Journal of Next-generation Convergence Information Services Technology Vol.8, No.4, December (2019), pp.427-438
차세대컨버전스정보서비스기술논문지 *http://dx.doi.org/10.29056/jncist.2019.12.05*

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

Mae Joy B. Penaflor-Espinosa[1]

Abstract

This study conducted in 2019, examined the utilization of Information Communication Technology tools and benefits to students in teaching and learning in a Private University in the Republic of Korea. The highly utilized ICT tool is power point presentation. The faculty also utilized laptop and computer, multimedia projector, wide screen, microphone, sound system, e-library, email, and video-conferencing. With ICT tools, the students are highly motivated and attentive towards learning. Female students are more likely to be active and interested in class than male students. The integration of technology could make a measurable difference in teaching and learning wherein it posed a great challenge to the faculty, thus, it is important to enhance their skills to facilitate appropriate integration within the teaching and learning process. The utilization of technology enhances students' motivation to learn and more likely to have a meaningful learning experiences. Recommendations focused on strengthening of capability-building programs in utilizing technology and improving school resources and facilities that would provide quality learning to students.

Keyword : Technology Integration, Utilization of ICT, ICT Tools, Benefits to Students

1. Introduction and Objective

In the recent decade, the utilization of Information Communication Technology (ICT) in education has become a priority, and increasingly important to enhance and support teaching and learning. ICT is considered as a mainstream in higher education [1]. According to a report published by the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics in 2013, governments and university managements globally have heavily invested in adopting of information technology in their education systems [2].

The integration of computers and communications offers unprecedented opportunities with its capacity to integrate, enhance, and interact with each other in a meaningful way to achieve the learning objectives [3]. It is also believed to significantly strengthen higher education system and addresses the three fundamental challenges of access, equity, and quality [4].

Most of the developed countries are investing heavily on the infrastructure for ICT and focusing on

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

Received(October 20, 2019), Revised(November 27, 2019), Accepted(December 9, 2019)

ISSN 2384-101X(p) 2672-1163(e) JNCIST

technology mediated learning approaches to match the changing learning styles [5]. In Korea, the remarkable growth of the internet has repositioned the country into an advanced information society in the modern era wherein the Korean government's enormous policy efforts to build a strong internet infrastructure have substantially contributed to such achievement and facilitated the rapid information technology development [6]. Its schooling system is no longer just a strategy but has become a formal policy after being embraced and adapted by the government and the nation, reaching the international level but still putting the main focus on national development [7]. Almost all of the classrooms in Korea have been equipped with high-speed internet connections since 2002, and computers and other related technologies for instruction have been rapidly integrated into curriculum under the policies of the Ministry of Education [8].

Several studies and reports have highlighted the opportunities and the potential benefits of information and communication technologies (ICT) for improving the quality of education [9]. The application of ICT has become a critical part of the learning process for university students both outside and inside the classroom setting wherein ICT applications provide institutions with a competitive edge by offering enhanced services to students and faculty, driving greater efficiencies and creating enriched learning experiences [10]. According to [10], ICT tools are used in developing course materials, delivering and sharing content, communication between learners, teachers, and the outside world, creation and delivery of presentation and lecture related to school learning research. Moreover, some of the perceived benefits of ICT are improved access to information, creation of an enabling environment for a wider participation in higher education, and improvement of communication among students and between students and teachers [11]. In addition, the use of ICT in the learning process by the university students represents a key competency in order to better adapt to a constantly progressing society and to develop skills that meet the needs of the 21st century [12].

The current generation of college students has grown up with technology, and these students are among the earliest adopters of new advances in technology and are particularly skilled at various forms of technology connected with their social and academic lives [13]. Moreover, these students possess unprecedented levels of skill with information technology, they think about, and use technology very differently from earlier student cohorts [14]. Indeed, ICT stimulates their interest and encourages them to adopt a newer mode of acquisition of knowledge and skills for the sake of improving their cognitive capacities and developing their autonomous learning as well as their collaboration and sharing. Furthermore, many studies have proved that the use of ICT in education increases the motivation of students [15].

All universities in the Republic of Korea, have fully utilized ICT in providing opportunities for students to learn. It is, however, difficult to identify specific benefits of ICT tools to college students in teaching and learning. It is not clear whether the utilization of technology would make difference and the impact it has on the learning of the students. These observations highlight the necessity to investigate the nature of the utilization and the benefits of ICT tools in the teaching and learning process in higher education. Thus, this study examined the utilization of ICT tools and the extent of benefits to students in teaching and learning in a private university in Republic of Korea.

2. Methodology

This study employed descriptive research, one-shot survey design, conducted in 2019 among the 85 randomly selected college students in two health-related departments in a private university in the Republic of Korea. The study has used a validated questionnaire-checklist [16]. The questionnaire was based on the available technology resources and facilities utilized by the faculty, the extent of utilization of ICT tools of the faculty, and the extent of benefits to the students in utilizing ICT tools in teaching and learning.

Consent from the respondents was secured prior to data gathering. The consent containing the information sheet which includes the purpose of the study, voluntary participation, risks, benefits, confidentiality, and privacy as a respondent were highly maintained, and that the results were used for research purposes only. The right to refuse and to withdraw at any time of the interview was discussed in detail to the respondents.

The data gathered were coded and processed using the Statistical Package for Social Sciences (SPSS) Software. For descriptive statistics, frequency, percentages, and mean were used to describe the data on the profile of the respondents, the available technology resources and facilities, the extent of utilization of ICT tools of the faculty, and the extent of benefits of ICT tools to the students. For inferential statistics, Mann-Whitney U-test and Kruskal-Wallis test were used in determining the difference in the extent of benefits of ICT tools to the students. The level of significance was set at .05.

3. Results and Discussions

3.1 The Profile of the Respondents

The data in [Table 1] has shown that more than one-half of the respondents (52.9%) belonged to

Department A while 47.1 percent belonged to Department B. In terms of sex, majority of the respondents (62.7%) were female, while less than two-fifths were males (37.6%). More than one third of them were first grade students (37.6%) while 31.8 percent and 30.6 percent, were second and third grade students.

[Table 1] The Profile of the Students

Profile	Categories	f	%
Department	A	40	47.1
	B	45	52.9
	Total	**85**	**100.0**
Sex	Male	32	37.6
	Female	53	62.4
	Total	**85**	**100.0**
Grade/Year-Level	1	32	37.6
	2	26	30.6
	3	27	31.8
	Total	**85**	**100.0**

3.2 The Available Technology Resources and Facilities for Department A and Department B

[Table 2] shows the available resources and facilities such as equipment, internet, and software applications for Department A and Department B.

[Table 2] The Available Technology Resources and Facilities for Departments A and B

Technology Resources and Facilities	Department A	Department B
Equipment		
Laptop/Computer	Yes	Yes
Multimedia Projector	Yes	Yes
Wide Screen	Yes	Yes
Microphone	Yes	Yes
Sound System	Yes	Yes
Internet		
Emails	Yes	Yes
Chat Rooms	No	No
Podcasting (Module Classes)	No	No
Videoconferencing	Yes	Yes
Software Application		
E-Library	Yes	Yes
Image Manipulating Software (Photoshop)	Yes	Yes
OPAC (Online Public Access Catalogue)	Yes	Yes
PROQUEST	Yes	Yes

For equipment, laptops/computers, multimedia projectors, wide screen, microphones, and sound systems are all available for use in the two departments. In terms of the availability of internet and software applications, the same results were noted to both departments. Department A and B have emails and video conferencing, however, there are no chat rooms and podcasting (module classes). In terms of software application, both department have e-library, image manipulating software, OPAC (Online Access Catalogue), and PROQUEST.

3.3 The Extent of Utilization of the Available Technology Resources and Facilities by the Faculty in Department A and B

The technology resources and facilities utilized by the faculty in Department A are presented in [Table 3]. The data reveal that there was high utilization in the usage of equipment such as laptops/computers (M=4.00), multimedia projector and wide screen (M=4.00 and M=4.00, respectively), and sound system (M=3.70). Microphone was found to have moderate utilization (M=3.00). Moreover, in terms of internet and software application, the utilization of email and e-library were high (M=3.80 and M=3.80, respectively). Videoconferencing (M=2.00), image manipulating software (M=2.15), online public access catalogue (2.15), and PROQUEST (1.83) were found to be less utilized.

[Table 3] The Technology Resources and Facilities Utilized by the Faculty in Department A

Technology Resources and Facilities	Mean	Description
Equipment		
Laptop/Computer	4.00	High Utilization
Multimedia Projector	4.00	High Utilization
Wide Screen	4.00	High Utilization
Microphone	3.00	Moderate Utilization
Sound System	3.70	High Utilization
Internet		
Email	3.80	High Utilization
Videoconferencing	2.00	Minimal Utilization
Software Application		
E-Library	3.80	High Utilization
Image Manipulating Software (Photoshop)	2.15	Minimal Utilization
OPAC (Online Public Access Catalogue)	2.15	Minimal Utilization
PROQUEST	1.83	Minimal Utilization

Scale	Mean Range	Description
4	3.50-4.00	High Utilization
3	2.50-3.49	Moderate Utilization
2	1.50-2.49	Minimal Utilization
1	1.00-1.49	Not Utilized

Moreover, in the Department B, the data reveals that there was a high utilization of the equipment

such as laptops/computers (M=4.00), multimedia projector (M=4.00), wide screen (M=4.00) and sound system (M=3.70) as shown in [Table 4]. Microphone was found to have minimal utilization (M=2.14). Email was highly utilized by the faculty (M=3.83), e-library was moderately utilized (M=3.43), and minimal utilization were found in videoconferencing (M=2.14), image manipulating software (M=1.70), online public access catalogue (2.05), and PROQUEST (1.85). The result shows that the faculty members in the two departments have highly utilized technological resources and facilities such as laptop and computer, multimedia projector, wide screen, sound system, and email.

[Table 4] The Technology Resources and Facilities Utilized by the Faculty in Department B

Technology Resources and Facilities	Mean	Description
Equipment		
Laptop/Computer	4.00	High Utilization
Multimedia Projector	4.00	High Utilization
Wide Screen	4.00	High Utilization
Microphone	2.14	Minimal Utilization
Sound System	3.70	High Utilization
Internet		
Email	3.83	High Utilization
Videoconferencing	2.14	Minimal Utilization
Software Application		
E-Library	3.43	Moderate Utilization
Image Manipulating Software (Photoshop)	1.70	Minimal Utilization
OPAC (Online Public Access Catalogue)	2.05	Minimal Utilization
PROQUEST	1.85	Minimal Utilization

Scale	Mean Range	Description
4	3.50-4.00	High Utilization
3	2.50-3.49	Moderate Utilization
2	1.50-2.49	Minimal Utilization
1	1.00-1.49	Not Utilized

In line with the findings, [17] has found that the use of laptop and computers each day in the classroom has made the students to be more engaged in learning, completing their work with more depth and efficiency, and having improved communication with teachers. Laptop enable students to take more comprehensive notes, stay more organized, and instantly access a broad range of learning material, moreover, most students believe that they learn better when using computer and they would like to use computers more during class [18]. It can be used for learning that is more active, interactive and meaningful for the students, particularly due to the abundance and variety of support materials such as texts, audio, video, and images [19].

3.4 The Extent of Utilization of ICT Tools of the Faculty for the Students

[Table 5] shows the utilization of ICT tools of the faculty for the students. The data show that

power point presentation (M=3.95), image devices (M=3.67), and audiovisual slides/files (3.55) were the highly utilized tools used in Department A. Web browsers (M=3.42), web-based assignments, projects, activities (M=3.42), email for feedback/communication (M=3.35), video clips (M=3.17), online quiz and tests (M=3.12), and online research work/plates (M=3.10) were moderately utilized ICT tools. However, simulation (M=2.95) was the least utilized. The college students in Department A had experienced moderate utilization (M=3.37) of technology-based teaching tools.

In Department B, power point presentation was highly utilized ICT tool (M=3.95). Video clips (M=3.37), audiovisual slides/files (M=3.37), image devices (photos) (M=3.17), online quiz and tests (M=2.97), web browsers (M-2.97), and online research work/plates (M=2.53), simulation (M=2.51) were moderately utilized. Web-based assignments, projects, activities and email for feedback/communication were poorly utilized (M=2.40 and M=2.40, respectively). The over-all mean score for the utilization of ICT tools in Department B was 2.94 which means moderate.

The over-all mean scores for Department A and Department B in terms of utilization of ICT tools was moderate (M=3.14). Power point presentation was found to be highly utilized for the students (M=3.95). Image devices (photos) (M=3.41), audiovisual slides/files (M=3.45), videoclips (M=3.28), web browsers (3.18), online quiz and tests (M=3.04) were moderately utilized. Web-based assignments, projects, activities (M=2.88), online research work/plates (M=2.80), simulation (M=2.71), and email for feedback/communication (M=2.69) were also moderately utilized for the students.

Classrooms have changed over the last decade with the advent of technologies and equipment developed to make teaching and learning more diversified and interactive. A digital educator creates a learning environment in the classroom that provides the opportunity for students to develop both academic skills and 21st century skills [20].

Moreover, teachers could use multimedia classroom for getting the best privileges of ICT. Power point presentations could make interesting and informative things in their presentation [21]. Moreover, it could enhance the presentation of the teacher and has made teaching more better along with multimedia projector, wherein multimedia projector makes the classroom more dynamic and lively [22]. The findings is supported by [22] that Estonian teachers tend to use power point presentations to introduce new material, revise a topic, present tasks, and rules. Moreover, audiovisual aids such as making and watching videos (including YouTube), music and songs, documentaries, films or extracts, listening tasks on CDs and DVDs, and (BBC) news were some of the ICT tools used by the Estonian teachers. In addition, handouts printed from power point presentations help the students to study for course exams.

[Table 5] Utilization of ICT Tools of the Faculty for the Students

ICT Tools	Department A (N=40)		Department B (N=45)		Total (N=85)	
	Mean	Description	Mean	Description	Mean	Description
1. Powerpoint presentation	3.95	High	3.95	High	3.95	High
2. Videoclips	3.17	Moderate	3.37	Moderate	3.27	Moderate
3. Audiovisual slides/files	3.55	High	3.37	Moderate	3.46	Moderate
4. Online research work/plates	3.10	Moderate	2.53	Moderate	2.81	Moderate
5. Web-based assignments, projects, activities	3.42	Moderate	2.40	Minimal	2.91	Moderate
6. Similation	2.95	Moderate	2.51	Moderate	2.73	Moderate
7. Online quiz and tests	3.12	Moderate	2.97	Moderate	3.04	Moderate
8. Image Devices (photos)	3.67	High	3.17	Moderate	3.42	Moderate
9. Web browsers	3.42	Moderate	2.97	Moderate	3.19	Moderate
10. Email for feedback/communication	3.35	Moderate	2.11	Minimal	2.73	Moderate
Overall	**3.37**	**Moderate**	**2.94**	**Moderate**	**3.14**	**Moderate**

Scale	Mean Range	Description
4	3.50-4.00	High Utilization
3	2.50-3.49	Moderate Utilization
2	1.50-2.49	Minimal Utilization
1	1.00-1.49	Not Utilized

3.5 The Extent of Benefits of ICT Tools to Students

[Table 6] pertains to the benefits of ICT tools to the students. In Department A, ICT tools have helped improved school-related requirements was highly beneficial them (M=3.50). Further, ICT tools were moderately beneficial in terms increasing the students' interest in the subject matter (M=3.47), helping in communication and collaboration (M=3.40), gaining attention in class (M=3.30), increasing motivation (M=3.25), enjoying varied learning activities (M=3.22), and increasing new knowledge (M=3.15). Getting better grades (M=3.07), allowing greater control of class activities (M=3.02), and being happy with their learning (M=3.00) were the items which have the lowest mean scores, however, still moderately beneficial to the students. The over-all mean score of the extent of benefits of ICT tools was moderate (M=3.24).

Moreover, the data on the benefits of technology in teaching and learning in Department B, show that ICT tools made the students, motivated, attentive, and they enjoyed various learning activities (M=3.73, M=3.64, and M=3.57, respectively). With ICT tools, students had increased interest in improving school-related requirements and the subject matter and had greater control of class activities (M=3.13, and M=3.13, and M=3.13, respectively). The lowest mean scores were the items on being happy with what they learned, getting better grades, and it helped in communication and collaboration with classmates (M=3.02, M=3.00, and M=2.82), however, moderately beneficial to the students. In

Department B, the over-all mean scores show moderate extent of benefits to ICT tools (M=3.24).

For the two Departments, the item on, being motivated with ICT tool obtained the highest mean score (M=3.50). All other items obtained were found to be at moderate extent. The over-all mean score obtained was 3.24 which means that the ICT tools were moderately beneficial to the students. The results suggest that ICT tools have great impact to students wherein it increases their motivation towards learning.

[Table 6] The Extent of Benefits of ICT Tools to the Students

Items	Department A (N=40)		Department B (N=45)		Total (N=85)	
	Mean	Description	Mean	Description	Mean	Description
1. I am motivated.	3.25	Moderate	3.74	High	3.49	High
2. I am attentive.	3.30	Moderate	3.64	High	3.47	Moderate
3. I enjoyed varied learning activities.	3.22	Moderate	3.57	High	3.39	Moderate
4. I gained new knowledge.	3.15	Moderate	3.24	Moderate	3.19	Moderate
5. I am interested in improving school-elated requirements.	3.50	High	3.17	Moderate	3.33	Moderate
6. I am happy with what I have learned.	3.00	Moderate	3.00	Moderate	3.00	Moderate
7. I get better grades.	3.07	Moderate	3.02	Moderate	3.04	Moderate
8. Increased interest in the subject matter	3.47	Moderate	3.13	Moderate	3.29	Moderate
9. Allowed greater control of class activities.	3.02	Moderate	3.13	Moderate	3.3	Moderate
10. Helped in communication and collaboration.	3.40	Moderate	2.82	Moderate	3.11	Moderate
Overall	3.24	Moderate	3.24	Moderate	3.24	Moderate

Scale	Mean Range	Description
4	3.50-4.00	High Utilization
3	2.50-3.49	Moderate Utilization
2	1.50-2.49	Minimal Utilization
1	1.00-1.49	Not Utilized

3.6 The Difference in the Extent of Benefits of ICT Tools to the Students in terms of Profile

The findings for the test of difference in the extent of benefits of ICT tools to the students in [Table 7] show higher mean rank score among the female students (M=49.03) than the male students (M=33.02). The Mann-Whitney U test result of 528.500 with a p-value of 0.003 reveal significant difference between the two groups. Therefore, the hypothesis stating that there is no significant difference in the extent of benefits of ICT tools when grouped according to sex is rejected. This means that the benefits of ICT tools to the students vary according to sex. Female students find it beneficial and interesting than male students. Moreover, the mean ranks for the benefits of ICT tools to the students according to Department are nearly the same (M=43.00 and M=42.66, respectively).

There is no statistically significant difference in the extent of benefits of ICT tools to the students when grouped according to Department, as evidenced by Mann-Whitney U test result of 886.500 with a

p-value of 0.905. This implies that the department they belonged has no influence on the benefits received by the students.

Moreover, the results of the test of difference in the extent of benefits of ICT tools according to the grade shown in [Table 8] reveal a higher mean rank among those second grade students (M=49.12), compared to first grade (M=43.28) and third grade students (M=36.78). The Kruskal-Wallis value of 3.367 is not statistically significant, with a p-value of 0.186.

The null hypothesis therefore that there is no significant difference in the extent of benefits of ICT tools grouped according to year level is rejected. This implies that the extent of benefits of ICT tools does not vary with year level. Irrespective of the year level, the extent of benefits of ICT tools is not remarkably different.

[Table 7] Differences in the Extent of Benefits of ICT Tools to the Students in terms of Sex and Department

Profile	Categories	Mean Rank	MW-U	p-value	Decision Rule
Department	A	42.66	886.500	0.905	Not Significant Accept Null Hypothesis
	B	43.00			
Sex	Male	33.02	528.500	0.003	Significant Reject Null Hypothesis
	Female	49.03			

[Table 8] Differences in the Extent of Benefits of ICT Tools to the Students in terms of Grade/Year-Level

Profile	Category	Mean Rank	MW-U	p-value	Decision Rule
Grade/ Year-Level	1	43.28	3.367	0.186	Not Significant Accept Null Hypothesis
	2	49.12			
	3	36.78			

4. Summary of Findings

1. The technology resources and facilities in the two departments that are available and utilized by the faculty are laptop and computers, multimedia projectors, wide screen, microphones, and sound systems. Emails and videoconferencing, and e-library are also available, however, chat rooms and podcasting are not available for use.
2. The extent of utilization of the available technology resources and facilities of the faculty is moderate. PowerPoint presentation is highly utilized.
3. The students are highly motivated towards learning. They also enjoyed varied learning activities, more attentive in class, and interested in improving school-related requirements.
4. The extent of benefits of ICT tools to the students vary significantly. It is more beneficial and interesting to the female students.

5. Conclusions

The integration of technology can make a measurable difference in teaching and in the learning process. The utilization of technology posed a great challenge to the teachers, thus, it is important to enhance their skills to facilitate appropriate integration within the teaching and learning process. Technology integration in the teaching and learning benefits the students in numerous ways in their quest for life-long learning. The utilization of technology enhances students' motivation to learn and more likely to have a meaningful learning experiences.

The research evidence confirms that the constructivist learning environments and innovations, representing that learning with technology, which encourages learners to actively process and organize information by making internal cognitive connections, can well provide the theoretical framework for effective technology integration. Recommendations focused on strengthening of capability-building programs in utilizing technology and improving school resources and facilities that would provide quality learning to students.

References

[1] S. Talebian, H. M. Mohammadi and A. Rezvanfar, "Information and communication technology (ICT) in higher education: advantages, disadvantages, conveniences and limitations of applying e-learning to agricultural students in Iran", Procedia-Social and Behavioral Sciences, vol. 151, no. 7, October 2014, pp. 300-305, doi: 10.1016/j.sbspro.2014.09.199.

[2] W. S. Basri, J. Alandejani and F. Almadani, "ICT adoption impact on students' academic performance: evidence from Saudi universities", Educational Research International, vol. 2018, April 2018, pp. 1-9, doi: 10.1155/2018/1240197.

[3] S. Majumdar, "Emerging trends in ICT for education and training", unevoc.unesco.org, https://unevoc.unesco.org/fileadmin/up/modelling_ict.pdf, (accessed October 15, 2019).

[4] M. D. Shamin, J. Alam and A. Islam, "The impact of ICT on students' performance: a case study on undergraduate university students", Manarat International University Studies Journal, vol. 2, February 2016, pp. 137-147.

[5] T. Srivastava, L. Waghmare, A. Jagzape, A. Rawekar, N. Quazi and V. P. Mishra, "Role of information communication technology in higher education: learners perspective in rural medical schools", Journal of Clinical Diagnosis Research, vol. 8, no. 6, June 2014, pp. XC01-XC068, doi: 10.7860/JCDR/2014/8371.4448.

[6] I. Lee, H Jeung and H. Kwon, "The Korea agency for digital opportunity and promotion's e-learning initiatives to bridge the digital divide in South Korea", International Journal for Educational Media and Technology, vol. 1, no. 1, 2007, pp. 35-47, doi: 10.24458/ijemt.1.1_35.

[7] M. Gzybowski, "Educational technologies in South Korea", General and Professional Education, January 2013, pp. 2-9.

[8] S. Pang, D. Reinking, A. Hutchison and D. Ramey, "South Korean teachers' perceptions of integrating information and communication technologies into literacy instruction", Education Research International, vol. 2015, January 2015, pp. 1-13. doi: 10.1155/2015/783593.

[9] A. Sangrà and M. González-Sanmamed, "The role of information and communication technologies in improving teaching and learning processes in primary and secondary schools", ALT-J Association for Learning Technology Journal, vol. 18, no. 3, December 2016, pp. 207-220, doi: 10.1080/09687769.2010.529108.

[10] O. D. Opati, "The use of ICT in teaching and learning at Makerere University: the case of college of education and external studies", duo.uio.no, https://www.duo.uio.no/handle/10852/36807, (accessed October 15, 2019).

[11] B. Stensaker, P. Maassen, M. Borgan, M. Oftebro and B. Karseth, "Use, updating, and integration of ICT in higher education: linking purpose, people, and pedagogy", Higher Education, vol. 54, no. 3, September 2007, pp. 417-433.

[12] K. Oulmaati, S. Ezzahri and K. Samadi, "The Use of ICT in the learning process among the students of history and civilization at Abdelmalek Essaadi University, Morocco", International Journal of Scientific and Engineering Research, vol. 8, no. 2, February 2017, pp. 972-979.

[13] A. BrckaLorenz, H. Haeger, J. Nailos and K. Rabourn, "Student perspectives on the importance and use of technology in learning", Annual Forum of the Association for Institutional Research, May 18-22, 2013, Long Beach, California, USA.

[14] R. Kvavik, "Convenience, communications, and control: how students use of technology", educause.edu, https://www.educause.edu/research-and-publications/books/educating-net-generation/convenience-communications-and-control-how-students-use-technology, (accessed October 16, 2019).

[15] R. Wajszczyk, "A study of the impact of technology in early education", diva-portal.org, http://www.diva-portal.org/smash/get/diva2:737018/FULLTEXT01.pdf, (accessed October 15, 2019).

[16] M. J. P. Espinosa, "Technology integration in nursing education: it's implications to colleges of nursing in Western Visayas, Philippines", International Journal of Hybrid Information Technology, vol. 9, no. 9, September 2016, pp. 375-392.

[17] R. Righi, "The impact of laptop computers on student learning behaviors as perceived by classroom teachers", Master's Thesis, Educational Administration and Supervision, The University of Toledo, USA, 2012.

[18] T. Kullberg, "Swedish teachers' and students' views on the use of ICT in the english classroom", diva-portal.org, http://www.diva-portal.org/smash/get/diva2:432037/FULLTEXT02.pdf, (accessed October 17, 2019).

[19] T. Karsenti and S. Collin, "Use of laptops by pre-service teachers at the university: Does it help or hinder initial teacher training?", Society for Information Technology & Teacher Education International Conference, March 7, 2011, Nashville, Tennessee, USA.

[20] V. Z. Mashhadia and M. R. Kargozarib, "Influences of digital classrooms on education", Procedia Computer Science, vol. 3, February 2011, pp. 1178-1183, doi: 10.1016/j.procs.2010.12.190.

[21] R. Amin, M. Azim and A. Kalam, "The benefit of using multimedia projector in english language teaching classroom", International Journal of Social Sciences & Humanities, vol. 3, no. 1, July 2018, pp. 62-76. doi: 10.5281/zenodo.140326.

[22] F. Kolbakova, "The use of ICT among the teachers of english in Estonia by comparison with Europe and USA", Master's Thesis, Department of English, University of Tartu. Estonia, 2014.