

Program Development of Digital Leadership for School Administrators Under the office of Primary Educational Service Area

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Abstract

The purposes of the research aim to 1) To study the components and indicators of digital leadership of school administrators 2) To study the current condition desirable conditions and necessities for digital leadership of school administrators 3) Develop a digital leadership development program for school administrators 4) To study the effect of using digital leadership development program of school administrators. Results of the research are as follows: 1) Digital leadership of school administrators consist of 7 components, 22 indicators 2) Desirable Conditions for Digital Leadership of School Administrators. The overall average was at a low level. Desirable Conditions for Digital Leadership of School Administrators Overall, it's at the highest level. and the necessity of developing digital leadership among school administrators, the highest value was digital vision leadership, 3) Program development of digital leadership for school administrators is suitable possible and is useful overall, it was at the highest level. 4) The results of using the program; 4.1) Program development of digital leadership for school administrators. The efficiency was 93.01/95.55, which was higher than the 80/80 threshold set. 4.2) The effectiveness index in the program was 0.9306 or equivalent to 93.06 percent. 4.3) Program development of digital leadership for school administrators has higher academic achievement after school than before with statistical significance at the .05 level. 4.4) Executives developed with the program was no difference in educational achievement scores after 2 weeks of study. 4.5) Satisfaction of school administrators, Overall, the satisfaction level was at the highest level.

Keywords: components, digital leadership, school administrator

1. Introduction

The situation of the leap of technology that leads to the transformation of human behavior into digital humanities has united into a digital society. With the internet of things, the world is becoming more connected and Thai government has given importance to the development of the digital economy. Transforming the country into Thailand 4.0, which focuses on development in all sectors through innovation and creativity. The country's telecommunication infrastructure has been thoroughly improved and effective, Promote the use of digital technology to create business value added. However, most Thais still use the Internet for entertainment rather than searching for knowledge. and used to develop further to create economic value (Ministry of Information and Communication Technology, 2016; Ministry of Education, 2017)

The Constitution of the Kingdom of Thailand, B.E. 2560, Article 54, paragraph 6, there must be a comprehensive and equal promotion of local information infrastructure throughout the country and Thailand's 20 – Year National Strategic Plan, National Education Plan 2017 - 2036, with 6 strategies and master plans of promoting the Digital Economy 2018-2021, which has set the vision to drive Thailand “Towards a dynamic digital economy based on a knowledgeable society and adaptive manpower and create opportunities from technology and digital innovations by developing workforce to the digital age increase awareness and basic digital skills, build personnel and experts in digital technology and innovation about the development of logical thinking skills (Computational Thinking) Programming (Coding), digital Invention development to support teaching and learning , development of digital skills learning platform, etc. (Digital Economy Promotion Agency, Ministry of Digital Economy and Society, 2017)

Ministry of education under the national strategy on human resource development and enhancement by raising the level of Thai education by using technology and digital innovations for education in the 12th education development plan of the Ministry of Education (2017–2021), item 3, development and human capacity building on 1) Develop curriculum, learning process and evaluation 2) Producing and developing teachers and educational personnel 3) Produce and develop workforce, including research that is in line with the needs of the country's development; 4) Expand access to educational services and promote lifelong learning for all. 5) Promote and develop information and communication technology systems for education. 6) Develop a management system and encourage all sectors involved in education management. (Office of the Secretariat of the 20-Year National Strategy Board, 2017)

Office of the Basic Education Commission Require educational institutions to use digital technology to increase the efficiency of management in a systematic way Applying Big Data technology to connect various fields of information from information on learners, teachers, schools and budgets. so that educational institutions can manage learning develop learners effectively (Office of the Basic Education Commission, 2019)

In the 21st century, the organizational context is changing rapidly. The external technological environment is both a contributing factor and a hindrance factor in management. Digital leadership of executives in the digital era must be able to lead the organization by using technology or digital innovation. to drive educational institutions Systematic management resulting in more efficient work (Sukanya Chamchoi, 2018)

The digital leadership of executives that is required to drive the organization to success consists of (1) digital literacy using digital technology (2) digital vision by creating strategies (3) public relations by encouraging people to have digital vision. able to thrive in a digital environment (4) Presence of a leader with a clear vision to support people seriously (5) Communicating the transfer of digital vision to personnel to implement (6) Adaptation of new technology developments for use in work practices (7) Self-awareness Able to anticipate events that may affect both oneself and others (8) Cultural perception Communication and Participation in Collaborative Actions Using Digital Technologies (Sullivan, 2017).

The International Association of Educational Technology (ISTE) and the Professional Education Association have set international standards for information technology development. for education for administrators (National Educational Technology Standard for Administrators: NETS-A) in 5 areas: (1) Leadership in vision (2) Digital learning culture (3) Professional practice excellence (4) Systematic improvement and (5) Digital citizenship. Each area has defined tasks in the role of information and communication technology leadership (International Society for Technology in Education (ISTE), 2009). Educational administrator in the digital era is important variable. Therefore, they must develop themselves to have knowledge, abilities, characteristics, skills, experience in educational administration. to develop educational institutions to be modern suitable for changes in the digital era with innovative thinking skills, technology leadership and innovative leadership (Chaokasem Suphawat et al., 2019).

Learning to turn students into quality digital citizens, A good educational leader need to be aware and understand the context of educational institutions in the century 21 as well, including innovative ways to use technology for education, adopting technology to manage learning in schools effectively with digital leadership.

Thus, administrators should use tools, social media, or other channels such as Facebook, Line, YouTube, Web pages to disseminate and publicize the parents, community, and stakeholders to be informed of the ongoing operations of the school. (Boontham Tongluck, 2016)

School administrators in the digital age have to learn about technology and the impact on the management of educational institutions to use information and communication technology for maximum benefit with real worthiness (Keesukphan Ekachai, 2016) Promote and develop teachers and educational personnel to have digital literacy skills, digital pedagogy and communication skills. They should have potential and competence according to Professional standards and ethics (Office of the Basic Education Commission, 2019).

The administrators have to change the direction of education. progressive vision can anticipate changes in education by using digital technology to make decisions and be able to plan operations effectively, especially in the current situation, there has been an epidemic of coronavirus disease 2019 (COVID-19) or Covid 19, there is social distancing, one of the measures to reduce the spread of infectious agents that are transmitted via aerosol or touch.

Many organizations have resolved to allow Work From Home employees to use digital technology to communicate in times of crisis. For executives and organizations to turn this crisis into an opportunity by online meeting for teachers and administrators or VDO Conference in various applications, as well as for the promotion of distance education, information and communication technology, Chaiyaphum Primary Educational Service Area Office 2 which is the agency under the researcher's duty There were 262 school administrators and the results of the remote

meeting questionnaire of the school administrators via the Google Meet application several times and the feedback after the meeting found that School administrators still lack knowledge and skills in VDO conference and the ability to use online meetings in various formats at a very good level 11.83 %, good level 19.08 %, The moderate level 22.14% and the level should be improved. 49.95%, which when taking the results from the moderate level and the level should be improved equals 72.09 percent. As a result, the Office of Chaiphum Primary Education Area 2 should accelerate the development of educational institution administrators in using digital technology urgently to keep up with technology in the present time (Office of Chaiphum Primary Education Area 2,2020).

From the above reasons, Digital leadership of school administrators is essential, especially school administrators of the primary education service area office. They should have a digital leadership development program for school administrators for the benefit of administrative development of educational institution administrators both at the policy level and the operational level to be more effective.

A program is a systematic process or activity that compiles a planned experience in an organized way. It is a development process created by applying elements that relate to the principles, concepts and theories that form the basis of program development to implement the objectives or goals within the context of development in each organization (Chalard Chantarasombat, and Phinit Meekhamtong, 2019).

Thus, the researcher is interested in developing a digital leadership development program for school administrators of the primary education service area office by applying the concepts of the development program of Barr and Keating (1990); Houle (1996); Caffarella (2002); Knowles (1980); Suwimon Vongvanich (2001); Chantarasombat and Meekhamtong (2019) is a model or structure for developing digital leadership development programs for school administrators for the development of digital leadership of school administrators

Which is a leadership that consistent with new paradigm of learning management in the 21st century directly affects management that is related to commitment, responsibility and effectiveness in all aspects of operation as well as formulate policies or plans to develop digital leadership of school administrators in a direction It is possible to improve the quality of education and is suitable for further development of students' future life skills.

2. Research Questions

What are the components and indicators of digital leadership of school administrators of primary education service area office?

What are current conditions, desirable conditions and needs for digital leadership of school administrators of the primary education service area office?

What should be the digital leadership development program for school administrators of the primary education service area office?

What are the results of implementing digital leadership development program for school administrators of the primary education service area office?

3. Research Objectives

To study the components and indicators of digital leadership of school administrators of the primary education service area office.

To study the current conditions, desirable conditions and necessities for digital leadership of school administrators of the primary education service area office.

Develop a digital leadership development program for school administrators of the primary education service area office.

To study the effect of using digital leadership development program of school administrators. of the primary education service area office.

4. Scope of Research

- Population and sample

The population are used in this research were school administrators and teachers, academic supervisors. Schools in the Northeastern Thailand of the Office of the Basic Education Commission, Academic Year 2020, 13,179 schools were 13,179 school administrators and 13,179 teachers and academic supervisors, including 26,358 informants. The samples used in the research were school administrators and teachers, academic supervisors of schools in the Northeastern region. Under the Office of the Basic Education Commission, Academic Year 2020, the researcher determined that the data providers were 375 school administrators and 375 teachers and academic supervisors, totaling 750 informants.

- **Researched variables**

The variables used in this research were components and indicators of digital leadership of school administrators, consisting of 7 components and 22 indicators, which were analyzed. Synthesized from principles, concepts, theories and related research that the researcher uses as Latent variables in the program to obtain indicators that are observed variables

5. Research Methodology

The researcher divides the presentation according to the research process into 4 phases as follows:

Phase 1: A Study of Digital Leadership Components and Indicators of School Administrators

- **Procedure**

Study and analysis of concepts, theories from documents, textbooks and research related to digital leadership.

Synthesis of data from 1.1 to obtain components and indicators 1.3 Verify the suitability of elements and indicators of digital leadership of educational institution administrators by qualified persons

- **Informant group**

Information group 5 experts to verify the elements and indicators of digital leadership of school administrators by means of specific selection (Purposive Sampling)

- **Methods of constructing and qualification of implementing tools as follows:**

Study the principles and methods of creation.

Create questionnaires based on components and indicators.

Use the generated questionnaires for validity and appropriateness. by the thesis control committee and make corrections according to the recommendations then used to find the conformity index by analyzing the IOC (Index of Item Congruence). Consider selecting questions with IOC values of 0.50 or more (Thaveerat Puangrat, 1997). The results of finding the IOC values appear to be consistent. 1.00 All questions

Phase 2 Study of current conditions desirable conditions and necessities for digital leadership of school administrators

- **Procedure**

Using the research results from Phase 1, the components and indicators of digital leadership of school administrators to create a questionnaire to study the current and desirable conditions of digital leadership of school administrators.

Collect data from the sample group.

Analyze current condition data Desirable Conditions and Needs for Digital Leadership of School Administrators

- **Information group**

13,179 school administrators and teachers, academic supervisors of schools in the Northeastern region under the Office of the Basic Education Commission, Academic Year 2020, totaling 13,179 schools, 13,179 school administrators and 13,179 teachers, academic supervisors, including providers. Total data of 26,358 people.

The sample groups were school administrators and teachers, academic supervisors. Schools in the Northeast Under the Office of the Basic Education Commission for the academic year 2020, there are 375 school administrators and 375 academic supervisors, including 750 informants by using the prefabricated table of Krejcie and Morgan (Krejcie and Morgan, 1986 cited in Boonchom Srisa-ard, 2011) at the error level of 0.05 by a simple random sampling method.

- **Methods for creating and qualification of tools are as follows:**

Study the principles and methods of creation.

Create questionnaires.

The questionnaires were checked by the thesis control committee and make corrections according to the recommendations.

Verification of content accuracy by qualified persons Then used to find the conformity index by analyzing the IOC (Index of Item Congruence). Consider selecting questions with an IOC value of 0.50 or higher (Puangrat Thaveerat, 1997). The IOC findings showed that all questions were consistent with 1.00.

The questionnaire was tested (Try out) with 30 school administrators who were not the sample group. The overall current condition was at a low level ($\bar{Y} = 2.49$, S.D. = 0.34) and desirable condition. Overall, it was at the highest level ($\bar{Y} = 4.68$, S.D.= 0.33).

The collected questionnaires were tested for confidence by using Cronbach's Alpha Coefficient formula and using the SPSS statistical program, the confidence value of the questionnaire was 0.99.

Phase 3: Creation and development of digital leadership development programs for school administrators Under the Primary Education Service Area Office

- **Procedure**

Take the data from Phases 1 - 2 and the results of the Priority Needs Index (PNI modified) into consideration to use as data in drafting a digital leadership development program for school administrators. to be as appropriate as possible and useful. Structural Coverage content relationship Complete program development activities and details.

Interview school administrators who have best practices in developing digital leadership of school administrators By means of selecting a specific (Purposive Sampling) from the school administrators who have a portfolio in the use of digital. Five key informants were assigned to school administrators to study how to develop digital leadership excellence and conduct focus group discussions on developing executive digital leadership. Educational institutions by 5 experts

- **Drafting program to develop digital leadership for school administrators Under the Office of Elementary Education Service Area consists of** 1) Principles 2) Objectives 3) Content consists of 7 modules: Module 1 explores previous experiences, Module 2 steps to strengthen planning, Module 3 steps to collect ideas, Module 4 Steps to Conquer Applications, Module 5 Steps Bringing Happiness to Practice, Module 6 Steps to Strengthen Learning Skills, and Module 7 Steps to Continuous Supervision. 4) Action methods consisted of 4.1) learning activities 4.2) leadership development methods 4.3) learning media/resources 5) Program evaluation is divided into 3 phases: Phase 1, Pre-Development Assessment, Phase 2, During Development Assessment, and Phase 3 Post-Development Assessment.

- **Drafting a manual for the use of digital leadership development program for school administrators, consisting of**

Study concepts, theories, principles and related research

Draft a manual for implementing digital leadership development programs for school administrators as appropriate as possible and complete benefits The details are as follows.

The Manual for Digital Leadership Development Program for School Administrators consists of 7 volumes, 7 modules, each of which consists of 1) Instructions on how to use the manual 2) Objectives 3) Digital Leadership Development Models 4) Preparation Materials, equipment, media 5) Content of knowledge and activities 6) Worksheets or practice exercises 7) Measurement and evaluation and 8) Reference documents.

- **Take the draft program and manual for implementing the digital leadership development program for school administrators to the thesis control committee to check and then bring it to improve.**
- **Take the draft program and manual to 7 experts to check and confirm the suitability, possibility and usefulness as well as giving comments and suggestions for improvement.**
- **Methods for creating and finding quality of tools are as follows:**

Study the principles and methods of construction;

Create an interview form, group discussion form, program evaluation form and manual.

Take the questionnaire created to check for accuracy and appropriateness. by the thesis control committee and make corrections according to the recommendations.

Content validity checked by 7 experts and used to find the Conformity Index by analyzing the IOC (Index of Item Congruence) selecting questions with an IOC value of 0.50 or higher (Puangrat Thaveerat, 1997).

Phase 4: Study the effect of digital leadership development program for school administrators Under the Primary Education Service Area Office

Implementation of the program and manual for digital leadership development program for school administrators which has been evaluated and improved according to the recommendations of experts already, there are steps to take as follows.

The sample groups that applied the program were administrators of Kudyom Sub-District School Group and Nong Khon Thai Sub-District Group, 9 persons under the Office of Chaiyaphum Primary Educational Service Area 2 were obtained by using purposive sampling and who were voluntary to participate in the development.

• The research tools are as follows:

Quiz about the knowledge of digital leadership of school administrators before being developed and after being developed by creating a four-choice test, 45 questions, 7 experts, assessing the content and language used. Assess the correspondence between the created questions and the learning objectives using the IOC technique. A consistency score of 0.5 or higher was obtained. A test of 30 items was obtained, try out with an experiment that was not a sample group of 30 people and analyzed for quality. It was found that the exams with the difficulty value and the discriminant power were in the criteria which had the difficulty (p) from 0.30 to 0.75 and the discriminating power (r) from 0.30. reached 0.75 and the confidence value of the whole test was 0.83 (Kamket Wanee, 2012) then printed complete test and applied to the next sample group.

Digital leadership level assessment form for school administrators before and after development, take it to experts for checking content validation, considering the congruence of the questions by using the IOC technique with a consistency value of 0.5 or more. Bring the assessment form to try out with the school administrators. The sample group consisted of 30 people, and then the whole version of confidence was determined using the Cronbach' Alpha Coefficient method, the confidence value was 0.94.

Assessment form for follow-up during the development of digital leadership development program for school administrators and then bring the model to 7 experts to check the research tool. Consider the correspondence between the follow-up questions and the objectives. and definitions of terminology by using IOC technique, obtaining a consistency value of 0.5 or higher.

Digital leadership development program for school administrators consists of 7 modules.

An evaluation form of the participants' satisfaction with the use of the development program presented to 7 experts to determine the appropriateness of the text by using the IOC technique with a consistency value of 0.5 or higher. Check and improve according to the recommendations of 30 experts to experiment with educational institution administrators who are not a sample group of 30 people, the whole issue of confidence was 0.92 and the discriminant power ranged from 0.35 – 0.80. school administration to publish the full edition for further use with the sample.

Duration of study

September 2021 – February 2022

6. Research Framework

Developing a digital leadership development program for school administrators under the primary education service area office, the researcher has synthesized the research conceptual framework as follows: 1) The components and indicators of digital leadership 2) Program components 3) Leadership development methods 4) Program development 5) Program evaluation Summary of research concepts as shown in Figure 1.

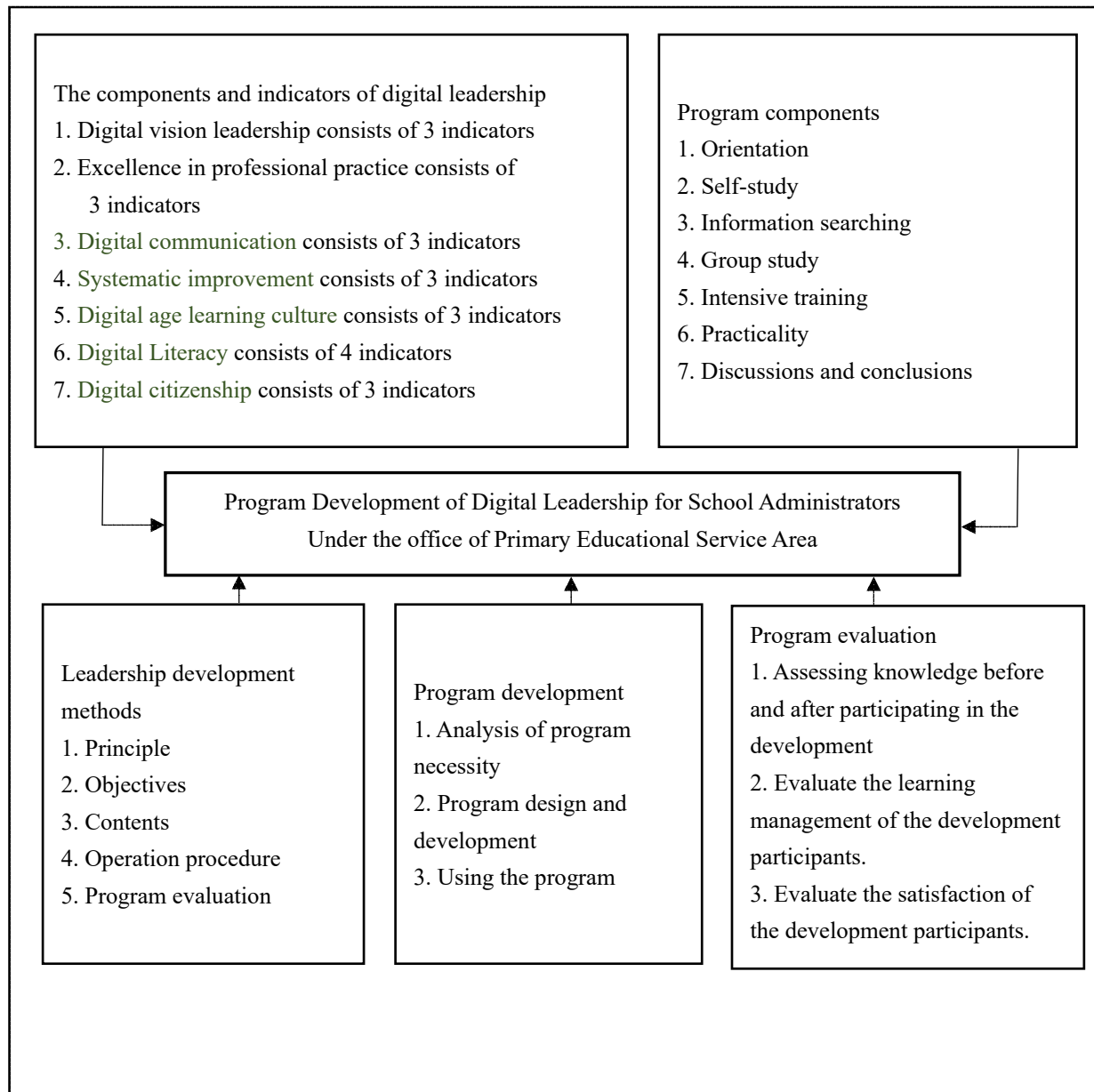


Figure 1. Conceptual Framework “Program Development of Digital Leadership for School Administrators”

7. Data Collection

Collect information on knowledge of the region Theory by testing before and after learning with an achievement test.

Collect data on digital leadership level of school administrators before and after development.

Data collection during the development of digital leadership development program for school administrators

Collect performance data effectiveness and persistence of knowledge after learning management for 2 weeks

Satisfaction data was collected by using the satisfaction questionnaire for the digital leadership development program of educational institution administrators.

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8. Data Analysis

Analyze the suitability of components and indicators by 5 qualified persons

Analyze current conditions, desirable conditions and the necessities for digital leadership of school administrators from a sample group of 375 school administrators and 375 academic group head teachers, a total of 750 people.

Analyze the efficiency (E1/E2) that is effective according to the specified criteria 80/80. (Brahmawong Chaiyong, 2010) The efficiency of the learning module was searched for using E1/ E2 Formula as follows:

$$E_1 = \frac{\sum X/N}{A} \times 100$$

$$E_2 = \frac{\sum F/N}{B} \times 100$$

- Analyze the effectiveness index (E.I). (Brahmawong Chaiyong, (2010) as follows:

Effectiveness Index (E.I.) = $\frac{\text{The sum of the post-test score} - \text{the sum of pre-test score}}{\text{(Student Number X Full Score) - The sum of the pre-test score}}$

- Analysis for learning achievement of t-test using Dependent method (Boonchom Srisa-ard, 2011) between pre-study and post-study. statistically significant at the .05 level
- Analysis of learning persistence with digital leadership development program Comparison using the last t-test (Dependent) value between the latest with after other 2 weeks (Boonchom Srisa-ard, 2011).
- Satisfaction was analyzed using statistics, percentage, mean and standard deviation with the measure of satisfaction level. According to the principle of Likert of (Boonchom Srisa-ard, 2011)

9. Research Result

A study of the components and indicators of digital leadership of school administrators

- Components and indicators of digital leadership of school administrators consist of 7 components and 22 indicators.
- The results of the assessment of the suitability of the components and indicators of digital leadership of the school administrators by 5 experts found that they were highest level.
- The results of the study of the present condition desirable and necessary conditions for digital leadership of school administrators It was found that desirable conditions for digital leadership of school administrators overall, at a low level. desirable conditions for digital leadership of school administrators overall, at the highest level and the necessity of developing digital leadership among school administrators, the most important necessities were digital vision leadership, followed by digital citizenship.

The results of the development of digital leadership development program for school administrators It can be summarized as follows: 1) Program components 2) Program development activities content consists of 7 Modules 3) Development methods 4) Evaluation by evaluating the program by 7 experts, it was found that the program was appropriate and feasible. and the overall benefit is at the highest level.

To study the results of using the digital leadership development program of school administrators, the results of the research can be summarized as follows:

The components and indicators of digital leadership of school administrators consisted of 7 components and 22 indicators, with overall appropriateness at the highest level.

Current conditions, desirable conditions and the need for digital leadership of school administrators the overall current situation is at a low level. and overall desirable conditions were at the highest level.

Digital leadership development program for school administrators It has an efficiency (E1/E2) of 93.01/95.55, which is higher than the 80/80 threshold set.

The index of effectiveness in developing digital leadership development programs of school administrators is 0.9306 or 93.06 percent. 4.5 Executives developed with the digital leadership development program for school administrators There was a statistically significantly higher educational achievement after school than before at the .05 level.

The Administrators were developed by digital leadership development program for school administrators There was no difference in academic achievement scores after school and the scores of educational achievement measurements after 2 weeks of schooling. persistence in learning

The Administrators are satisfied with the development. digital leadership development program for school administrators overall, the satisfaction level was at the highest level.

10. Discussion

The results of the study on the components and indicators of digital leadership of school administrators consisted of 7 components: 1) Digital vision leadership 2) Excellence in professional practice) 3) Digital communication (Digital communication) 4) Systematic improvement 5) Digital age learning culture 6) Digital Literacy 7) Digital citizenship in line with the concepts of Virginia and Tadeja (2013); Sheninger (2014). Sullivan (2017); Krishnamurthi (2017); Gorton and Gorton (2018); Digital marketing institute (2018); Ekachai Keesukphan (2016); Vejyalak (2017); Sangpho et al. (2017); Chamchoi (2018); Buachoo, T and Buachoo, T (2020) and Chantarasombat and Sombatsakulkit (2021) as a theoretical framework. which elements and indicators of digital leadership, the results of the examination and evaluation by experts found that they were at the most appropriate level for all components and indicators. which corresponds to Buachoo and Tippaporn Buachoo (2020). They study the digital leadership of school administrators, the results of the digital leadership study, summarized the five elements of digital leadership, and was consistent with Phakdeewut (2013). Creativity program development for learning activities for secondary school teachers It was found that there were 6 components of effective team leadership for middle school administrators and 22 indicators were found.

Current conditions, desirable conditions and the necessities for digital leadership of school administrators the overall current situation is at a low level. and overall desirable conditions were at the highest level. This is in line with Thongsuk (2017) who conducted research on the development of a program to enhance ethical leadership for school administrators. under the Office of the Basic Education Commission The results of the research can be summarized as follows: There are 8 components. The present condition of the ethical leadership of the school administrators overall was high level. and the desirable condition of ethical leadership of the school administrators as a whole averaged at the highest level. The most necessary level is responsibility and is consistent with Phayothorn (2017). Developing an effective team leadership program for junior high school administrators. The results of the study found that current conditions of effective team leadership of junior high school administrators Overall, it was at moderate level and the desirable condition of effective leadership team of junior high school administrators as a whole was at the highest level. and also consistent with Pimko (2014) that has conducted research on development of a program to enhance creative leadership of school administrators under local administrative organizations. It was found that the analysis of the current reality of creative leadership of school administrators from asking the opinion of the school director overall, at a low level. As for the expected conditions for enhancing the creative leadership of executives from asking the opinion of the school director Overall, it's at a high level.

The Digital Leadership Development Program for school administrators under the primary educational service area office (E1/E2) was 93.01/95.55, in accordance with the 80/80 criteria set, consistent with the research of Rakrongtanen (2016) has studied the development of the Mathematics Learning Module on Sequencing. The results of the study found that the 3 volumes of the Mathematics Learning Module on Sequencing were effective as 83.30/84.55, which was higher than the 80/80 threshold. Paphaphasit (2018) has studied about innovations to improve classroom research potential of instructors, a case study: Creation of Self-Learning Kits and Consulting. Classroom research outperformed the benchmark 80/80 with a mean efficiency score of 81.53/88.46 and also consistent with Chantarasombat (2020). has studied the teacher development program in Thai language learning management to enhance students' critical thinking. The results showed that the module lessons created were effective at 84.61/83.00, which was higher than the specified threshold and was consistent with the research of Rowland (1995). Module lessons were developed to promote and prepare students for the discipline of teacher trainees. This module was developed based on the discipline needs of University of Mississippi students. The results showed that the module lessons created by the researcher are really effective, giving students more knowledge and discipline. And in accordance with Chantarasombat and Sirisuthi (2020) that has conducted a research study on the

development of learning modules on supervision within educational institutions. For the students as research and development, it was found that 1) the subject learning module for students developed the efficiency of the practical process was 84.67, the efficiency of knowledge was 83.00, which was higher than the set threshold of 80/80.

The Effectiveness Index for Digital Leadership Development Program Development of Educational Administrators Under the Primary Education Service Area Office, the value was 0.9306 or percentage. 93.06 This is in line with the research of Chantarasombat and his team (2018) who conducted a research study on the development of teaching potential of full-time teachers: an innovative project to enhance learning achievement of educational institutions. in the Northeastern Thailand, It was found that the trainees had index of effectiveness after learning was higher than before training was 0.7946, with an increase of 79.46% in knowledge, and was consistent with Chantarasombat and, Meekhamtong (2020), which conducted a research on the development of teacher development programs in management. Learn Thai to strengthen students' critical thinking. The results showed that the effectiveness after learning was 0.7567 higher than before, with a 75.67% increase in knowledge and consistent with the research results of Chantarasombat (2020). Learning with the Learning Policy, Strategies and Strategic Plan (EDA6201) modules in Education (EDA6201) was 0.6577 or 65.77%. Students have a 65.77% increase in learning.

The Administrators who have studied with the digital leadership development program for school administrators under the primary education service area office, post-study achievement was significantly higher than before at the .05 level, consistent with Nelson (1994). Study and build module lessons to empower nitroglycerin-treated patients. It was found that the group who has studied using the module lessons had more knowledge and encouragement than the sample group using documents at statistical significance at the .001 level and consistent with Pimko (2014). The development of a program to enhance creative leadership of school administrators under the local administrative organization found that the opinions of the school director Overall, it's at a high level. When considering each aspect, it was found that the scores after the creative leadership program were higher than the median scores of the school administrators before the program. statistically significant at the .01 level; Khaklong (2014) researched on The development of a program to enhance service-oriented leadership of basic education administrators found that the results of a comparison of the level of service-oriented leadership of basic education administrators In the case of the participants developing self-assessment and assessment by other persons, It was found that the level of service-oriented leadership of basic education administrators After development is higher than before development. statistically significant at the .01 level; Paphaphasit (2018), studied innovations to develop classroom research potential of instructors, a case study: building a self-learning kit and mentoring. It was found that the achievement of the self-learning package

test of the sample group had a statistically significantly higher mean score after using the self-learning package than before using the self-learning package at the .05 and consistent with Chantarasombat and Meekhamtong (2019) researched on the development of a program for developing the leader teachers who have taught Thai language to enhance critical thinking among students in secondary schools. Educational administration seminar course for master's degree students In the field of educational administration, the results showed that the students had a statistically significantly higher post-study achievement at the 0.05 level. Chantarasombat and, Sirisuti (2020) researched on the development of learning modules on supervision within educational institutions. For students, it is research and development (Research and Development: R&D). It was found that the academic achievement of the students who studied with the learning module on In-School Supervision for students after school was significantly higher than that at the .05 level.

The Administrators who were developed by the digital leadership development program for school administrators, There was no difference in post-study achievement and post-study achievement scores, indicating that administrators developed with the digital leadership development program of school administrators. under the primary education service area office persistence in learning. Adams (1967) said that retention, or the ability to recall a stimulus previously learned or experienced after having abandoned it for a period of time, is memory persistence. If we evaluate as soon as the learner accomplishes what we want, the result is the result of learning. But if we wait for the elapsed time, perhaps 2 minutes, 5 minutes, or several days and then evaluate the effect of the change is the effect of learning and memory persistence and consistent with Chantarasombat and Meekhamtong (2019), researched on the development of a program for developing teachers who lead learning management in Thai to enhance critical thinking among students in secondary schools. Self-developed program, quality assessment test, learning achievement test, post-work record, it was found that the students had no difference in learning achievement after school and the scores of learning achievement after 2 weeks of study, show that students are durable in learning through the program developed and consistent with Dechagupt (2011), who said that student-centered instruction is a teaching-learning approach that emphasizes that learners create new knowledge and new inventions by using

cognitive processes. (Thinking process) A social process. (Group process) for learners to interact and participate in teaching and learning to be able to apply knowledge. In addition, the results of a study by Chantarasombat (2020) also found that students enrolled in the Learning Policy, Strategies, and Educational Strategies Module (EDA6201) had post-study achievement with a post-graduate achievement score. 2 weeks of study, no difference, indicating that students who studied with the learning module persistence in learning

The Administrators are satisfied with the development with the digital leadership development program of the school administrators. Overall, the satisfaction level was at the highest level. This is consistent with the research of Phayothorn (2017). The development of an effective team leadership enhancement program for middle school administrators at the highest level and consistent with Chantarasombat and Meekhamtong (2019), researched on the development of a program for developing teachers who has taught Thai Language to enhance critical thinking among students in secondary schools. The results revealed that overall, there was a high level of satisfaction and when considering each item. It was found that the development program had a content covering the development of critical thinking in organizing learning activities, the teachers' satisfaction was at the highest level.

11. Recommendations

11.1 Recommendation for Implementing

From research results the development with digital leadership development program for School administrators, The key points for development were found as follows:

- Learning through digital leadership development program for school administrators Executives must be ready to self-study.
- Learning through digital leadership development program for school administrators can be flexible time and place to learn.
- In the case of implementing the digital leadership development program for school administrators to study and learn by yourself, users should carefully study the manual with instructions and complete all activities. and should study or learn from other related media that have been created and developed to affect learning more.

11.2 Recommendation for Future Research

There are many universities in Thailand manage learning with the digital leadership development program for school administrators but lack of research It was observed from searching related researches, it was found that there were few researches related to learning with programmed lessons. Therefore, the researcher would like to suggest further research as follows:

- There should be research and development of programmed learning or module learning lessons at the higher education level with bachelor's, master's and doctoral students.
- There should be research that organizes learning with programmed lessons. Module Learning lessons that promote high-level thinking skills by the century 21 and educational leadership.
- There should be a comparison of learning achievements by using the lesson program or module lessons by designing learning with other teaching methods that are more suitable.

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References

- Barr, M. J., & Keating, L. A. (1990). Introduction: Elements of Program Development. In M.J. Barr, L.A. Keating and Associates, *Developing effective Students Service program*. San Francisco: Jessey - Bass.
- Brahmawong, C. (2010). Testing the efficiency of media or teaching series. *Silpakorn Education Science Journal*.
- Buachoo, T., & Buachoo, T. (2020). Leadership of educational institution administrators. *Journal of Education: Journal of Educational Studies*.
- Buntham, T. (2016). Leadership in the Digital Economy and Sustainable Development of Educational Organizations. *Journal of Industrial Education, King Mongkut's Institute of Technology North Bangkok*.
- Chantarasombat, C., Udomboonyanupap, N., & Kenchaiwong., N. (2018). Development of Innovation enhances Learning achievement of Education schools in Northeastern Thailand under of the Office of the Basic Education Commission. *Journal of Education, Mahasarakham University, 12(2)*, 54-69.
- Chantarasombat, C., Udomboonyanupap, N., & Songsri, C. (2018). The innovations Development foe Enhancing the learning Performance of Schools under Nakhon Panom Primary Educational Service area Office 2. *Journal of Education, Mahasarakham University, 12(3)*, 18-35.
- Chantarasombat, C., & Meekhamtong. P. (2019). The Development of Leader Teachers Development Program in Thai Management for Enhancing Critical Thinking of Students in Secondary research and Development for implementation of development program to develop teachers to be Scholls in Educational Administration Seminar Course for Master Degree Students Majoring in Educational Administration. *Educational Research. 10(1)*, 10-20.
- Chantarasombat. (2020). Developing Module Lessons: Policies, Strategies and Strategic Plans in Education. (EDA6201) for Master's degree students. *Journal of Education, Mahasarakham University, 14(1)*, 31-50.
- Chantarasombat, C., & Sirisuthi, C. (2020). The Development of Learning Module of School-Based Supervision of Students in Thailand. *Educational Research, 11(1)*, 1-9.
- Chantarasombat, C., & Sombatsakulkit, E. (2021). Doctoral Program Learning Module on Developing Leading Secondary School Teachers in Creative Thinking for Enhancement of Students' Learning Activities in Thailand. *International Journal of Higher Education, 10(3)*, 138-149. <https://doi.org/10.5430/ijhe.v10n3p138>
- Chamchoi, S. (2018). *Educational administration in the digital era*. Bangkok: Chulalongkorn University Press.
- Dechagupt, P. (2011). *Student-centered teaching and learning: concepts, methods and teaching techniques*. Bangkok: Academic Quality Development Institute.
- Jack, A. (1967). *Human Memory*. New York: McGraw – Hill.
- Garland, V., & Tadeja, C. (2013). *Educational Leadership and Technology: Preparing School Administrators for a Digital Age*. United States of America: Kindle. <https://doi.org/10.4324/9780203134702>
- Houle, C. (1996). *The Design of Education*. San Francisco: Jossey-Bass Publishers.
- International Society for Technology in Education (ISTE). (2009). National Education Technology Standard for Administrators. Retrieved October 15, 2016 from <http://www.iste.org/standards/ISTE-standards/standard-for-administrators>
- Khaklong, C. (2014). *Development of a program to enhance service-oriented leadership for school administrators*. Doctoral Degree of Education Department of Educational Administration and Development Faculty of Education, Maha Sarakham University.
- Keesukphan, E. (2016). Educational administration in the digital era. Retrieved May 2, 2019, from <http://www.trueplookpanya.com/knowledge/content/52232/-edu-t2s1-t2-t2s3->
- Knowles, M.S. (1980). *The Modem Practice of Adult Education from Meadow to Andragogy*. New York: The Adult Education company.
- Krishanamurthi, R. (2017). *Leadership Excellence in the Digital Era*. Retrieved May 25, 2019, form <https://www.dqindia.com/50137-2/>
- Krongtanen, P. (2016). *Development of mathematics learning module Lesson on Sequence*. Graduate school Chiang Mai University.
- Likert, R. (1967). *The Method of Constructing and Attitude Scale*. New York: Wiley and Son.

- Ministry of Technology and Communications. (2016). *Digital Development Plan for Economy and Society*. Bangkok.
- Nelson, D. B., & D.P. Foster. (1994). Asymptotic Filtering Theory for Univariate ARCH Models. *Econometrica*, 62(1), 1-41. <https://doi.org/10.2307/2951474>
- Office of Chaiyaphum Primary Educational Service Area District 2. (2020). Online meeting of educational institution administrators. *Distance Education Promotion Group, Information and Communication Technology. Educational Service*.
- Office of the Basic Education Commission. (2019). Policy of the Office of the Basic Education Commission Fiscal Year 2019. Retrieved May 5, from <https://www.obec.go.th>
- Office of the Secretary of the National Strategy Board. (2017). National Strategy 2018-2037. Bangkok.
- Office of the National Economic and Social Development Board. Digital Economy Promotion Agency. (2017) Digital Economy and Society Development Act B.E. 2560. Bangkok.
- Phakdeewut, S. (2013). The development of creative programs for learning activities of Secondary school teachers. Department of Education and Development Administration, Mahasarakham University.
- Phayothorn, S. (2017). Developing an Effective Team Leadership Program for senior high school administrators. Doctoral degree of Education Thesis department of management and development education faculty of education of Mahasarakham University.
- Paphaphasit, A. (2018). *Innovations to develop research potential in the classroom of instructors. case study: create self-learning and mentoring kits*. College of Teacher Training. Pharmakon Rajabhat University. Bangkok.
- Pimkoh, P. (2014). *Development of a program to enhance creative leadership of school administrators under Local government organizations*. Thesis: Mahasarakham University: Mahasarakham University.
- Rowland, G. (1995). Designing and Instructional Design. *Educational Technology Research and Development*, 41(1), 79-91.
- Rosemarys, C. (2002). *Planning: Programs for Adult Learners: A Practical Guide for Educations Trainers And Staff Developers*. San Francisco: Jossey-Bass Publishers.
- Srisa-ard, B. (2011). *Preliminary research* (9th ed.). Bangkok: Suwiriyan Company Limited. Education Mahasarakham University.
- Sangpho, J., Chanthiwasarnkit., R., & Saowdeeram, S. (2017). Leadership in organizational management. Digital era, case study: IT organizations and IT-related organizations in Bangkok and Metropolitan Region.
- Sheninger, C. (2019). *Digital leadership: changing paradigms for changing times*. United States of America: Corwin.# <https://doi.org/10.21125/inted.2019.2528>
- Sullivan, L. (2017). 8 Skills Every Digital Leader Needs. Retrieved May 25, 2019, from <https://www.cmswire.com/digital-workplace/8- skills-every-digital-leader-needs/>
- Thongsuk, K. (2017). *Development of Programs to Strengthen Ethical Leadership of School Administrators under the Office of the Basic Education Commission. Doctorate of education thesis graduate program in educational administration and Development Faculty of Vejjalak, N*. Leadership in management. Bangkok: Chulalongkorn University.
- Wongvanich, S. (2015). *Needs assessment research = Needs assessment research*. Bangkok: Chulalongkorn University Press.

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