

# Attitude towards to and Use of Technology among College Students in a Private University in Republic of Korea

Mae Joy B. Penaflor-Espinosa<sup>1</sup>

## Abstract

This paper deals with the determination and analysis of the attitude of College students in a private university in the Republic of Korea towards the use of technology. Stratified random sampling with a random start was used to draw the 176 respondents of this study. Using the one-shot survey design, data were collected through self-administered. Upon retrieval of the questionnaire, the data were scored, classified, and subjected to computer-processed statistics, analyzed, and interpreted. The majority of the respondents are males and in their second grade. Generally, they had a good attitude towards technology as they perceived it to be fascinating, easy to learn, more interesting, and making them comfortable in doing academic tasks. They use technology in accomplishing their school works on a daily basis, such as a laptop, mobile phone, Internet, and email. Irrespective of their sex and grade level, still the students had a good attitude towards technology. Both male and female students had the same level of technology use while those in the third and fourth grade used the technology frequently as compared to lower grade students. Moreover, a good attitude towards using technology led the students of using it more often in school. Recommendations include a further study on the specific preferences like traditional or technological tools of students in performing certain academic tasks.

Keyword : Use of Technology, Attitude towards Technology, Information and Communications Technology Tools, ICT Usage

## 1. Introduction and Objectives

In recent years, technology has had the greatest impact on the development of the educational environment and has led to the construction of a new learning environment that helps learners to increase knowledge [1]. One of the products of these technological changes is mobile learning. Mobile learning (m-learning) can define the way to access, absorb, transfer, and manipulate information within a university context. Mobile learning aids student motivation as learners can take ownership over specific projects in an academic context, and enjoy doing it. This approach encourages collaborative learning and enhances student interactions with their instructors because it provides university students with opportunities to learn through “collaborative idea-sharing” between students and at the same time connects the instructor with the student [2]. In other words, it engages learners as it helps them do new

1 Sol International Healthcare Management Department, Woosong University, Daejeon, Korea [Professor]  
e-mail: maejoyespinosa426@yahoo.com

Received(August 25, 2020), Review Result(1st: September 20, 2020, 2nd: November 2, 2020), Accepted(December 7, 2020), Published(December 31, 2020)



© 2020 The Authors. Published by NCISS.  
This is an open access article licensed under the Creative Commons Attribution-NonCommercial 4.0 International License.  
To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc/4.0/>.

things with their learning. It also explains how wireless interactive learning devices (WILD) provide the a transformative potential for learning than desktop computers because of their availability everywhere and at any time [3].

Many higher education institutions are adopting new educational technology policies and procedures, including the University of Glasgow, the University of Sussex, and the University of Regensburg, have been working towards embedding the concept of m-learning in their learning systems [4]. With regards to course delivery, mobile devices are integrated into economic classes in Spain [2]. They maintain that there are personal, socioeconomic, and technical differences that explain students' preferences for the use of one device or another within their program [2]. Students were exposed to mobile technology (MT) during their freshman year and that instructors were requiring increasing use of mobile within the university context [5]. It was also recommended that mobile technology has the potential to support blended learning beyond classrooms and computer centers [6]. The advantages of using mobile devices that American university students cited in their study; namely, accessing information quickly through discussion boards, course readings, communicating with fellow students and instructors, providing new ways to learn and interact with the course materials, and allowing for interaction with course content in a highly contextualized way [7]. In Korea, mobile learning has been so indispensable in the student's education process. Almost all of the classrooms have been equipped with high-speed Internet connections, and computers and other related technologies for instruction have been rapidly integrated into the curriculum [8]. In fact, the integration of such technology have made a remarkable difference in the teaching and learning process among Korean university students [9].

However, one might suspect that in many cases the decisions to implement these digital technologies are not necessarily based on the thorough research on student needs, course objectives, and delivery [10-14]. Student feedback is important for indicating which technologies are most effective for learning [15]. This feedback can be used to inform both the teaching and learning investment in order to understand which specific technologies are the most effective and which ones can be seen as a sound strategic personal investment by the students [2]. Previous studies have investigated student device choice [16][17]; however, fewer studies have looked specifically at which devices students choose in their academic tasks.

Higher education has a changing cohort over the years. Universities are embracing more technology and implementing technology integration in the class as widely as possible. This study aims to provide a more comprehensive account of the technological devices students mostly use to complete their academic tasks within a university context. This study also seeks to evaluate student attitudes towards using

technology for learning, in order to provide recommendations on the most effective way to integrate digital technology into the classroom. It is hoped that this study will be of use for both university instructors and management alike when making decisions about classroom and institutional technology policies.

## **2. Methodology**

This is a descriptive correlational study, one-shot survey design, conducted in October 2019, in a Health Care Department of a Private University in the Republic of Korea. Stratified random sampling with a random start was used to draw the 176 college students as respondents of this study. This is the process of selecting a random sample from subgroups or strata into which a population has been subdivided [18]. In this study, the population of the students was subdivided into 4 strata or grade level. The percentage of the sample population in each stratum was derived from the total population of each grade level divided by the total number of respondents in all strata, a total of 315. Systematic random sampling was also utilized, in which the sampling interval was determined by the population size divided by the desired sample size. The list of the names of the target population was arranged in alphabetical order in each stratum. The random start was identified by randomly picking a number, and subsequently taking every second name on the list until the desired number of sample was drawn. A consideration for those who were absent was also made in case their names were picked out as respondents. The researcher took another name in the sampling frame as a replacement. [Table 1] shows the sampling distribution.

A validated self-administered questionnaire composed of three parts was used to gather respondents' attitudes towards and use of technology. Part I contains information about the respondents' personal characteristics which include sex and year level. Part II is about the respondents' attitudes toward technology. This is a 25-item questionnaire answerable by a 7-point Likert scale: Entirely Disagree (1), Mostly Disagree (2), Somewhat Disagree (3), Neither Agree nor Disagree (4), Somewhat Agree (5), Mostly Agree (6), and Entirely Agree (7). Scoring was reversed among negatively stated statements. Part III is composed of a 15-item checklist of the commonly used technology by the respondents in their educational courses. This is answerable by a Yes (1) or No (0) and further by 4-point Likert scale with the following equivalent: Once a month (1), Once a week (2), Thrice a week (3), and Daily (4). All of these questionnaires were adopted from the study of [17]. A letter of request to adopt the instrument was sent to the author prior to the conduct of the study. Approval of the author was also sought

thereafter.

[Table 1] Population of the Respondents

<b>Grade Level</b>	<b>Population</b>	<b>Sample Size</b>
1	90	50
2	95	53
3	80	45
4	50	28
<b>Total</b>	<b>315</b>	<b>176</b>

Before the conduct of the study, the researcher asked permission from the university president and the head of the department through a formal letter. A consent letter addressed to the respondent stating the objectives of the study. The respondents were assured that the information they provide were treated highly confidential and used for the research purpose only. Upon approval, the instruments were distributed by the researcher to the respondents. They were given enough time to answer the questionnaire and were immediately collected right after completion. The researcher then double-checked each item to ensure its completeness.

Data gathered were processed and analyzed using the Statistical Package for Social Sciences (SPSS) version 17. Descriptive statistics such as frequency distribution and means were employed to analyze variables such as respondent's profile (sex and grade level), attitude towards technology, and use of technology. Inferential statistics such as T-test and Analysis of Variance (ANOVA or F-test) with Scheffe test for post-hoc analysis were used for differences in respondents' attitudes towards and use of technology grouped according to their profile. Meanwhile, Gamma was used to determine the relationship between respondents' attitudes towards and use of technology. The level of significance was set at 5 percent alpha.

### **3. Results and Discussions**

The profile, analysis, and interpretation of the results of the study are presented in this section.

#### **3.1 The Profile of the Respondents**

The data show that there were more males (53.4%) than females (46.6%). A little higher percentage of those who were in second grade (30.1%) than those who were first and third grade (28.4% and 25.6% respectively). Meanwhile, only 15.9 percent were in fourth grade.

[Table 2] The Profile of the Respondents

Profile	Categories	f	%
Sex	Male	94	53.4
	Female	82	46.6
	<b>Total</b>	<b>176</b>	<b>100.0</b>
Grade Level	1	50	28.4
	2	53	30.1
	3	45	25.6
	4	28	15.9
	<b>Total</b>	<b>176</b>	<b>100.0</b>

### 3.2 Respondents' Attitude towards Technology

[Table 3] presents the respondents' responses to the specific items on attitude towards technology. Overall, the respondents had a good attitude towards using technology (M=5.71). This is further validated by their statements that they like using technology (M=5.75) because it is fascinating (M=5.98) and interesting (M=5.81), easy to learn (M=5.89), comfortable to use (M=5.80), brings confidence (M=5.78) and very useful study tool (M=5.80). It is undeniably how essential technology is in the students' life. It brings so much ease and comfort which can mitigate their life's stressors as students. On top of these, it offers them varied options for the study task that makes learning fun and interesting. As a matter of fact, the flexibility afforded by the introduction of mobile technology in particular, not only allows students to access to course content and input from instructors both on-and-off campus, it also allows for a different kind of engagement with their studies [6]. Such flexibility has changed the way in which students access information and learn [16]. Essentially, mobile learning has put students firmly in the driving seat, and this autonomy has a positive motivational impact. As suggested, students have better control over setting their own goals, can take more ownership of their own learning, can communicate more efficiently with peers and tutors alike, and can experience learning in-context [19].

Studies have been carried out on the use of tablets in the classroom that enhance learning. Research completed at [20], which fully integrated the iPad in a college course, stated that 75% of participants strongly agreed that the iPad was enhancing the learning environment of the course. A study conducted by an education company found that 81% of respondents believe tablets will change the way university students learn and 74% said tablets could make learning more fun [21].

However, despite the advantages technology may bring, some of the respondents are still in doubt about it. They are at the fair of agreeing technology's worth, especially in stopping boredom (M=5.47) and believing it's rather more of trouble (M=5.35). The research appears to suggest a number of factors

that may influence student perceptions of educational technologies. Amongst two of the most influential factors are the frequency with which students use a particular device [11] and a particular device’s overall functionality [22]. It would seem that the more a particular device is used, the more positive the students’ response towards that device [11]. It also appears that “functionality” is prized over convenience, in relative terms [22]. Interestingly, it would also seem that a number of contextual factors may play a minimal role in device preferences. For example, in [11], there was no real difference in attitudes towards technology between different faculty affiliations or between genders.

[Table 3] Respondents’ Attitude towards Technology

Items	Mean	Interpretation
1. Technology is a useful study tool.	5.80	Good
2. Technology can help me organize my studies.	5.59	Good
3. I learn more rapidly when I use technology.	5.65	Good
4. Using technology is more trouble than it’s worth.	5.35	Fair
5. Its longer to learn to use technology than to do the job manually.	5.89	Good
6. Technology makes my study activities more personal and my own.	5.70	Good
7. I like using technology.	5.75	Good
8. The use of technology increases my motivation to study.	5.60	Good
9. The use of technology makes a course more interesting.	5.81	Good
10. Technology stops me from being bored.	5.47	Fair
11. I am tired of using technology.	5.50	Good
12. I find it easy to get technology to do what I want it to do.	5.72	Good
13. Technology makes me uncomfortable.	5.68	Good
14. I find technology confusing.	5.71	Good
15. Likely to give up on trying using technology if I find it difficult.	5.68	Good
16. I generally feel confident working with technology.	5.78	Good
17. I am easily able to learn new technology skills.	5.63	Good
18. I feel comfortable using technology.	5.80	Good
19. Confident with the forms of technology I am most familiar with.	5.69	Good
20. When I use computers, I feel in control.	5.60	Good
21. Technology makes me nervous.	5.86	Good
22. Technology makes me feel stupid.	5.88	Good
23. Using technology in home,makes me anxious,even if I have chosen it	5.84	Good
24. Technology is fascinating.	5.98	Good
25. I don’t want to know more about technology.	5.82	Good
<b>Overall</b>	<b>5.71</b>	<b>Good</b>

Mean Range	Interpretation
5.50-7.00	Good
3.50-5.49	Fair
1.00-3.49	Poor

As pointed out, it would also be a mistake to assume that student attitudes towards educational technology can be considered homogenous in nature [22]. The construct of the “Digital Native” would be easy to assume that all students of the current university age approach the use of technology within

an educational setting with the same ease and expertise [23]. This, in some situations, the case is different; rather, first-year university students differed a great deal from one another in terms of their knowledge of, and ease with, using technologies for educational purposes [22]. They also had a range of responses with regard to the use of technology for educational purposes, with some students being far more responsive and open to the use of technologies than others. Although students may differ in terms of their ability to use technology, and their attitudes towards technology, overall, students consider educational technologies and mobile devices as having a positive impact on their learning within university contexts.

### 3.3 Respondents' Use of Technology

Presented in [Table 4] are the respondents' responses to their use of technology in performing different academic tasks. Data shows that respondents used technology daily (M=3.44). It further reveals that they used laptop computers (M=4.00) and mobile phones (M=4.00) on daily basis.

[Table 4] Respondents' Use of Technology

Items	Mean	Interpretation
1. Desktop computer	1.78	Once a Week
2. Laptop computer	4.00	Daily
3. Tablet computer e.g., iPad	3.00	Thrice a week
4. Mobile phone (smartphone e.g., iPhone, Samsung Galaxy)	4.00	Daily
5. The Internet	4.00	Daily
6. E-readers e.g., Kindle, Kobo	1.30	Once a Month
7. Email	4.00	Daily
8. Texting	4.00	Daily
9. Instant messaging (Kakao, Snapchat)	4.00	Daily
10. Social Networking (Facebook)	3.80	Daily
11. Videos (YouTube, Netflix, Vimeo)	3.56	Daily
11. Video calls/conferencing e.g., Skype, Facetime, Hangouts	3.68	Daily
12. Office suite e.g., word processors like Microsoft Word, spreadsheets such as Excel, Powerpoint, etc	4.00	Daily
13. Online Class (Zoom)	4.00	Daily
14. Web-based assignments and Projects	3.59	Daily
<b>Overall</b>	<b>3.44</b>	<b>Daily</b>

Mean	Range	Interpretation
3.01-4.00		Daily
2.01-3.00		Thrice a Week
1.51-2.50		Once a Week
1.00-1.40		Once a Month
0.00		None

There is no question with regards to the essentiality and the importance of these devices in student's daily life as these offer so much comfort and access in doing different academic tasks. Moreover, the laptop is the student's most preferred in doing academic work [15]. Amongst the reasons cited, over other devices are the limitations of the "soft" keyboard [24], and the smaller screen and keyboard offered by these mobile devices [14]. Indeed, the usability that comes from laptops' larger screens and keyboards is more important than the more portable nature of the tablets [15]. Along with the mentioned devices are the different useful software programs which respondents utilized every day such as office suite like Microsoft Word, Excel, Powerpoint, etc. (M=4.00), Internet (M=4.00), Email (M=4.00), Texting (M=4.00), Instant messaging like Kakao or Snapchat (M=4.00) and Web-based assignments and projects (M=3.59). Moreover, the social media, not just bring students to a higher level of learning but also to a higher extent of entertainment and fun. Thus, it is not a surprise that the respondents use these Facebook (M=3.80), You Tube, Netflix, and Vimeo Videos (M=3.56), Video Calls, and Conferencing like Skype, Facetime and Hangouts (M=3.68) every day.

Conversely, there were several technologies that are not that popular among the respondents such as tablet and desktop computer and E-readers, which they just used three times or once a week, and once a month, respectively. Despite the fast increasing popularity of mobile devices within the general population, within a university environment, these devices are not eclipsing the functionality of standard tools, such as laptops, which students use more for academic work. The desktop computer is also very helpful in doing educational stuff, however, may not suit student's demands in terms of flexibility use and comfortability. In a study involving 2,300 university students in Qatar, such devices are being used predominantly to source information and to maintain contact with peers, tutors, and professors and not to address computing needs [15]. Indeed, Utah State University's 2011 survey, involving 3,074 students, found that only 3.9% of the students have used an iPad daily [25]. Also, it was found that, only five respondents out of 941 relied exclusively on a tablet to address their computing needs [16].

Moreover, within the context of university education, it is known that students tend to use e-books for quite a specific set of tasks pertaining to research rather than for more general reading tasks [26]. However, a number of studies show that paper-based reading and materials are still considerably valued by students. One recent study in Russia, involving 252 students from Ariel University, found that students from each of the academic faculties, still preferred to read printed materials rather than read from a screen [27]. This is supported by [28] who suggests that paper-based materials are still an important academic resource.

### 3.4 Differences in Respondents' Attitude towards Technology When Grouped According to their Profile

The respondent's attitude towards technology in terms of sex and grade level is presented in [Table 5]. The mean score was used to measure the attitude of the respondents towards technology. A higher mean score connotes a good attitude, while a lower mean score indicates a poor attitude.

[Table 5] Differences in Respondents' Attitude towards Technology When Grouped according to Profile

Profile	Category	Mean	T-test	p-Value	Interpretation
Sex	Male	5.7153	0.005	0.996	Not Significant
	Female	5.7151			
	<b>Total</b>	<b>5.7152</b>			
Grade Level	Category	Mean	ANOVA	p-Value	Interpretation
	1	5.7144	0.373	0.773	Not Significant
	2	5.6891			
	3	5.7396			
	4	5.7271			
	<b>Total</b>	<b>5.7271</b>			

Differences in respondents' attitudes towards technology when classified according to their profile show that both male (M=5.71) and female (M=5.71) have equal mean scores with regards to their attitude towards technology. The difference between the mean scores of the respondents' attitudes towards technology in terms of their sex is not statistically significant at 0.05 level. This could be mean that respondent's attitude towards technology does not significantly differ with their sex. The results of the study do not find support with the findings of [29][30] which revealed that comparatively girls had a better outlook towards using technology in school than boys.

The mean score for respondent's attitude towards technology grouped according to grade level is nearly the same for the first, second, third, and fourth grade (5.71, 5.68, 5.73, and 5.72, respectively). The results of the ANOVA test for difference among means are not significant at 0.05 level (F=0.373; p=0.773). This means that attitude towards technology among respondents does not vary according to their grade level. They have the same attitude towards technology regardless of their grade level. This finding is in contrast with the result of the studies [29][30] which showed that attitude towards technology among students fairly decreasing as they advance to their year level.

### 3.5 Differences in Respondent’s Use of Technology When Grouped according to their Profile

The analysis in the use of technology among respondents as grouped according to their profile is presented in [Table 6]. The mean scores were used as a scale to measure their use of technology. The higher the mean score means the more frequent use of technology.

The statistical data on respondents’ use of technology according to sex show that males and females have almost the same mean scores (3.46 vs. 3.43). Considering the small differences between the means, it is not surprising that the result of the T-test ( $t=0.805$ ;  $p=0.422$ ) is not significant at 0.05 level. This indicates that the use of technology among respondents does not vary with their sex. Regardless of their sex, the respondents’ level of use of technology is the same.

[Table 6] Differences in Respondent’s Use of Technology When Grouped according to Profile

Profile of Students	Category	Mean	T-test	p-Value	Interpretation
Sex	Male	3.4603	0.805	0.422	Not Significant
	Female	3.4366			
	Total	3.4492			
Grade Level	Category	Mean	ANOVA	p-Value	Interpretation
	1	3.3773	9.398	0.000	Significant
	2	3.3987			
	3	3.5319			
	4	3.5405			
Total	3.4492				
Post-Hoc (Scheffe test)	Category		Mean Differences	p-Values	Interpretation
	1st	2nd	-0.2141	0.949	Not Significant
		3rd	-0.15452*	0.001	Significant
		4th	-0.16314	0.003	Significant
	2nd	1st	0.02141	0.949	Not Significant
		3rd	-0.13311*	0.006	Significant
		4th	-0.14173*	0.013	Significant
	3rd	1st	0.15452*	0.001	Significant
		2nd	0.13311*	0.006	Significant
		4th	-0.00862	0.998	Not Significant
	4th	1st	0.16314*	0.003	Significant
		2nd	0.14173*	0.013	Significant
3rd		0.00862	0.998	Not Significant	

In contrast, it was found that sex is significantly differentiated in terms of technology use among students [30]. They further noted that female students are more inclined towards ICT usage and likely to find that ICT helps them in their studies. On the other hand, however, the finding is consistent with the result of the study of [31] wherein the mean difference in the utilization of technology in the

classroom in terms of age did not vary.

The statistical data for the test of difference in the respondent's use of technology according to their grade level show higher mean scores among the third and fourth grades (3.53 and 3.54, respectively) as compared to first and second grades (3.37 and 3.39, respectively). The computed ANOVA or F-value of 9.398 with a p-value of 0.000 is lower than 0.05 level of significance. This implies that the frequency of use among respondents increases as they go up to a higher grade level. The result significantly differed among third and fourth grade than the first and second grade with p-values of 0.001, 0.003, 0.006 and 0.01, respectively (Scheffe test for level of difference). This means that the use of technology increases among third and fourth grade level students.

The findings are consistent with those of the study of [29] wherein the students' use of technology may differ according to grade level. They found that the first and second grade students started to use less technology, but resume as they entering into third and fourth grade [29]. On the other hand, study [17] revealed a contrasting results. According to her, mature students used fewer technologies as compared to mature students. Moreover, students' use of technology did not differ according to their grade level [30].

### 3.6 Correlation between Attitude Towards to and Use of Technology of the Respondents

The result of the relationship analysis between respondents' attitudes towards and use of technology is presented in [Table 7], utilizing the statistical treatment of the Gamma coefficient.

[Table 7] The Correlation between the Attitude and Use of Technology of the Respondents

Attitude	Use of Technology		
	Gamma	p-Value	Interpretation
	1.000	0.000	Significant

The statistical data between attitude towards and use of technology shows a significant relationship. The Gamma coefficient of 1.00 (p=0.000) indicates a positive and significant at 0.05 level. The positive correlation between two variables implies that a good attitude towards technology may lead students to use technology frequently in their academic tasks. Good attitude towards using technology is more likely an indicator of increased use of technology among students in school. The result is supported by the findings of [32] that student's attitude towards technology is significantly related to the increasing use of technology in the school. On the contrary, the study of [33] reported that students attitude towards technology is not significantly correlated to their technology usage.

#### **4. Summary of Findings and Conclusions**

The majority of the respondents are males and in their second grade. Generally, they had a good attitude towards technology as they perceived it to be fascinating, easy to learn, more interesting, and making them comfortable in doing academic tasks. They use technology in accomplishing their school works on a daily basis, such as a laptop, mobile phone, Internet, and email.

Irrespective of their sex and grade level, still the students had a good attitude towards technology. Both male and female students had the same level of technology use while those in the third and fourth grade used the technology frequently as compared to lower grade students. Moreover, a good attitude towards using technology led the students of using it more often in school. Recommendations include a further study on the specific preferences like traditional or technological tools of students in performing certain academic tasks.

#### **References**

- [1] O. Emam, M. Abdesalam, A. Khedr, Y. Helmy, "Agg general approach student's attitude towards to virtual reality technology in distance environment", *Future Computing and Informatics Journal*, vol. 4, no. 1, 2019, pp. 10-15.
- [2] J. I. Castillo-Manzano, M. Castro-Nuño, L. López-Valpuesta, M. T. Sanz-Díaz, R. Yñiguez, "To take or not to take the laptop or tablet to classes, that is the question", *Computers in Human Behavior*, vol. 68, no. 1, March 2017, pp. 326-333, doi: 10.1016/j.chb.2016.11.017.
- [3] R. D. Pea, H. Maldonado, *The Cambridge handbook of the learning sciences*, Cambridge University Press, 2006.
- [4] Z. Kalinic, S. Arsovski, M. Stefanovic, Z. Arsovski, V. Rankovic, "The development of a mobile learning application as support for a blended e-learning environment", *Technics Technologies Education Management*, vol. 6, no. 4, November 2011, pp. 1353-1364.
- [5] A. Spiegel, G. Rodriguez, "Students at university have mobile technologies. Do they do m-learning?", *Procedia-Social and Behavioral Sciences*, vol. 217, February 2016, pp. 846-850, doi: 10.1016/j.sbspro.2016.02.006.
- [6] T. Mayisela, "The potential use of mobile technology: enhancing accessibility and communication in a blended learning course", *South African Journal of Education*, vol. 331, no. 1, December 2012, pp. 1-18, doi: 10.15700/saje.v33n1a629.
- [7] J. Gikas, M. Grant, "Mobile computing devices in higher education: student perspectives on learning with cellphones, smartphones & social media". *The Internet and Higher Education*, vol. 19, October 2013, pp. 18-26, doi: 10.1016/j.iheduc.2013.06.002.

- [8] S. Pang, D. Reinking, A. Hutchison, D. Ramey, "South Korean teachers' perceptions of integrating information and communication technologies into literacy instruction", *Education Research International*, vol. 22, February 2015, pp. 1-13, doi: 10.1155/2015/783593.
- [9] M. J. Peñafior-Espinosa, "The utilization of ICT tools and the extent of benefits to students in teaching and learning in a private university in the Republic of Korea", *Journal of Next-generation Convergence Information Services Technology*, vol.8, no. 4, December 2019, pp. 427-438, doi: 10.29056/jncist.2019.12.05.
- [10] M. Al-Emran, H. Elsherif, K. Shaalan, "Investigating attitudes towards the use of mobile learning in higher education", *Computers in Human Education*, vol. 56, November 2016, pp. 93-102, doi: 10.1016/j.chb.2015.11.033.
- [11] J. G. Martínez, "Attitudes towards new technologies: a student perspective at Inter American University of Puerto Rico", *Ceiba*, vol. 3, no. 1, January 2017, pp. 85-95.
- [12] S. Y. Park, M. W. Nam, S. B. Cha, "University students' behavioral intention to use mobile learning: evaluating the technology acceptance model", *British Journal of Educational Technology*, vol. 43, no. 4, July 2012, pp. 592-605, doi: 10.1111/j.1467-8535.2011.01229.x.
- [13] S. N. Şad, O. Göktaş, "Preservice teachers' perceptions about using mobile phones and laptops in education as mobile learning tools", *British Journal of Educational Technology*, vol. 45, no. 4, May 2013, pp. 606-618, doi: 10.1111/bjet.12064.
- [14] Z. Zaleb, A. Sohrabi, "Learning on the move: The use of mobile technology to support learning for university students", *Procedia-Social and Behavioral Sciences*, vol. 69, December 2012, pp. 1102-1109, doi: 10.1016/j.sbspro.2012.12.038.
- [15] E. Dahlstrom, K. Warraich, "Student mobile computing practices, 2012: lessons learned from Qatar", Educause Center for Analysis and Research, Louisville, Colorado, USA, May 2012. [Online]. Available: <https://library.educause.edu>.
- [16] E. Cassidy, A. Colmenares, G. Jones, T. Manolovitz, L. Shen, S. Vieira, "Higher education and emerging technologies: shifting trends in student usage", *The Journal of Academic Librarianship*, vol. 40, no. 2, March 2014, pp. 124-133, doi: 10.1016/j.acalib.2014.02.003.
- [17] R. Staddon, "Bringing technology to the mature classroom: age differences in use and attitudes", *International Journal of Educational Technology in Higher Education*, vol. 17, no. 11, March 2020, doi: 10.1186/s41239-020-00184-4.
- [18] F. David, "Understanding and doing research: a handbook for beginners", Panorama Printing Inc., 2005.
- [19] A. Jones, K. Issroff, "Motivation and mobile devices: exploring the role of appropriation and coping strategies", *Research in Learning Technology*, vol. 15, no. 3, October 2007, pp. 247-258, doi: 10.1080/09687760701673675.
- [20] D. Wong, "iPads enhanced learning experience at Oklahoma State University", *neowin.net*, <https://www.neowin.net>, (accessed July 21, 2020).
- [21] C. Piehler, "Survey reveals student's mobile devices", *thejournal.com*, <http://www.thejournal.com> (accessed July 1, 2020).
- [22] R. Edmunds, M. Thorpe, G. Conole, "Student attitudes towards and use of ICT in course study, work and

- social activity: a technology acceptance model approach”, *British Journal of Educational Technology*, vol. 43, no.1, December 2012, pp. 71-84, doi: 10.1111/j.1467- 8535.2010.01142.x.
- [23] M. Prensky, “Digital natives, digital immigrants”, *On the Horizon*, vol. 9, no. 5, September 2001, pp. 1-6, doi: 10.1108/107481201110424816.
- [24] T. Marmarelli, C. M. Ringle, “The Reed College iPad study”, reed.edu, [https://www.reed.edu/cis/about/ipad\\_pilot/Reed\\_ipad\\_report.pdf](https://www.reed.edu/cis/about/ipad_pilot/Reed_ipad_report.pdf) (accessed July 21, 2020).
- [25] A. Dresselhaus, F. Shrode, “Mobile technologies & academics: do students use mobile technologies in their academic lives and are librarians ready to meet this challenge?”, *Information Technology & Libraries*, vol. 31, no. 2, December 2012, pp. 82-101, doi: 10.6017/ital.v31i2.2166.
- [26] R. Wexelbaum, P. Miltenoff, S. Patault, “Ebooks and reading comprehension: perspectives of librarians and educators”, stcloudstate.edu, [http://repository.stcloudstate.edu/lrs\\_facpubs/2](http://repository.stcloudstate.edu/lrs_facpubs/2) (accessed July 1, 2020).
- [27] N. Davidovitch, “The effect of technology on students’ reading habits: reading from a screen versus reading from paper”, *Pedagogical Sciences*, vol. 6, January 2017, pp. 91-97.
- [28] Z. Liu, D. G. Stork, “Is paperless really more?”, *Communications of the ACM*, vol. 43, no. 11, November 2000, pp. 94-97, doi: 10.1108/00220410410534185.
- [29] J. Ardies, S. De Maeyer, D. Gijbels, H. van Keulen, “Students attitudes towards technology”, *International Journal of Technology and Design Education*, vol. 25, no.1, September 2000, pp. 43-65.
- [30] D. Krishna, H. K. Sachan, “Attitudes towards ICT among CAFF students in Fiji”, *International Journal of Education and Research*, vol. 2, no. 9, September 2004, pp. 51-58.
- [31] M. J. Peñaflor-Espinosa, “Technology integration in nursing education: its implications to Colleges of Nursing in Western Visayas”, *International Journal of Hybrid Information Technology*, vol. 9, no. 9, 2016, pp. 375-392, doi: 10.14257/IJHIT.2016.9.9.35.
- [32] H. MacLeod, J. Paterson, “A survey of undergraduate technology use and attitudes”, altc.alt.ac.uk, <http://altc.alt.ac.uk> (accessed July 21, 2020).
- [33] N. Terkes, F. Celik, H. Bektas, “Determination of nursing students’ attitudes towards the use of technology”, *Jpn J Nurs Sci*, vol. 16, no. 1, January 2019, pp. 17-24, doi: 10.1111/jjns.12207.