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A Digital Leadership Development Model of Administrators in Large-Sized Secondary Schools under the Basic Education Commission Offices in the Northeast of Thailand

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Abstract

The objective of this study was to develop and validate a digital leadership development model of administrators in large-sized secondary schools under the Basic Education Commission offices in the northeast of Thailand. The findings showed that 1) the developed model comprised four key elements, namely factors of success development support, components of digital leadership, development process and strategies and digital leadership outcomes, 2) all elements of the developed model obtained suitability and feasibility at the highest levels, and 3) the guide book of digital leadership development model of administrators in large-sized schools under the Basic Education commission offices in the northeast of Thailand composed of Instructions, Principles, Objectives, Rationale and Background, Contents and References. All components of the guide book, in overall, received the highest level of feasibility.

Keywords: digital leadership, digital leadership development model, school administrators, large-sized school, secondary school

1. Introduction

The rapid change that occurred in this century is mainly relevant to new technology and digital devices. The consequences of the change arouse global awareness of human development, especially in technology implementation. Thailand is one of the countries where the major focus in country development is on technological education support for Thai citizens. Thus, the Ministry of Education launched the principles and financial support for digital and technology systems in school management (Ministry of Education, 2017).

In the digital era, it is essential for school administrators to have abilities and knowledge of communication and digital technology in order to implement digital technology in school management. School administrators in this era are required to lead and motivate (Pakotang, 2018). To create a digital and technology environment of a school, the administrator is required to demonstrate digital competencies to lead teachers to perform their work and responsibilities to achieve the vision of the school (Somprach, 2019). Additionally, the digital development process and support in school are essential. Digital devices must be integrated into learning and school management (Sheninger, 2014). Administrators act as supporters in providing necessary technology digital gadgets, applications and network systems that serve the needs of teachers, students and school and community context, and the Ministry of Education in Thailand (2021) mentioned that digital leadership becomes crucial in school development. Learning materials, media and classroom management adequate for teacher and student supports.

The Ministry of Digital Economy and Society (2018) reported that the technological change affected Thai educational system in various aspects. The effects were revealed in several previous studies of digital technology development of schools. The rapid change of technology in Thailand affected the quality of school management in several aspects, such as academic administration, learning management, human resource management, infrastructure and environmental management, student affairs management and community network building and information communication and technology (Wannathong, 2016; Leesanmamad, 2017). According to Leesanmamad (2017), the negative effects of the technological change stemmed the inadequate of knowledge and experience in media or information communication and technology implementation and application from school personnel. To reduce this limitation of school management, these problems can be solved by school administrators

and teachers.

School administrators are expected to be the key factor of school success (Office of Education Council, 2019). Since the administrators influence the quality of teachers and encourage them in developing students using digital leering devices. In order to create digital school atmosphere, the administrators require to improve the abilities about digital and technology, as well as are able to master or utilized specific learning devices because the can act as role models for teachers (Pakotang, 2018).

The researcher, as a school administrator, realizes the importance to develop digital leadership of administrators in large-sized schools under the Basic Education commission offices in the northeast of Thailand. The findings of the study would be utilized as a guideline for self-development, and implement in school administration under the Basic Education Commission offices in the northeast.

2. Objective

The study aimed to construct and validate a digital leadership development model in large-sized schools in the northeastern of Thailand and compose a user manual of the developed model.

3. Procedures

The procedures of the study were divided into four phases as follows.

Phase 1: Identification of the components of the digital leadership development model in large-sized schools in the northeastern of Thailand. In this process, an intensive review and synthesis of principles and concepts of digital leadership components, as well as the interview of five administrators of outstanding schools were employed to identify the draft of digital leadership components. Then the components were evaluated for suitability by five experts.

Phase 2: Construction of a digital leadership development model in large-sized schools in the northeastern of Thailand. A draft of the digital leadership development model in large-sized schools in the northeastern of Thailand was designed, and then was judged by seven experts in an expert group meeting. The model was adjusted according to the experts' suggestions.

Phase 3: Validation and evaluation of the developed model. The suitability, feasibility and possibility of the digital leadership development model in large-sized schools in the northeastern of Thailand were tested using a questionnaire as a research tool. The administrators of 353 large-sized schools in the northeastern of Thailand responded the questionnaire. The collected data were analyzed for mean and standard deviation.

Phase 4: Composition of a user manual of the developed model. The user manual was design and drafted according to the aspects revealed as the results of Phase 3. The draft of the manual was evaluated using a questionnaire for accuracy and suitability. Statistics used to analyze the data in this phase were mean and standard deviation. Details of the research procedures are show in Figure 1.

Phases	Activities	Findings
1. Identification of digital leadership of large-sized secondary school administrators under The Basic Education Commission offices in the northeast	1. Intensive review of literature 2. Outstanding school administrator interview 3. Components validation by five experts	Digital leadership components of large-sized secondary school administrators
2. Model development	1. Drafting the digital leadership of large-sized secondary school administrators under The Basic Education Commission offices in the northeast 2. Model development using seven experts group meeting 3. Model adjustment	Digital leadership development model of large-sized secondary school administrator (draft)
3. Model validation	1. Validation of appropriateness, benefits and possibility of digital leadership of large-sized secondary school administrators 2. Participants were 353 administrators of large-sized school administrators	Digital leadership development model of large-sized secondary school administrators (draft) (Completed)
4. Manual construction	1. Drafting the manual of the model 2. validation of the manual by five experts 3. Adjusting and create the complete manual	Manual of digital leadership development model of large-sized secondary school administrator

Figure 1. Research procedures

4. Findings

The findings of the construction and validation of a digital leadership development model in large-sized schools in northeastern of Thailand and the evaluation of the developed user manual of the model are presented below.

1) The digital leadership development model of administrators in large-sized schools under the Basic Education Commission offices in the northeast of Thailand comprised four components, namely factors of success development support, components of digital leadership, development process and strategies and digital leadership outcome. All components were suitable to be included in the model.

2) The test result of the digital leadership development model of administrators in large-sized schools under the Basic Education Commission offices in the northeast of Thailand showed suitability ($\overline{X}$=4.56, S.D.=0.35), feasibility ($\overline{X}$=4.56, S.D.=0.35) and possibility ($\overline{X}$=4.58, S.D.=0.34) at the highest level.

3) The user manual of the digital leadership development model of administrators in large-sized schools under the Office of the Basic Education Commission offices in the northeast of Thailand composed of Instructions, Principles, Objectives, Rationale and Background, Contents and Bibliography. The findings of the experts' evaluation showed suitability at the highest level ($\overline{X}$= 4.88, S.D.=0.19).

5. Discussion

The findings of this study are discussed based on the objectives of the study, which are presented below.

The construction of the digital leadership development model consisted of four components, namely 1) success development factors, 2) digital leadership components, 3) development process and methods, and 4) digital leadership development results. These components stemmed from a variety of model construction methods, such as the analysis and the synthesis of the digital leadership development model which were constructed previously, and those components were evaluated for validation by experts. Additionally, the indicative behaviors of each component were considered for suitability in the experts in an expert group meeting in order to confirm that the developed model was appropriate. The model construction procedure was found to be supported by previous studies which presented that a development model composted of four components, namely, 1) principles, 2) objectives, 3) contents, 4) development procedures, and 5) measurement and evaluation (Kullasan, 2014; Promsin, 2016; Akkrachan, 2017). Consideration of each component is presented below.

Success Development Factors were the key factors that assisted school administrators achieved the digital leadership. The administrators widened their perspectives and strengthened their digital technology skills, as well as adjusted school and learning management using digital technology and digital platforms as new normal management tools. The factors of success development included 1) principles, budget and digital planning, which supported decision making the guideline of digital technology operational planning of school in advance. The digital plan would support the needs or be utilized as guidelines to solve the problems related to digital technology. 2) Comprehension of the importance of digital technology was about the skills and competencies of administrators to implement technology in monitoring work operations based on digital laws, principles, and standards. Also, administrators utilized digital technology to enhance school effectiveness, as well as to develop school management processes to be modern and more efficient. 3) administrator commitment, which was related to self-planning to develop information and digital technology. The administrators were able to give some advice and solve some problems to teachers, enhance, support, and build networking through teacher collaboration for development, and be a role model for teachers and 4) collaborative network building to prepare the readiness for technological change. The collaborative network showed co-working among teachers and communities in terms of participating in activity organization using knowledge sharing and exchange of information. The result related to Tawinkan, 2021) which showed the success factors of digital leadership of using technology implementation and development depended on school administrator.

Digital leadership components comprise behaviors and the ability of administrators to demonstrate technological vision, promote visioning development participation of stakeholders, implement those visions to practice, and widely present the vision to the public. Moreover, technological system planning, implementation, and monitoring of technological systems to support school operation to achieve the vision, and innovation development support using technology in terms of creativity and transformational development, using information for decision making, being transformational leadership effectively. The results supported Somprach (2019) who conducted a study of digital leadership affected on school branding. The results found that core components of digital leadership included 1) digital leadership visioning, 2) professional development of personnel and administrators, 3) digital competencies and ability of administrators, 4) digital network for learning construction and 5) organizational ethics and digital society.

Development process and methods, due to the researcher synthesized the related studies and research articles, comprised four stages, namely 1) exploration of the characteristics needed to be developed, 2) development planning and design, 3) development operation and 4) development evaluation. The development process stemmed from the analysis of various planning, monitoring, evaluation and decision-making methods. The results were related to the work of Samithikrai (2013) which showed the importance of need assessment or survey of the focused characteristics for development. It was an essential stage for designing and developing the key characteristics that served the needs and achieved that ultimate goal of organization. The needs assessment comprised the analysis of three aspects, namely organization analysis, mission and qualification analysis and personnel analysis. The results also related to Ackoff's (1970) work that the appropriateness of planning or designing was something to be done before actions that meant planning happened using prediction. Also, the resulted was supported by Klunpaitoon's (2021) work that development process was the steps for personnel development, emphasized on good operational process besides the knowledge gained from training. Moreover, Desster (2004) stated that evaluation was the appropriate step because it was a system that employed information for development into consideration, decision making or summarization of quality or qualification of things from measurement and showed the exact levels of those things compared to the criteria set. The evaluation emphasized on quality rather than quantity by gathering various information from different sources.

The results of digital leadership of school administrators showed that if the administrators managed school system with digital leadership, the schools would be improved in terms of 1) school of innovation, technological potential of administrators and teaching and learning management using technology of teachers. Khaosakul et al. (2020) stated that the technological potential of administrators was the ability to implement technology in classroom and school appropriately. It was necessary for administrators to have technological leadership, accept the transformation of innovation and technology and created the awareness of using technology in learning management, and the awareness of professional development, then finally become the organization culture. The results related to Songchorhor's (2020) work, which showed that an innovative institute was able to increased school innovations. The adaptation of school systems should support creativity to drive school development to achieve innovative goal using the knowledge and learning of personnel. Human resources and learning of human were impossible to imitate. Chindanurak (2017) stated that using technology in learning management was about the teachers in the digital era having the knowledge of technology, both in Analog Systems and Digital Systems, as well as Information Technology, for specific purposes, for example, using computers to create documents, using the online-social platform for communication and using software programs for data process.

The results of appropriateness, benefit and possibility test of the digital leadership development model of large-sized school administrators under the Basic Education Commission office in the northeast showed that showed that the appropriateness, benefit and possibility of the model were all at the highest level. This might because the developed model was appropriate for digital leadership development of large-sized school administrators. The model was comprised of various development stages, different data collection methods until the developed model was able to be implemented appropriately. The results were related to Sriboonruang's (2015) work, which created a model of information and technology leadership development of administrators under the Basic Education Commission offices in the northeast. The study comprised three phases. Phase 1 was the identification of information and technology leadership components from the analysis of related studies, in-depth interviews of experts and survey studies. The participants comprised 370 school administrators under the Basic Education Commission offices in the northeast in the academic year 2012. The tool was a set of questionnaires, and the collected data were analyzed for frequency, percentage mean, percentage and standard deviation. Phase 2 was the development and validation of the model included drafting the model and it was validated by experts. Phase 3 was implementation of the model by 15 school administrators from schools under the Basic Education Commission offices in the northeast. The findings showed that 1) the components of technology leadership development of administrators comprised (1) implementation of ICT in school management, (2) implementation of ICT in learning management and (3) ethics of ICT implementation, 2) the information and technology leadership development model of administrators composed of principles, objectives, contents, process and measurement and evaluation, 3) the results of the model implementation revealed high level of ICT leadership development, which the level of ICT leadership of administrator after the implementation was higher than before implementation with statistical significance at .05, and the results of the follow-up phase showed higher level of ICT leadership than the implementation with statistical significance at .01. The results related to the work of Pornpatumchaikij (2021), which showed the appropriateness of digital leadership model of teachers in primary schools in the northeast of Thailand at the highest level. The model was able to be implemented in developing learning management of primary school teachers in the technological transformation period. The aspects of the results were considered as follows.

Factors supporting the success of development, which achieved the appropriateness, benefits and possibility at the highest level, because the success factors included 1) principles, budget, and digital planning, 2) comprehension of digital technology importance, 3) development intention of administrators and 4) collaboration network for technology transformation. The results related to Piamsomboon (2014), which concluded that planning was a connecting process between present and future to solve the problem effectively. The plan must be related to past, present and future in terms of achieving the goal. Potasome (2016) stated that budgeting was expense management, monitoring the expense effectively, which supported by Digital Economy Promotion Agency (2017) that digital technology comprehension was about having effective digital communication competency and ethics, included digital technology comprehension ability in fluently technical use of computer and internet, information comprehension and digital media evaluation to assist in decision-making process in operation, as well as effective content creation and communication through digital tools. Deemak (2016) stated that intention of development was about supporting teachers to be enthusiastic, creative, knowledge and skill inquirers, especially in decision making, which necessary for both teachers and administrators. If the policy makers supported the head staff self-development in knowledge and ethics, the organization would achieve the ultimate goal.

Digital leadership components showed appropriateness, benefits and possibility at the highest level. Because the components and behavioral indicators were crucial for digital leadership development nowadays. The transformation of schools in digital era, school administrators should accept the transformation of digital cultures which were complicated and challenged. The administrators should have the specific qualifications, namely 1) digital vision, digital knowledge, digital professional, technology digital and communication skills and 5) digital management. The results were related to Tawinkan (2021) that digital vision of administrators created inspiration in technology development and application through vision exchange about technology and work integration to enhance the organizational transformation, information resources collection to create vision, promoting the vision in digital form and collaboration in implementing the vision to practice appropriately. Somprach (2019) stated that the appropriateness and benefits of digital knowledge that if leaders aware of the role of technology of work and life, they would have knowledge and capability in information communication technology to evaluate, create and communicate using modern tools. Thamsaeng (2015) stated that digital professional was to control and monitoring and support in information technology and communication for operation and learning management to prepare for the transformation in the future. Institutions in modern era should expand the information technology and communication to prepare for the future change. Tawinkan (2021) stated that technology skills and digital communication were necessary and appropriate because it was the behavior of administrators in communication, promotion and networking using digital to communicate with students, teachers, personnel and community effectively. Runcharoen (2019) stated that digital management of school administrators is about changing administrator's roles, included digital leadership and learning leadership create ICT vision, create ICT working cultures and environment, support ICT in learning management, provide technological media and digital equipment to support learning, develop the school to be SMART school and SMART classrooms, employ outside-classroom actual environment in learning management, improve curriculum align with global change, develop competencies and build transformation awareness for teachers, develop self-learning awareness of teachers, students and parents, and create learning organization.

Development process and methods were found to be appropriate, beneficial and possible at the highest level. It because digital leadership development needed obvious sequences of development process, which were able to create actual advantages. The process comprised four stages, namely 1) exploration of development-needed characteristics, 2) development planning and design, 3) development operation and 4) evaluation of development. Tangchitwattanakul (2016) proposed the guidelines to develop the leadership of school administrators included five stages, namely development needs identification, development planning, development method identification and development operation.

The results of digital leadership development of school administrators showed appropriateness, benefit and possibility at the highest level. This because administrators who had digital leadership would lead schools to effective development in many ways. For example, personnel development to improve information technology knowledge and skills, technology for learning management and school management. The consequences of digital leadership development of administrators comprised 1) technological potential of administrators, 2) innovative schools and 3) technology implementation in learning management. Chamchoi (2018) stated that administrators who had digital leadership would create innovative schools. The schools would invent or adjust traditional management of working methods and learning management to be more effective. Technological potential administrators understand in using technology to support learning management and school management, as well as employing vision and leadership to enhance technology integration in educational management and work in

schools aligned with the contexts and needs of students, teachers and stakeholders, and encouraged them to be confident in using technology, as well as media and technological literacy aligned with ethics of media and technology implementation. Rungreungsook (2018) stated that digital administrators would support teachers to employ technology in learning management. Teachers inquire technological knowledge, practice technological skills integrated with learning management, using computer and technology as a tool in designing activities aligned with the differences among people for effective learning management.

The findings of implementing user manual of digital leadership development model of administrators in large-sized schools under the Basic Education Commission offices in the northeast showed that the model comprised of instructions, principles, objectives, rationale and background, contents, and bibliography. The manual indicated the overall appropriateness at the highest level ($\overline{X}$= 4.88, S.D.=0.19) because the manual was drafted aligned with intensive review of literature, and was validated by five experts. The adjustment was conducted prior to creating the complete manual. Besides, the developed manual was implemented obviously. When considering for each aspect of the manual, the appropriateness was found at the highest level in every aspect, namely instructions, principles, objectives, rationale and background, contents, and bibliography. From Changkwanyuen (2007)'s point of view, the good manual design should be obvious, informative enough for users to understand, which supported by Paopueng (2011)'s study. The study developed a manual of activity arrangement to promote critical reading and writing main ideas for Thai Language teachers. The findings showed that good manual provided obvious stages of manual construction and implementation, included instructions, development process and guidelines of manual implementation.

6. Suggestions

6.1 Suggestions for Implementation

From the findings, the components of digital leadership development model of administrators in large-sized schools under the Office of Basic Education Commission in the northeast could be implemented as follows.

1) The Office of Basic Education Commission could employ the components in the identification of digital competency criteria and qualification, as well as the guidelines of digital leadership development training program for school administrators.
2) The educational service area offices were able to implement the findings in school management planning, and digital leadership development of school administrators aligned with current educational context to achieved effective educational management.
3) The success factors of digital leadership development showed that the intention of development of administrators was the most significant. Thus, school administrators should focus on self-intention development to be as role model, and be respectful.
4) The digital leadership development process received the highest level of significance. The administrators should seriously concentrate on development process.

6.2 Suggestions for Further Study

1) The digital leadership of administrators under different educational service area offices might be investigated for organization development.
2) The guidelines of digital leadership development in technological implementation and digital communication needed to be further investigated because the results showed the appropriateness, benefits and possibility at high level.

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Competing interests

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Informed consent

Obtained.

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.