DIGITAL QUOTIENT AND ATTITUDE TOWARDS INFORMATION TECHNOLOGY OF TEACHER EDUCATION STUDENTS OF CARAGA STATE UNIVERSITY CABADBARAN CITY: AN EVALUATION

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ABSTRACT. *The study aims to evaluate the digital quotient and attitude toward information technology of the 599 teacher education students enrolled in the 1st Semester of the School Year 2021 – 2022 at Caraga State University Cabadbaran City. The study used the descriptive-correlation research method. The researchers employed Digital Quotient and Attitude towards Information Technology Test to evaluate the teacher education students' digital quotient and attitude toward information technology. Mean, and standard deviation was used to determine the level of the digital quotient and attitude toward information technology. Spearman's Rho was used to test the significant relationship between the attitude toward information technology and the level of the participants' digital quotient. The result revealed that The College of Industrial Technology and Teacher Education students have a high level of digital quotient. The participants have a high attitude toward information technology which implied high engagement towards the use of information technology. There is a significant relationship between the digital quotient and the participants' attitudes toward information technology.*

Keywords: Digital Quotient, Attitude towards Information Technology, Teacher Education

1. INTRODUCTION

The approach to education nowadays is the use of 21st Century Skills which is more on technology-based teaching. The internet is a vital source in the educational world, and students are motivated to utilize it [1]. The demand for technology-based education was more required when the COVID Pandemic occurred. Most of the establishments with face-to-face transactions are closed, like educational institutions. One of the solutions made by the educational institution is to conduct asynchronous or synchronous online teaching to continue the students' learning process. Mobile and online learning applications have become more known year after year and are used today by millions of students and educators worldwide. Wireless mobile devices like smartphones, PDAs, and tablets could benefit students' learning in or out of the classroom. In front of the idea of inclusion of mobile learning in the educational process, some important case studies examine the consequence of using mobile tools and apps, as well as online applications in teaching, at all educational levels [2].

To cope with the global demands and further equip the education students of Caraga State University Cabadbaran City, the researchers would like to assess their digital quotient (DQ) level and attitudes towards information technology. In such a way, the researchers have baseline data for further research studies and teaching process implementation like flexible learning.

The objectives of the study are to evaluate the digital quotient and attitude toward information technology of the teacher education students of Caraga State University Cabadbaran City. Specifically, it sought to:

- Evaluate the participants' level of attitude towards information technology.
- Evaluate the participants' level of the digital quotient.
- Determine the significant relationship between the participants' level of digital quotient and attitude towards information technology.

Digital Quotient

The article discusses research on companies' digital maturity or digital quotient, which evaluates their digital strategy, capabilities, and culture. According to the authors, most firms will not introduce disruptive innovations but must formulate a clear digital strategy and adapt their digital capabilities, organizational culture, and structures accordingly. The DQ has similarities to the intelligence quotient (IQ), emotional quotient (EQ), and social quotient (SQ, the ability to respond effectively after reading a person's behavioral cues and emotions)[3]. Digital Intelligence or Digital Quotient refers to the digital maturity of individuals or groups of people, which measures their digital strategy, capabilities, and culture [4].

According to the study of Cocorocchia [5], our lifestyles have become more connected. A person's digital intelligence or DQ will become dangerous to individual accomplishment and the welfare of society. The problem is that most people worldwide may not adequately know what DQ is or its implications on their personal life.

As mentioned in the study of Chawla [3], the DQ has likenesses to the intelligence quotient (IQ), emotional quotient (EQ), and social quotient (SQ), the ability to respond effectively after reading a person's behavioral cues and emotions. The number of jobs that rely on technology will increase, so schools must teach students how to use it safely and responsibly.

Attitude Towards Information Technology

Interest in technology is significantly positively related to the amount of time that technology is taught, as well as to the teacher. Parents positively influence several aspects of attitude to technology when mothers and/or fathers have a profession related to technology. Equally, the presence of technological toys at home is a significantly positive characteristic. As the results confirmed previous fragmented studies in related disciplines like science education, this study contributes to the broader body of knowledge concerning students' attitudes towards technology and how this can be investigated [6].

According to the study of Ali & Ahmad Bilal [7], ICT has observed fast growth and has reformed traditional forms of

libraries into digital forms. Currently, the internet and e-resources are common sources of information all over the world. Their study revealed that students' knowledge of IT is significant for science education. This study is related to the present study since attitudes in IT are considered one of the variables of the study.

In the studies of Ardies et al. [6], Tezci [8], Gay et al. [9], and Weisberg [10] appears that attitudes toward technology have a positive relationship with the amount of time that technology is being delivered in class, also with the teacher.

2. MATERIAL AND METHODS

A quantitative research design is used in this study to explore and understand the meaning of a few individuals or groups of people who are considered to come from social or humanitarian problems [11]. Moreover, the study used the descriptive-correlation research method. It is descriptive since the study involved an evaluation of the level of digital quotient and attitude of the respondents towards information technology. It is correlational because it aimed to establish the significant relationship between digital quotient and attitude towards information technology.

The study was conducted at Caraga State University Cabadbaran City. A total of 599 teacher education students enrolled in the 1st Semester of the School Year 2021 – 2022 participated in the study.

To evaluate teacher education students' digital quotient and attitude toward information technology. A 20-item Digital Quotient Test and 20-item Attitude Toward Information Technology Teacher Test. The two adapted instruments underwent a pilot test. They yielded a coefficient of reliability of Cronbach Alpa = 0.83 for the Digital Quotient Test, which implies a higher level of reliability, and a Cronbach Alpa = 0.87 for the Attitude towards Information Technology Test, which means a higher level of reliability also. The researchers of the study asked permission from the dean of the College of Industrial Technology and Teacher Education (CITTE) to distribute questionnaires to the participants with the help of the advisers and the CITTE Office staff.

Furthermore, the researcher used mean and standard deviation to determine the level of the digital quotient and attitude toward information technology of teacher education students. Spearman's Rho was used to determine the significant relationship between the participants' digital quotient level and attitude toward information technology.

3. RESULTS AND DISCUSSION

Table 1 shows the level of participants' attitudes toward Information Technology. To mention some significant indicators, a high attitude of knowing that information technology can give opportunities to learn many new things with a mean of 3.45. As mentioned in the study of Alan & Mariquit [12], Computer technology in education started in the 1960s. It claimed that computers could support instructional methods and thus improve student performance.

Additionally, high attitude towards believing that it is very important to learn how to use information technology and learn many things when using information. However, a low attitude towards not being tired of using a computer with a mean of 2.43. Table 1 presents the overall participants' attitude towards Information Technology which is high, as indicated in the grand mean of 2.91 with a standard deviation of 0.33. However, it can be noted that this is not the highest prospected range for this variable. This indicates that the participants' level for viewing information technology does not reach the highest level of attitude.

Table 1. Level of Participants' Attitude towards Information Technology

Indicators	SD	Mean	VI
1. I enjoy doing things with use of information technology.	0.54	3.15	HA
2. I am not tired of using a computer.	0.67	2.43	LA
3. I will be able to get a good job if I learn how to use a technology.	0.59	3.28	HA
4. I concentrate on a computer when I use one.	0.57	2.90	HA
5. I enjoy technology related games very much.	0.75	2.59	HA
6. I would work harder if I could use technology more 4.	0.63	2.95	HA
7. I know that information technology give me opportunities to learn many new things.	0.57	3.45	HA
8. I can learn many things when I use information technology.	0.57	3.35	HA
9. I enjoy lessons on the computer.	0.61	2.87	HA
10. I believe that the more 4 teachers use information technology, the more I will enjoy school.	0.64	2.80	HA
11. I believe that it is very important for me to learn how to use information technology.	0.54	3.43	HA
12. I feel comfortable working with a computer.	0.60	2.90	HA
13. I get a good feeling when I think of trying to use information technology.	0.53	2.95	HA
14. I think that it takes a short time to finish when I use technology.	0.59	2.91	HA
15. Computers do not scare me at all.	0.64	2.78	HA
16. Working with a computer makes me nervous.	0.67	2.50	HA
17. Using a computer is not frustrating.	0.64	2.58	HA
18. I will do huge work with technology as possible.	0.53	2.93	HA
19. Computers are not difficult to use.	0.62	2.80	HA
20. I can learn more from computer than from a books.	0.69	2.72	HA
Grand Mean	**0.33**	**2.91**	**HA**

Legend: 1.00-1.49: (VLA) Very Low Attitude; 1.50-2.49: (LA) Low Attitude; 2.50-3.49: (HA) High Attitude; 3.50-4.00: (VHA) Very High Attitude

Table 3 shows the level of participants in terms of Digital Quotient. The level of participants' Digital Quotient is high, as indicated in the mean of 2.55 and standard deviation of 0.37. This implies the participants for this study have the digital maturity to use digital technology and navigate the digital world. This further implied that these participants can acquire and apply new knowledge and skills related to digital technologies: social, mobile, analytics, cloud, and, more recently, cybersecurity. This result may help our teachers to

deliver their lessons via digital technologies. In the study of Alan & Mariquit [12] that using mobile phone applications in teaching helps the students understand the topics. However, it is essential to note that this rating does not reach the highest range for Digital Quotient. This may mean that the participants do not reach a very mature level regarding digital use.

Moreover, some significant indicators with the highest mean, like often used a smartphone, with a mean of 3.52. Sometimes send, receive and open an email attachment with a mean of 3.38. Sometimes, the participants were social media users (Facebook, Twitter, Instagram, etc.) with a mean of 3.37. This also implied that the participants' social media had affected their digital skills, especially those dependent on it [1]. Rarely used an eBook reader and spent a certain number of hours per week emailing professional and personal contacts, with a mean of 1.63 and 1.67, respectively.

Table 3. Level of Participants' Digital Quotient

Indicators	SD	Mean	VI
1. I spend ___ hours per week using the Internet.	1.03	2.75	Sometimes
2. Of that time ___ hours are related to work responsibilities.	0.86	2.18	Rarely
3. I spend ___ hours per week emailing professional and personal contacts.	0.82	1.67	Rarely
4. I have posted a product review online.	0.93	1.93	Rarely
5. I have used a smartphone.	0.75	3.52	Often
6. I am a social media user (Facebook, Twitter, Instagram, etc.)	0.69	3.37	Sometimes
7. I have used an eBook reader.	0.86	1.63	Rarely
8. I can send, receive and open email attachments.	0.69	3.38	Sometimes
9. I have uploaded or downloaded to YouTube	0.99	2.22	Rarely
10. I have used a web based file sharing system(e.g. Dropbox, Google Drive)	0.81	2.99	Sometimes
11. I have sent a text (SMS).	0.86	2.81	Sometimes
12. I have edited or retouched a digital photo.	0.85	2.48	Rarely
13. I have watched a web video.	0.77	2.86	Sometimes
14. I have read or written a blog.	0.92	2.12	Rarely
15. I have downloaded music online.	0.93	2.72	Sometimes
16. I have bought or sold something on online shops.	0.96	2.28	Rarely
17. I have played an online multi player video game.	1.02	2.29	Rarely
18. I have made a payment using mobile to mobile payment technology.	1.00	1.80	Rarely
19. I have downloaded an app.	0.69	3.18	Sometimes
20. My technology self-confidence level is:	0.54	2.84	Sometimes
Grand Mean	**0.37**	**2.55**	**High DQ**

Legend: 1.00-1.49: Never; 1.50-2.49: Rarely; 2.50-3.49: Sometimes; 3.50-4.00: Often

Legend for Mean: 1.00-1.49: Very Low DQ; 1.50-2.49: Low DQ; 2.50-3.49: High DQ; 3.50-4.00: Very High DQ

Table 4 shows the significant relationship between Digital Quotient and Attitude toward information technology. Specifically, there is a significant positive correlation between the level of Digital Quotient and the level of Attitude toward Information Technology, as indicated in the p-value of 0.001, which is less than 0.05. This means that if the level of Digital Quotient increases, the Attitude toward Information Technology will increase and vice versa.

Table 4. Significant Relationship Between Digital Quotient and Attitude towards Information Technology

Variables	Spearman	t-value	p-value
Digital Quotient VS Attitude towards Information Technology	0.21	5.23	0.001*

*Significant at 0.05 level.

4. CONCLUSION

Based on the data gathered, the following conclusions are drawn:

1. The College of Industrial Technology and Teacher Education students have a high level of digital quotient which implies a high digital maturity to use digital technology and navigate the digital world.
2. It is also further concluded that the participants have a high attitude toward information technology which implied high engagement towards the use of information technology.
3. It is concluded that there is a significant relationship between the digital quotient and the attitude of the participants toward information technology which means that digital quotient positively affects the attitude toward information technology of the participants and vice versa.

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