

Technology Leadership in Malaysian Schools: The Way Forward to Education 4.0 – ICT Utilization and Digital Transformation

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ABSTRACT

Education 4.0 is the answer to the global needs for the advanced integration of humans and technology. Leading school's technology utilization can be the way forward to support Education 4.0 realization. This study aims to investigate the effects and roles of principals' technology leadership towards teachers' ICT utilization and students' academic performance in secondary schools in Selangor, Malaysia. This empirical study uses a set of questionnaires to gather information from respondents who are in the teaching profession. A total of 310 questionnaires were completed and analyzed. The findings have shown significant positive impacts between the effects of the technology leadership roles of principals on teachers' effective ICT utilization and students' academic performance. The integration of ICT and technological tools in schools has a great challenge towards the new era of the Education 4.0 system. This suggests that principals who embrace technology will effectively lead their schools to acquire educational resources to enhance student engagement and learning.

KEYWORDS

Digital Transformation, Education 4.0, ICT Utilization, Malaysia, Principals, Teachers, Technology, Technology Leadership

INTRODUCTION

In an era that focuses on smart technology, artificial intelligence and robotics, educational institutions must produce a highly skilled and capable workforce who can take advantage of the tools available in this technologically transformed world. Accordingly, education 4.0 needs to cater to the needs of Industrial Revolution (IR) 4.0 by introducing students to the potential of digital technology, open-sourced content and personalized data. By aligning teaching and learning methods with the skills needed in the future, education institutions need to produce students who are well-equip with the 21st century skills and knowledge to face the challenges of fourth industrial revolution. One of the strategies can be taken is accelerated remote learning, which is the idea that students learn theoretical knowledge remotely using digital means, whilst ensuring any practical skills are still learnt face-to-

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face. This is a more flexible way of learning that requires accountability, good time management, and skills that need to be relied on due to the rise in the freelance economy (Anealka Aziz, 2018).

In implementing ICT into schools, the main responsibilities of the principal, is to ensure that the best method to stimulate the learners' to learning process are done through effective ICT infrastructure and staffs exposure to it (Gurr, 2000). A school principal is the main agent in bringing successful digital transformation in schools (Hall & Hord, 2001). Researchers also justified that an important element in a smooth technological change in school, is obviously the school principal (Hallinger & Heck, 1996). Furthermore, the attitude exhibited by the principals while in the process of the technology implementation or innovation towards it differs and the consequences to it may lead to greater execution success. Principals are often regarded as the backbone of a school to provide the interventions that either increases the potential for it to be a success of a change or it to be failure (Dexter, 2008). A principal's technology leadership role is essential so that the school's teaching and learning systems can be in place to make the process more efficient (Gurr, 2000), including the recruitment of the school's staffs to manage and govern the ICT implementation.

Technology leadership is the combination of strategy and general leadership techniques. However it is more focused on technology, particularly those which has a connection to access towards tools (Killen, 2005). Technology updating and the realization that the professional expansion and application of technology is always changing according to the needs of the generation. Metcalf (2012) states that school leaders are facing challenging task of applying current digital transformation in order to make the learning process more effective. A school leader must combine various responsibilities to ensure those technology resources are available and safe for the use of students and teachers alike. Simultaneously, school leaders must become a role model to encourage the use of ICT in the teaching and learning process and also organizational management in this 21st century (MOE, 2013). How to effectively lead the teaching and learning process in order to facilitate students to learn theoretical knowledge by using digital means, is the main challenge for the school technology leadership (Wachira & Keengwe, 2011).

The Malaysian education system is facing some challenges in regards to current digital transformation. Continuously, there is a pressure for schools to be equipped and prepared towards the 21st century education system . Although, the government has continuously given adequate attention and support for the digitalized education system (Ministry of Education, 2012), the key focus is how school leaders are moving forward and where they are make the most progress. The connection between principals' technology leadership and the effectiveness of ICT implementation in schools has been reported in previous researches (Brooks-Young, 2000; Gibson, 2002; Gurr, 2000). According to Gibson (2002), one of the most important issues in the success of school technology integration includes the effectiveness of principals' technology leadership that can directly influence in fully utilization of ICT by teachers. The efforts from school leaders to answer these questions, will help the younger generation to go through a quality and updated education system (Leong, 2010; Lu, 2013; Wahdain & Ahmad, 2014).

The competitive Malaysian education system to global needs to be transformed in the line with the development of the industrial revolution 4.0. the development of advanced technology like robotics, Internet of Things (IoT), and big data analytics are expected to change the landscape of Malaysian education system. Education 4.0 creates various opportunities for teachers to engage in new teaching and learning technology tools and it improved the teachers' knowledge on ICT more in depth (Lawrence, Lim & Abdullah, 2019). Moreover, principals need to know how technology can improve students' achievement, how to make data driven decisions, how much technology staff and technological support are required and carry out the technology policies. Therefore, there is a need to investigate the various aspects of technology leadership roles in schools. In a nutshell, technology management stresses the achievement of management efficiency by ensuring the right information can be obtained at the right time. This research specifically aims to identify the technology leadership roles of principals towards effective ICT utilization in schools as well as to identify the relationship

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