

Examining K-12 Educator Experiences from Digital Citizenship Professional Development

Florence Martin, Tuba Gezer, WeiChao Wang, Teresa Petty and Chuang Wang

Abstract

Digital citizenship refers to exhibiting responsible digital habits to function in a digital world. The purpose of this mixed methods study is to examine K-12 educators' experiences based on a digital citizenship graduate-level course that they participated in for professional development. Forty-five educators participated in this course. In addition to the knowledge and attitudinal data collected from assessment and survey, ten educators also participated in follow-up interviews at the end of the course. Results indicated that educators' digital citizenship knowledge increased significantly over the course period. Qualitative data indicated educators could transfer the course content to their school environments and enrolled in the course due to personal, student-related, curriculum-related, and school-related reasons. Needs and challenges regarding digital citizenship were also identified. *Keywords:* digital citizenship, professional development, K-12 education

Examining K-12 Educator Experiences from Digital Citizenship Professional Development

Digital Citizenship is defined as responsible digital habits to function in a digital world (Authors, 2019). By digital habits, the authors refer to the everyday use of digital technologies effectively and safely. They examined five digital citizenship topics; cyberbullying, digital footprint, digital privacy, digital netiquette, and digital identity to support students' academic, social and emotional well-being. As schools move to the use of more technology to support learning, there is an increasing need for teachers not only to understand how to use technology and integrate it appropriately, but also to understand digital citizenship and the impact technology use can have on students.. With greater access to technology both in and outside of school, comes greater risks for the inappropriate use of technology. Although teachers' awareness of digital citizenship has grown, digital citizenship interventions and opportunities at schools have not changed much (Hollandsworth, Donovan, & Welch, 2017). In their study, Pusey and Sadera (2012), found that teachers were not prepared to teach or serve as role models for digital citizenship.

International Society for Technology in Education (ISTE) lists digital citizenship as an essential aspect of educational technology that educators are now held responsible for teaching to their students. ISTE has standards on digital citizenship for teachers, coaches, and students. The ISTE standard for educators on digital citizenship states that educators should, "inspire students . . . to positively and responsibly participate in the digital world" (ISTE, 2019a, p. 1). The ISTE standard for coaches who are technology facilitators in educational settings states that technology coaches should "model and promote digital citizenship" (ISTE, 2019b, p.1). In addition to the national standards on educational technology, several states have standards focusing on digital citizenship. North Carolina has standards for technology facilitators, and these standards include

digital citizenship as one of the skills that the facilitators have to be proficient, accomplished or distinguished. This demonstrates the need for K-12 educators to be prepared to model digital citizenship not only in their behavior but also to teach it to their students and other teachers.

Definitions and Frameworks of Digital Citizenship

In the last decade, there has been an increase in research on digital citizenship. Research has examined students' practices of digital citizenship (Dowell, Burgess & Cavanaugh, 2009; Jones & Mitchell, 2016; Author, 2018; Symons, Ponnet, Emmery & Heirman, 2017) while some studies have examined teachers' practices on digital citizenship. Researchers have defined digital citizenship differently focusing on different aspects. They have also developed or adapted different frameworks on digital citizenship. Table 1 provides a list of definitions and frameworks on digital citizenship.

Table 1

Definition and Frameworks of Digital Citizenship

Researchers	Definition of Digital Citizenship	Framework
Ribble and Bailey (2011)	Digital citizens are those who exhibit the norms of appropriate, responsible behavior with regards to technology use. Concepts of responsibility, rights, safety, and security.	Nine elements of digital citizenship - digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and wellness, and lastly digital security
Jones and Mitchell (2016)	Respectful and tolerant behaviors towards others [that] increase civic engagement	Digital Citizenship Scale on ethics and online participation focused on online respect and online civic engagement.
Choi, Glassman and Cristol (2017)	Participation of adults in the Internet-centric community	Digital citizenship scale included Internet political activism, Technical skills, Local/Global awareness, Critical perspective and Networking agency.

Kim and Choi (2018)	Digital citizenship education goes beyond duty or responsibility and focuses on instituting self-identity, belief, protection, and healthy digital use	SAFE Framework - Self-identity in digital environment, Activity online, Fluency for the Digital tools, and Ethics for digital environment
Author (2019)	Responsible digital habits to function in a digital world.	Five aspects in digital citizenship included Cyberbullying, digital footprint, digital privacy, digital netiquette and digital identity

While there are various definitions and frameworks for digital citizenship, we use Author's (2019) definition of digital citizenship focusing on responsible digital habits to function in a digital world to guide this study. The digital citizenship intervention described in this study included the five aspects of digital citizenship described by these authors and included cyberbullying, digital footprint, digital privacy, digital netiquette and digital identity. These digital habits support the everyday use of digital technologies effectively and safely while supporting students' academic, social and emotional well-being.

Teachers Experience with Digital Citizenship

Teachers themselves need to have knowledge of what it takes to be a good digital citizen. There are a number of things that influence teachers as digital citizens. Choi, Cristol, and Gimbert (2018) studied factors that influence levels of digital citizenship through an in-depth literature review and validated survey with 348 in-service teachers. They found a strong relationship between teachers' Internet self-efficacy and digital citizenship. They also determined that work experience, Internet self-efficacy, and use of social network sites for teaching significantly influences teachers' perceptions of digital citizenship. They recommended that educators be prepared with knowledge, skills and behavior as digital citizens.

Kim and Choi (2018) developed a digital citizenship scale called the SAFE model which includes, self-identity in digital environment, activity online, fluency for digital tools, and ethics for digital environment. While the SAFE model was designed for youth, they validated it with 200 pre-service and in-service teachers and emphasized the importance of examining digital citizenship knowledge, attitude, and behavior together. They also recommended the importance for teachers to know the risks and benefits since they supported students as mentors regarding digital citizenship.

Oudeweetering and Voogt (2018) examined teachers' conceptualization of curriculum guidelines on 21st century competencies. In surveying 804 primary and secondary school teachers, they found six dimensions of the 21st century curriculum, which include 1) digital literacy, 2) innovative thinking, 3) critical thinking, 4) digital citizenship, 5) self-regulated learning, and 6) computer-supported collaboration, to be important. Xu, Yang, MacLeod, and Zhu (2018) examined the influence of interpersonal communication competence (ICC) for improving digital citizenship by surveying 905 preservice teachers. They identified 10 ICC skills to predict digital citizenship among which environmental control and immediacy were the strongest predictors of digital citizenship.

Teachers also need the support of their principals to provide professional development on digital citizenship. Zhong (2017) surveyed teachers and found that teachers mentioned that their principals were effective in supporting professional development on digital citizenship. Teachers also perceived that principals recommended strategies for professional development on digital citizenship varied with teachers' age and grade levels.

Teachers and parents work closely on digital citizenship practices of students. Mark and Nguyen (2017) examined the qualitative conversation analysis during a professional

development workshop on Internet safety and digital citizenship. Four themes emerged from responses to open-ended questions: trust, respect, optimism, and intentionality. One of the teachers mentioned “We (adults) need to be educated on cyber issues, so we can teach, train, model, and accept personal responsibility for online actions” (p.68). Another teacher commented “think we, as the schools and parents, need to put effort into inviting each other to continue talking. We all get busy, but this is ultimately for the children” (p.68). This shows the importance of continued conversation between teachers and parents with the focus being on the children.

Author (2019) in a study examining K-12 educators’ perceptions of students’ practices of cyberbullying, digital footprint, digital privacy, digital netiquette, and digital identity found that most of the items on various digital citizenship practices were rated “not well”. They also found that digital citizenship practices did not vary among school levels and were not based on their roles as teachers or technology coaches. However, educators who taught digital citizenship had higher perceptions of their students' digital citizenship practices compared to those who had not taught digital citizenship.

In a study of social studies teacher candidates in Turkey and the United States, teachers reported that there were no topics discussed on digital citizenship within social studies courses or if included they were insufficient or shallow. The author reported the need to include more topics on digital citizenship in social studies training (Karaduman, 2017).

James, Weinstein and Medoza (2019) researched on the CommonSense K-12 digital citizenship curriculum in Project Zero which included topics that educators identified as important and urgent. Teachers were concerned about the amount of time kids spend in front of a screen and the importance of media balance with other life activities. Another aspect that teachers tackled was teaching the kids to identify fake news and recognize bias and identify

parody sites and articles before spreading it to their network. They recommend several solutions for teachers to work with students and to create a positive culture on the use of media and technology.

Professional Development for Teachers on Technology Integration

Professional development for teachers on the use of technology has been examined. Kim, Kim, Lee, Spector and DeMeester (2013) investigated teacher beliefs related to technology integration based on a four-year professional development and found teacher beliefs about effective ways of teaching to be significantly correlated with technology integration practices. Kopcha (2012) examined teachers' barriers to technology integration and practices after two years of situated professional development. Other researchers have examined professional development with technology for specific subject areas (Bennison & Goos, 2010; Gerar & Varma, 2011).

Lawless and Pellegrino (2007) created a schema to evaluate professional development for teachers. This included types of professional development, units of analysis and design and methods. The type of professional development was examined through delivery mechanism, content of PD and duration. The unit of analysis focused on program outcomes, teacher change and student achievement. The design and methods included descriptive studies, case studies and experimental studies. Their evaluation design focused on three phases, where Phase I was on type, content, duration of PD and technical support. Phase II focused on teacher outcomes including knowledge, attitudes and instructional behaviors and Phase III focused on student outcomes.

Purpose of the Study and Research Questions

While researchers have studied teacher professional development for technology integration broadly, there have not been any studies specifically focused on professional development for digital citizenship. An examination of the literature reveals the need for teacher professional development on digital citizenship is evident. Most of the research on K-12 teachers have included surveys or interviews of teachers on their perception of digital citizenship practices. Researchers, however, have not studied professional development opportunities made available for teachers on digital citizenship and examined the outcome of the training provided to the teachers. The purpose of this study is to examine K-12 educators' experience on digital citizenship from participating in a graduate course on digital citizenship. The research questions for this study are as follows:

1. What were educators' experiences from the digital citizenship professional development course?
2. What motivated educators to participate in a digital citizenship professional development course?
3. What are the challenges and needs educators have regarding digital citizenship?
4. How do educators describe their students' digital citizenship behaviors?

Method

This study used a mixed method design including both quantitative and qualitative aspects to explain K-12 educators' learning process of digital citizenship, and how their attitudes towards digital citizenship are implemented in their classrooms and schools. According to Lawless and Pellegrino (2007) evaluation model, teacher knowledge, attitudes, and instructional behaviors, which are outcomes of digital citizenship professional development and the focus of this study, may not be explained solely with quantitative or qualitative data. Mixed method

design was chosen so that the qualitative data and quantitative data can supplement each other. Specifically, semi-structured interviews made in-depth understanding of participants' experience and attitudes toward the professional development possible and descriptive statistics present the relative standing of participants' ratings on each aspect of the professional development, e.g., motivation, student digital citizenship practices, and digital citizenship areas of needs. Paired-sample *t*-test allows the researcher to see if the change of participants' attitudes and beliefs is due to chance. The convergent parallel design (Teddlie & Tashakkori, 2009) was used to understand educators' learning progress and the implementation of digital citizenship. Based on convergent parallel design, qualitative and quantitative data are analyzed separately, and the results are compared for interpretation.

The digital citizenship professional development was offered in Summer 2018 and Summer 2019. The Institutional Review Board approval was received for both the quantitative and qualitative aspect of this project from University of North Carolina at Charlotte. Interviews and data analysis were completed in Fall 2019.

Participants

Course Participants and Survey Respondents

The participants in this study included two cohorts of students enrolled in a digital citizenship 3-credit hour course in a large southeastern university. The number of participants in the summer of 2018 and 2019 summer digital citizenship course was 22 and 23, respectively, with the total sample of 45. Participants' performance data was obtained anonymously for all 45 students enrolled in the course.

There was a satisfaction survey at the end of the course, and the participation was voluntary. Participants signed an online consent form before responding to the survey. The

student satisfaction data and demographic data such as grade-level and content the educator's taught was obtained only for the 40 teachers who completed the post-survey. The range of teaching experience was between 0 and 25 years with the average of 7.6 years ($SD = 6.26$). The distribution of school level was elementary school (25%), middle school (45%), high school (10%), district level (15%), and a professional media expert (2.5%). Besides one participant (2.5%) did not respond to the question. The majority of the participants taught Instructional Technology (45%) and others taught Math/Science (12.5%), English (10%), Social Studies/Guidance (10%), all (10%) and others (12.5%).

Interview Participants

All course participants were invited for a short interview to share their digital citizenship experience in depth via e-mail which indicated that the participation is voluntary. The participants who volunteered signed the consent form before the interviews. Ten of the course participants agreed to participate in the interview, and each received \$25 Starbucks gift card as appreciation for their time. Among the 10 educators who were interviewed, seven educators taught in elementary or middle schools, two of them taught in high schools, and one educator was teaching digital citizenship professionally. Four interviewees were instructional coaches or technology facilitators, one interviewee was a media specialist, and the others were teaching Science, English, or Arts.

Intervention

The intervention was a graduate level course on digital citizenship offered at a southeastern university in summer 2018 and summer 2019. Teachers participated in this course for professional development. More details about this course is included in Appendix A.

To reach course goals, the professional development course included five modules of digital citizenship on the topics of cyberbullying, digital netiquette, digital footprint, digital privacy, and digital identity. This was in alignment with the Author's (2019) definition and framework. Each module included learning objectives, module goals, informative videos, practice activities, and online module assessments. Practice activities included real life scenarios regarding the module content where students contributed to an online discussion to share their ideas and perspectives. In addition to weekly activities, students had to complete a final project. For the final project, the educators designed a Digital Citizenship workshop which can be offered to students or teachers in their schools.

Data Collection

The data collection was conducted in two phases. Quantitative data collection took place during and after the summer course. The sources of quantitative data were digital citizenship pre-test and post-test, grades, and post survey regarding the effectiveness of the course. The second phase was qualitative data collection, in which we conducted ten semi-structured interviews with the educators via Zoom synchronous tool for deeper understanding of the implication of digital citizenship.

Quantitative Phase

Pre-test and pos-test. Students completed a pre-test at the beginning of the course and posttest at the end of the course. These tests included 25 multiple choice items on the five modules of digital citizenship, cyberbullying, digital netiquette, digital footprint, digital privacy, and digital identity. Sample questions on pre and post-test were "How should you format your password to ensure they are secure?" and "Once you post a picture online, why can you never really 'delete' it?"

Survey. At the end of the course, students were asked to participate in an online survey to share their perspectives about the course activities and effectiveness. Out of the 45 registered students, 40 students responded to the post-survey, which resulted in a response rate of 88.8%. The survey included three demographic questions, ten Likert type questions regarding students' perceptions of the course materials focusing both on usability elements as well as instructional design elements, and three open-ended questions to share additional information about the course. Likert scale question ratings were one to four, where one is strongly disagree, and four is strongly agree. Cronbach's alpha was used to check the inter reliability of the survey items, and it was .97 which is above the acceptable reliability measure of .7 (Nunnally, 1978). The survey also included open-ended questions asking what they liked about the course and what they did not like about the course.

Grades. Participants completed a practice activity and a module assessment for each of the five modules in the course. Practice activities were based on online discussion with peer educators, and module assessment was a multiple-choice assessment on the module content. Course grades were composite of 5% for introductions, 40% for practice activities, 25% for module assessments, 10% for class participation, and 20% for the final project. The grade band was A- Excellent (90-100), B-Good (80-89), C-Marginal (70-79), D-Weak (60-69) and U-Unsatisfactory (below 60).

Qualitative Phase

Interviews. The qualitative data were collected through semi-structured interviews, and 10 educators who completed the course participated in the online interview via Zoom. Before the interviews, the participants read and signed the consent form. The researcher also informed participants verbally regarding the use of the interview data for research purposes. The length of

each interview ranged from 12 to 30 minutes. The interview included nine questions and focused on their motivation to participate in digital citizenship, challenges they face when teaching digital citizenship and areas of need regarding digital citizenship. The interview questionnaire is located in Appendix B. Demographic detail of the interviewees was also collected during the interviews.

Data Analysis

Quantitative Data Analysis

A paired sample t-test was used to detect if there is a significant increase in educators' knowledge about digital citizenship. Descriptive statistics and frequency count were used to analyze demographic information, grades, and survey questions.

Qualitative Data Analysis

The researchers analyzed the interview data based on the thematic analysis. The focus was to identify themes and patterns in the data (Glesne, 2015). The doctoral student researcher conducted the interviews and transcribed them in Fall 2019. The doctoral student researcher read the transcription twice before data analysis. MAXQDA was used for qualitative data analysis. First, the researcher then highlighted the meaningful information in different colors based on the similarity of the data then the data segments were summarized with a couple of words which created the codes. The similar codes created the themes. The results were presented as themes, if available, codes, quotes along with frequency. In addition, the researcher reached out to the participants for member checking. Only one interviewee responded with feedback as to how the teachers who participate in this digital citizenship course now have the information they need and have to make an awareness among students now.

Results

Educator's Experience from Digital Citizenship Professional Development

Educator's experience was measured through knowledge and attitudes.

Pre-test and Post-test

To examine the change in educators' knowledge of digital citizenship, a paired sample t-test was conducted between pre-test and post-test scores. All the assumptions for the t-test were met. The difference between participants' pretest assessment ($M = 25.07$, $SD = 1.86$) and post-test assessment ($M = 26.7$, $SD = 1.24$) digital citizenship score was statistically significant $t(43) = -5.10$, $p < .001$, $d = 1.03$ (large effect size).

Grade

The majority of student grades (85%) consisted of practice activities, module assessment, and final project. The remainder of the final grade came from introduction (5%) and participation (10%). Each practice activity constituted 8 points and the module assessment constituted 5 points. The mean and standard deviations of the practice activities, and module assessments are presented in Table 2. The overall mean of the practice activities was 7.78 and module assessment was 4.83. In addition to the practice activities and module assessments, students also completed a final project. The mean and standard deviation of the final project were 17.92 and 2.46, respectively.

Table 2

Descriptive Statistics of Practice Activity and Module Assessment Score

	Practice Activities		Module Assessment	
	Mean	SD	Mean	SD
Cyberbullying	7.62	1.25	4.73	.54
Digital Netiquette	7.98	.15	4.80	.41

Digital Footprint	7.81	.49	4.93	.25
Digital Privacy	7.87	.34	4.96	.21
Digital Identity	7.62	.72	4.73	.81
Total	7.78	.71	4.83	.50

Overall, out of the 45 participants, 40 (88.9%) passed the digital citizenship course with an A, and 4 (8.9%) earned a B as the final grade. One student received a C. The mean and standard deviation of final scores were 95.23 and 5.03, respectively.

Post Survey

Post survey results revealed participants' experience during the course. Table 3 summarizes the descriptive statistics of post survey Likert type questions. The results indicated that the students had positive experience with the course as the means of the responses to these questions were above 3, which is above agree and close to strongly agree. Question 10 had the highest mean ($M = 3.78$, $SD = 0.58$), which indicates participants have intention to apply the course content in their classrooms and school.

Table 3

Descriptive Statistics of Post Survey Likert Type Items

No	Questions	<i>n</i>	<i>M</i>	<i>SD</i>
1	The directions in the course were easy to follow	40	3.68	0.62
2	The navigation in the course was easy to use	40	3.65	0.70
3	The content was presented in an organized manner	39	3.72	0.61
4	The course discussions encouraged critical engagement with the material	40	3.58	0.68
5	The interactive practice activities allowed me to practice digital citizenship	40	3.60	0.71

6	The assignments helped me to apply the course content.	39	3.59	0.68
7	The information I learned during the course was worth my time.	40	3.62	0.63
8	The course was effective in helping me learn digital citizenship practices.	40	3.62	0.63
9	The online course was engaging	40	3.48	0.75
10	I am very likely to take this content to my own classroom/school	40	3.78	0.58

In addition to the Likert scale items, the participants were asked what aspect of the course they liked the most. The top three themes were organization (30%), content/resources (27.5%), and discussion/sharing ideas (25%). The organization theme included easy access, easy to navigate, and easy to understand. The participants liked the course content, especially videos, and other resources that were shared by the instructor or colleagues. Educators enjoyed learning from each other during online discussions, and the instructor's presence. Some participants also stated transferring the course content to their school (22.5%) and applying the content to their behavior (17.5%). Table 4 presents themes, frequency, and example quotes from the open-ended question on what they liked the most about the digital citizenship course.

Table 4

Favorite Aspects of the Digital Citizenship Course

Themes	Frequency	Quote
Organization	12	• The setup of this class was very easy to follow. Due dates were clear and posted. • I appreciated the organization and pace of the course. The feedback was helpful and purposeful.
Content/Resources	11	• The resources that were shared among my colleagues and the Instructor. • I enjoyed the videos. Not only were they informative, but also provide a potential

		resource to share with students and/or colleagues
Discussion/sharing ideas	10	● My favorite aspects of the course were the discussions. I enjoyed reading my peers' posts and engaging in dialogue on a variety of digital citizenship topics. ● I also enjoyed that the instructor was an active participant with us. The questions were thought provoking on many levels.
Transferring the content to my school	9	● I will definitely be applying what I learn in this course this school year and educate my students since social media is their life. ● The practicality of the content and how relatable it is for middle school students and educators.
Applying the content to my behavior	7	● I enjoyed the opportunity to reflect on my own online behavior and think about modifying those experiences for middle school students. ● I like the self-analysis and reflection about our own social media use and online persona. I also found the netiquette activities very informative.

The second open-ended question was about what the participants did not like about the course. While 15% of them did not like discussions as one participant stated that “I wish some of my classmates had engaged more in the posts and we could have generated more ‘in-depth’ discussion,” approximately 12 % of them found the course ‘too easy’.” On the other hand, 27.5% of the participants answered this question as none.

In addition to the data from open-ended questions, interview data were collected from 10 K-12 educators who participated in this professional development course. Overall, educator experience on the digital citizenship course can be summarized in six categories: transferable content, reflection to online behaviors, effective content, online course delivery, interaction in

the course, and appropriate for classroom teachers. Themes, frequency, and quotes are presented in Table 5.

Table 5

Overall Educators' Experiences with Digital Citizenship

Themes & Codes	Frequency	Quote
• Transferable content to school environment	11	I like the fact we've got to develop a lesson that I could take and teach. I thought that was pretty awesome.
• Effective training	10	I figured with very effective again activities were appropriate for adults but then easily adaptable for children to make them appropriate though.
• Useful resources	9	I like the most was that it supply resources that you can utilize and implement.
• Benefits of online discussion	9	I like being able to relate it to the real world and read people's posts. So I like that she let us post images and examples.
• Easy navigation of course materials	8	I have to say this one was much easier to navigate and those were backward in.
• Reflection to online behavior	5	I learned that I'm not as safe as I think I am.
• Appropriate classroom teachers	4	Your higher students like eighth grade and up; a lot of the videos that I would find we're still a little bit elementary level.

The comparison of qualitative and quantitative data shows some similarities such as transferring the content to school, reflection to their online behaviors, and the benefits of resources. Easy course navigation and the course pace were other aspects of training that teachers liked. Responses to open-ended questions indicated that participants prefer more interaction using Zoom or having an in-person session. To sum up, open-ended survey questions

and interview data validated the results as both data sets suggest that educators like the training, and they can transfer their knowledge of digital citizenship to their schools and classrooms.

Educator's Motivation to Participate in Digital Citizenship Training

Student-related reasons, personal reasons, curriculum-related reasons, and school-related reasons were the four categories of motivation to participate in digital citizenship training. Student-related reasons included teaching students appropriate use of computers and the consequences of their online behavior. One of the personal reasons was having kids in middle schools. Curriculum-related reasons were getting fresh ideas about digital citizenship and updating digital citizenship knowledge. School-related reasons were using the lessons learned to teach in 1-1 classrooms where every student had a technology device and helping the media specialist. Table 6 displays themes, frequency, and quotes for the motivation to participate in digital citizenship training.

Table 6

Motivation to Participate in Digital Citizenship Training

Themes & Codes	Frequency	Quote
Personal reasons		
Personal/research interest, tuition waiver	4	I just kinda want to with my research interest is in critical digital media literacy and digital citizenship. So that's my research interest for urban schools.
Having kids at middle schools, friend recommendation, etc.	3	I have my own kid or that age in middle school.
For students		
Educating students about appropriate use of computers	6	Because I think you need to model that; you need to teach it and you need to model it just like anything else you do in the classroom. You can't just say this is how you act you've got to show them and have opportunities to learn it.

Teaching students the consequences of online behaviors	3	I think it's really important to stress that to the students the importance of digital citizenship especially with social media and digital footprints
Curriculum		
Fresh ideas	4	I was hoping that taking the course getting fresh ideas for digital citizenship.
Filling the gap in the digital citizenship curriculum, modern manner to present digital citizenship	3	we didn't have a county-wide program. So there were several of us that just said we need to learn more and get a good handle on it since it's part of our standards. Teachers have to teach digital citizenship. So I wanted to see if there's anything new I could learn
School related reasons		
Teaching in 1-1 classroom, supporting media specialist	3	I taught in a school district that was one-to-one. I taught middle schoolers that had one-to-one MacBook

Educator's Challenges and Needs regarding Teaching Digital Citizenship

Challenges of digital citizenship were identified in three areas: student-related challenges, teacher-related challenges, and curriculum-related challenges. One of the student-related challenges was the students' lack of openness to learning digital citizenship. An example of a teacher-related challenge was the inconsistency in digital citizenship instruction. Lack of time and difficulty keeping up with digital citizenship were curriculum-related challenges. The majority of educators (70%) mentioned lack of time to teach digital citizenship while 50% of them asserted that students were not open to learn digital citizenship. Table 7 presents themes, codes, frequency, and exemplary quotes regarding educators' challenges of digital citizenship.

Table 7

Educators' Challenges in Teaching Digital Citizenship

Themes & Codes	Frequency	Quote
Curriculum related		

Lack of time to teach digital citizenship	7	Time is probably the biggest one. Teacher schedules are so tight with all the testing and everything
It is hard to keep up with digital citizenship	4	I have to make sure that I'm keeping up with the new trends. And so that's a challenge
Digital citizenship is not a part of curriculum	4	I think the biggest challenge is it's really not in our curriculum to teach it.
Teachers related		
Teachers are not engaged with digital citizenship	4	And part of that too is showing that our teachers if they are not really working through the lessons, if they don't consider buy-in themselves, then the students aren't going to buy in as well.
Teachers do not provide the same digital citizenship instruction	3	I feel like the biggest problem that we have is that not all the teachers are presenting the lessons the same way.
Student related		
Students are not open to learn digital citizenship	5	They're somewhat resentful when you try to teach them appropriate Internet use.
It is hard to change students' online behavior	2	So sometimes when we went through the lesson but somehow they just did not quite connected to their real-life if that makes sense.
Digital citizenship content for older teenagers	1	I think one of the biggest challenges is this generation and especially the older teenage population that I work with; She'll think that they're invincible and that the Internet is temporary.

The educators suggested that digital citizenship should be taught consistently as 70% of the participants mentioned having designated time for digital citizenship is important. If students hear about digital citizenship once a month, behavior change is not likely to happen. Some other needs regarding digital citizenship are: teaching digital footprint, cyberbullying, digital privacy, and providing teacher digital citizenship training. It is important to teach students what to do with digital citizenship, not what not to do, as setting positive digital citizenship examples. Table 8 summarizes the digital citizenship needs.

Table 8

Areas of Needs regarding Digital Citizenship

Themes & Codes	f	Quote
Teaching digital citizenship consistently	7	● I think our need is that we only address at once in a while. And I feel like a commitment of at least having some type of lesson once a week. My dream and my request to our administration were that we can do something every week.
Digital footprint (Setting positive digital citizenship examples)	4	● I think probably the digital footprint aspect. A lot of kids don't think about how their life now and their actions now will impact them later.
Cyberbullying (teaching students to consequences of their online behaviors)	3	● I think cyberbullying probably is the thing. Just helping the students to truly understand the thing that says to other people the effect that had on them, whether it be in person or online.
Digital privacy (chatting with strangers)	2	● I'm with the older students they are getting on video games and It just seems like every single application now has a chat feature. So that is a real concern for us. And so being able to communicate online with one another and being careful in those open chat areas is a real concern.
Teacher digital citizenship training	2	● They need to implement training. Actually, the district started doing micro-credentials for training. I think that one thing that I can do to help to make these little mini courses that are online could it actually online and the teachers can earn credit by these courses need to be required. Something they definitely need to start learning and implementing soon

Students' Digital Citizenship Behaviors

Educators summarized their student digital citizenship behaviors in two main categories as positive and negative digital citizenship behavior. Accountability is an example of positive behavior, as students knew that they were responsible for their online behaviors. Regarding negative behaviors, students were careless to share pictures and used weak passwords. Besides, students may cyberbully other students with mean comments and hide pictures or emails from

their parents. Table 9 includes themes, frequency and quotes regarding students' digital citizenship practices.

Table 9

Students' Digital Citizenship Behaviors

Themes & Codes	Frequency	Quote
Positive Digital Citizenship behaviors		
Accountability	3	They know that proper professional digital citizenship is now something can be evaluated on in addition to content such as neatness and promptness. And so they see it in my class as an embedded skill. This year, I actually have some of the students that I taught last year. I see them now leading the effort and being a good influence on their peers because they know it's going to be an expectation in my class.
More educated about digital citizenship	2	I think they've come a long way in the past couple of years. Well, the kids have come a long way. They're really becoming more educated.
Negative Digital Citizenship behavior		
Bullying	2	Even on a Google classroom, a platform that they know I'm monitoring and just putting ridiculous silly inappropriate comments that they know I'm going to see. This is with seventh and eighth graders and even the sixth graders
Hiding pictures/emails from parents; sharing pictures	2	I'm concerned with students finding ways to hide things from parents through the phone like different apps that will hide pictures or messages. In fact just Monday I had one of my students in my homeroom, I overheard him sharing with his friends that he needed to find a way to he needed an app where he could get his email but it didn't have any way for his mother to look at it.
False sense of security, weak passwords	2	There's a lot of community involvement. And I feel like in some sense my students have almost a false sense of security. When it comes to the digital world because our physical world is as relatively safe.
There is a difference between younger kids and older kids	3	So I would say they're generally pretty good but as they're getting older they're transitioning from children and to young adults. They do try; they push; they are very impressionable like kids will tell and our kids how to get around or filters and things.

Discussion

The findings from this digital citizenship project highlights the experiences of the K-12 educators who participated in the digital citizenship professional development. Based on the findings, we discuss the importance of design of professional development, peer learning, digital citizenship resources, and educator motivation as important aspects of digital citizenship professional development. In addition, through the lens of going forward with digital citizenship we discuss challenges, needs, and student behavior.

Digital Citizenship Professional Development

This digital citizenship intervention was offered as a professional development opportunity for educators. Four common aspects that were highlighted in the results included design of professional development, peer learning, digital citizenship resources, and motivation.

Design of Professional Development. Organization of the course was highlighted both in the Likert scale items as well as the open-ended items on the survey and in the interview. The first three items on the survey focusing on usability design elements, specifically on directions, navigation, presentation of content were rated high demonstrating that the design of professional development course was a positive experience for the educators. In addition, other instructional design elements such as discussions, practice, assignment to support learning were designed using a systematic instructional design process and the items were rated to have contributed to a positive experience. This shows that both aspects in design of the course, usability as well as instructional elements, are important in an online course.

Peer Learning. When teachers were asked what their favorite aspect was about this digital citizenship course, discussions were highlighted as one of the favorite aspects “I enjoyed reading my peers' posts and engaging in dialogue on a variety of digital citizenship topics.” This dialogue with the peers on a variety of digital citizenship topics was beneficial to the educators.

Jackson and Bruegmann (2009) discuss the importance of teaching students but also teaching others through peer learning. In their study, there were larger achievement gains when there were more effective colleagues. Miquel and Duran (2017) developed a peer-learning network as a staff development model which promoted peer-learning among students, teachers, and schools in Spain. Their study found that this had positive effects on teacher learning of concepts and attitudes. Thus, peer learning is an important aspect to consider when offering professional development on digital citizenship.

Digital Citizenship Resources. One other aspect that educators thought to be beneficial was the resources that were shared by both the instructors and peers. One of the teachers commented, “What I like the most was that it supplies resources that you can utilize and implement.” Teachers valued the resources that were shared because they could use them and implement them with their own students. On the other hand, another teacher responded that she was already familiar with most of the resources that were shared. When designing a professional development experience for digital citizenship, it is common to have participation from educators with varied prior knowledge on digital citizenship. It is important to identify resources for all expertise levels. Sharing resources in open educational communities is becoming a common practice due to the availability of the Internet (Tosato, Arranz, & Avi, 2014). Tseng and Kuo (2014) examined social participation and knowledge sharing in teachers’ online professional community of practice and found that the strength of ties and prosocial commitment was a factor for sharing of resources. Encouraging sharing of resources in the community of practice is important not only for digital citizenship education for teachers but also for various aspects of professional development.

Motivation. Different aspects of motivation to participate in digital citizenship professional development emerged from the findings: student-related reasons, personal reasons, curriculum-related reasons, and school-related reasons. All four aspects of motivation are essential for an educator to participate and be successful in the digital citizenship professional development. Making a difference in their students' online behavior, having kids in middle school, getting new ideas on teaching digital citizenship, and supporting the schools with the 1-1 classrooms or media specialists were the main reasons for educators learning about digital citizenship. In a motivation framework for culturally responsive teaching, Wlodkowski (2003) identified establishing inclusion, developing attitude, enhancing meaning, and engendering competence as main reasons for fostering motivation for teachers. Two of their framework elements were captured in our findings: (a) developing attitude toward the learning experience through personal relevance and choice, and (b) enhancing meaning by creating challenging and thoughtful learning experiences that include learner perspectives.

Going Forward with Digital Citizenship

Challenges. The teachers were asked about challenges that exist when teaching digital citizenship, and three areas of challenge emerged: student-related challenges, teacher-related challenges, and curriculum-related challenges. Curriculum-related challenges were mentioned the most with digital citizenship not being given sufficient time to be taught as it is not part of the curriculum. The educators interviewed also mentioned that older teens do not engage with the content on digital citizenship and are sometimes resentful when taught about online behavior. Similarly, there is a need for more teachers to engage in this content especially if they are not familiar with this topic. This aligned to Kopcha's (2012) study that found when teachers were

interviewed for barriers to technology integration, time was identified as a barrier. Similarly, teachers need adequate time to include lessons on digital citizenship.

Needs. When educators were asked about their needs regarding digital citizenship, they responded that digital citizenship needs to be taught more frequently rather than once a while. Implementing training for teachers was mentioned as well. In addition, teachers provided some specific topics, digital footprint, cyberbullying, and digital privacy, as areas of need. Frequency of training and content-related needs were mentioned by the teachers as essential for digital citizenship professional development.

Positive and Negative Behavior. When educators were asked about their students' digital citizenship practices, two behavior categories, positive and negative, emerged. While accountability can reinforce positive online behavior, students can carelessly share pictures, use weak passwords, and cyberbully with mean comments demonstrating negative behavior. Efforts have to be taken to reinforce positive behaviors and discourage negative behaviors.

Overall, educators reflected that through this professional development on digital citizenship, they would take it back to their schools to share it with their peers and students, support their students' practices, and apply it to their behavior. From these findings, we conclude that this professional development on digital citizenship was beneficial to the educators, and we need more professional development initiatives on digital citizenship continuing to support the educators.

Limitations

The study had some methodological limitations. First, due to the small sample size, it is difficult to generalize the result to the population. Second, there might be a pretest effect which may influence the participants' response on the posttest (McMillian, 2016) because the

participants could have learned from the pretest or remember the questions while taking the posttest. Besides, pretesting may challenge the generalizability of the result considering not all educator took the pretest. Lastly, this study includes both quantitative (knowledge and experience) and qualitative data (e.g. experience, challenges, motivation). However, we could not link qualitative to quantitative data due to anonymous responses. While the major focus of the study was on educator experience in the professional development and this was addressed using both quantitative and qualitative data, the remaining three questions relied only on the qualitative data. This study only examined Phase I and Phase II of Lawless and Pellegrino (2007) evaluation model, focusing on design of professional development and teacher behaviors and did not include data from Phase III focusing on student outcomes.

Implications and Future Research

The findings of this study have implications for teachers, students, administrators, and those who offer professional development in higher education institutions.

Designers of professional development. This study showed that including both usability design elements as well as instructional design elements is critical when designing professional development. Also, when facilitating professional development including opportunities for peer learning and a variety of resources on digital citizenship might be beneficial to the learners.

Designers and Administrators. When designing and offering professional development including various motivational elements at different levels (school-level, personal-level, student-level and curriculum-level) benefits might help with recruitment as well engagement when educators participate in professional development. .

Administrators. This study also provides empirical evidence for administrators and professional development organizers to address the challenges and needs identified in this study.

Time was identified both as a challenge and as a need. Sufficient time needs to be devoted to teach digital citizenship topics.

Researchers. The findings from this study add to the literature base on digital citizenship. This might help researchers in designing future studies related to digital citizenship.

Future studies should continue to study digital citizenship professional development in various settings. Studies also focusing both on teachers training on digital citizenship and implementation in their classroom to study student outcomes will be beneficial. Besides, a longitudinal study may examine the effect of digital citizenship professional development on teachers' and students' digital citizenship behaviors.

References

Authors (2018)

Authors (2019)

Bennison, A., & Goos, M. (2010). Learning to teach mathematics with technology: A survey of professional development needs, experiences and impacts. *Mathematics Education Research Journal*, 22(1), 31-56.

Choi, M., Glassman, M., & Cristol, D. (2017). What it means to be a citizen in the internet age: Development of a reliable and valid digital citizenship scale. *Computers & Education*, 107, 100-112.

Choi, M., Cristol, D., & Gimbert, B. (2018). Teachers as digital citizens: The influence of individual backgrounds, internet use and psychological characteristics on teachers' levels of digital citizenship. *Computers & Education*, 121, 143-161.

Dowell, E. B., Burgess, A. W., & Cavanaugh, D. J. (2009). Clustering of internet risk behaviors in a middle school student population. *Journal of School Health*, 79, 547-553.

Glesne, C. (2015). *Becoming qualitative researchers: An introduction*. (5th ed.). Boston: Pearson.

Gerard, L. F., Varma, K., Corliss, S. B., & Linn, M. C. (2011). Professional development for technology-enhanced inquiry science. *Review of educational research*, 81(3), 408-448.

Hollandsworth, R., Donovan, J., & Welch, M. (2017). Digital citizenship: You can't go home again. *Techtrends: Linking Research and Practice to Improve Learning*, 61(6), 524-530.
doi:10.1007/s11528-017-0190-4

International Society for Technology in Education (ISTE). (2019a). *ISTE standards for educators*. Retrieved from <https://www.iste.org/standards/for-students>

- International Society for Technology in Education (ISTE). (2019b). *ISTE standards for coaches*. Retrieved from <https://www.iste.org/standards/for-coaches>
- James, C., Weinstein, E., & Mendoza, K. (2019). *Teaching digital citizens in today's world: Research and insights behind the Common Sense K–12 Digital Citizenship Curriculum*. San Francisco, CA: Common Sense Media.
- Jackson, C. K., & Bruegmann, E. (2009). Teaching students and teaching each other: The importance of peer learning for teachers. *American Economic Journal: Applied Economics*, 1(4), 85-108.
- Jones, L. M., & Mitchell, K. J. (2016). Defining and measuring youth digital citizenship. *New media & society*, 18(9), 2063-2079.
- Karaduman, H. (2017). Social Studies Teacher Candidates' Opinions about Digital Citizenship and Its Place in Social Studies Teacher Training Program: A Comparison between the USA and Turkey. *Turkish Online Journal of Educational Technology-TOJET*, 16(2), 93-106.
- Kim, M., & Choi, D. (2018). Development of youth digital citizenship scale and implication for educational setting. *Journal of Educational Technology & Society*, 21(1), 155-171.
- Kim, C., Kim, M. K., Lee, C., Spector, J. M., & DeMeester, K. (2013). Teacher beliefs and technology integration. *Teaching and teacher education*, 29, 76-85.
- Kopcha, T. J. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. *Computers & Education*, 59(4), 1109-1121.

- Lawless, K. A., & Pellegrino, J. W. (2007). Professional development in integrating technology into teaching and learning: Knowns, unknowns, and ways to pursue better questions and answers. *Review of educational research*, 77(4), 575-614.
- Mark, L. K., & Nguyen, T. T. T. (2017). An invitation to internet safety and ethics: School and family collaboration. *Journal of Invitational Theory and Practice*, 23, 62-75.
- McMillian, J. H. (2016). *Fundamentals of Educational Research (7th edition)*. Pearson.
- Miquel, E., & Duran, D. (2017). Peer learning network: Implementing and sustaining cooperative learning by teacher collaboration. *Journal of Education for Teaching*, 43(3), 349-360.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Pusey, P., & Sadera, W. (2012, March). Preservice teacher concerns about teaching cyberethics, cybersafety, and cybersecurity: A focus group study. *In Society for Information Technology & Teacher Education International Conference* (pp. 3415-3419). Association for the Advancement of Computing in Education (AACE).
- Ribble, M., & Bailey, G. (2011). Nine elements of digital citizenship. *Digital citizenship: Using technology appropriately*. International Society for Technology in Education.
- Symons, K., Ponnet, K., Emmery, K., Walrave, M., & Heirman, W. (2017). Parental knowledge of adolescents' online content and contact risks. *Journal of Youth and Adolescence*, 46, 401-416.
- Teddlie, C., & Tashakkori, A. (2009). *Foundation of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.

- Tosato, P., Arranz, B. C., & Avi, B. R. (2014). Sharing resources in open educational communities. *Qualitative Research in Education*, 3(2), 206-231.
- Tseng, F. C., & Kuo, F. Y. (2014). A study of social participation and knowledge sharing in the teachers' online professional community of practice. *Computers & Education*, 72, 37-47.
- Van de Oudeweetering, K., & Voogt, J. (2018). Teachers' conceptualization and enactment of twenty-first century competences: Exploring dimensions for new curricula. *The Curriculum Journal*, 29(1), 116-133.
- Wlodkowski, R. J. (2003). Fostering motivation in professional development programs. *New Directions for Adult and Continuing Education*, 2003(98), 39-48.
- Xu, S., Yang, H. H., MacLeod, J., & Zhu, S. (2019). Interpersonal communication competence and digital citizenship among pre-service teachers in China's teacher preparation programs. *Journal of Moral Education*, 48(2), 179-198.
- Zhong, L. (2017). The effectiveness of K-12 principal's digital leadership in supporting and promoting communication and collaboration regarding CCSS implementation. *Journal of Educational Technology Development and Exchange*, 10(2), 55-77.

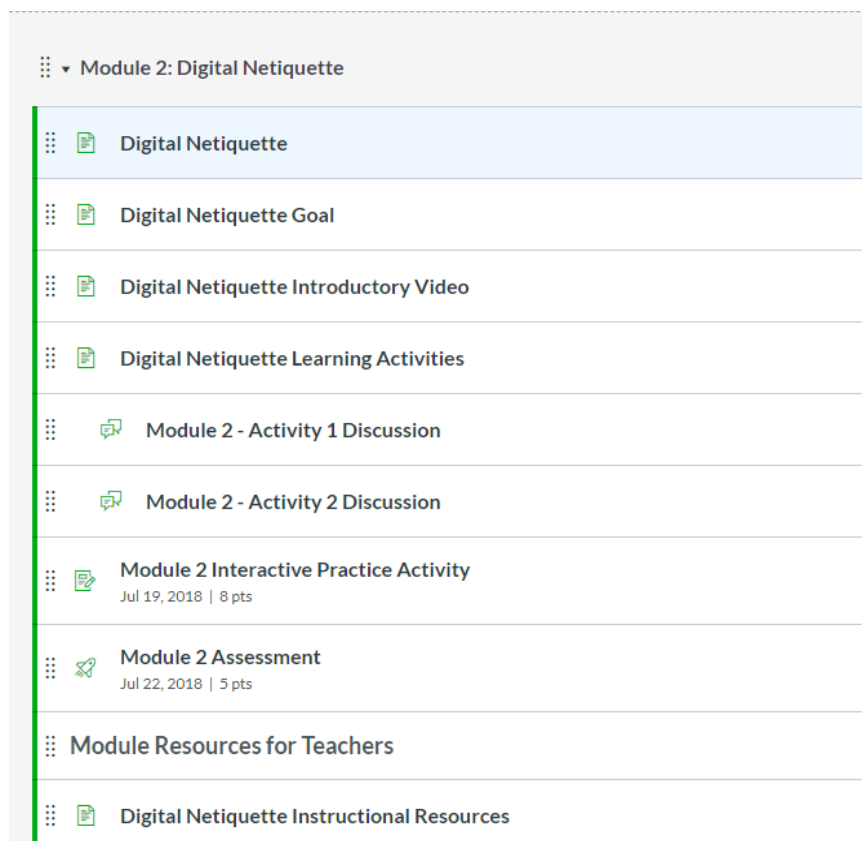
Appendix A

Professional Development Course Details, Digital Citizenship for K-12 Educators

This 100% online course aimed to achieve the following goals:

1. Provide an introduction to cyberbullying and provide suggestions for handling inappropriate online behaviors.
2. Collect and compare the digital netiquette rules of major social media sites.

3. Collect information of personal digital footprints and analyze how activities impact active and passive digital footprints.
4. Guide students in adjusting privacy features on social media accounts and analyze interaction history.
5. Compare and contrast perceptions created by digital representations presented online versus offline.



Screenshot of a Sample Module in the Course

Appendix B

Interview Questions

Demographic Information

- 1- Grade level:
- 2- Role:
- 3- Years of experience:
- 4- Which digital citizenship curriculum do you use in your class?

Interview Questions

- 5- What motivated you to participate in the digital citizenship summer course?
- 6- How was your experience with the digital citizenship course? How do you evaluate the effectiveness the course?
- 7- What challenges you when you teach digital citizenship?
- 8- How has your digital citizenship practice changed after the course?
- 9- How would you describe your students' digital citizenship practices?
- 10- What are some areas of needs regarding digital citizenship in your school?