PalArch's Journal of Archaeology of Egypt / Egyptology

INFORMATION AND COMMUNICATION TECHNOLOGY AND PRACTICING TEACHERS ON THEIR WORKPLACE IN PUNJAB

Dr. Muhammad Idrees[1], Misbah Khurshid[2], Muhammad Uzair-Ul-Hassan[3]

[1]Professor of Education, Govt. Gordon Graduate College, Rawalpindi

[2]Assistant Professor, University of Lahore, Sargodha Campus, Pakistan

[3]Associate Professor, University of Sargodha, Pakistan

Dr. Muhammad Idrees, Misbah Khurshid, Muhammad Uzair-Ul-Hassan. Information And Communication Technology And Practicing Teachers On Their Workplace In Punjab -- Palarch's Journal Of Archaeology Of Egypt/Egyptology 20(2), 1863-1874. ISSN 1567-214x

Key Words: Technological Innovations, Designation, Professional Qualification

ABSTRACT

It is fact that mostly teachers are well aware regarding their course and an effective pedagogical technique, but if they consider it as compellation to adapt their instruction for a new technology, resultantly they are more possible to repel this change entirely. Therefore, a study to diagnose the prevailing situation regarding use of information and communication technology in the Punjab was conducted. Main findings of the study were: i) female teachers have better practices towards use technological innovations as compared to the male teachers, ii) SSE teachers have better practices towards use technological innovations as compared to the SST teachers, iii) there was insignificant difference *(Sig. =.315)* amongst the dissimilar professional qualification of male teachers on their beliefs to use technological innovations, and there was also insignificant dissimilarity *(Sig. =.287)* amongst the various professional qualification of female teachers on their beliefs to use technological innovations. Findings of the study clarified that newly appointed teachers i.e. SSE have better beliefs regarding technological innovations as compared to SST, therefore, training institutes i.e. QAEDs should arrange refresher training for old teachers to enhance their IT skills for better teaching learning process. Furthermore, the policy makers may suggest training courses for teachers regarding proper utilization of technological innovations during teaching learning process.

INTRODUCTION

It was concluded that socioeconomic status of people or locality has a direct impact on implementation of technological innovations in educational system. Teachers from highly income areas were more confident in utilizing innovations as compared to teachers from lower income areas. They were more active and

confident to take as challenge to utilize innovations in their teaching process for better learning of students (Cortez, 2016).

Many studies have described technology as an effective tool to enhance learning of students. It was also found that there was a significant variations regarding beliefs of teachers as compared to their actual practices in implementations of technological innovation. It was concluded that mostly teachers do not regularly or unfluctuating usage of computers (Woodbridge, 2004).

Curriculum, instructional procedures, and reliable assessment should sustenance the addition of technology, even though integrating technology into the classroom is more about instruction and education than expertise. The most innovative and effective way is to implement an updated assessment system depending upon technology in educational institutes. This requires a focus on participatory media, a fundamental change in pedagogics made possible by utilizing information technology, and the acknowledgement of emerging competencies among learners. , including teachers. In reshaping classroom activities, students need to be creators of knowledge and actively participate in learning process (Wong et al., 2008).

Model the usage of technology by teachers, apply technological tools throughout the syllabus, application of technological innovations in decision making and problem solving in an trustworthy learning environments to enable cooperation among learners, which can help assist the employment of technology principles (Mills & Tincher, 2003). It was described that an active incorporation of technology is caused by numerous features, but the furthermost imperative aspect is the aptitude of teachers to outline instructive technology actions to meet the requirements of students. (Gorder, 2008).

It is fact that mostly teachers are well aware regarding their course and an effective pedagogical technique, but if they consider it as compellation to adapt their instruction for a new technology, resultantly they are more possible to repel this change entirely (Ertmer, 2005). With the passage of time, mostly teachers become self-confident to use technology, they frequently use such innovative tools, including proper usage of technology. It was also concluded that many teachers prefer to adopt second level integration expertise to develop knowledge and appreciative of information investigation.

A substantial literature specifies that teachers in American public schools have not efficiently utilized technological tools to improve student knowledge to an amount that contests its entitlements of potential, in spite of large commercial funds in hardware, software and network technology (Niederhauser and Perkmen, 2006). It is also described that although many teachers have proper usage of technology for many lower level everyday jobs, rates of higher level usage are very low in comparison (Ertmer, and Newby, 2013).

Activities related to usage of computer that mostly teachers involve their students including writing, digital skills, researching the Internet, usage of computers for fun or reward, and hands-on exercises. It clears that with the advancement of technological innovations in educational institutions is also

very beneficial for the society as these skills can be used in solving different daily life problems for students. Students are able to gather up-to-date knowledge and information, communicate effectively, and put these skills to use in their daily lives (Barron, 2003). Positive outcomes have come from this increased focus on integrating technology into K–12 classrooms, including investments to give most American schools internet access, the purchase of materials including various digital media, software, hardware, database management systems, staff, and professional development sessions for teachers to facilitate best practises for the effective use of technology (Baker et al., 2006). The goal of teaching the technologies utilised in all facets of everyday life and at all levels of school is to help people develop the skills required to use technology. These abilities are now a requirement for anyone who wants to use technology to travel the globe. Students can organise primary source information using educational technologies. Educational technology encourages continual lifelong learning while keeping students interested throughout the learning process. Additionally, educational technology gives teachers the power to design lessons that are suitable for the majority of students while also giving them access to skill sets for different learning preferences (Kurt, et. Al., 2008).

It is impossible to stress the importance of instructors in integrating ICT tools for evaluation. According to Ihechu and Ugwuoji (2017), the use of ICT in continuous assessment can be characterised as a formal or summative evaluation of an educational programme using ICT resources such computers and computer programmes. They also add that in order to effectively integrate ICT resources into other sources to ensure a more valid assessment of learners in terms of knowledge, performance and skills, teachers need to adopt a positive attitude. Positive, flexible and innovative spirit. The teacher, as the implementer of the curriculum, is always the central actor in the use of any reform-based innovation in education.

Rana (2012), notes that a school with a commensurate technology background may not provide technology-assisted education if teachers are not willing to do so and do not have a positive attitude towards use technology in their teaching. He also concludes that an important resourcefulness to contrivance technology in any instructive program rest on mainly on attitude and support of instructors. It should be noted that the success of any inventiveness for implementation of technology is extremely dependent on the support and approaches of the teachers' involvement in the program. It is recommended that when instructors believe that a suggested ICT application may require more effort in completing the teaching and learning process, they may not try to put technology into their teaching and learning. There are many different aspects that make up the concept of attitude regarding technological innovations. This includes computer confidence, computer literacy, anxiety, confidence and passion, locality, academic and professional qualification and gender. Several studies highlight how important teacher attitudes are when teaching curriculum content and assessing learners' achievement through ICT.

According to Sadik's (2006) research in Egypt, teachers are more inclined to integrate technology into the classroom the more positive attitudes they have

towards it. In a survey conducted by Mooij (2014), which included 116 teachers, it was discovered that teachers' opinions towards the adoption and use of ICT tools to cover and assess program material were largely favorable. It has been noted, nonetheless, that not all teachers are comfortable utilizing particular technology. He emphasizes that while ICT use in classrooms does not always alter teaching strategy, it does encourage learning for self-regulation and provides students with quick feedback through evaluation. Based on the aforementioned, the study's goal was to find out how teachers in Metropolitan Port Harcourt felt about using ICT tools to evaluate students' academic achievement in secondary schools. In the modern period of time, with the revolution in technology, significant change are also introduced in educational systems at national as well as international level. This revolution have change the concept of daily life and evidently had an influence on instructors, scholars and institutes, especially the curriculum, pedagogy and education procedure. (Cetinkaya, 2017).

Educational systems are facing numerous problems in the 21st century, as fairness in education and the attainment of 21st century expertise by students. Nevertheless, active usage of ICT in teaching and Learning is a multifaceted and complicated procedure connecting dissimilar situations at the teacher and school level (Vanderlinde & van Braak, 2011). There's no disbelief that approach matters in many ways because it depends on how they consider any innovative phenomena, react over it and then implement it in their practices. Therefore, attitude has significant relation with practices regarding any particular innovative phenomena, technique or tool (Fazio & Roskos-Ewoldsen, 2005). It was concluded that association between approaches and performance plays a character not simply in ordinary life circumstances but similarly in classroom conditions.

The encroachment of innovative technology in the 21st century and the subsequent stress in syllabuses on digital problematic solving abilities nearly requires the usage of technology in instructive situations. It is the demand of modern time that students should be equipped with updated knowledge as well as digital literacy for better learning outcomes (van Laar, van Deursen, van Dijk and de Haan, 2017). It is described that as teachers and students have significant positions in any educational system, they must be well equipped according to the demand of time and global needs. It was highlighted that teachers' attitudes to technology as a determining factor of the acceptance and usage of ICT for instruction and education determinations. Many studies have indeed confirmed that attitudes towards ICT are positively associated with the reception and utilization of ICT in educational institutes.

When an innovation occurs, it is worthless if not implemented or not? There are many questions related to the significance and importance of educational innovations. It is tried to investigate the reasons of failure in implementation of such innovations in educational set up and different key factors for effective utilization of educational innovations for better learning among students (Csikszentmihalyi, 2013).

Innovation is not just conversation, but actually ambulatory. Furthermore, a novelty can only create a noteworthy alteration if it is used on a great measure. It is not sufficient to generate inventions, they necessity be distributed and used in institutes, a supplementary problematic task. For innovation to have an obvious consequence, we need an army of doers as well as favorable conditions for the invention to range and yield a result. In turn, performers need to be imaginative and inspired to prepare their work; they must also have the autonomy to modernize in presentation, be harmless in the workstation to take risks and controller regarding their action. To conclude, they must to be reliable to do their work well. In short, it is essential to be a revolution interested system, (Polka and Kardash, 2013).

The researcher have described further problems related to the implementation of innovations. Market based approach is considered very effective in higher education institutions having a clear objectives of fulfilling needs of students according to the market need and lifelong learning for their better future.

Today, according to needs, almost all universities are providing quality education using different innovations in their classrooms. In the present era, the concept of learning has been changed from just knowledge to updated knowledge with satisfaction and expertise and skills. This is obviously an extension of an adaptive or discriminated method regarding education, which in turn is very beneficial for students as well as society. But there is another discussion regarding a question, whether satisfaction of students related to their needs is suitable factor of learning excellence? It depends upon our way of thinking and to develop more anxious regarding feelings of students positively or negatively. Furthermore, our efforts to facilitate the students with quality learning environment according to their needs and satisfaction (Schuwer and Kusters, 2014).

Table 1 Comparison of Practices of Teachers Designation Wise Regarding Use of Technological Innovations

Designation	N	Mean	Std. Deviation	t-value	Sig.
SST	317	3.868	.502	-4.278	.001
SSE	106	4.102	.447		

Table 1 shows the differences between teachers designation wise regarding their practices towards use of technological innovations. Analysis describes that significant difference was found amongst means of SSTs (M=3.868, SD=.502) and SSEs (M=4.102, SD=.447), p=.001. Also, analysis illustrate that SSE teachers have better practices towards use technological innovations as compared to the SST teachers.

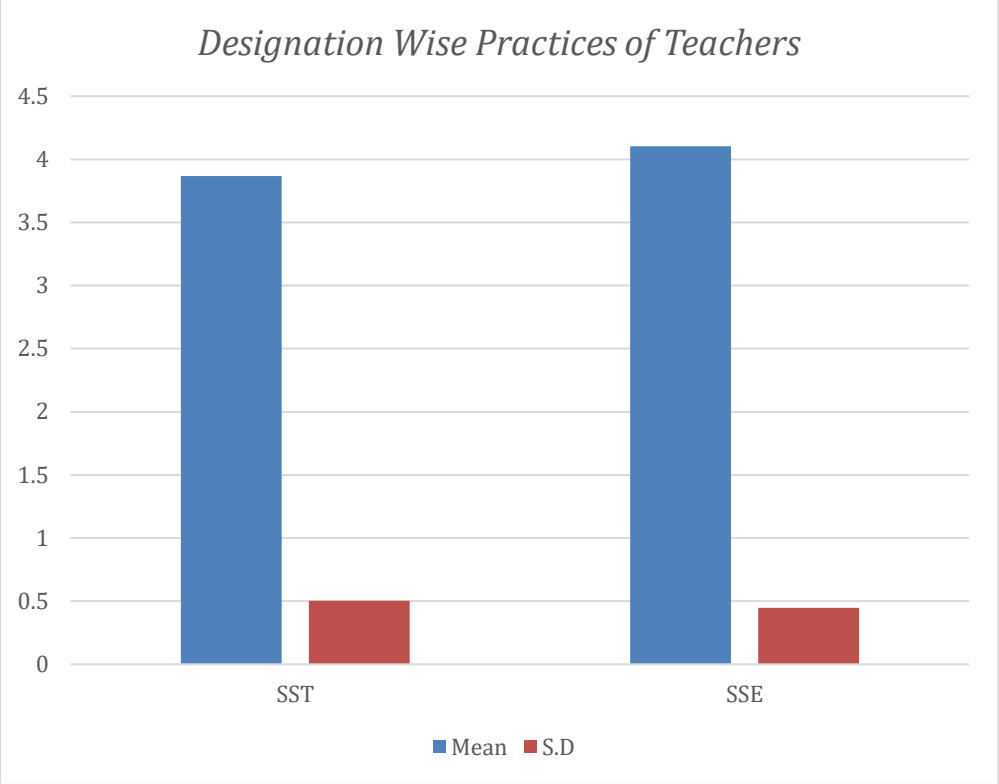

Figure I. Comparison of Practices of Teachers Designation Wise Regarding Use of Technological Innovations

Table 2. Comparison of Practices of Teachers Gender Wise Regarding Use of Technological Innovations

Gender	N	Mean	S.D	t-value	Sig.
Male	219	3.960	.503	-4.164	.000
Female	204	4.158	.474		

Table 2 shows the differences between teachers gender wise regarding their practices towards use of technological innovations. Analysis depicts that a significant dissimilarity amongst means of male (M=3.960, SD=.503) and female (M=4.158, SD=.474) teachers, p=.000 was found. Moreover, analysis describes that female teachers have better practices towards use technological innovations as compared to the male teachers.

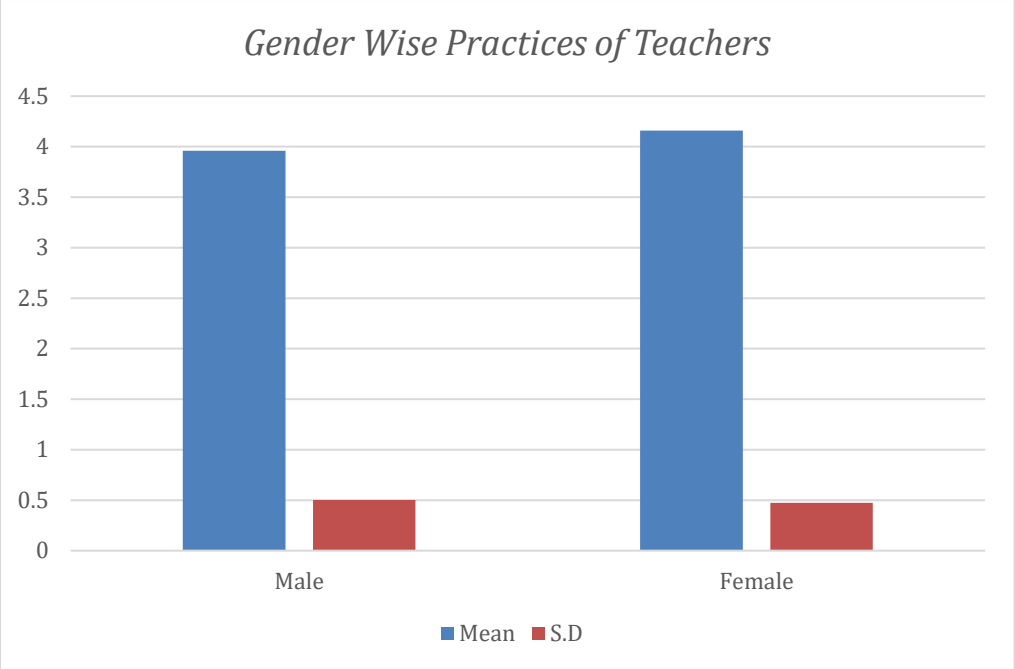

Figure II: Comparison of Practices of Teachers Gender Wise Regarding Use of Technological Innovations

Table 3. Comparison of Practices of Teachers Locality Wise Regarding Use of Technological Innovations

Locality	N	Mean	Std. Deviation	t-value	Sig.
Urban	200	4.133	.406	4.379	.000
Rural	223	3.879	.723		

Table 3 shows the differences between teachers locality wise regarding their practices towards use of technological innovations. Analysis describes that a significant dissimilarity amongst means of urban teachers (M=4.133, SD=.406) and rural teachers (M=3.879, SD=.723) having p=.000 was found. Additionally, analysis shows that urban teachers have better practices towards use technological innovations as compared to the rural teachers.

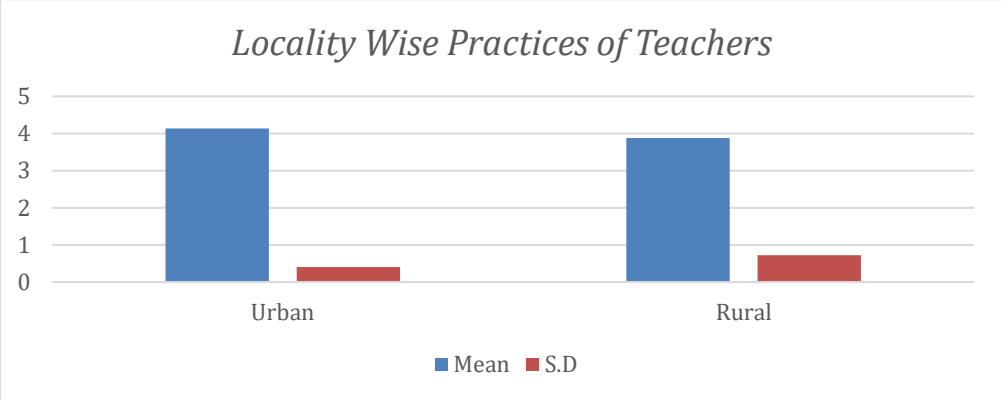

Figure III: Comparison of Practices of Teachers Locality Wise Regarding Use of Technological Innovations

Table 4. ANOVA Analysis Male Teachers' Professional Qualification on their Beliefs regarding use of Technological Innovations

	Sum of Squares	df	Mean Square	*F*	*Sig.*
Between Groups	.446	2	.223	1.160	.315
Within Groups	41.537	216	.192		
Total	41.983	218			

A One-way amongst different groups' analysis regarding inconsistency was implied to discover the effect of male teachers' professional qualification on their beliefs towards use of technological innovations. Teachers' professional qualification was divided into three categories; B.Ed., M.Ed. and M.A Education.

The table 4 showed results regarding ANOVA among dissimilar male teachers' professional qualification categories and beliefs of teachers regarding use of technological innovations. Table specified that there was insignificant difference *(f=1.160, Sig. =.315)* amongst the dissimilar professional qualification of male teachers on their beliefs to use technological innovations.

Table 5. Effect of Male Teachers' Professional Qualification on their Beliefs regarding use of Technological Innovations

Multiple Comparison

	Technological Based Training	N	Mean	Std. Deviation	M.D	*Sig.*
1	B.Ed.	42	4.006	.633	-.105	.355
	M.Ed.	158	4.111	.377		
2	B.Ed.	42	4.006	.633	.121	.426
	M.A Education	19	4.158	.392		
3	M.A Education	19	4.158	.392	.106	.901
	M.Ed	158	4.116	.377		

Post hoc test was implemented for additional learning of dissimilarity and the comparative situation of different male teachers' professional qualification levels and beliefs of teachers, and showed insignificant difference.

Male teachers' professional qualification levels and teachers' beliefs regarding use of technological innovations showed that teachers having B.Ed. (*M=4.006, SD=.633*) was insignificantly different from teachers having M.Ed. professional qualification (*M=4.111, SD=.377*) having *p* value .355 and having M.A Education as professional qualification (*M=4.158, SD=.392*) having *p* value .426. Teachers with M.Ed. professional qualification (*M=4.111, SD=.377*) also differs insignificantly from teachers having M.A Education (*M=4.158, SD=.392*) as having *p* value .901 regarding use of technological innovations.

Table 6. ANOVA Analysis Female Teachers' Professional Qualification on their Beliefs regarding use of Technological Innovations

	Sum of Squares	df	Mean Square	*F*	*Sig.*
Between Groups	1.223	2	.612	1.254	.287
Within Groups	98.014	201	.488		
Total	99.237	203			

A One-way amongst groups' investigation regarding inconsistency was directed to find the effect of female teachers' professional qualification on their beliefs towards use of technological innovations. Teachers' professional qualification was divided into three categories; B.Ed., M.Ed. and M.A Education.

The table 6 showed results of ANOVA between different female teachers' professional qualification categories and their beliefs regarding use of technological innovations. It also indicated that there was insignificant dissimilarity *(f=1.254, Sig. =.287)* amongst the various professional qualification of female teachers on their beliefs to use technological innovations.

Table 7. *Effect of Female Teachers' Professional Qualification on their Beliefs regarding use of Technological Innovations*

Multiple Comparison

	Technological Based Training	N	Mean	Std. Deviation	M.D	*Sig.*
1	B.Ed.	24	3.766	.576	-.227	.304
	M.Ed.	150	3.993	.720		
2	B.Ed.	24	3.766	.576	-.274	.325
	M.A Education	30	4.041	.671		
3	M.A Education	30	4.041	.671	-.048	.937
	M.Ed.	150	3.993	.720		

Post hoc test was utilized for additional thoughtfulness of dissimilarity and the comparative position of different female teachers' professional qualification levels and beliefs of teachers and have insignificant difference.

Female teachers' professional qualification levels and teachers' beliefs regarding use of technological innovations showed that teachers having B.Ed. (*M=3.766, SD=.576*) was insignificantly dissimilar from teachers keeping M.Ed. (*M=3.993, SD=.720*) having *p* value .304 and M.A Education as professional qualification (*M=4.041, SD=.671*) having *p* value .325. Teachers with M.Ed. professional qualification (*M=3.993, SD=.720*) also differs insignificantly from teachers having M.A Education (*M=4.041, SD=.671*) as having *p* value .937.

Major Findings:

The data analysis examined the differences in practices and beliefs regarding the use of technological innovations among teachers based on their designation, gender, and locality. The results revealed significant variations in teachers' practices and beliefs across different categories.

1. Designation-wise Comparison: There was a significant difference in the practices of Secondary School Teachers (SST) and Secondary School Educationists (SSE) concerning the use of technological innovations. SSE teachers exhibited better practices in utilizing technology in their teaching compared to SST teachers.
2. Gender-wise Comparison: Female teachers showed significantly higher practices in utilizing technological innovations compared to male teachers. This indicates that female teachers are more proactive in integrating technology into their teaching methods.
3. Locality-wise Comparison: Urban teachers demonstrated significantly better practices in utilizing technological innovations compared to their rural counterparts. This suggests that urban teachers are more inclined towards incorporating technology in their teaching approaches.
4. Male Teachers' Professional Qualification: There was no significant difference in the beliefs of male teachers with different professional qualifications (B.Ed., M.Ed., and M.A Education) regarding the use of technological innovations. This indicates that professional qualifications did not influence male teachers' beliefs in utilizing technology.
5. Female Teachers' Professional Qualification: Similar to male teachers, there was no significant difference in the beliefs of female teachers with different professional qualifications regarding the use of technological innovations.

CONCLUSIONS:

The study highlights the importance of addressing the disparities in practices and beliefs regarding the use of technological innovations among teachers. SSE teachers, female teachers, and urban teachers demonstrated better practices, indicating the need for targeted interventions to promote the integration of technology in teaching for SST teachers, male teachers, and rural teachers.

The study also suggests that professional qualifications may not significantly impact teachers' beliefs towards technology adoption. This implies that efforts should focus on providing adequate training and support to all teachers, regardless of their qualifications, to enhance their confidence and competence in using technological innovations in the classroom.

Overall, the findings underscore the significance of fostering a positive and technology-friendly environment in educational institutions. Policymakers and educational leaders should promote teacher professional development programs that emphasize technology integration, encouraging teachers to embrace innovative approaches to enhance students' learning experiences. Findings of the study clarified that newly appointed teachers i.e. SSE have better beliefs regarding technological innovations as compared to SST, therefore, training

institutes i.e. QAEDs should arrange refresher training for old teachers to enhance their IT skills for better teaching learning process.

REFERENCES

Baker, D., Kelly, M. G., & Haber, J. (2006). *Resources for student assessment*. Eugene, OR: NETS.

Barron, A. E. (2003). Large-Scale Research Study on Technology in K–12 Schools Technology Integration as It Relates to the National Technology Standards. *Journal of Research on Technology in Education, 35*(4), 354. Retrieved from http://dx.doi.org/10.1080/15391523.2003.10782398

Cetinkaya, L. (2017). An educational technology tool that developed in the natural flow of life among students: WhatsApp. *International Journal of Progressive Education*, *13*(2), 29-47.

Cortez, M. B. (2016). Teachers are confident about using technology, now more than ever. Retrieved from http://www.edtechmagazine.com/k12/article/2016/07/teachers-are-confidentabout-using-technology-now-more-ever

Csikszentmihalyi, M. (2013), Creativity: The Psychology of Discovery and Invention, *Harper perennial, New York*.

Ertmer, P. A., & Newby, T. J. (2013). Behaviorism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective". *Performance Improvement Quarterly*, *26*(2), 43-71. http://dx.doi.org/10.1002/piq.21143

Fazio, R. H., & Roskos-Ewoldsen, D. R. (2005). Acting as We Feel: When and How Attitudes Guide Behavior. In T. C. B. M. C. Green (Ed.), *Persuasion: Psychological insights and perspectives, 2nd ed* (pp. 41-62). Thousand Oaks, CA, US: Sage Publications, Inc.

Gorder, L. M. (2008, Spring/Summer). A study of teacher perceptions of instructional technology in the classroom. *Delta Phi Epsilon Journal*, *50*(2), 63-76.

Ihechu, K. J. P., & Ugwuoji, J. N. (2017). Evaluation of the Application of ICT in Continuous Assessment by Academic Staff of Universities in Abia State, *Nigeria. International Journal of Scientific Research in Education*, 10(1), 102-111.

Kurt, A., Coklar, A., Kilicer, K., & Yildirim, Y. (2008, July). Evaluation of the skills of k-12 students regarding the national educational technology standards for students (NET*S) in Turkey. *The Turkish Online Journal of Educational Technology*, *7*(3). Retrieved from http://www.tojet.net

Mills, S. C., & Tincher, R. C. (2003, March). Be the technology: A developmental model for evaluating technology integration. *Journal of Research on Technology in Education, 35*(3), 382.

Mooij, T. (2014). Optimising ICT effectiveness in instruction and learning: Multilevel transformation theory and a pilot project in secondary education. *Computers and Education*, 42, 25-44

Niederhauser, D., & Perkmen, S. (2008, July). Validation of the intrapersonal technology integration scale: Assessing the influence of intrapersonal factors that influence technology integration. *Computers in the Schools*, *25*(1), 98-111. http://dx.doi.org/10.1080/07380560802157956

Polka, W., & Kardash, J. (2013). "Managing in the effective change zone to implement a '1-to-1' laptop program in a rural school district", in Ran, B. (Ed.), *The Dark Side of Technological Innovation, Information Age Publishing, Charlotte, NC, pp. 323-346.*

Rana, N. (2012). A study to assess teacher educators' attitudes towards technology integration in classrooms. *MIER Journal of Educational Studies, Trends & Practices*, 2(2), 190-205.

Sadik, A. (2006). Factors Influencing Teachers' Attitudes toward Personal Use and School Use of Computers: New Evidence from a Developing Nation. *Evaluation Review*, 30(1), 86-113

Schuwer, B. and Kusters, B. (2014), "Mass customization of education by an institution of HE: what can we learn from industry?" *The International Review of Research in Open and Distributed Learning, Vol. 12 No. 2.*

Van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior, 72*, 577-588. doi:10.1016/j.chb.2017.03.010

Vanderlinde, R., & van Braak, J. (2011). A New ICT Curriculum for Primary Education in Flanders: Defining and Predicting Teachers' Perceptions of Innovation Attributes. *Educational Technology & Society*, *14*(2), 124–135.

Wong, E. M., Li, S. S., Choi, T., & Lee, T. (2008). Insights into innovative classroom practices with ICT: Identifying the impetus for change. *Educational Technology & Society*, *11*(1), 248-265. Retrieved from http://ifets.info/journals/11_1/18.pdf.

Woodbridge, J. (2004). *Technology integration as a transforming teaching strategy.* Retrieved from *http://www.techlearning.com/news/0002/technology-integrationas-a-transforming-teaching strategy/56552*