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Research Article

An Information Technology Resource Management Model for Learners

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Abstract

Information and communication technology has a recognised role. In order to achieve reform and development in all areas, especially in education, it is necessary to keep progressing and develop learning to have the knowledge and ability to apply information and communication technology to use in educational institution administration. It allows the management to plan or set goals in doing work for the best benefit. The objectives of this study were to 1) study information technology resource management, and 2) propose guidelines for information technology resource management in learning management for learners under the Office of the Basic Education Commission. This study involved mixed-methods research. The samples used in this study comprised school administrators, teachers, students and the school committee of educational institutions under the Office of the Basic Education Commission, consisting of the Eastern Economic Corridor (EEC) area, which is a trade and investment promotion zone that is important for the development of the country's competitiveness. The results of the study showed that the guidelines for information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission should be promoted in 4 areas including human resource management, budget management, material and educational information technology equipment management, and general management. As a result, the resource management will be more successful. This affects the appropriate formulation of policies for related departments to promote the management of information technology in the study of learners.

Keywords: Resource management, Information technology, Learning, Education model

1. Introduction

The 20-year National Strategy Framework (2018 - 2037), under the direction of the National Education Plan (2018 - 2037) and the essence of the 12th edition of the Ministry of Education's Educational Development Plan, is based on the principles of education

management as follows: Principle of education for all, principle of education for equality and inclusion (Inclusive Education), philosophy of Sufficiency Economy, and principle of participation for all sectors of society (All for Education),as well as adherence to the Sustainable Development Goals (SDGs 2030) (Office of the Education Council, 2017: e). Based on the strategy, the National Education Plan has set four objectives: 1) to develop a superior and effective education management system and process, 2) to develop Thai people to become good citizens with qualifications, skills and competencies in line with the provisions of the Constitution of the Kingdom of Thailand, 3) to develop Thai society into a civilisation of learning, morality, knowledge, love, unity and cooperation, working towards sustainable development in accordance with the philosophy of the Sufficiency Economy, and 4) to lead Thailand over the trap of middle-income countries while lowering inequality throughout the country. The goals are set in two areas: the student side, with the aim of developing all students to have learning characteristics and skills for the 21st century, and the five aspects of educational management: 1) All people have access to quality and standard education, 2) all students and target groups receive equal quality education services according to the standards, 3) the education system possesses the quality to be able to develop students to reach their full potential, 4) an effective educational management system exists for worthwhile investment in education and achievement of goals, and 5) an education system that responds to and keeps pace with the changing world dynamics and changing contexts (Office of the Education Council, 2017).

Educational reform plans and government policies, especially urgent policies concerning preparing people for the 21st century, emphasise all aspects of quality and efficiency in all dimensions for students, teachers and educational personnel, civil servants and executives at all levels as well as educational institutions of all levels and types. It is a life-long study by education at all levels. One important issue is the determination of technology to be used as a learning tool to give students access to education with standards and equality. Currently, educational inequality is a very serious problem due to the economic and social inequality faced by people throughout the country, as well as the lack of access to educational services. People with good economic and social status certainly have values and satisfaction. As such, they are more likely to send their children to a good, standardised school than poor people or those with low incomes. In addition, educational disparities stem from differences in educational quality and management standards between urban and rural schools. Likewise, the size of the school is a factor affecting the quality of education in terms of having equal standards. Therefore, increasing educational opportunities and upgrading the quality of standards by applying information technology in the teaching of students will aid students through self-learning. This can reduce inequality, as well as create more opportunities and equality in education (Ministry of Education, 2019).

This study focuses on the Eastern Economic Corridor (EEC) consisting of Chonburi Province, Chachoengsao Province, and Rayong Province. This is because the National Development Policy towards Thailand 4.0 needs to focus on the development of people in the Eastern Economic Corridor (EEC), which is a trade promotion zone for investment and the facilitation of business operations. Important factors for the development of the country's competitiveness are related to education, human development and human capital, which can be considered an important factor in driving and developing national competitiveness and competitiveness. It is also very important capital for Thailand’s 4.0 policy to drive and develop an education system to support the development of the Eastern Economic Corridor. It is a project that aims to holistically develop and cover all dimensions including economy, industry, tourism, and agriculture while reducing inequality in

opportunities. The education system must be developed to enable Thai people to have skills in science, technology, innovation, and specialised knowledge in order to support the technology changes that will be the driving force in everything. To define the area groups in this study, the researcher selected educational institutions that belong to the Primary Education Service Area Office and the Secondary Education Area Office in the Eastern Economic Corridor (EEC), which is the main target area for development by the government. It will link the development of education and other fields simultaneously in all dimensions and drive the policy of the Ministry of Education concerning the application of technology to learners, resulting in more concrete and clear implementation. From the above information, it can be seen that the creation of a foundation for technology education is essential for the future economic and social development of the country. This study collected data through a systematic research process to generate information that could be used to propose policies to the Ministry of Education as well as propose guidelines for information technology resources management in learning management for learners under the Office of the Basic Education Commission to be suitable for the development of national education in the future.

2. Research Objectives

2.1 To study the management of information technology resources in learning management for learners under the Office of the Basic Education Commission.

2.2 To propose guidelines for information technology resource management in learning management for learners under the Office of the Basic Education Commission.

3. Study Scope

3.1 Scope of content

The researcher established a framework for technology resource management in learning management for learners under the Office of the Basic Education Commission (OBEC), Ministry of Education using both quantitative and qualitative study. The POLC theoretical framework consists of planning, organisation management, leading) and controlling.

3.2 Population and sample scope

The quantitative study process

The population comprises school administrators, teachers, students and the school board of educational institutions under the Office of the Primary Educational Service Area, consisting of 764 and 79 schools under the Secondary Education Service Area Office, totalling 1,616 people in the Eastern Economic Corridor (EEC), including Chachoengsao Province, Chonburi Province, and Rayong Province.

The samples were school administrators, teachers, students and the school board. The sample size was determined from the table of Krejcie & Morgan(1970 p. 608), totalling 339 people, classified as schools under the Primary Education Service Area Office (NEDA), totalling 274 people and educational institutions under the Office of the Primary Education Service Area. The secondary education (NESDB) of 65 students was obtained by assigning sampling from multi-stage random sampling proportionally from small, medium-sized, large and extra-large schools.

The qualitative study process

The process was operated by analysing data and drafting guidelines for information technology resource management to create opportunities for learning management among learners in educational institutions under the Office of the Basic Education Commission by using a focus group with 9 experts who work at the policy planning level.

3.3 Area boundary determines data collection in the Eastern Economic Corridor (EEC), comprising Chachoengsao Province, Chonburi Province, and Rayong Province.

4. Study method

Step 1: Study the state of information technology resource management in learning management for learners under the Office of the Basic Education Commission, Ministry of Education. The tool used was a questionnaire created by the researcher.

Step 2: Analyse the data and draft guidelines for information technology resource management in learning management for learners.

Step 3: Organise a focus group meeting with experts to determine the suitability of the draft for IT resource management guidelines for learning management of learners.

5. Study results

Quantitative data analysis

From the study, it was found that the state of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission is consistent, both for primary and secondary schools, in the view of the school administrators, teachers, learners and the school board. In general, the practice is at a high level as in the tables below.

Table 1. The mean and standard deviation for the state of information technology resources management in learning management for learners in educational institutions under the Office of the Basic Education Commission (According to administrators' opinions)

Administrators	Planning			Organisation			Leading			Controlling		
	$\bar{x}$	S.D.	Results	$\bar{x}$	S.D.	Results	$\bar{x}$	S.D.	Results	$\bar{x}$	S.D.	Results
Small school	4.37	0.62	High	4.33	0.70	High	4.36	0.71	High	4.36	0.70	High
Medium-sized school	4.42	0.63	High	4.35	0.71	High	4.39	0.69	High	4.36	0.72	High
Large school	4.45	0.89	High	4.24	0.68	High	4.37	0.69	High	4.34	0.76	High
Extra-large school	4.39	0.68	High	4.29	0.75	High	4.41	0.68	High	4.50	0.62	High
Total	**4.40**	**0.70**	High	**4.30**	**0.55**	High	**4.38**	**0.69**	High	**4.39**	**0.70**	High

The information in Table 1 shows the state of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission. According to the opinions of the administrators, it involves planning,

organisation, leading, and controlling. Classified by school size, it was found that the average was at a high level overall. This may be because the administrators are the persons who set the direction for information technology resource management in learning management for learners. Therefore, they have a good understanding of the aforementioned matters. According to the study, it can be observed that the schools that are extra-large have a higher level of controlling and leading than any other size, which may be due to the availability of the school more than any other size.

Table 2 shows the mean and standard deviation for information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission, according to teachers' opinions.

Teachers	Policy and implementation			Teaching		
	$\bar{x}$	S.D.	Results	$\bar{x}$	S.D.	Results
Small school	4.45	0.72	High	3.90	0.96	High
Medium-sized schools	4.46	0.66	High	3.51	0.73	High
Large school	4.48	0.64	High	3.68	0.69	High
Extra-large school	4.47	0.64	High	3.64	0.74	High
Total	**4.46**	**0.66**	High	**3.68**	**0.79**	High

The information in Table 2 shows the state of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission. In terms of policy implementation and teaching, the state of information technology resource management in learning management for learners in educational institutions was found to have an overall average that was at a high level, according to the opinions of the teachers. As classified by school size, the results of the study showed that large schools can implement policies at a higher level than others, though small schools had higher teaching levels than other schools.

Table 3 shows the mean and standard deviation for information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission, according to students' opinions.

Students	$\bar{x}$	**S.D.**	Results	Levels
Small school	4.13	0.72	High	2
Medium-sized school	4.14	0.66	High	1
Large school	3.72	0.79	High	4
Extra-large school	3.90	0.66	High	3
Total	**3.97**	**0.70**	High	

The information in Table 3 shows the status of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission. From the opinions of students, it was found that the overall average was at a high level. By students in medium-sized schools, there is the opinion that they have the best opportunity to access the use of technology resources, followed by small schools, extra-large schools and large schools, respectively.

Table 4 shows the mean and standard deviation of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission, according to opinions from the school committee.
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School committee	$\bar{x}$	**S.D.**	Results	Levels
Small school	4.13	0.72	High	2
Medium-sized school	4.14	0.66	High	1
Large school	3.72	0.79	High	4
Extra-large school	3.90	0.66	High	3
Total	**3.97**	**0.70**	High	

The information in Table 4 shows the state of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission. According to the opinions of the school committee, it was found that the overall average was at a high level for high schools. According to the study, it was found that the medium-sized schools as a whole were mostly equipped to manage information technology resources, followed by small schools, large schools and extra-large schools, respectively.

Qualitative data analysis

The results for the synthesis of information technology resource management guidelines in learning management could aid learners under the Office of the Basic Education Commission. From the discussion with a group of 9 experts working on education management in 3 provinces in the Eastern Economic Corridor Development (EEC) project, namely Chachoengsao Province, Chonburi Province, and Rayong Province, holding the positions of Education Director of the Office of the Educational Service Area, Deputy Director of the Office of the Educational Service Area, and school directors at the elementary and secondary levels, the guidelines for information technology resource management in learning management for learners under the Office of the Basic Education Commission, can be summarised and classified into 4 areas as follows:

1). People Management: As for the educational service area office, it should be conducted by organising meetings for all groups of work in the educational service area office to explain the necessity and benefits of the application of educational information technology, which will assist in teaching and learning for the office of educational districts and schools affiliated by conducting the establishment and selection of a director of the distance education promotion group, information technology and communication with a good understanding of information technology, and recruitment of personnel with knowledge and expertise to perform their duties in information technology. As for educational institutions, the school

directors should be directly responsible for implementing the policy of the education area office on educational information technology into concrete implementation as well as carry out the selection and appointment of teachers to undertake school-specific responsibilities for information technology, including providing computer teachers with direct qualifications in the taught field in order to be able to effectively transfer knowledge and experience in using information technology for learning.

2). Budget Management: For the education area office, investment should be made to procure educational information technology materials and additional internet networking, as well as improve the original equipment materials to be able to work well, meaning fast and able to be used continuously. As for educational institutions, the budget should be increased for the preparation of educational information technology rooms according to needs and requirements. Educational areas and educational institutions procured from various sources as appropriate to obtain sufficient budget for the development of the information technology room and information technology system. In addition, educational institutions should survey the needs of teachers regularly for the use of information technology. Information from the survey should be used to consider allocating the budget for information technology management to be appropriate and sufficient to meet the needs.

3). Material Management: Educational information technology in the Office of the Educational Area should provide equipment and internet signal rental for use in the information technology room of the Office of the Educational Service Area, including setting up an internet system and other information technology systems for every working group, every meeting room, and every building in the office of study areas. In particular, educational institutions should build an information technology room separated from the computer room used for the study of the students throughout the school. It should be a room learners can easily access as an interesting learning resource.

4). Management: As for the educational service area office, participatory management principles should be applied in the management of educational information technology resources from the planning stage to the performance evaluation. Similar to the school section, it should focus on the participation of all personnel under budget constraints for maximum benefit. In addition, educational institutions should focus on developing teachers to have more technological competencies for online teaching, such as the preparation of apps, an application for learners to be able to study anytime from anywhere. Students should have access to lessons through their smartphones, including assignments or sending homework via the Internet, etc. The school director should closely and seriously supervise the system development, and should disseminate the results of operations or news of educational institutions via the internet system.

The figure below demonstrates the promotion of information technology resource management in learning management for learners in educational institutions under the Office of the Basic Education Commission, as synthesised by the researcher.

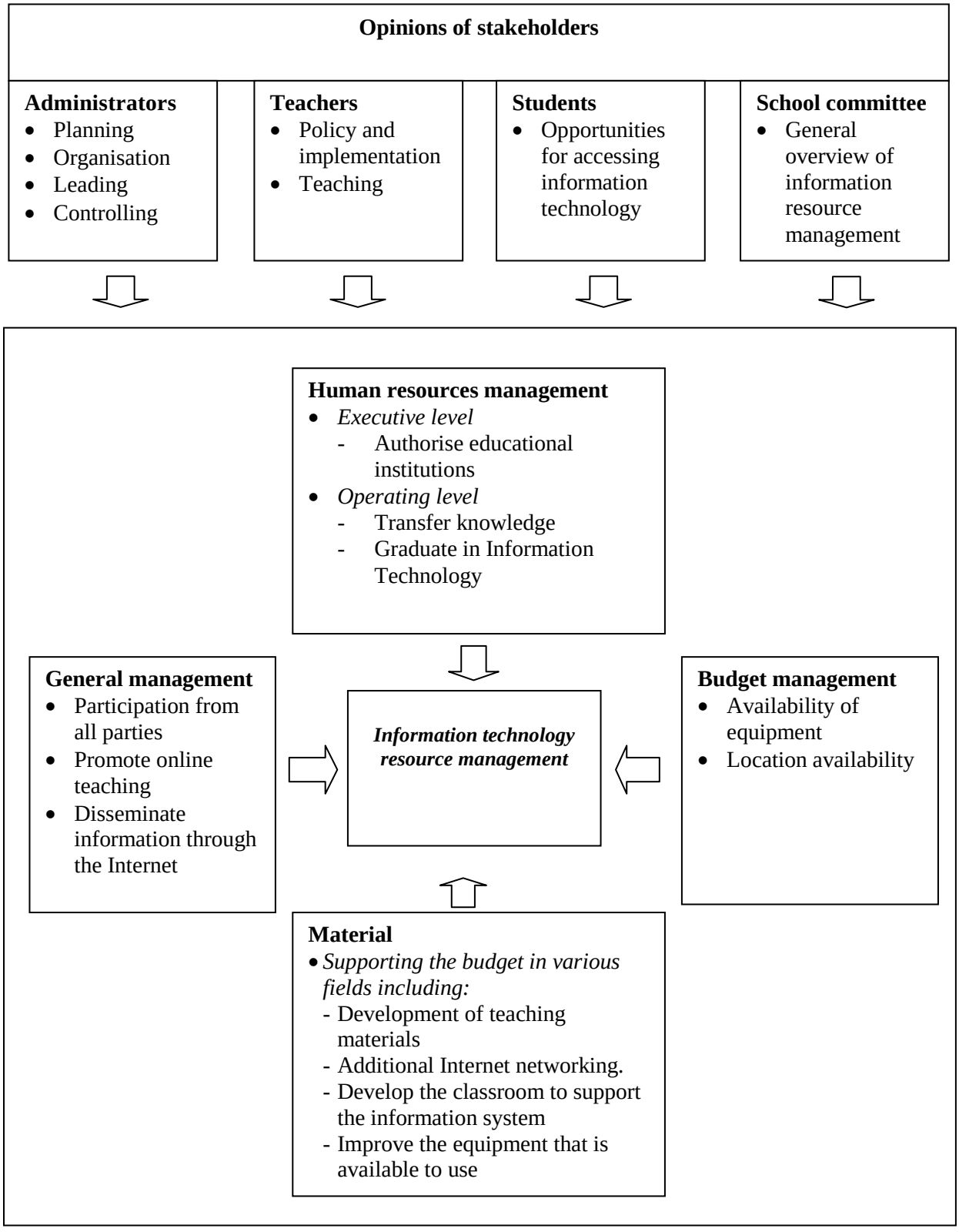

Figure1. A model guideline for the promotion of information technology resource management in learning management for learners

6. Discussion

The following section identifies and analyses the study and survey found in the following order in terms of opinions on the use of the management of information technology resources as follows:

6.1 Management of information technology resources in learning management for learners in educational institutions under the Office of the Basic Education Commission: The perspective of the school administrators, teachers, learners and the school board were consistent. Overall practice was at a high level, possibly because the school administrators realised the importance of technology resource management. Information and efficient management covering planning, organisation, leading, and controlling, cause each school to have a policy on information technology in the school's strategic plan: appoint a committee to jointly define the vision, mission, goals for the administration of information technology within the school, prepare an information technology network system, development work plan or project in the annual action plan, appoint a committee to work on the development of information technology within educational institutions, provide equipment, tools, computers, and network signals that are appropriate and sufficient for the number of learners. This includes setting the learning method for all learners to have opportunities to learn information technology and the Internet, requiring teachers to organise supplementary activities for learners using information technology, and organising learning for learners using information technology at least 3 times a week so all learners can learn computers and internet technology at each class level, conduct and monitor operations and reports on budget usage and results of operations to related parties regularly, including making an assessment of performance, the value of information technology and internet used in educational institutions, and to survey the satisfaction of learners and personnel in educational institutions about using technology in learning management. This is the main activity that reflects the cooperation of all personnel in the educational institution and the participatory administration of the school administrators, combined with the implementation of POLC management theory with a high level of practice in all areas. Therefore, the management of information technology resources in learning management for learners in educational institutions under the Office of the Basic Education Commission was at a high level. It is consistent with the concept of Allen et al. (2005), which explains the use of quality management processes, both planning systematic organisation of leadership and control will improve performance, and the concept of Argyr is (1957), which explains that the results of participatory management will help to achieve goal recognition and mutual aid among members. That Cooperation will spread throughout the organisation, thus making members of the entire organisation have the same goals, intent and readiness to perform duties willingly. This is consistent with the results of Wienrob (2014) research on the study of information technology management competencies and communication of school administrators of international standards Under the Office of the Secondary Educational Service Area 1. Overall, the results of the research showed that the level of practice for the administrative competencies of information and communication technology among international standard school administrators under the Office of the Secondary Educational Service Area 1 was at a high level. Based on the results of Chatprasop (2014), research on the use of information technology for general administration in schools under the Office of Buriram Primary Educational Service Area 1 showed that practice was at a high level generally and in terms of the use of information technology for overall administration in schools. Further, the research results of Binduem (2015) concerning the study of educational needs for information and communication technology administration at Nawaminthrachinuthit

Satriwitthaya School, Phutthamonthon School, the current state of information and communication technology administration for education at Nawaminthrachinuthit School, Satriwittaya School, and Phutthamonthon School were at a high level overall.

6.2 Guidelines for information technology resource management in learning management for learners under the Office of the Basic Education Commission can be classified into 4 areas: people management, budget management, material management, and educational information technology equipment management. It is synthesised to complement information technology resource management practices in learning management for learners in the area of key operational activities, namely the provision of computer teachers with direct qualifications in the fields taught to be able to transfer knowledge and experience in the use of information technology for learning to learners effectively, as well as allocating sufficient funds for the development of the information technology room. Information technology systems include the teaching materials in the school system. In addition, educational institutions should survey the needs of teachers regularly for the use of information technology. Information from the survey can be used to allocate the budget for the management of information technology to suit and meet the needs, create a dedicated information technology room separated from the computer room used in the study of the students throughout the school, a room where learners can easily access as an interesting learning resource, and develop teachers to gain more technological competencies for online teaching, such as creating an application for students to be able to study anytime, anywhere and can access lessons via smartphones and assignments or sending homework via the Internet, etc., including the dissemination of performance or news of educational institutions via the internet system. It can be seen that it is an approach that gives importance to the development of knowledge and capabilities by the personnel, budget allocation structure, and the development of learning resources in information technology In line with the concept of the Ministry of Information and Communication Technology (2011), the promotion of the use of information and communication technology to promote lifelong learning can be achieved by 1) providing information technology and communication resources to promote and enable people to make use of existing public places to access learning, 2) promoting the use of open-source information and communication technology tools, 3) building knowledge and understanding the use of open-source information technology, information technology and communication for learning to people at all levels, and 4) requiring educational institutions at the basic education level to use information technology more as a tool for teaching and learning. This is consistent with the research of Sae Heng (2017) who studied the development of information and communication technology management at Wat Kosinarai School. The research results showed that guidelines for the development of information technology administration at Wat Kosinarai School included personnel application support and the systematisation of structures.

7. Recommendations

Recommendations for implementing the policy into practice

7.1 From the study, it was found that the management of information technology resources in learning management for learners in educational institutions under the Office of the Basic Education Commission should be addressed. According to the opinions of the school administrators, teachers, learners and the school board, there is a high level of practice. This indicates good management skills and competencies. Therefore, administrators

in both the district office and the school should take advantage of such administration adding to the challenge of the organisation, such as formulating plans or projects to increase the capacity of the use of information technology resources in learning management for learners to be higher sequentially.

7.2 Also from the study, it was found that the guidelines for information technology resources management in learning management for learners in educational institutions under the Office of the Basic Education Commission should focus on development in three key areas: 1) Development of human resources knowledge, 2) Budget allocation structure, and 3) Development of information technology learning resources. Therefore, if these information technology resource management approaches are applied to create learning management opportunities for learners, the three development issues should be taken into account and, therefore, participatory management is essential.

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