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Teachers' ICT Competency and Technology Leadership Practices for Pedagogical Digital Transformation Initiative: An Empirical Evidence in Klang, Malaysia

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Abstract: In this paper, we investigated the relationship between ICT competency and technology leadership practices located in one of the districts in Selangor, Malaysia. A quantitative correlational study was employed in this research and the respondent was 121 (37.81% response rate) primary school teachers from 35 schools under the jurisdiction of the Ministry of Education, Malaysia. Permission to conduct the research was obtained from the Education Planning and Research Division (EPRD) and the institutional ethics review board, Universiti Putra Malaysia (UPM). Google form was adopted to distribute the survey form and the data was compiled and analyzed using SPSS version 24.0. Pearson correlation analysis revealed significant positive and moderate correlations between ICT competency and technology leadership practices. In summary, ICT competency and technology utilization has become the premise traits for educational stakeholders. With a great challenge in the educational landscape, teachers and school administrators now have an extensive effort to advocate digitalization in education from myriad pedagogical settings.

Keywords: Technology leadership, teacher ICT competency, digitalization

1. Introduction

Information and Communication Technology (ICT) has become an essential and primal factor in the educational system throughout the globe (Omar et al., 2020). ICT integration took place in Malaysian education back in the early 1990s. Since then, the Malaysian Ministry of Education (MOE) has initiated various efforts and intervention programs to provide ICT infrastructure either hardware or software to execute ICT-based instructions effectively (Malaysia, 2013). MOE aims to inculcate 21st-century human capital with creative and critical thinking who can compete with the challenging job market. For this mission, coping with digitalization and the ICT landscape would enhance individual capability and capacities to cope with the current needs of employment.

The utilization of ICT has relatively assisted human beings in devising businesses and the economy. Moreover, the ICT application in the context of education is not new. ICT integration in academia has been introduced in the United States and many European countries as early as the 1960s. Glancing at the global perspectives, voracious efforts and initiatives have been implemented abroad such as the Fatih Project in Turkey, The 2.0 School Program in Spain, Learning Resource Center in Saudi Arabia, U- Taiwan Programs in Taiwan, and 1: 1 Program in the United States (Alenezi, 2017; Banoğlu et al., 2016; Gil-Flores et al., 2017; Wang & Zhou, 2013). The aforementioned projects have proven a success for ICT integration in education in the respective countries. The integration of ICT can be optimized if the school leaders recognize their role as a technology leader to cope with the demanding digital age (Moreina, Rivero & Alonso, 2019). Based on the aforementioned issues, this study aims to examine the relationship between technology leadership practices and teachers ICT competency.

2. Methodology

This study employed a quantitative correlational study at the rural primary school in Klang district involving primary school teachers Based on the record, there are 35 government primary schools categorized as rural in the district of Klang, and the population of the teachers numbered at 1877. The sample size was set at 320 based on Krejie and Morgan's (1970) table. However, only 121 completed forms were received (37.81% of response rate) which beyond researchers controlled. Three set of reminders were sent to respective sample. A multistage sampling was sampling was employed. The first sampling phase involved 35 schools using a cluster sampling. Seven cluster was identified which consisted of five schools. The second phase involved 64 teachers which were selected using a random sampling from each cluster to represent the generalizability of data collection procedure. A set of questionnaires was developed for this study. There were three sections listed in the survey form: demographics, school administrator technology leadership practices, and teachers' ICT competency. The first section contains six items related to the demographic profiles of the respondents: gender, age, type of school, teaching experience, educational level, and involvement in ICT training. The second section was replicated from Leong et. al (2016) and the Principle Technology Leadership Assessment (PTLA) from the International Society for Technology in Education - Standards for Administrators (ISTE, 2009) in determining the technology leadership practices among school administrators.

3. Findings

The result of the correlation analysis informed that teachers' ICT competency and technology leadership practice was found moderately positively correlated at r (119) = .571 p<. 01. Among the five dimensions of technological leadership, the systematic improvement had the highest correlation with the value of correlation coefficient, r = .605 while the dimension of visionary leadership showed the lowest correlation with the value of correlation coefficient, r = .406.

Table 1. *The relationship between teacher's ICT competency and technology leadership practice*

Knowledge		Skills		Attitude	Teachers' ICT Competency	
Visionary Leadership	.393**	.000	.379**	.000	.340** .000	.406** .000
Digital Age Learning Culture	.520**	.000	.461**	.000	.468** .000	.528** .000
Professional Practice Excellence	.505**	.000	.468**	.000	446** .000	.518** .000
Systematic Improvement	.538**	.000	.550**	.000	.562** .000	.605** .000
Digital Citizenship	.536**	.000	.461**	.000	.512** .000	.549** .000
Technology Leadership Practice	.546**	.000	506**	.000	.512** .000	.571** .000

**. Correlation is significant at the 0.01 level (2-tailed). N= 121

4. Discussion and Conclusion

Teachers' ICT competency is a critical element in determining the effectiveness of ICT integration in teaching and learning processes (Agyei & Voogt, 2011). ICT competency has become an integral part to instill the ICT integration in the educational milieu which subsequently becomes ways of 21st-century teaching and learning techniques and execute plans at the ministry and educational provider levels (MOE, 2012). The ICT competency among teachers can be explained by their willingness to integrate ICT in daily tasks, especially in the teaching and learning settings. The motivated teachers who embrace technology in their daily tasks will eventually increase enthusiasm and self-inquiry to learn and try out

new technology (Bordbar, 2010; Hasnuddin et al., 2015; Raman et al., 2019; Varol, 2013). Teachers with a high level of ICT competency especially of those teachers posted in the rural area able to cope with the latest technological developments and are more likely to perform daily tasks in a technological environment, and have an awareness of responsibility, and understand the ethics and trust that must be adhered to when using ICT in performing their duties (Kreijins et al, 2013; Ruuhina, 2018; Zhu & Aslan, 2016).

To summarize, technological readiness will be seen as a premise in teaching, assessment, and delivery of knowledge process. Reflecting on the impact of COVID-19, it is salient to retain educational stakeholders' motivation to acquire and deliver knowledge and educators also do not lose the spirit to impart knowledge to the community of learners. Instead, via technology, educators continue to pour knowledge through an online classroom. The school leader, conversely, needs to deepen their knowledge of new technologies to enculture the ICT integration at school. Thus, the role of technology leaders among school leaders is vital to improving the ICT competencies among school teachers.

References

Alenezi, A. (2017). Technology leadership in Saudi schools. *Education and Information Technologies*, *22*(3), 1121–1132. https://doi.org/10.1007/s10639-016-9477-x

Banoğlu, K., Vanderlinde, R., & Çetin, M. (2016). Investigation of principals' Technology leadership profiles in the context of schools' learning organization culture and ICT infrastructure: F@ tih Project Schools vs. the Others. *EGITIM VE BILIM-EDUCATION AND SCIENCE*, *41*(188), 83-98.

Bordbar, F. (2010). English teachers' attitudes toward computer-assisted language learning. *International Journal of Language Studies*, *4*(3). 27-31

Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J.-J. (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in Human Behavior*, *68*, 441–449. https://doi.org/10.1016/j.chb.2016.11.057

Joo, Y. J., Park, S., & Lim, E. (2018). Factors Influencing Preservice Teachers' Intention to Use Technology: TPACK, Teacher Self-efficacy, and Technology Acceptance Model. *Educational Technology & Society*, *21*(3), 48–59.

Lawrence, J. E., & Tar, U. A. (2018). Factors that influence teachers' adoption and integration of ICT in teaching/learning process. *Educational Media International*, *55*(1), 79–105. https://doi.org/10.1080/09523987.2018.1439712

Leong, M. W., Chua, Y. P., & Sathiamoorthy, K. (2016). Relationship between Principal Technology Leadership Practices and Teacher ICT Competency. *Malaysian Online Journal of Educational Technology*, 4(3), 13–36.

Malaysia, K. P. (2013). *Pelan Pembangunan Pendidikan Malaysia* 2013-2025. Putrajaya: Kementerian Pendidikan Malaysia.

Moreira, M. A., Rivero, V. M. H., & Sosa Alonso, J. J. (2019). Leadership and school integration of ICT. Teachers' perceptions in Spain. *Education and Information Technologies*, *24*(1), 549–565. https://doi.org/10.1007/s10639-018-9789-0

Omar, M. K., Zahar, F. N., & Rashid, A. M. (2020). Knowledge, Skills, and Attitudes as Predictors in Determining Teachers' Competency in Malaysian TVET Institutions. *Universal Journal of Educational Research*, 8(3C), 95-104.

Raman, A., Thannimalai, R., & Ismail, S. N. (2019). Principals' Technology Leadership and its Effect on Teachers' Technology Integration in 21st Century Classrooms. *International Journal of Instruction*, *12*(4), 423–442. https://doi.org/10.29333/iji.2019.12428a

Ruuhina, M. S. (2018). *Pembangunan Kepiawaian Kompetensi ICT untuk Guru- Guru: Satu Kajian Delphi* (Doctoral Dissertation, Universiti Utara Malaysia).

UNESCO (2017). Asia Pacific Ministerial Forum on ICT in Education 2017. Retrieved from https://bangkok.unesco.org/content/asia-pacific-ministerial-forum-ict-education-2017

Varol, F. (2013). Elementary School Teachers and Teaching with Technology. *Turkish Online Journal of Educational Technology-TOJET*, *12*(3), 85-90.

Zhu, C., & Aslan, A. (2018). Starting Teachers' Integration of ICT into Their Teaching Practices in the Lower Secondary Schools in Turkey. *Educational Sciences: Theory & Practice*, *18*(1), 23–45. https://doi.org/10.12738/estp.2018.1.0431