

**Digital Citizenship of Generation Z in Indonesia:
Does Islamic Higher Education Matter?**

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This study explores and analyzes the knowledge and practices of digital citizenship (DC) of Islamic high school (IHS) students and Islamic higher education (IHE) students. Data were collected using a questionnaire distributed online. The participants were 765 IHS students in South Kalimantan, Indonesia, and 765 at State Islamic University Antasari Banjarmasin, South Kalimantan, Indonesia. Data were processed using T-test to determine the difference between digital citizenship practices and knowledge. Pearson's correlation was utilized to assess the relationship between knowledge and digital citizenship actions. This study found a significant correlation between students' knowledge of and practice digital citizenship. The knowledge and practice of digital citizenship of IHS and IHE students were similar. It shows that Islamic educational institutions have yet to be able to instill digital citizenship in Generation Z. Therefore, this study recommends that teachers, lecturers, and managers of Islamic education institutions introduce and instill digital citizenship in schools and universities. The government should also establish policies encouraging digital citizenship as part of learning in Islamic educational institutions.

Keywords: digital citizenship element, digital citizenship knowledge and practice, Generation Z

INTRODUCTION

The rapid development of information technology has led to two impacts that are always debated when talking about the use of technology. On the one hand, information technology provides great benefits in all areas of life. Technology makes it possible to work at home and spend more time with family and friends outside the work environment. (Nakagawa & Yellowlees, 2020). Technology makes the process of sharing goods or services through the internet (Paro et al., 2021). Technology makes it easier for students to do research, follow learning from anywhere, learning becomes fun through games and they can learn when and how they want. (Gashi Shatri, 2020). Technology increases the effectiveness of learning. (Wentao et al., 2017). These positive impacts are the basis for the integration of technology with the learning process in educational institutions and other fields.

On the other hand, technology also has negative effects on students. Some news told negative effect of technology such as “as a result of friendship through social media and online games, a 14-year-old teenager was deceived and sent about 1 billion money from his father’s account”; “teenagers scammed 1.2 billion with arisan online (online arisan is a group savings activity with sequential disbursement of money); rape and murder committed by a teenager after seeing pornographic films on the internet”. Indonesian society tends to be a user of these thoughts rather than an exporter of religious movements and thoughts, including transnational religious thoughts that are not in line with Indonesian wasatiah Islam and rahmah Islam (Azra, 2015).

Generation Z, the generation born between 1996 and 2009, is the most familiar with information technology. This generation is very comfortable with technology (Giunta, 2017). They are global-minded, less likely to verify information, and tech-savy. (Sladek & Grabinger, 2016). Gen Z is ambitious, creative, learns primarily from online sources, and has more friends than previous generations. (Graczyk-Kucharska & Erickson, 2020). They seek information online and share it online because they think information and knowledge are more valuable when shared. (Lazányi & Bilan, 2017). Generation Z is active in constant digital communication (Albadi & Zollinger, 2021).

The characteristics of Generation Z that cannot be separated from information technology make them very vulnerable to negative impacts as well as can benefit from information technology. Therefore, DC is the basic foundation of Generation Z when dealing with information technology. Norms and behaviours that have been used in society must also pay attention to norms and behaviours when using technology. (Saputra & Al Siddiq, 2020). Digital citizenship can be understood as norms about appropriate and responsible behaviour in the use of technology (M. Ribble, 2009). DC prepares and teaches students to use technology appropriately, safely, and beneficially through positive behaviour when using technology. (Al-Abdullatif & Gameil, 2020). Digital citizenship is the ability to realise the potential risks associated with the digital world and to protect oneself from these risks. Another definition explains that digital citizenship is the ability to use communication and information technologies with respect for regulations, safety, ethics

and responsibility (İmer & Kaya, 2020). With digital citizenship, students will engage in advocating and practising the legal and safe use of technology and information, demonstrate positive behaviour in using technology that supports collaboration, learning and productivity, demonstrate personal responsibility for lifelong learning, and show leadership for digital citizenship. (M. Ribble, 2009) Skills and ways of responding to the damaging effects of technology use are essential functions of the DC. (Emejulu & McGregor, 2019). Research by Zhong et al (2020) proved that the level of citizenship has a negative correlation with digital bullying actions but is not significantly correlated with bullying victimisation. (Zhong et al., 2021). In other words, the better a student's level of digital citizenship, the lower his or her level of bullying, but it was not related to the likelihood of him or her being a victim of bullying. In a democratic society, DCs play a role in building political participation. (Choi & Cristol, 2021). DC prepares students against political polarisation, disinformation, racism and other prejudices (Mirra et al., 2022).

The majority of literature that is often referenced explains that digital citizenship includes nine elements of digital access, digital commerce (digital economic transactions), digital communication, digital literacy, digital etiquette (ethics when using digital devices), digital law, digital rights and responsibilities, digital health and well-ness and digital security. (M. Ribble, 2011). Öztürk (2021) categorised the nine elements into three groups: respect for self and others, independent learning and relating to others and protecting self and others (Öztürk, 2021).

The increasing importance of DCs is reflected in the interest to improve digital citizenship is increasing in education community (Jones & Mitchell, 2016). Digital citizenship became an increasingly studied topic after 2010 (Chen et al., 2021). It shows that educational institutions' awareness of the importance of DC for students is increasing and digital citizenship must be built from an early age (Mahadir et al., 2021).

In contrast to that, DC in Islamic education has not been studied much. DC elements has not been considered as an inherent part of Islamic education. The study of Islamic education related to digital technology revolves around how digital technology is a tool in learning, infrastructure and costs, as well as skills (Mu'is & Huda, 2022). Social media: twitter and snapchat contributed to DC female students of Islamic university in Saudi Arabia (Alharbi & Alturki, 2018). According to teachers, there is no difference in the availability of DC learning between grades in Islamic secondary schools in Saudi Arabia (saleh Al-Bassam, 2021). Digital literacy is important in the destructive era (Saputra & Al Siddiq, 2020). The research does not examine other elements of digital citizenship. Digital literacy is a topic that has been studied more in the context of Islamic education. Digital literacy is reflected in students' ability to access learning materials (Musa et al., 2021). Digital literacy affects student achievement in Islamic education midwives (Araniri et al., 2021).

In the DC context related to social and norms, Islamic education must play an active role in preparing students as digital citizens. Islamic education is not only involved in preparing students to become part of real society, but also to be part of digital society. Islamic education is a form of education that plays a major role in Indonesia. There are 9,448 IHSs in Indonesia and 13,995 SMAs. At the higher education level, there are 847 IHEs while there are 3,115 public tertiary institutions. Islamic education refers to moral education based on the Koran (Douglass & Shaikh, 2004) Islamic education presents virtue (Idris et al., 2018), including in digital etiquette.

For that reason, this study aims to explore the impact of Islamic education at the level of DC knowledge and practice. The impact shows that Islamic education matters and vice versa. It will provide evidence of the level of involvement of Islamic education institutions in Indonesia in preparing a generation capable of facing the challenges of information technology. This study will contribute theoretically to Islamic education which has not yet studied much about DC in Islamic educational institutions.

METHOD

This research is a field research with quantitative and qualitative approaches (mixed method). The participants were 765 students of Islamic higher school/*madrasah aliyah* (IHS) in South Kalimantan and 765 students of State Islamic University Antasari as the biggest Islamic higher education (IHE) in

Kalimantan Island. Questionnaires were used to measure their perceptions of their own digital citizenship knowledge and practices.

Quantitative and qualitative data, both, were collected and analyzed simultaneously (Wisdom & Creswell, 2013). The research was conducted in three regencies and one city in South Kalimantan: Tabalong, Hulu Sungai Selatan, Tanah Laut, and Banjarmasin City. The selection of these areas was based on regional characteristics: coal mining areas, mountains, coastal areas, and cities. In this study, the survey and interview participants are the same but the numbers are different. In other words, some participants who filled out the questionnaire will be interviewed. Nineteen participants were interviewed.

Knowledge of digital citizenship (DC) was measured with five items including knowledge of DC concepts, knowledge of DC elements, and knowledge of personal data security. The practice of the eight DC elements was measured using an instrument containing 38 items. The question items were adopted from Al-Abdullatif and Ahlam (Al-Abdullatif & Gameil, 2020) and Yildiz, Çengel, and Alkan. (Yildiz et al., 2020). Answers consisted of a scale of 1-4 to avoid participants choosing the middle of the scale.

The data were processed using t-test to determine the significance of the differences in DC knowledge and practices of Islamic higher school/madrasah aliyah (IHS) students and Islamic higher education (IHE) students. Therefore, the hypothesis tested in this study

1. Ha which reads “there is a significant difference between digital knowledge and practice”;
2. H0 which reads “there is no significant difference between the knowledge and practice of digital citizenship of IHS (*madrasah aliyah*) students and IHE students”.

RESULTS AND DISCUSSION

Result

Digital Citizenship Knowledge

IHS (*madrasah aliyah*) students and IHE students do not have adequate knowledge of digital citizenship (DC) as can be seen in table 1. This is due to the unpopularity of the concept among teachers and lecturers. This causes teachers and lecturers not to discuss it in learning. The average score is relatively high only on knowledge related to students’ personal interests: usage and personal safety.

P1 said that he never heard about digital citizenship discussed by lecturers during lectures. “As far as I remember, I never heard about it”, he said. This trend also occurred at the IHS level. P2 said that he had never explained how to be a citizen of a digital community systematically. “Before this online lecture on Covid, explaining about behaviour related to the internet was usually done if there were students who were caught using mobile phones while studying”.

TABLE 1
KNOWLEDGE OF DIGITAL CITIZENSHIP

No.	Indicators	IHSs	IHEs
1	Knowledge of the concept of digital citizenship	2,86	2,83
2	Knowledge of what digital citizenship entails	2,76	2,75
3	Knowledge of the internet and communications and its benefits	3,53	3,60
4	Awareness of how to use the internet and smartphones to connect/interact with others	3,7	3,68
5	Knowledge of how to protect personal data when using the internet	3,6	3,54
		3,29	3,28

At the IHS level, moreover, digital citizenship is not a topic that is discussed in learning. Matters related to DC are only emphasized by teachers when they are related to the subjects they teach. P3, a student of IHS, said that teachers do not explain about good behavior when using the internet. “Teachers explain when there is a problem”, she said. P4 and P5, for example, shop online, but they never received any explanation

about online shopping in the lesson to avoid fraud. This shows that learning at Islamic high schools and Islamic higher education institution are not systematically designed to prepare students as digital citizens.

Digital Citizenship Practices

This section describes the DC practices of IHS students and IHE students in South Kalimantan. There is no significant development of DC practices after attending IHS and IHE.

TABLE 2
DIGITAL CITIZENSHIP PRACTICES

No	Statement Item	IHSS	IHES
	Digital Commerce		
1	I shop online	2,93	3,10
2	I check the security of a trading site before using it	3,44	3,5
3	I choose popular selling sites when buying things online	3,36	3,42
4	I read the terms and information on the trading site carefully, thoroughly and meticulously.	3,62	3,53
5	I research the reliability and credibility of a trading site before using it.	3,45	3,4
		3,36	3,39
	Digital Communication		
1	I use information technology (phone and internet) to communicate and share ideas with others.	3,66	3,63
2	I use social media (e.g., Facebook, Instagram) to communicate with others	3,62	3,62
3	I send sound and video clips using the internet	3,51	3,55
4	I use the internet to support activities at school/campus and outside school/campus.	3,71	3,77
5	I use email to communicate with others	2,75	2,91
		3,45	3,5
	Digital Literacy		
1	I learn and practice my computer skills before using it	3,1	3,24
2	I check the accuracy of the information on the internet and compare it with other sources of information on the internet.	3,38	3,34
3	I learnt about the risks of using the internet	3,4	3,36
		3,29	3,31
	Digital Ethics		
1	I do not share personal information on social media and the internet	3,39	3,41
2	I follow the rules related to good manners in speaking/communicating over the internet	3,68	3,61
3	I block accounts whose content is untrue regarding manners, religion, or community customs	3,54	3,53
4	I use other people's photos/content after obtaining permission	3,08	3,07
5	When interacting using the internet, I respect the opinions and views of others and accept differences in society using the internet.	3,71	3,64
		3,48	3,45

No	Statement Item	IHSS	IHES
	Digital Law		
1	I respect others and do not abuse other people's property.	3,78	3,7
2	I read about the laws and sanctions against crimes using the internet	3,3	3,28
3	I don't use pirated apps	3,47	3,24
4	I follow the terms of digital licensing and copyright and notify when using other works' materials	3,43	3,34
		3,5	3,39
	Digital Copyright and Liability		
1	I follow the authorised party's access requirements policy	3,5	3,45
2	I follow digital laws and agreed rules	3,55	3,44
3	I follow the rules of online etiquette	3,62	3,54
4	I report negative behaviour on the internet to the authorities or site manager	3,21	3,16
		3,47	3,4
	Health and Safety		
1	I realise that using the internet will have an impact on my physical	3,48	3,49
2	I realise the dangers of internet addiction and know how to reduce its impact	3,51	3,48
3	I use the internet at set times only	2,83	2,9
4	I follow the proper settings on my mobile phone or computer	3,48	3,37
5	I make sure the light from my mobile phone or computer screen does not damage my eyes.	3,57	3,59
6	I take breaks and exercise lightly when using the internet	3,14	3,02
		3,34	3,31
	Security		
1	I buy anti-virus	2,53	2,53
2	I regularly update my computer/mobile phone operating system	3,28	3,18
3	I use and update applications for computer/mobile phone system security (spyware protection)	3,32	3,12
4	I use spam filters on email	2,32	2,49
5	I change my password regularly	2,29	2,24
6	I spread awareness about safety within the family using the internet	3,16	3,15
		2,82	2,79
		3,33	3,32

Elements of e-commerce are commonplace activities for Generation Z. However, there are some members of Generation Z who do not really like online shopping because the items purchased cannot be touched or seen directly. P6 is one example of a generation Z who is not so interested in *ecommerce* or online shopping. She shared

“I don't like buying things online, because the items are not what I want. I don't install online shopping apps. When the item arrives, it turns out that it is not to my liking, just look at the photo and it looks suitable. Usually, if I give goods online through friends who have bought” (P1).

Generation Z's love for online shopping is not that hard to find. P2 is one Gen Z who loves to try shopping apps. He shared

“Because I shop online too often, I always try every new online shopping application, I want to know what features it provides, so that we are not fanatical about one application,

so we can compare the advantages and disadvantages of each application, as opposed to comparing the goods that we want to exchange.” (P7)

Another Gen Z has been able to compare price disparities between online shopping apps. P3 said “usually I shop online but through Shopee App the price is USD 6,59-26,35, but if I shop above USD 32,94 I use Tokopedia App” (P8).

However, Gen Z is also relatively careless in shopping online. P9 is Gen Z often buys things online and the items they buy are not what they want. This caused his parents to get angry and not allow him to buy online anymore. This is illustrated in the following excerpt from P9’s story

“I don’t know why I sometimes buy things (online) that are not what I want, so I get scolded by my mum. Mum said, don’t buy online anymore, but I still buy online until now, I don’t mind. Just buying goods, if I buy clothes or trousers, I am very careful, worried that the fabric will be different when the delivery comes (P9)”.

The next element is digital communication. Digital citizens are not resistant to digital communication. Therefore, they are familiar with using email, instant messaging, and social media to convey information or ideas to others. P5 stated that digital communication in today’s era is a common thing to do, he said

“If you think about it, it’s so easy now, when I was in school, I used to have to go to a friend’s house to do assignments or anything. Now, through WA alone, we can give each other news when there is an assignment (P10)”.

Al also argues that digital communication is easier and faster, he states, “any information now reaches us very quickly, anything that is searched on social media, the information is there” (P8). Gen Z sees that communication with digital devices has the same position as face-to-face communication. Our data shows that Gen Z prefers social media to communicate rather than email. They are still relatively unaware of the difference between email messages that are more personalized than social media messages. They prefer to send college assignments by WhatsApp rather than by email. Generation Z cannot yet differentiate the use of messaging applications with more formal emails.

Elements of digital literacy include knowledge and skills about digital tools as well as the ability to check the credibility of information obtained online. It is not hard to recognize that Generation Z’s skills in the use of digital devices. They are very quick to learn about the use of digital devices compared to previous generations. Gen Z can master skills in the use of information technology by learning by themselves. P11 shared that his skills in using apps or digital devices were acquired through self-learning (P11).

However, their ability to check the information found online is still very low. “I don’t double-check the information I get. When I read something on the internet, I just assume it is correct. The lecturer did not explain about credible sources,” said a student. (P12) Nonetheless, Gen Z also realizes that there is a need for awareness in receiving information online, P13 said, “Now that information that is clear let alone unclear is very quickly spread, the point is that we ourselves must be able to cross-check, whether the news is true or not” (P13).

P14 as gen Z learnt about the importance of checking the truth of information from the internet through the seminar. According to him, “because of the use of the internet, information nowadays spreads very quickly, so we ourselves must be able to catch which ones are true or hoaxes, we must be able to sort them out, that’s what I got from the seminar (P14)”. P14 statement shows that he gained awareness about the importance of checking the truth of information received from the internet from the seminar. In other words, Gen Z who do not have the opportunity to attend seminars will not be aware of it, because IHS and IHE have not made it part of the curriculum.

DC practices in the digital literacy element of students and university students, as with other elements, have no notable differences. Gen Z’s digital literacy practices have problems in skills, but the critical attitude towards information in the digital world is still very low.

The ethical element, in our opinion, is an element that must be considered. This research found that digital social etiquette has not been a concern in the learning process. Behavior that is not in accordance with the digital community's social etiquette is considered behavior that does not violate. P3 said that teachers explain the rules or how to get along when using social media only when there is a problem, such as a student fighting over a status on Instagram. "Teachers do explain about how to get along with social media, when there are students fighting over social media)", She said. On the other hand, education about digital ethics is largely ignored due to limited internet quota. "During the lecture, the lecturer told me to switch off the camera to save the internet quota", said P15. While there are other lecturers who do not care whether students turn on the camera or not, "it doesn't matter if the camera is on or off, the important thing is that they understand", said a lecturer (P16). Students confirmed that lecturers differed regarding ethics when lecturing with the video conference. P14 said, "Some lecturers require the camera to be switched on, while others do not" (P14). The statements above show that digital social etiquette is not a concern in the online learning process.

Legal elements related to the use of digital devices are of concern to students. This is related to the sanctions they will face when misusing digital devices. This is inseparable from news on television or online media about the punishment for people who violate the law. Students and university students know about the existence of laws governing socializing in the digital world. However, this study did not explore in detail their level of knowledge about the law. Students are aware of digital law from news or seminars. In general, they know there are legal consequences for their actions when using digital devices and the internet. This has an impact on behavior when interacting digitally.

The digital rights and responsibilities element refers to an awareness of responsibility towards norms that maintain the copyrights of others that are acquired digitally. Generation Z has a very open opportunity to read, hear and see other people's work through digital devices. However, at the same time, they are required to respect the copyrights of others. Practices towards others' copyrighted works tend to be unaffected by education level.

The importance of respecting the work of others, P17 recounted that she and her friends were often warned by lecturers not to be plagiarized. She said,

"during lectures, lecturers often advise that it is not allowed to plagiarize other people's writings, if you want to plagiarize, put the name of the creator, if we plagiarize there is a law, if I'm not mistaken, I can be fined by being sued" (P17).

Students relatively more often use other people's work when doing coursework when compared to students. Lecturers who do not explain about copyright, academic ethics, plagiarism cause students to not care about the practice of copyright infringement, especially related to the scientific work of others. The practice of copy and paste is a common thing for students to do when writing papers.

We checked nine undergraduate papers with Turnitin similarity and all papers ranged from 30 to 88% similarity. Master's students are also relatively unaware of copyright. The practice of copy and paste is considered an act that does not violate anything. Of the fourteen writings of master's programme students, the level of similarity ranged from 2 to 92% similarity and only the articles were below 20%. At the doctoral programme level, we tried to scan seven short article review reports, the Turnitin similarity results ranged from 8 to 48% and only three articles were below 20%. This confirms that the majority of students still do not understand about other people's copyrights.

In relation to the health dimension, Generation Z in their daily lives feel that they have paid attention to the health impacts of digital devices. Awareness of these impacts is not related to education level, but rather to experience. They will stop or realize the negative impact on health when they have felt the impact on them.

Generation Z has experienced the impact of digital devices (smartphones/laptops) on their physical health. Dizziness, headaches, and hot eyes are physical impacts that they admit to. "The phone is hot, let alone the eyes", said a student who concluded that the device alone is hot let alone the human body. They don't have any precautions to prevent these impacts. Generation Z only realizes the impact of using digital

devices on their physical health when they feel it. Once the physical impact is felt, they will only stop using the device.

In addition to experience of the impact of digital devices, family supervision in prevention is very important. Ist admitted that he was often advised by his mother to be careful of the impact of using digital devices. Therefore, IHS students’ DC practices are better than those of students who are not under parental supervision. She shared

“My mother, during this online learning, saw me sitting, sometimes on my stomach, while doing assignments, so she bought me a table and chair. She said it was so that I wouldn’t get a backache and hunchback if I didn’t use a desk and chair to do my assignments. Mum said it’s not nice to see me on my stomach while typing on my laptop” (P18).

In the context of security elements, Generation Z is not concerned about their security in digital or internet interactions. Anti-virus is one of the applications that Generation Z rarely buys. “I use a free anti-virus, when it runs out it is installed again, I want to buy it, I don’t know how to buy it (P19). The quote shows two things: firstly, Generation Z still considers the expense of buying security applications unimportant, so they prefer free ones; secondly, there is no information on how to buy. The second reason is unacceptable because purchasing information can be seen on anti-virus sites. However, the majority of payments for these apps must be made by credit card or other unfamiliar methods, making it difficult for students. The purchase of anti-virus accounts can be done through online shopping apps that they are already familiar with. Therefore, we argue that Generation Z is relatively unconcerned about the security of their transactions or activities in the digital world. Generation Z realized the importance of password security when they experienced fraud. P11 shared, “I was once scammed over the phone. He claimed to be from Shopee and would send a gift. I was deceived because I transferred money via ATM for USD 158, 12. After that, I changed my ATM password” (P11). The statements above illustrate that knowledge about DC is obtained independently, not from learning at school or university. Content related to DC is delivered by teachers when there are problems that arise related to information technology such as fights or plagiarism. On the other hand, awareness about DC elements arises from their own experiences. They are aware of safety after being scammed online or aware of health impacts after feeling the physical impact of technological devices.

The average DC practice scores of IHS students and IHE students have a small difference, although they can be categorised as good. The level of education did not lead to higher average DC practice scores. The average score of students was higher than that of IHE students by 0.01 as shown in table 3.

TABLE 3
COMPARISON OF IHS AND IHE STUDENTS’ DC PRACTICES

No.	Elements	IHSs	IHEs
1	Digital Commerce	3,36	3,39
2	Digital Communication	3,45	3,5
3	Digital Literacy	3,29	3,31
4	Digital Ethics	3,48	3,45
5	Digital Law	3,5	3,39
6	Digital Copyright and Liability	3,47	3,4
7	Health and Safety	3,34	3,31
8	Security	2,82	2,79
		3,33	3,32

Differences in DC Knowledge and Practice

The DC knowledge level of HIS students and IHE students had no significant difference. It is based on the result of t-test calculation that shows sig is at 0.541 which is greater than 0.05 (sig< 0.05) as shows in

table 4. It proves that Islamic education has no impact on knowledge about DC. The result of t-test calculation shows that sig is 0.541 which is greater than 0.05 (sig < 0.05).

The t-test results of the DC practices of IHS students and IHE students also showed no significant difference at 0.907 (sig < 0.05). It proves that Islamic education does not have an impact on the DC practices of Generation Z students. This finding is consistent with the t-test of DC knowledge and practice together which also shows no significant difference between HIS students and IHE students. The t-test result of knowledge and practice was 0.301 which is greater than 0.05 (sig < 0.05) as shown in table 5.

TABLE 4
T-TEST RESULT OF KNOWLEDGE AND PRACTICE

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence interval of the Difference		
								Lower	Upper	
Knowledge	3.407	.065	.611	564	.541	.11661	.19076	.49130	25808	
			.611	554.365	.541	.11661	.19076	.49131	25810	
Practice	2.581	.109	.117	564	.907	.13074	1.11665	-2.06256	2.32405	
				.556.476	.907	.13074	1.11665	-2.06263	2.32411	

TABLE 5
T-TEST RESULT OF KNOWLEDGE AND PRACTICE BOTH

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig	t	df	Sig (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence interval of the Difference	
								Lower	Upper
Total	.204	.652	1.036	564	.301	1.34892	1.30258	-1.20867	3.90831
	Equal variances assumed								
	Equal variances not assumed		1.036	563.943	.301	1.34892	1.30258	-1.20867	3.90832

This study also examined the correlation of knowledge with DC practices in HIS and IHE students. Statistical analysis shows that the correlation value of knowledge with practice is 0.000 which is lower than 0.05 ($\text{sig} < 0.05$) as shown in table 6. Thus it can be concluded that knowledge is significantly correlated with DC practice in HIS and IHE students. The better the level of generation Z's knowledge about DC, the better their level of DC practices. Thus, H_a is rejected and H_0 is accepted.

TABLE 6
PEARSON CORRELATION

		Knowledge	Practice
Knowledge	Pearson Correlation	1	.586
	Sig. (2-tailed)		.000
	N		765
Practice	Pearson Correlation	.586	1
	Sig. (2-tailed)	.000	
	N	765	765

Discussion

This study found that knowledge is related with DC practice on students. The better the knowledge about DC, the better the DC practice of IHS and IHE students. The finding is relevant to Ahlam and Ahza's research which proves that technology-related learning has an impact on DC practice (Al-Abdullatif & Gameil, 2020). Training will have an impact on DC practice. (Gazi, 2016). Based on these findings, it can be said that if learning about DC at Islamic education institutions (IEIs) is well implemented, students' DC practices will also be good. Knowledge arising from experience (experience of being scammed online and health problems), as found in this study, also has an impact on DC practices. It is consistent with Zahrani's findings that proves experience in using computers has a correlation with digital citizenship (Al-Zahrani, 2015).

Furthermore, this research also found that there was no difference in the level of knowledge and practice between HIS students and IHE students. These findings indicate that education in Islamic higher education is not successful in digital citizenship learning. Knowledge of DCs is acquired by students independently and comes from experience. DC is conveyed by teachers when there are problems, such as fights or plagiarism, caused by digital technology. The findings prove that education at HIS and IHE does not have an impact on improving Generation Z's DC knowledge and practices. Based on the first finding, it can be concluded that there is no learning related to DC at Islamic education institutions so there is no development of DC knowledge and practices after the learning process at IHS and IHE. The lack of knowledge about DC in these educational institutions is consistent with Logan's opinion who concluded that only 32% of students have sufficient knowledge about DC. (Logan, 2016). Previous research is consistent with the results of this study. Webster concluded that there was no difference between lower and higher grades in DC learning (Webster, 2018). There is no difference in students' digital citizenship between education levels, gender, and age. (E Alamri & A Alqahtani, 2022). Martin, Gezer, and Wang (2019) also found that based on teachers' perspectives, there was no variation in DC practices among elementary and high school students, so learning/training or curriculum is needed to improve students' understanding (Martin et al., 2019).

The insignificant difference between IHS and IHE students reflects that DC is not a content in Islamic higher education institutions. In fact, DC is strategic knowledge for students in the future. Van de Oudeweetering and Voogt (2018) revealed that digital citizenship is one of six elements that must be part of learning activities in the 21st century, namely digital literacy, innovative thinking, critical thinking, self-regulated learning, and computer supported collaboration. (Oudeweetering & Voogt, 2018). Schools should provide guidance for students to become digital citizens. (Isman & Canan Gungoren, 2014). The

development of digital technology makes schools obliged to be involved in preparing students for the impact of digital media consumption (M. Ribble, 2012).

There are four categories (SAFE) of DC that can be used as components in DC learning in educational institutions, namely

1. Self-identity: to build personal value and trust in the digital environment and to protect oneself from possible risks;
2. Online activities: engaging in positive and beneficial activities and interacting with others through rational decision-making;
3. Fluency for digital environment: using software and hardware to achieve goals and adapt to changes in the digital environment;
4. Ethics for digital environment: demonstrate understanding and respect for the rights and obligations of others in a digital environment (Minjeong Kim & Dongyeon Choi, 2018).

The most fundamental issue of embedding digital citizenship through learning in Islamic education institutions is the absence of guidelines and learning materials integrated with DC. Ribble (2006) concluded that the reason why schools find it difficult to implement DC learning in schools is the lack of literature in the form of guidelines for principals and teachers on DC implementation in schools (M. S. Ribble, 2006). In learning, DC is more identically introduced as a technology related to learning not as a DC practice in a critical manner (Tadlaoui-Brahmi et al., 2022).

In addition to classroom learning, the control of parents, teachers, and school administrators is crucial in DC practices. (Martin et al., 2020). Parents, teachers, students, and communities should be involved in policies, procedures, and curriculum, not only the content but when DC should be taught (Hollandsworth et al., 2011). Prospective teachers must be prepared for DC education (Tangül & Soykan, 2021). The role of parents is evidenced in this study. Students who live with parents have better DC practices than students who do not live with parents.

CONCLUSION

This study indicates that Islamic education does not make digital citizenship part of the learning content. Generation Z has a limited and independent understanding of DC from their own experiences and efforts. Therefore, there is no significant development in the level of knowledge and practice of DC among Islamic education institution (IEI) students. The role of parents was found to be more dominant in supervising the use of digital devices by children. This is ironic, because Islamic education has always made religious morality (akhlaq) an important feature of Islamic education.

This indication is an evaluation of the Islamic education system in Indonesia. DC education in IEI must be organized systematically. As Ribble says the implementation of DC in schools is lack of guidelines for teachers (M. S. Ribble, 2006), We encourage MORA to support the preparation of appropriate and sufficient teachers, curricula, guidelines, and learning materials. MORA is recommended to support as well as massive religious moderation projects. DC should also be socialized to religious leaders, community leaders and families. Before a strategic policy is set by MORA, the IEI can encourage teachers to integrate DC elements in all relevant lessons.

This research was limited to IHS and IHEs in South Kalimantan. Therefore, future research is expected to cover a wider area and include high schools, vocational schools, and other IEIs, so that the findings can be generalized. Future research is also expected to look at DC from the perspective of teachers and lecturers in IEIs. Research not only provides guidance on DC and learning, but also contributes to the field of civic education (Öztürk, 2021). The research findings can enrich theoretically and practically the study of DC in the context of IEI in Indonesia.

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