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NAVIGATING THE DIGITAL DIVIDE: AN IN-DEPTH ANALYSIS OF THE IMPACT OF PRIOR COMPUTER EXPERIENCE ON UNIVERSITY STUDENTS' ADOPTION OF INTERNET RESOURCES IN UGANDA

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Abstract
In the evolving landscape of higher education, the shift from traditional pedagogical tools to digital resources has been significant. This study delves into the transformation experienced by university students in Uganda, with the introduction of Internet services. The focus is on understanding the influence of students' prior computer experience on their utilization of Internet resources for academic purposes. Employing a stratified random sampling technique, a sample of 280 university students participated in the study. The research employs a mixed-methods approach, combining quantitative data collected through a questionnaire and qualitative insights gathered through interviews. Descriptive analysis using SPSS highlights the frequencies, means, standard deviation, and cross-tabulation of quantitative data, while thematic analysis is applied to qualitative findings. The results reveal a significant relationship between students' previous computer experience and their engagement with Internet resources. The study recommends incentivizing students to foster positive attitudes towards e-technology and advocates for the early introduction of ICT education at primary and secondary levels to better prepare learners for the digital demands of higher education. This research contributes valuable insights into enhancing the effectiveness of educational technology provision in institutions of higher learning.

Keywords: digital divide, prior computer experience, internet resources

Introduction

The landscape of accessing academic resources for teaching and learning has undergone a significant transformation with the advent of the Internet, marking a paradigm shift (Daramola, 2015; Ng'ambi et al., 2016). This digital evolution aims to equip learners with the necessary tools to competitively engage in the global economy (Newby et al., 2013). In higher education institutions, both teachers and students now have the capability to explore, acquire, and download electronic books and papers from online journals, as highlighted by Machimbidza and Mutula (2020). The Internet, a relatively novel medium, not only offers a plethora of academic resources but also demands information literacy competences to navigate through them effectively (Senkbeil & Ihme, 2017).

Despite the integral role that the Internet plays in teaching and learning within higher institutions globally (Resta, 2002), its utilization in Africa remains disproportionately low, as indicated by various studies (AAU, 2017; Kyakulumbye et al., 2013; Lusigi, 2019). Omoda-Onyait and Lubega's (2011) investigation into the readiness for e-learning in eight Ugandan higher learning institutions revealed a lack of familiarity with e-learning, coupled with low levels of computer availability, access, and internet penetration (p. 200). Similarly, Aguti and Fraser (2006) found a deficiency in access to and utilization of educational technology in Makerere University, the largest and oldest university in Uganda, particularly within the context of the country's largest distance-teaching program.

Despite these challenges, the government of Uganda recognizes the significance of Information and Communication Technologies (ICTs) and has articulated a goal to promote their development and effective utilization, with a specific aim of achieving quantifiable impact throughout the country within the next 10 years (Republic of Uganda, July 2002, p. 21, as cited in Aguti & Fraser, 2006, p. 94).

In 2003, Uganda formulated its initial ICT national policy with a focus on lifelong education for all (Farrell, 2007). Recognizing the necessity for a comprehensive national ICT policy, the policy framework document paved the way for the establishment of the Ministry of ICT in 2006. This ministry was tasked with addressing the convergence of ICT and coordinating policy development (Bassi, e-schools, & Communities Initiative, 2011).

In response to the policy, there was a realization of the need for new media to provide high-quality educational materials. Consequently, Ugandan universities, including Kyambogo University (KyU), the country's second-largest, began investing in ICT as an integral part of their instructional strategies. KyU, established in 2003 through the merger of three institutes, developed a web presence for regular students and affiliated colleges. Despite limited ICT resources, KyU is committed to providing ICT training and digitizing the online curriculum (Olema, 2019).
Located on Kyambogo Hill in Kampala District, KyU has a diverse student enrollment, including Postgraduate, Undergraduate, Diploma, and Certificate programs, totaling over 26,547 students. The university has established computer laboratories with technology connectivity to facilitate student training through projects like Connect-ED and the Open, Distance, and e-Learning (ODeL), funded by the AVU and the African Development Bank (ADB) for in-service distance teacher education. Despite these initiatives, students at KyU, like their counterparts in other Ugandan universities, exhibit ambivalence towards this new technology, leading to low levels of ICT/internet utilization (AAU, 2017; J. Aguti & Fraser, 2006; Aguti et al., 2004; Kyakulumbye et al., 2013; Lusigi, 2019).

Proficiency in technology use is closely associated with ICT literacy, recognized as a crucial skill for accessing, managing, and critically evaluating information (Senkbeil & Ihme, 2017). Students with previous computer training have a higher likelihood of effectively utilizing the Internet, employing advanced techniques for information retrieval (Pennanen & Vakkari, 2003; Wildemuth, 2004). This proficiency in computer use also contributes to increased confidence in navigating the Internet (Verhoeven et al., 2007; Verhoeven et al., 2020).

There appears to be a deficiency in ICT literacy among students, impacting their ability to use the Internet for academic purposes. Additionally, research from various countries indicates limited computer usage in schools, with young people primarily using ICT at home for entertainment rather than educational purposes, independently acquiring ICT skills (Senkbeil & Ihme, 2017; Wittwer & Senkbeil, 2008; Zhong, 2011). Scholars have questioned the effectiveness of these self-acquired ICT skills in informing academic technology use (Gibbs et al., 2011; Van Deursen and Van Diepen, 2013). This study addresses this concern by examining the relationship between students' prior computer skills and their attitudes towards Internet usage. Previous research from around the world reveals diverse attitudes among university students towards ICT use (Bakioglu & Hacifazlioglu, 2008; Van Deursen & Van Diepen, 2013; Wittwer & Senkbeil, 2008).

Several studies support the notion that positive prior experiences, exposure, and familiarity with computers can alleviate Internet anxiety (Matthews et al., 2020; Simsek, 2011; Sullivan et al., 2019). Research indicates that increased computer exposure contributes to more favorable conditions and fosters positive attitudes in students, influencing their success in utilizing the Internet. Consequently, students with previous computer experience have an advantage in employing advanced methods to access information (Pennanen & Vakkari, 2003).

In a study focusing on pre-service teachers at the Faculty of Educational Studies, University Putra Malaysia, Luan et al. (2005) discovered that participants with positive attitudes toward computers spent more time on the Internet. Similar findings from other studies, such as Rugayah Hajah & Hashim Mustapha (2004), support the idea that prior computer experience correlates with more positive attitudes toward the Internet for all participants.

Schumacher and Morahan-Martin (2001) investigated the relationship between attitudes toward the Internet and computer experiences in two studies conducted in 1989/90 and 1997. Significant differences were observed in the attitudes of incoming college students based on their computer experiences and skill levels. The 1997 survey also revealed that students with more prior exposure to computers reported higher skill levels with the Internet.

The development of expertise in using the Internet for instructional purposes is a gradual process, often taking at least five years for frequent Internet users in schools (Verhoeven et al., 2020). Successful experiences with computers motivate users to invest more in developing computer literacy, maximizing the positive effects of the Internet in classrooms (Wen & Mei, 2000). Mohammed et al.'s (2016) study found that positive attitudes toward the Internet are associated with increased computer use. Students with more computer exposure and opportunities to use computers on campus demonstrated more positive attitudes toward Internet use, showing greater independence and control while online.

Noyes and Garland's (2008) study indicated a preference for books over the Internet, with respondents favoring traditional learning materials. The study also highlighted the impact of short computer use experiences, leading people to have a strong preference for books for learning purposes. Prior experiences with specific technologies, as illustrated by Prediger (2004), contribute to the diversity in students' abilities and preferences. This study conducted in Africa at Ugandan university aimed to investigate the relationship between previous computer experience and student

attitudes toward using the Internet, given the increasing investment in Internet technology within the educational context.

Research Question

This research question guided the study:

Is there a notable correlation between students' attitudes towards Internet usage and their proficiency in prior computer skills?

Research Hypothesis

There is no significant relationship between having previous computer skills and students' attitudes towards use of Internet.

Methodology

The research utilized a survey approach to gather information about students' past experiences with computers and their attitudes toward utilizing the Internet for educational purposes. This methodology was deemed advantageous as it facilitated the collection of a substantial amount of data from a diverse group of participants, ensuring that the data obtained accurately reflected the overall situation. Employing quantitative methods allowed for the generation of numerical data, enabling the assessment of the extent of the relationship between the variables under investigation.

To achieve a favorable balance between accuracy, confidence level, and cost-effectiveness, the researchers conducted a survey involving a substantial number of respondents, as recommended by Arsham (2005). Specifically, out of the 1,060 final year undergraduate students at KYU who were obligated to take ICT as a subject, 280 respondents were selected as the targeted sample.

One research instruments were used; a questionnaire. All participants in this investigation successfully filled out the instrument, which was based on the "Internet Attitude Scale (IAS)." This scale, initially developed by Lloyd and Gressard (1984) in the United States, underwent modifications and revalidation by the researchers to align with the Ugandan context. The instrument consisted of twelve Likert-format items, serving as dependent variables. Students were required to express their agreement or disagreement with statements on a five-point scale ranging from "Strongly Agree" (SA) to "Strongly Disagree" (SD).

To validate the scientific rigor of the study, the researchers enlisted knowledgeable lecturers from the workplace who specialized in educational technology and had extensive experience in teacher education. These experts thoroughly examined the survey instruments for clarity. Subsequently, they provided specific suggestions to enhance the quality of each item. Adjustments were made to survey items that exhibited double-barreled characteristics based on the reviewers' recommendations. The study achieved a Content Validity Index of 0.75, which was deemed appropriate (Shariati et al., 2018).

The questionnaire underwent a pilot test with 20 final year undergraduate students from another public university in Uganda to refine it. This group was carefully selected to enhance the instrument's reliability and ensure familiarity with the research context (Ghazali et al., 2019). Out of these participants, 55% (11) were females, while 45% (9) were males, all of whom had prior computer experience before university enrollment.

Permission for data collection from the university was obtained from the office of the Academic Registrar at Kyambogo University, granted through an official letter. Research assistants, who were former instructors at Kyambogo University, were enlisted to aid in data

collection. These assistants were briefed on the research's purpose and the intended use of the collected data.

Statistical data analysis was employed to examine the dimensions of students' attitudes towards internet use. Rated scores were treated as interval data suitable for quantitative analysis. To explore the relationships between independent variables and item responses, a t-test was utilized. The choice of a t-test was based on the study's nature, involving the evaluation of mean differences between two groups for each hypothesis, making it the most appropriate method for comparing means (Bray & Thomas, 1995).

Inferential statistics were computed using SPSS, which provides precise P values. A significance level of less than 0.05 was adopted, indicating statistical significance.

The questionnaire garnered an 83 percent response rate. Subsequently, the collected surveys were inputted into Microsoft Excel software and meticulously reviewed for precision. The independent variable, representing participants' prior computer skills, was systematically coded to facilitate data entry. The outcomes are succinctly presented in tables.

Result

Table 1: Participants' perspectives regarding the correlation between their prior computer skills and the attitudes of students towards Internet usage.

Prior Computer Skills			Yes		No	
			Count	Col %	Count	Col %
1)	Easy	Disagree	42	56.0%	155	75.6 %
		Indifferent	16	21.3%	18	8.8%
		Agree	17	22.7%	32	15.6 %
2)	Prior knowledge	Disagree	33	44.0%	165	80.5 %
		Indifferent	16	21.3%	17	8.3%
		Agree	26	34.7%	23	11.2 %
3)	Not worried about ability	Disagree	41	54.7%	141	68.8 %
		Indifferent	14	18.7%	31	15.1 %
		Agree	20	26.7%	33	16.1 %
4)	Long experience reduces tension	Disagree	55	73.3%	163	79.5 %
		Indifferent	10	13.3%	15	7.3%
		Agree	10	13.3%	27	13.2 %
5)	Not hesitant	Disagree	42	56.0%	162	79.0 %
		Indifferent	11	14.7%	20	9.8%
		Agree	22	29.3%	23	11.2 %
6)	Spend more hours	Disagree	34	45.3%	112	54.6 %

		Indifferent	16	21.3%	46	22.4 %
		Agree	25	33.3%	47	22.9 %
7)	Confident	Disagree	45	60.0%	160	78.0 %
		Indifferent	15	20.0%	13	6.3%
		Agree	15	20.0%	32	15.6 %
8)	Do not need experienced person	Disagree	34	45.3%	125	61.0 %
		Indifferent	16	21.3%	33	16.1 %
		Agree	25	33.3%	47	22.9 %
9)	solve it without help from someone to	Disagree	34	45.3%	95	46.3 %
		Indifferent	14	18.7%	37	18.0 %
		Agree	27	36.0%	73	35.6 %
10) I like getting on research project		Disagree	44	58.7%	151	73.7 %
		Indifferent	13	17.3%	23	11.2 %
		Agree	18	24.0%	31	15.1 %
11) Happy in many hours		Disagree	39	52.0%	144	70.2 %
		Indifferent	15	20.0%	24	11.7 %
		Agree	21	28.0%	37	18.0 %
12) Confidence from skills		Disagree	24	32.0%	131	63.9 %
		Indifferent	13	17.3%	24	11.7 %
		Agree	38	50.7%	50	24.4 %

The investigation delved into the connections between the independent variable and responses to the items by employing a t-test. The choice of a t-test was considered optimal due to the nature of the study, which involved assessing differences in means between participants with and without prior computer experience. In such circumstances, a t-test was deemed most suitable for comparing means, as suggested by Bray and Thomas (1995).

Simonson and Schlosser (2007) contend that users' proficiency in computer skills serves to reduce anxiety associated with Internet use. The absence of prior knowledge and skills related to a specific medium can impact students' attitudes and potentially lead to difficulties in usage. There is a widely held belief that students' participation in Internet activities may be hindered by their apprehension towards computers, reflecting their overall attitudes towards technology.

Consequently, students with prior computer experience are more likely to navigate complex methods for information retrieval (Pennanen & Vakkari, 2003).

In the research, the students were asked to indicate on questionnaires whether they had acquired any computer skills before joining KYU. The acquisition of computer skills is deemed crucial when contemplating Internet use. This importance stems from the realization that students play a vital role in their academic pursuits and need assurance in their actions, especially concerning the integration of the Internet (Pennanen & Vakkari, 2003).

Hypothesis

There is no significant relationship between having previous computer skills and students' attitudes towards use of Internet.

To examine the aforementioned hypothesis, a questionnaire comprising 12 items was utilized to gather data on the correlation between possessing prior computer skills and students' attitudes toward Internet usage. The perspectives of students on this matter were documented.

Table 2: Relationship between previous computer proficiency and attitudes towards the use of the Internet

response	N	Mean	Std. Deviation	t-statistic	df	p-value
Yes	75	21.2933	5.56964	5.263	278	.000
No	205	17.9073	4.44092			

Based on the t-test results presented in Table 2 regarding the participants' previous computer skills, it was observed that the p-value (0.000) is below the predetermined level of significance (0.05). The outcomes indicate that individuals with prior computer skills exhibit a higher mean attitude score compared to those without such skills. Consequently, there are statistically significant differences between the means at the 0.05 significance level, suggesting a substantial relationship between possessing previous computer skills and respondents' attitudes towards Internet usage.

Therefore, the study rejects the null hypothesis, which posits no significant association between previous computer skills and undergraduate students' attitudes towards Internet use. Consequently, the research concludes that the attitudes of KYU undergraduate students towards Internet usage are contingent on having prior computer skills. These findings align with earlier research, such as Luan et al. (2005) and Rugayah et al. (2004), which emphasize the influential role of students' prior computer skills on their attitudes. The prevailing assumption that students' negative attitudes toward computers, and consequently the Internet, stem from their limited computer skills is supported. Consequently, students possessing prior computer skills are more adept at employing advanced methods for information retrieval compared to their counterparts lacking such skills. This evidence therefore shows a positive relationship between previous computer experience and attitudes towards Internet use.

Conclusion and Recommendation

Students with greater prior exposure to computers demonstrated higher proficiency levels with the Internet compared to those without such exposure. To enhance Internet use for academic purposes, it is suggested that users require more time engaging with computers. Successful experiences with computer use serve as motivation for students to incorporate the Internet into future learning activities and invest in computer literacy, maximizing the positive impacts of the Internet (Hong et al., 2003). Consequently, the study refutes the hypothesis claiming no significant relationship between prior computer skills and the attitudes of undergraduate students toward Internet usage.

Based on the study's findings, it is suggested that students receive incentives to cultivate positive attitudes toward e-technology. Furthermore, the introduction of ICT usage at the primary and secondary education levels is recommended to enhance familiarity by the time students reach university.

References

AAU. (2017). *Progress toward achieving systemic change: A five-year status report on the AAU Undergraduate STEM Education Initiative*. Author Washington, DC.

Aguti, J., & Fraser, W. (2006). Integration of Information Communication Technologies (Icts) in The Distance Education Bachelor of Education Programme, Makerere University, Uganda. *Turkish Online Journal of Distance Education-TOJDE*, *7*(3).

Aguti, J. N., Fraser, W. J., Arsham, H., Korir, W. P. K., Omollo, R. O., Scrimshaw, P., Toward, P., Ving, A., Change, S., & Wardhani, P. A. (2004). Questionnaire design and surveys sampling. *Efikasi Diri Dan Pemahaman Konsep IPA Dengan Hasil Belajar Ilmu Pengetahuan Alam Siswa Sekolah Dasar Negeri Kota Bengkulu*, *6*(June 2004), 1– 45. https://doi.org/10.1017/CBO9781107415324.004

Arsham, H. (2005). Questionnaire design and surveys sampling: United Kingdom Mirrow Site. *Retrieved January*, *14*, 2008. http://158.132.155.107/posh97/private/research/methods/questionnaire-design02.pdf

Awofala, A. O., Akinoso, S. O., & Fatade, A. O. (2017). Attitudes towards Computer and Computer Self-Efficacy as Predictors of Preservice Mathematics Teachers' Computer Anxiety. *Acta Didactica Napocensia*, *10*(3), 91–108.

Bakioglu, A., & Hacifazlioglu, O. (2008). Lecturers' and students' attitudes towards the use of technology in lectures: No taboos, more thinking. In *Totems and Taboos* (pp. 155–170). Brill Sense.

Balogun, A. G., & Olanrewaju, A. S. (2016). Role of computer self-efficacy and gender in computer-based test anxiety among undergraduates in Nigeria. *Psychological Thought*, *9*(1), 58–66.

Batane, T., & Ngwako, A. (2017). Technology use by pre-service teachers during teaching practice: Are new teachers embracing technology right away in their first teaching experience? *Australasian Journal of Educational Technology*, *33*(1).

Bray, M., & Thomas, R. M. (1995). Levels of comparison in educational studies: Different insights from different literatures and the value of multilevel analyses. *Harvard Educational Review*, *65*(3), 472.

Daramola, F. O. Y. M. O. O. O. S. (2015). Information and Communication Technology Literacy among Student-Teachers in Universities in Nigeria, . *Malaysian Online Journal of Educational Technology*, *3*(4), 13–22. https://eric.ed.gov/?id=EJ1085906

Eickelmann, & Birgit. (2011). *Eickelmann, Birgit Supportive and hindering factors to a sustainable implementation of ICT in schools*. http://www.waxmann.com

Farrell, G. (2007). *Survey of ICT and education in Africa: Uganda country report*.

Ghazali, N. H. C. M., Hamzah, M., Abdullah, N., & Zaini, S. H. (2019). Validation of an Instrument to Measure the Feedback Conceptions Scale. *International Journal of Academic Research in Business and Social Sciences*, *9*(7), 55–64. https://doi.org/10.6007/ijarbss/v9-i7/6091

Gibbs, S., Steel, G., & Kuiper, A. (2011). Expectations of competency: The mismatch between employers' and graduates' views of end-user computing skills requirements in the workplace. *Journal of Information Technology Education:Research*, *10*(1), 371–382. https://doi.org/10.28945/1531

Hong, K.-S., Lai, K.-W., & Holton, D. (2003). Students' satisfaction and perceived learning with a web-based course. *Educational Technology & Society*, *6*(1), 116–124.

Kombo, D. K., & Tromp, D. L. A. (2006). Proposal and thesis writing: An introduction. *Nairobi: Paulines Publications Africa*, *5*, 814–830.

Kyakulumbye, S., Olobo, M., & Kisenyi, V. (2013). Information Communication Technology (ICT) Utilization in Private Universities in Uganda: Exploring Strategies to Improve. A Case of Uganda Christian University. *Technology and Investment*, *04*(01), 22–29. https://doi.org/10.4236/ti.2013.41004

Lloyd, B., & Gressard, C. (1984). Reliability and factorial validity of Computer Attitude Scales. *Educational And Psychological Measurement*, *44*(1), 501–505.

Luan, W. S., Fung, N. S., Nawawi, M., & Hong, T. S. (2005). Experienced and inexperienced Internet users among pre-service teachers: Their use and attitudes toward the Internet. *Journal of Educational Technology & Society*, *8*(1), 90–103.

Lusigi, A. (2019). Higher Education, Technology, and Equity in Africa. *New Review of Information Networking*, *24*(1), 1–16. https://doi.org/10.1080/13614576.2019.1608576

Machimbidza, T., & Mutula, S. (2020). Investigating disciplinary differences in the use of electronic journals by academics in Zimbabwean state universities. *Journal of Academic Librarianship*, *46*(2), 102132. https://doi.org/10.1016/j.acalib.2020.102132

Matthews, G., Hancock, P., Lin, J., … A. P.-P. and, & 2020, U. (2020). Evolution and revolution: Personality research for the coming world of robots, artificial intelligence, and autonomous systems. *ElsevierSign In*. https://www.sciencedirect.com/science/article/pii/S0191886920301586

Mohammed, M. A., Belal, A. K., & Ibrahim, D. A. (2016). Human interaction with mobile devices on social networks by young and elderly people: Iraq a case study. *Indian Journal of Science and Technology*, *9*, 42.

Newby, L. S., Hite, J. M., Hite, S. J., & Mugimu, C. B. (2013). Technology and education: ICT in Ugandan secondary schools. *Education and Information Technologies*, *18*(3), 515–530.

Ng'ambi, D., Brown, C., Bozalek, V., Gachago, D., & Wood, D. (2016). Technology enhanced teaching and learning in South African higher education - A rearview of a 20 year journey. *British Journal of Educational Technology*, *47*(5), 843–858. https://doi.org/10.1111/bjet.12485

Ngobi, D. H., Otaala, J., Maani, J., & Bakaira, G. (n.d.). *The Role of Universities in Teacher Education and Professional Development: Kyambogo University a Case Study*. Retrieved July 23, 2020, from http://aadcice.hiroshima-u.ac.jp/e/publications/sosho4_2-13.pdf

Novek, E. M. (1999). Do Prof. *Do Professors Dream of Electronic Students? Faculty Anxiety and the New Information Technologies. Presented at Eastern Communication Association Annual Meeting*, 1–24. https://files.eric.ed.gov/fulltext/ED429582.pdf

Noyes, J. M., & Garland, K. J. (2008). Computer-vs. paper-based tasks: Are they equivalent? *Ergonomics*, *51*(9), 1352–1375.

Omoda-Onyait, G., & Lubega, J. T. (2011). E-learning readiness assessment model: A case study of higher institutions of learning in Uganda. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *6837 LNCS*, 200–211. https://doi.org/10.1007/978-3-642-22763-9_19

Opoku, M. O., & Kuranchie, A. (2014). Understanding Student Attitude Towards Computer Education: A Survey of SHS in the Sunyani Municipality. *Academic Journal of Interdisciplinary Studies*, *3*(1), 11.

Pennanen, M., & Vakkari, P. (2003). Students' conceptual structure, search process, and outcome while preparing a research proposal: a longitudinal case study. *Journal of the American Society for Information Science and Technology*, *54*(8), 759–770.

Prediger, S. (2004). Intercultural perspectives on mathematics learning–Developing a theoretical framework. *International Journal of Science and Mathematics Education*, *2*(3), 377–406.

Resta, P. E. (2002). *Information and communication technologies in teacher education: A planning guide* (M. Khvilon, Evgueni; Patru (ed.)). Unesco. https://unesdoc.unesco.org/ark:/48223/pf0000129533

Rugayah, H., Hashim, H., & Mustapha, W. N. (2004). ATTITUDES TOWARD LEARNING ABOUT AND WORKING WITH COMPUTERS OF STUDENTS AT UITM. *Turkish Online Journal of Educational Technology*, *3*(2).

Rugayah Hajah Hj. Hashim Mustapha, W. N. (2004). Attitudes Toward Learning About And Working with Computers Of Students. . *The Turkish Online Journal of Educational Technology* , *3*(2).

Schumacher, P., & Morahan-Martin, J. (2001). Gender, Internet and computer attitudes and experiences. *Computers in Human Behavior*, *17*(1), 95–110.

Senkbeil, M., & Ihme, J. M. (2017). Motivational factors predicting ICT literacy: First evidence on the structure of an ICT motivation inventory. *Computers and Education*, *108*, 145–158. https://doi.org/10.1016/j.compedu.2017.02.003

Shariati, B., Keshavarz-Akhlaghi, A.-A., Mohammadzadeh, A., & Seddigh, R. (2018). The Content Validity of the Cultural Formulation Interview (CFI). *Psychiatry Journal*, 1–6. https://doi.org/10.1155/2018/3082823

Simonson, M., & Schlosser, C. (2007). Institutional policy issues. *Handbook of Distance Education*, 355–362.

Simsek, A. (2011). The relationship between computer anxiety and computer self-efficacy. *Contemporary Educational Technology*, *2*(3), 177–187.

Sullivan, Y., Management, C. K.-I. J. of I., & 2019, U. (2019). Social media enablers and inhibitors: Understanding their relationships in a social networking site context. *ElsevierSign In*. https://www.sciencedirect.com/science/article/pii/S0268401217308691

Van Deursen, A. J. A. M., & Van Diepen, S. (2013). Information and strategic Internet skills of secondary students: A performance test. *Computers and Education*, *63*, 218– 226. https://doi.org/10.1016/j.compedu.2012.12.007

Verhoeven, F., Van Gemert-Pijnen, L., Dijkstra, K., Nijland, N., Seydel, E., & Steehouder, M. (2007). The contribution of teleconsultation and videoconferencing to diabetes care: A systematic literature review. In *Journal of Medical Internet Research* (Vol. 9, Issue 5, p. e37). Journal of Medical Internet Research. https://doi.org/10.2196/jmir.9.5.e37

Verhoeven, J. C., Heerwegh, D., & De Wit, K. (2020). Predicting ICT Skills and ICT Use of University Students. In A. Tatnall (Ed.), *Encyclopedia of Education and Information Technologies* (pp. 1286–1304). Springer International Publishing. https://doi.org/10.1007/978-3-030-10576-1_226

Wen, Y.-M., & Mei, H. (2000). Quick Implementation of a WAP Push Gateway. *Proceedings of 2000 Workshop on Internet and Distributed Systems (WINDS), Tainan, Taiwan*, 486–493.

Wildemuth, B. M. (2004). The effects of domain knowledge on search tactic formulation. *Journal of the American Society for Information Science and Technology*, *55*(3), 246–258.

Wittwer, J., & Senkbeil, M. (2008). Is students' computer use at home related to their mathematical performance at school? *Computers and Education*, *50*(4), 1558–1571. https://doi.org/10.1016/j.compedu.2007.03.001

Zhong, Z. J. (2011). From access to usage: The divide of self-reported digital skills among adolescents. *Computers and Education*, *56*(3), 736–746. https://doi.org/10.1016/j.compedu.2010.10.016