Implementation of Principal's Digital Leadership in Communication and Teacher Professional Development at School

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Abstract—**This research aims to examine the implementation of digital leadership in terms of communication and teacher professional development. The descriptive-analytic method with a qualitative approach was performed. The primary data was collected from respondents through interviews with principals in the elementary school, junior high school, and senior high schools of El Fitra. The additional data was gathered through observation and documentation. Furthermore, the secondary data was obtained from a questionnaire administered to 93 Elfitra's teachers. The results revealed that effective communication had been established between principles and school members. The effective communication provided the relevant information to stakeholders in real-time. Additionally, through various social media and technological devices, the more accessible socialization of school programs (parent's meetings, flyers, and viral content). Finally, teacher professional development was also carried out. Principals initiated encouraging teachers in professional development and supported teachers through various training and workshops to develop their teaching and leadership skills.**

Keywords—*communication, digital leadership, professional development*

I. INTRODUCTION

Education goals are to ensure that all students experience the learning process that can fully develop the self-potential. Policymakers and educators are looking for best practices to increase student engagement by integrating learning technologies into the curriculum. Particularly, it prepares learners to be ready to learn in every situation [1]. The Covid-19 Pandemic has hit and appalled the whole world, which consequently affected on school system by changing the learning process into online classrooms. The Covid-19 pandemic has exacerbated the pre-existing reality regarding social and educational inequalities [2].

During the pandemic, the presence of technology assists the learning process. The presence of technology has changed the conventional method to the more digital ones. The change in the school management system from conventional to digital or called a digitalization process depends on the principal's digital leadership abilities as a strategic leader in the school. The principal needs to understand and make digitization to be implemented in schools [3].

Leadership and technology are intertwined in carrying a new management paradigm. It ensures the sustainability of learning based on the correct pedagogical foundation. Thus, principals must be able to innovate by using technology in all school management systems and develop relationships among stakeholders [4].

Mourshed et al. [5] argued that leadership is the most essential factor. The presence of a leader could initiate to creates the school management system reformation program. Additionally, Håkansson Lindqvist & Pettersson's [3] reported that school leaders understand digitization and the digital competencies by setting the direction, developing human resources, developing organizations, and developing teaching-learning. The research of T. Boronenko et al. [6] and Liisa Ilomäki et al. [7] stated that school digitization includes (a) creating an electronic digital school management system, (b) creating innovative electronic information files and educational environments; (c) implementing the education network program; (d) developing the digital competence of teachers and students.

The research on school leaders' ability in digital communication has been conducted by Yopi and Wahid [8], which was the systematic use of social media platforms in the form of Standard Operating Procedures for Digital Content. In addition, Yusof et al. [9] showed the relationship between principals and community collaboratives could be improved by using digital communication media such as WhatsApp, Telegram, Twitter, Facebook, and WeChat.

The research on the ability of school leaders in teacher professional development by William Sterrett and Richardson [10] reported that leaders with digital leadership could help shape the school's professional ethos, embrace and support

innovation as well as the learning and development of others. Digital leadership in schools ensures that they stay engaged in learning and innovation, as well. England [11] stated that school principals' role in this digital era is crucial in encouraging teachers' professional development. Thus, teachers as educators could have leadership skills to conduct online classrooms.

Research on digital leadership is limited. Previous research has focused on only one aspect of teacher communication or professional development. This study aims to examine the implementation of digital leadership by integrating the aspect of teachers' communication and professional development and maximizing digital technology.

II. LITERATURE REVIEW

A. Digital Leadership

A digital leader must be able to set direction, influence others and initiate sustainable change through various access to information. Additionally, the digital leader should be able to build relationships to anticipate changes which are crucial for the school success in the future [12]. This is because the students faced are those who grow up in a world that is driven by fast-moving technology. They need to accustom to receiving information quickly and have a better understanding of something through interaction with digital technology from an early age, called "*digital native*" [13].

The main emphasis on digital leadership in schools: (1) effective implementation of digital technology; (2) critical reflection on technology; (3) the ability to take into account the actions related to the use of digital technology, that can inherently influence the school transformation process [14].

Digital leadership must consider recent changes such as ubiquitous connectivity, open-source technology, mobile devices, and personalization. This requires a dynamic combination of thought patterns, behaviours, and skills to change or enhance the school culture through technological assistance. Digital leaders need to control but trust the students and teachers to use digital technology to explore their learning needs. Thus, all students acquire the skills for their future success.

1) Communication: Communication is an element of interaction in which there is an exchange of information, values, assessment, and meanings. There are three components in communication, namely information exchange, perception, and interaction [15]. A previous study reported that good communication between fellow employees and between employees and leaders was significantly reduced stress levels [16].

The impact of Industrial Revolution 4.0 can be significantly observed in the communication dimension. Currently, communication between the principal and the collaborative community at the school is conducted through virtual media. It was reported that the relationship between the principal and community collaborative could be improved by using digital communication media such as WhatsApp, Telegram, Twitter,

Facebook, and WeChat [9]. One of the critical factors to achieve goals is the digital communication factor because it helps achieve the school organization's activities, goals, and workflows. Recently, it is believed that digital communication is a comfortable communication. Additionally, it affects the convenience of school information flow processes and more efficient leadership communication [17].

Principals can provide "real-time" information to stakeholders through active communication by utilizing various technological tools [12]. Principals can take advantage of technology to increase parental involvement because they can stay connected with the school to get the latest information, such as test scores. One study found that increased parental involvement led to lower student absenteeism and dropout rates. Ray et al.[13] conducted a study to determine whether emerging technologies facilitate better parent-teacher communication and increase parental involvement. In addition, this case makes parents do not have to be in school physically to be proactively involved. "Most types of proactive engagement can be fostered through the use of technology". The skills that digital leaders must possess in carrying out digital communication are skills using multimedia, real-time transmission skills, producing information, skills in social networking, skills in using cellular technology [18].

*2) Professional development:*Technological advancement, such as social media invention, makes the school no longer an institution closed for information sharing or remote islands that lack support and feedback. Schools can provide instructional needs such as accessing various learning materials, receiving feedback, connecting with education experts and practitioners, and discussing proven strategies to improve learning and leadership [12].

The Covid-19 pandemic has changed the school system. Consequently, the internet becomes a fundamental role in the learning process, particularly from home or online learning, streaming videos, and other sudden changes. The strengthening of internet connectivity will result in better interaction between students and teachers. The Covid-19 pandemic is forcing teachers to change conventional teaching methods to digital teaching-centred ones. Teachers must prepare a new journey to meet students' demands in the digital world in the future. Teachers must motivate students to learn in an isolated atmosphere, switch to teamwork in a digital space, and assess students' abilities not only through tests or assignments. Teachers must integrate technology and select digital pedagogy that is ethical and provides benefits to the learning process. Therefore, training on mastery of digital technology is crucial to do in schools to ensure that all teachers are ready to perform digital technology in the learning process. Furthermore, the results of the training are directly practiced in their online classes. Most of the current activity is about training digital technology because integrating digital technology into learning is urgently needed to keep the instructional implementation's continuity in the recent day [19].

The presence of digital leader is necessary to build a supportive environment for teachers to apply technology in their online classrooms. Successful school principals' characteristics focus on teacher professional development through ongoing support to increase teacher involvement. Principals must be able to develop a technology vision and plan for their school, encourage technology development and teacher training, support teachers' understanding of technology use, support technology integration through collaboration, provide adequate technology infrastructure support, and develop effective school plans by developing a culture of technology [13].

III. RESEARCH METHODOLOGY

The descriptive-analytic method, with a qualitative approach was performed in this study. Primary data were obtained by conducting interviews with the school principals in elementary school, junior high school, and senior high school of El Fitra. The primary respondents were selected through purposive sampling. In addition, researchers also conducted observations and documentary studies in collecting data. Meanwhile, secondary data or supporting data were collected through questionnaires administered to supporting participants, 93 teachers of El Fitra.

The descriptive method with a qualitative approach was performed to explore an in-depth analysis of the Principal's Digital Leadership in communication and teacher professional development. The data was presented using descriptions, and in this case, an analytical study was also required to discuss whether digital leadership competence can be applied in school management or not.

To better understand how the school principal promote professional learning in the digital age, we use a qualitative case study approach. We attempt to investigate how principals as leaders conduct digital communication and embrace technology to develop teacher professionals to create professional learning.

IV. RESULTS AND DISCUSSION

The principal's understanding of managing communication and professional development is essential to be analysed to obtain an overview of digital leadership implementation in schools. This section presents interviews with El Fitra principles who are responsible for leading elementary school, junior high school, and senior high school. The interview result discussed the communication activities and teacher professional development activities managed by the school principal. In addition, this section also presents the questionnaire results that were administered to 93 El Fitra teachers. The result is related to teacher perception regarding teacher professional development. It supports primary data on digital leadership in terms of teacher professional development.

Two open questions explored to what extent the digital leadership dimensions provided by Elfitra school principals have been implemented digital leadership communication and professional development for teachers. The explanation of each dimension will be discussed as follows:

A. Question 1

1) As a principal, how do you manage a lot of day-to-day communications in the digital age?: The elementary school principal argued that developing active communication in the digital era can be conducted through social media or other online media such as WhatsApp and Zoom. He added that schools have clear directions and goals for their development in accordance with the recent situation by following digital-based technology. School also applies social media-based communication for sharing or conducting workshops regarding school programs and community relations activities in the form of POMG virtual. The formation of a positive image "branding" that promoted school programs, teacher performance, and student achievement, was conducted by creating viral content and were shared through WhatsApp, Instagram, Facebook, and Twitter. Furthermore, by utilizing digital technology, the principal created a class group network (WhatsApp Group) to monitor the progress of the learning process, teacher upgrading groups to communicate with educators in their professional development, POMG groups to communicate with parents, and groups of principals to communicate with fellow principals as a forum for sharing experiences in school management strategies.

The junior high school principal stated that active communication with school members could be carried out through WhatsApp and Zoom meetings. The school policies are implemented through top-down, while technical policies are carried out through bottom-up. Online communication was also applied by school committees for community relations programs to involve parents in school activities. In addition, the guest teacher program was conducted to motivate students through WhatsApp, zoom meetings, and official school Instagram which specifically shared information regarding school activities.

With respect to senior high school principal statements, communication plays an essential role in the educational and organizational process. Through the WhatsApp media, the process of sharing information and communication was conducted by educators and educational staff. In particular, the discussion of obstacles was carried out online via WhatsApp, and further, the zoom meetings and google meet were employed to look for the solutions. Weekend evaluation and morning briefing activities were conducted using zoom meetings. Accommodating the aspirations and feedback can be performed via WhatsApp media. Students also have consultation services via WhatsApp. Furthermore, collaborating with related parties regarding education, health, religion with the surrounding community was conducted through digital communication using online social media.

According to the interview data, the authors concluded that managing communication for digital leadership is fundamental

to be developed. School digital communication through online media such as WhatsApp, Instagram, Facebook, Twitter, Zoom meeting, and google meet was employed by school principals to communicate with school members. Creating viral content to share the school programs to the community was expected to build a positive image of the school. See Figure 1.

Fig. 1. The example of viral content.

Finally, communication with parents was conducted through the virtual program of parent-student association (POMG).

The results revealed that effective communication using digital technology assistance had been built between leaders and school members to organize a school. In addition, communication provides relevant information to educational stakeholders in real-time. Besides, social networks through various forms of program socialization, such as virtual parent meetings, flyers, and viral content, have also been built using various technological tools.

B. Question 2

1) What teacher have professional development activities been undertaken to support teacher performance in the digital age?: The elementary school principal stated that encouraging and developing teacher professional development in the digital era was conducted by making digital-based learning. Thus, teachers can search various teaching materials, receive feedback from students and parents, and connect with educational experts worldwide to improve the teaching process. In particular, teacher quality improvement was carried out through the formation of KKG (Teacher Working Groups). In addition, teachers' professional development was conducted by providing workshop training on digital

technology for learning, such as email management, Google Drive, Google Forms, and YouTube.

The junior high school principal revealed that the school management always upgraded to the latest one. Teachers were also encouraged to keep pace with technological developments by participating in or holding training, especially developing learning methodology. The standardization of educators and education staff and knowledge development strategies was also realized.

A workshop on the use of digital technology has been conducted for teacher professional development to improve learning quality.

The senior high school principal argued that developing teacher professionalism can be performed by holding training, in-house training, seminars, and upgrading. It was aimed to improve the quality and as well as the competence of teachers and education staff. The evaluation and sharing of the teaching program or education staff programs conducted weekly. For teacher professional development to improve the quality of learning, workshops on digital technology for the learning process were conducted.

Training or workshops on digital technology use to improve learning quality have been carried out simultaneously between elementary, junior high, and senior high schools. It was conducted online and offline by implementing health protocols before starting the new academic year of the 2020/2021. Training or workshops' goals are to prepare educators' competencies in managing online classes during a pandemic where learning switches from face-to-face to virtual. The training was provided to support teacher and educational staff performance in carrying out their duties. Teacher training was provided to improve teacher skills in teaching, such as training on digital technology-based learning media. In addition, there was also additional training to develop teacher creativity in making learning media. The training includes email usage, google drive management, video conferencing, quizizz, google forms, making learning videos, google classrooms, and YouTube channel management.

The result of the questionnaire illustrated an increase in the use of technology in the classroom after the professional development workshop. See Figure 2.
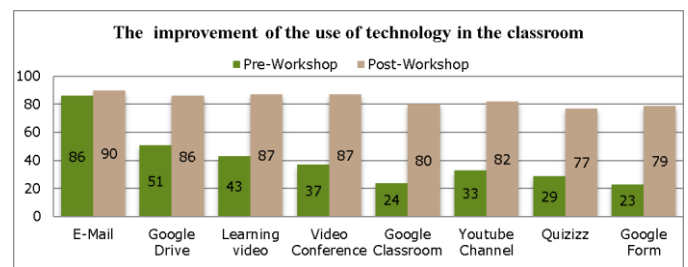

Fig. 2. Increased use of technology in the classroom after professional teacher training.

The questionnaire was administered to 93 teachers who participated in the training. It aimed to explore teacher

perception regarding the training of the use of technology for school learning. The result revealed that teachers were interested in the new technological platforms of teaching. Overall, 93 teachers reported the improvement of the use of digital technology for teaching improvement. The progress of the use of technological media for the teaching process is described as follows.

- *Email*. Before the training activity, 86 of 93 teachers have used email. Nonetheless, after training activities, 90 of 93 teachers use email for the learning process. The teacher argued that email could be used as an alternative media for assignment submission.

- *Google Drive*. 51 of 93 teachers could manage google drive before the training was conducted. However, after training was carried out, 86 of 93 teachers can organize google Drive. According to the teacher, Google Drive is useful to send teaching materials with a large capacity or file size. Notably, the teacher can upload the learning materials and share the link.

- *Learning Video*. A total of 43 teachers made learning videos before the training was conducted. Nevertheless, 87 out of 93 teachers can make learning videos after training activity. See Figure 3.

Fig. 3. The creation of learning video.

Based on the observation during and after training, teachers take turns making learning videos starting from the pre-production stage in which teachers design the concept of learning content. The second stage of production, which is making videos using handy came and cell phones. Finally, the editing process used premiere editing software on computers or using Android phones application such as kine master and canva.

- *Video Conference*. Before the training activity, 37 of 93 teachers can manage video conference. Nonetheless, after training activity, 87 of 93 teachers can manage video conference.

- *Google Classroom*. Before the training activity, 24 of 93 teachers can manage google classroom. Nonetheless, after training activity, 80 of 93 teachers can manage google classroom. Several teachers stated that Google Classroom is an alternative for managing online classes efficiently and practically. Thus, the assignments, teaching materials, and video conferencing via Google Meet can be performed in Google Classroom. They argued that online courses could be well organized using google classroom.

- *YouTube Channel*. The results of the questionnaire revealed that before training, 33 teachers could manage a YouTube channel. However, after training, 82 of 93 teachers can manage video conferencing. Based on observations, after the video had been edited, the video was uploaded on the YouTube channel that the teacher created. Therefore, the video can be accessed by students and parents in supporting the learning process.

- *Quizizz*. Before the raining activity, 29 of 93 teachers can manage the quizizz. Nevertheless, after training activity, 77 of 93 teachers can manage quizizz.

- Teachers used Quizizz for providing quiz or giving assignments. Teachers can use quizzes that are already available or design their questions according to the material taught in class. The report of quizizz can make easier for the teacher to examine students' comprehension by analysing each item.

- *Google Form*. A total of 23 teachers could manage google form. However, after training, 79 out of 93 teachers can handle google forms.

- Teachers use Google Form to analyse student learning environments outside of the classroom, analyse student learning readiness, and parents' willingness to assist their children's learning. The responses or reflections were conducted after the learning processes were completed. In addition, at the beginning of the semester, teachers created Google Forms to learn about students' interests, learning styles, and experiences. See Figure 4.

Fig. 4.   Example of Google Form design.

Overall, based on the questionnaire result, teachers perceived that the school's provided teacher training with the principal's full support to prepare the online classes. They hope that the training will be held continuously with other materials such as designing moving animations. Therefore, the teacher can develop the skills that support the continuity of Distance Learning (PJJ) to face the 21st century's challenges and the all-digital Covid-19 pandemic. They also hope that there will be an increase in digital technology facilities such as the G-pen, tabs pen, and faster internet networks.

V. CONCLUSION

As the embodiment of digital leadership, great communicators must be familiar with openness, be willing to share data and information, and be good at handling and leading change in the digital world. Another manifestation of digital leadership is helping develop the professional ethos of teachers in schools, embrace and support learning innovation and what teachers do. Digital school principals ensure that they remain engaged in learning and innovating by facilitating teachers with various training and activities supporting their professional advancement. Finally, professional teachers will provide the best service in the teaching process to develop students' potential adequately.

ACKNOWLEDGMENT

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