

Grades 4 to 9 Students' Perceptions of Their Digital Citizenship and Practices

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Introduction
While the internet and digital devices are central to students' current and future success, there is a complex relationship between time spent on the internet and reported satisfaction with life, academics, health, and school engagement (Shen et al., 2020; DCCO, 2017). To minimize such problems, educators require to know digital citizenship skills and the internet and digital tools in an appropriate, appropriate, safe, useful, legal, and healthy manner (International Society for Technology Education, 2016; Meek, 2014).
The primary purpose of the current study was to

Methods
Becoming a good digital citizen depends on students' self-awareness, mastery of technical skills for using digital devices, guidance from parents and teachers, and applying established social norms for online behavior. For research goals of these aspects of digital citizenship, the survey responses of 2,028 Grade 4 to 9 students (95% female) were analyzed. **Why Chongqing, China?** Chongqing, located in Southwestern China, is one of the largest 'big cities' in the world, and it is one of the four major metropolitan areas (Chongqing, Chengde, Kunming, and Changsha) under the four Chinese national strategies (Chang et al., 2018). Although Chongqing and Chengde are the only cities in the C98 partners, one might expect to find similar digital citizenship practices in Chongqing based on these patterns.

Findings
On a typical work day, 59-year-old students in the C98 countries spent more than 2 hours on average of online on the internet, with more than 80% of them using mobile devices only (DCCO, 2017). 59% of students in China were the only child in their family, and 41% of them were the only child in their family. **Summary** Our research provided evidence on digital citizenship skills, self-awareness, parental supervision, and digital citizenship practices. The findings suggest that digital citizenship education should be tailored to the needs of students in China. **Key Findings** 1. Usually, all students (98%) reported having internet access at home, and they spent an average of 45 minutes a day online (28 minutes of home and 17 minutes of school use) (Figure 1). 2. 95% of students reported using mobile devices (95% of them used smartphones) and 95% of them used smartphones to access the internet. 3. A majority of parents (80%) reported that they did not know how to use digital devices (80% of them reported they were playing online). 4. 20% of 95% of students who answered the question (whether they played online games), 71% indicated they did play online games. Also, 80% of students who answered the question about the effect of the fast development of online games played by them, 70% of them indicated they were playing online.

Discussion
1. Chinese students were much more likely to access online with parents before, without permission, or without their C98C students in 2017. Chinese students reported a new way to access online, 17% of them most commonly used a smart mobile device. Additional research is needed to determine why more digital devices for online communication are more popular than others. 2. On average, students in this study reportedly spent only 17 minutes a day online at school, with primary grade students spending more time online at school (20 minutes) than middle school students (13 minutes). This unexpected difference was not visible between primary grade students and middle school students in other countries. One of the reasons for this difference could be the different possible population for this difference in China.

Limitations and Implications
1. While we randomly selected a large sample of Chinese students from 2,028 students in 2017, survey completion rates are lower than 100% (not all students in the sample completed the survey). Although we have a reasonably large sample, there are limitations in the study. 2. This study relied on students' self-reports. 3. This investigation provided a number of possible findings about Chinese students and digital citizenship.

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PRESENTED AT:



INTRODUCTION

While the internet and digital devices are critical to students' current and future success, there is a negative relationship between time spent on the internet and reported satisfaction with life, loneliness, bullying, and school engagement (Becker et al., 2020; OECD, 2017). To minimize such problems, students need to become good digital citizens who use the internet and digital tools in an appropriate, responsible, safe, ethical, legal, and healthy manner (International Society for Technology in Education, 2018; Ribble, 2014).

The primary purpose of the current study was to determine if Chinese students in Grades 4 to 9 believed they used acquired knowledge and online skills to act in an appropriate and conscientious manner when online.

RESEARCH QUESTIONS AND PREDICTIONS

RQ1. What online activities do students engage in at school and home?

RQ2. Are perceptions of online importance, purposes, and attitudes related to student grade and gender?

RQ3. Do student characteristics, access and time spent on the internet, and beliefs about online engagement account for variance in reported digital citizenship?

For RQ1, we expected that older students would be more positive about their online capabilities than younger ones (as older students had more time to learn) and this would result in more time online at school/home in higher grades. We also predicted parental oversight would be less for older students (see Lyons, 2012).

For RQ2, we expected older students would view online engagement as more important than younger students (as older students would be online more often). We also expected gender and grade-level differences in terms of purposes for engaging in online activities, as such purposes are likely to change over time and differences in what girls and boys like to do are common (e.g., Gracia et al., 2022). We anticipated that girls would express more positive attitudes towards digital reading and writing than boys and younger students would be more positive than older ones about such literacy activities (Graham et al., 2018).

For RQ3, we anticipated that these variables would predict each of the five specific aspects of digital citizenship assessed. Students with greater internet access, those who spend more time online (school and home), and older students have more opportunities to acquire the knowledge and skills needed to act in an appropriate and conscientious manner online. Similarly, students who view online engagement as more important, reportedly engage in online activities more frequently, are more positive about digital reading and writing and are likely to be online more often, generating more opportunities to learn how to be a good digital citizen. Additionally, students who receive school instruction about online rights and responsibilities are more likely to engage in these social norms than students who do not receive such instruction. Finally, observed differences in online behaviors between girls and boys (e.g., online game playing; Martin et al., 2020) should impact what they view as appropriate online behavior.

METHODS

Becoming a good digital citizen depends on students' online access, mastery of technical skills for using digital devices, guidance from parents and teachers, and applying established social norms for online behavior. To examine each of these aspects of digital citizenship, the survey responses of 2,005 Grade 4 to 9 students (56% female) were randomly selected from 3,286 schools in Chongqing China.

Why Chongqing China?

Chongqing, located in Southwestern China, is the largest 'city proper' in the world, and it is one of the four direct-administered municipalities in mainland China (the others are Beijing, Tianjin and Shanghai). Unlike the four Chinese coastal cities/provinces (i.e., Beijing, Shanghai, Jiangsu, and Guangdong) providing data as OECD partners, few studies on teaching and learning in Chongqing have been published.

On a typical week day, 15-year-old students in the 38 OECD countries spent more than 2 hours outside of school on the internet, with more than three hours spent on each weekend day (OECD, 2017). While mainland China, where this study took place, 15-year-old Chinese students in Beijing, Shanghai, Jiangsu, and Guangdong spent 42 minutes online outside of school each weekday and 99 minutes online each day on the weekend. This is considerably less than the time reported by students in other countries. Data collected in Chongqing can contribute the recognition of Chinese students' use of Internet.

Survey

Each student completed instruments designed to assess their basic information, perceived importance of online engagement (e.g., help learning and give confidence; taken from Wu, 2012), purposes for online activities (learning and social; items adapted from Ke & Yao, 2011), attitudes toward digital reading (learning and social; taken from Graham et al., 2018), attitudes toward digital writing (e.g., write e-mails in free time; taken from Graham et al., 2018), and digital citizenship (media use, balanced use of digital media, digital etiquette, digital privacy, and digital footprint; taken from Martin et al., 2020). All measures were factor analyzed to establish their factor structure, and the resulting constructs evidence good reliability.

Procedure

A random sampling procedure, stratified by region and grade levels, was used to select elementary and middle schools from across Chongqing to participate in the study. In each school, the survey was distributed to fifteen randomly selected students in each grade (i.e., 4, 5, 6, 7, 8, and 9).

Students received a packet including an introductory letter indicating we were conducting a survey to learn about participants' experience in online reading and writing as well as experience in digital citizenship instructional practices. The letter asked participants to answer questions honestly. The packet also included an informed consent form emphasizing that the responses would not be shared with other school personnel and would remain anonymous. Both students and their parents were requested to sign the form if they agreed to participate in the study. Finally, the packet included the survey and an envelope. Participants were asked to return the completed survey and consent form in a sealed envelope to their teachers. The schools returned the surveys with a stamped envelope.

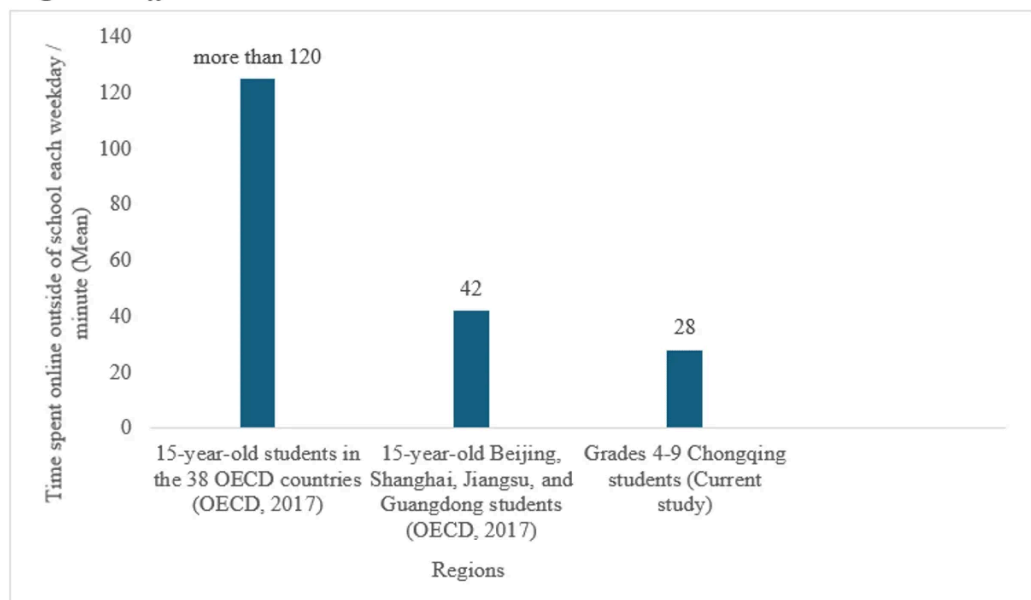
Two trained graduate students entered all data into two Excel files independently. Inter-coder agreement was 99.99%. All differences were resolved by the first author.

FINDINGS

RQ1

1. Virtually all students (96%) reported having internet access at home, and that they spent an average of 45 minutes a day online (28 minutes at home and 17 minutes at school; see figure 1).

Figure 1 ↵
Regional Differences ↵



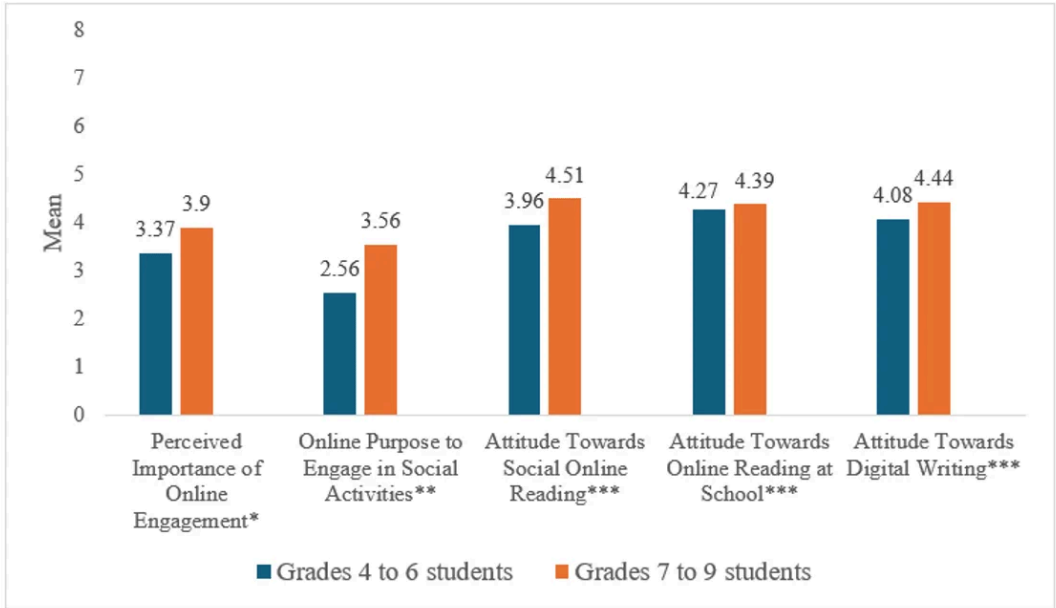
Note. A law aimed at limiting the playing of online games was issued in Mainland China in 2021. It stipulated the schedule minors can play online games (i.e., one hour, from 20:00 to 21:00, on Fridays, Saturdays, Sundays, and legal holidays), and online game users are requested to complete real-name registration (National Press and Publication Administration, 2021) ↵

2. Students were positive about their digital capabilities; just 5% of them rated these capabilities as poor.
3. A majority of parents guided internet use (although a sizable minority did not), and 89% of students indicated online responsibilities and rights were taught at school.
4. Of the 73% of students who answered the question (whether they played online games), 71% indicated they did play such games. For the 86% of students who answered the question about the effect of the law designed to limit online game played by minors, 78% of them indicated they were playing online games less.

RQ2

1. Students agreed that going online is important because it helps learning, makes it possible to write more, and makes reading more enjoyable. Grades 7 to 9 students placed greater emphasis on the importance of online engagement than Grades 4 to 6 students (See figure 2).

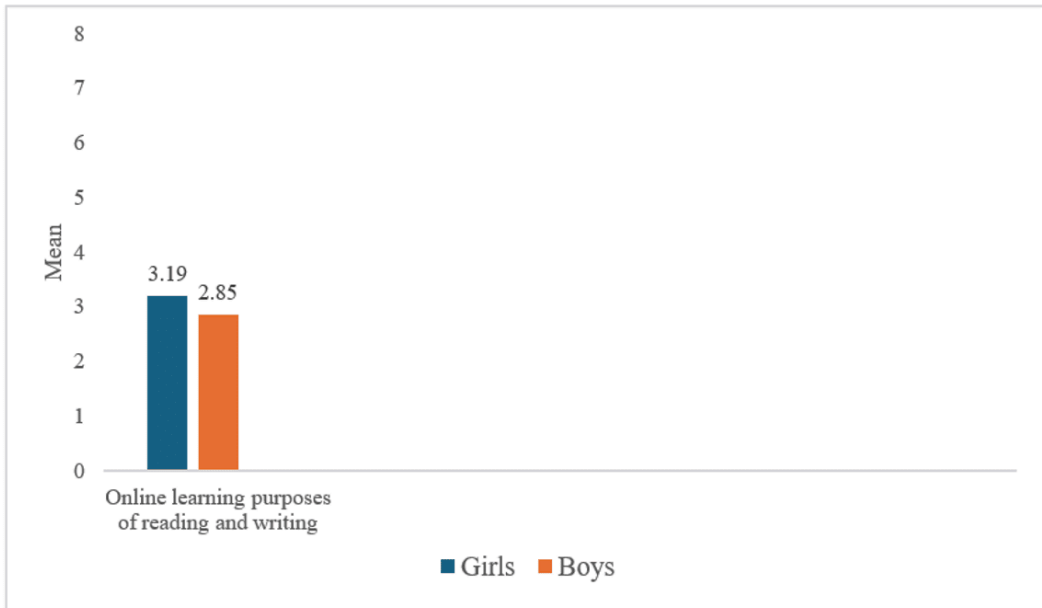
Figure 2
Grade-Level Differences



Note. $p < .001$. *Using a six-point Likert-type scale: Strongly disagree (score of 1), moderately disagree (score of 2), slightly disagree (score of 3), slightly agree (score of 4), moderately agree (score of 5), and strongly agree (score of 6). **Using a eight-point Likert-type scale: Never (score of 0), several times a year (score of 1), monthly (score of 2), several times a month (score of 3), weekly (score of 4), several times a week (score of 5), daily (score of 6), and several times a day (score of 7). ***Using a six-point Likert-type scale: Very bad [1], somewhat bad [2], a little bad [3], a little good [4], somewhat good [5], and very good [6].

2. Students in Grades 7 to 9 went online for social reasons more than students in Grades 4 to 6. Girls used online learning purposes of reading and writing more frequently than boys (See Figure 3).

Figure 3
Gender Differences



Note. $p < .001$. Using a eight-point Likert-type scale: Never (score of 0), several times a year (score of 1), monthly (score of 2), several times a month (score of 3), weekly (score of 4), several times a week (score of 5), daily (score of 6), and several times a day (score of 7).

3. Students in Grades 7 to 9 had more positive attitudes about reading online for social purposes and reading online for class than students in Grades 4 to 6.

4. Students in Grades 7 to 9 had more positive attitudes about writing online than students in Grades 4 to 6.

RQ3

1. Students moderately agreed they followed norms of digital netiquette, practiced safe online privacy behavior, managed their digital footprint appropriately, balanced digital media use in healthy ways, and approached digital media in a literate manner. Nevertheless, students reported unacceptable rates of cyberbullying, sharing of passwords with friends, friending strangers, re-sharing of posts, using false personal information to register online, and copying text directly from online sources when doing homework.

3. Measures of digital citizenship were related to student characteristics, internet use, and beliefs about online engagement.

DISCUSSION

1. Chinese students were much less likely to connect online with portable laptops, desktop computers, or tablets than OECD students in 2017. Chinese students reported a new way to connect online; 17% of them most commonly used a smart watch to do so. Additional research is needed to determine why some digital devices for online connections are more popular than others.
2. On average, students in this study reportedly spent only 17 minutes a day online at school, with primary grade students spending more time online at school (20 minutes) than middle school students (13 minutes). This unexpected difference was particularly notable because primary grade students spend less time at school than middle school students. One possible explanation for this difference is that traditional instructional practices were implemented in Chongqing middle schools for the preparation of a city-wide high school entrance exam, but such practices were not systematically stressed in the primary grades. Research is needed to replicate this finding and explore possible explanations. It is also important to explore the average amount of time students spend online each day in middle school in different Chinese provinces because they are all under considerable pressure for their students to do well on China's high school entrance exams.
3. Our findings on parental involvement were slightly higher than parental involvement in U.S. studies (Lyons, 2012; Martin et al., 2020), and considerably higher (89%) for the teaching of digital citizenship at school, where only 37% of middle schoolers in the U.S. indicated such instruction occurred (Martin et al., 2020). Research is needed to replicate our findings as well as to draw a fuller portrait of parental and school involvement in shaping children's online behavior not only in China, but in other countries as well.
4. As a group, the Grade 4 to 9 Chinese students in this study generally appeared to be good digital citizens based on their mean response to questions. Additional research is needed to replicate these findings, determine if teachers and parents agree with such assessments, and to observe if students demonstrate these same behaviors online.
5. Additional research is needed to explore why older students' digital reading and writing attitudes did not decline as expected.

LIMITATIONS AND IMPLICATIONS

1. While we randomly selected a large sample of Grade 4 to 9 students from 3,386 schools in Chongqing, China and we obtained an 84.6% survey completion rate, we were not able to randomly select students from across China. Selecting students randomly from a country the size of China is likely an impossible task. Thus, we cannot be sure if our results fully reflect the perceptions of all Grade 4 to 9 students in China.

2. This study relied on students' self-reports.

3. This investigation yielded a number of positive findings about Chinese students and digital citizenship. Nevertheless, the study revealed multiple issues of concern that policy makers, parents, and teachers should carefully consider. This included limited use of internet resources at school as well as a sizeable proportion of parents who did not monitor and influence youngster's online behavior. Student responses to survey questions also revealed unacceptable rates of cyberbullying, sharing of passwords with friends, friending strangers, re-sharing of posts, using false personal information to register online, and copying text directly from online sources when doing homework. These concerns need to be better addressed by parents, teachers, and students.

AUTHOR INFORMATION

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TRANSCRIPT

ABSTRACT

Becoming a good digital citizen depends on students' online access, mastery of technical skills for using digital devices, guidance from parents and teachers, and applying established social norms for online behavior. To examine each of these aspects of digital citizenship, the survey responses of 2,005 Grade 4 to 9 students (56% were female) randomly selected from 3,286 schools in Chongqing China. Virtually all students (96%) reported having internet access at home, and that they spent an average of 45 minutes a day online (28 minutes at home and 17 minutes at school). Students were positive about their digital capabilities; just 5% of them rated these capabilities as poor. A majority of parents guided internet use (although a sizable minority did not), and 89% of students indicated online responsibilities and rights were taught at school. Students moderately agreed they followed norms of digital netiquette, practiced safe online privacy behaviors, managed their digital footprint appropriately, balanced digital media use in healthy ways, and approached digital media in a literate manner. Nevertheless, students reported unacceptable rates of cyberbullying, sharing of passwords with friends, friending strangers, resharing of posts, using false personal information to register online, and copying text directly from online sources when doing homework. Measures of digital citizenship were related to student characteristics, internet use, and beliefs about online engagement. Implications for practice and future research were presented.

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