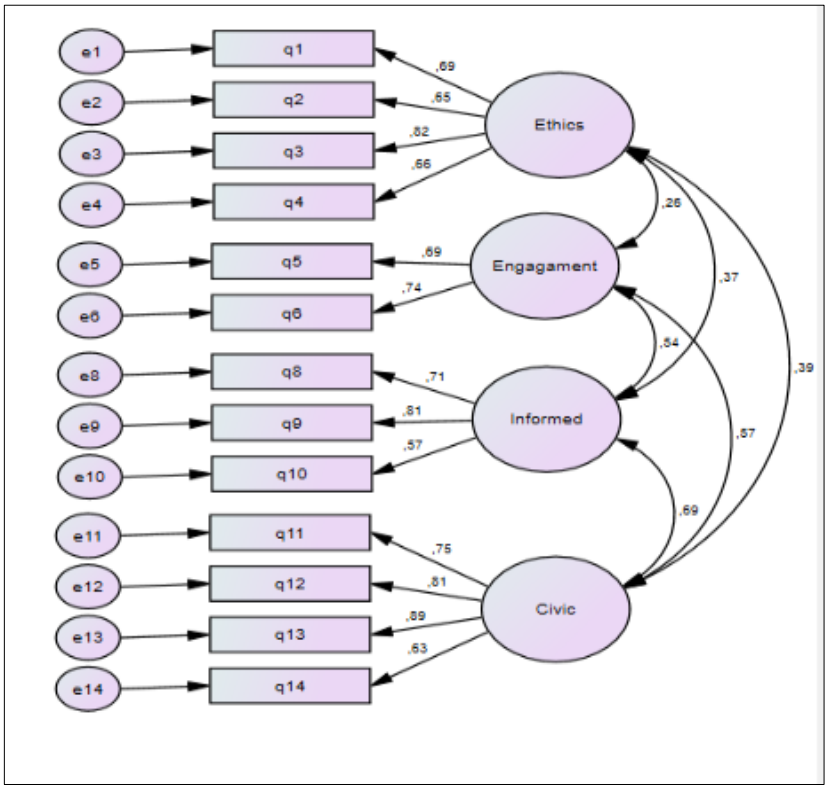

Figure 2. The factor loading values of the T-PODS

Conclusion, Discussion and Suggestions

Digital tools have a profound impact on our daily lives, both at the individual and social levels (Dedebali & Dasdemir, 2019). The rapid advancement of digital technologies, especially the internet and social media, has led to an increased interest in examining how adolescents utilize these digital tools and the associated concerns regarding their appropriate use. The increased accessibility to technology, both within and beyond the school environment, carries with it heightened risks of inappropriate technology usage (Martin et al., 2022). As a result, there has been a notable increase in the number of studies investigating this research topic (Lu & Gu, 2024; Öztürk, 2021).

The perspectives of teachers on digital citizenship education are crucial in fostering conscientious, secure, and accountable individuals in the digital realm. These perspectives are vital for the thorough and efficient implementation of digital citizenship education. However, it cannot be assumed that current educators are inherently equipped to effectively teach or exemplify digital citizenship skills (Stellmann & Song, 2024). Students require guidance to develop responsibility and respect for the rights of others in the digital landscape, where they mainly use mobile technologies and social media platforms (Wang & Xing, 2018). Therefore, teachers must first acquire proficiency in digital citizenship skills to effectively educate their students about safe and responsible online behavior (Öztürk, 2021).

A considerable body of research has investigated the digital citizenship behaviors of educators. Choi et al. (2018) identified lower levels of Internet Political Activism and Critical Perspective among teachers, attributing these findings to factors such as years of professional experience, social media integration in instruction, and internet self-efficacy. Similarly, Soykan and Keser (2018) observed a positive correlation between pre-service teachers' perceived digital citizenship and their experience with digital tools. However, Çoklar and Tatli (2020) noted age-related differences, with younger teachers demonstrating higher digital citizenship levels. Studies conducted in Indonesia and Turkey further illuminate the complexities of digital citizenship among educators. Ananto and Ningsih (2023)

found that both teachers and learners in Indonesia exhibited high levels of digital citizenship but were hesitant to engage in online political discourse. Durmuş Çerçem et al. (2023) discovered significant correlations between pre-service teachers' digital citizenship and their digital fluency and wisdom, with variations influenced by gender and educational background. These findings underscore the multifaceted nature of digital citizenship among educators. While many possess strong digital skills and a sense of digital responsibility, challenges persist in areas such as online political participation and critical thinking.

The present study followed an adaptation procedure with the objective of adapting the T-PODS, originally developed by von Gillern, Rose, & Hutchison (2024). Based on the GFI statistics, it can be concluded that the Turkish adaptation of this scale yielded a well-fitting model with satisfactory GFI statistics, demonstrating its validity. The analysis resulted in a valid and reliable scale comprising 13 items organized into four factors: digital ethics, engagement and participation, informed citizens, and civic know-how.

The Turkish-adapted scale can be employed to evaluate teachers' perceptions of digital citizenship. By analyzing the demographic characteristics, including age, gender, and department, researchers can establish connections between these factors and the teacher's perceptions in digital citizenship.

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Appendix. T-PODS (Turkish Version)

Boyut	Ölçek maddeleri	1	2	3	4	5
Dijital etik	1. Öğrencilerin kendilerini çevrimiçi ortamlarda güvende tutmayı bilmeleri faydalıdır.					
	2. Öğrencilerin dijital telif hakkı ve korsanlıkla ilgili yasaları bilmesi ve bunlara uyması faydalıdır.					
	3. Öğrencilerin çevrimiçi ortamlarda diğer insanlara saygılı davranması faydalıdır.					
	4. Öğrencilerin internette başkalarına zorbalık yapmamaları önemlidir.					
Katılım	5. Çevrimiçi katılımın öğrencilerin haksız veya adaletsiz olduğuna inandıkları bir şeyi değiştirmeleri için etkili bir yol olduğunu düşünüyorum.					
	6. Sosyal konularla ilgili çevrimiçi öğrenci katılımının, bu tür konulara çevrimdışı öğrenci katılımını teşvik ettiğini düşünüyorum.					
Bilgili vatandaş	7. Öğrenciler interneti kullanarak yerel ve ülke çapındaki siyasi veya sosyal konularla ilgili daha fazla bilgi sahibi olmalıdır.					
	8. Öğrenciler interneti kullanarak küresel sorunlar hakkında daha bilinçli hale gelmelidir.					
	9. Öğrenciler internette karşılaştıkları medya iletilerini eleştirel bir gözle değerlendirmelidir.					
Toplum bilgisi	10. Öğrencilerin il ve okul meseleleriyle ilgili siyasi toplantılara veya halka açık forumlara katılmak için interneti nasıl kullanacaklarını bilmeleri faydalıdır.					
	11. Öğrencilerin yerel, ulusal veya küresel sorunları çözmek için başkalarıyla çevrimiçi olarak nasıl iş birliği yapacaklarını bilmeleri faydalıdır.					
	12. Öğrencilerin sosyal, kültürel, politik veya ekonomik konularda çevrimiçi imza kampanyaları düzenlemek için sosyal medyayı nasıl kullanacaklarını bilmeleri faydalıdır.					
	13. Öğrencilerin, kendileri için önemli olan bir konu hakkında devlet yetkilileriyle iletişime geçmek için çevrimiçi yöntemleri nasıl kullanacaklarını bilmeleri faydalıdır.					