

A second-order confirmatory factor analysis model of primary school administration promoting 21st century skills

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ABSTRACT

The acquisition of skills amongst learners is integral for their survival. This is the reason why most of the pedagogies integrate them as part of the core learning objectives. However, the advent of technology has revolutionized teaching approaches as well as skills training. Many of the skills in 21st century education highlight ingenuity, critical analysis and IT literacy. Though it is understood that these prepare learners to be efficient in the future, there are significant underlying issues and challenges in how schools partake in the training process or how skills acquisition amongst learners are monitored and promoted in the schools' advocacies. This research is aimed at evaluating primary school administration how 21st century skills should be reflected in the school system. Identified factors that help promote 21st century skills were analyzed using content analysis and focus group discussion of ten (10) experts and later on evaluated and confirmed statistically through Confirmatory Factor Analysis (CFA). Four hundred respondents: two hundred (200) school directors and two hundred (200) academic headteachers from 322 schools in southern Thailand were considered as samples. A 5-rating scale questionnaire was used for data collection. Through second-order confirmatory factor analysis, the results confirmed eight (8) factors that promote 21st century skills in primary school administration. Arranged in descending order by goodness of fit, these factors were: 1) teacher quality development (0.97), 2) educational evaluation (0.92), 3) teaching and learning management (0.90), 4) learning environment (0.88), 5) curriculum, learning media, and technology (0.87), 6) budget for education (0.84), 7) community cooperation (0.66), and 8) volunteer supervision (0.64). The measurement of all factors (R2) also indicated positive reliability ranging between 0.41-0.94.

Keywords: Factor analysis model, primary school administration, 21st century skills.

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INTRODUCTION

Parts of the agenda stipulated in the policies set by The National Education Plan of Thailand for 2017-2036 for education management are (1) to secure that all Thai people have access to education and lifelong learning opportunities, and (2) to improve the quality and efficiency of educational management at all levels by providing education that conforms consistently with the changing trends of the 21st century, especially continuous self-learning to maximize potentials and abilities to be internationally competitive (Ministry of Education, 2017). What the policies had failed to acknowledge is the

consistency of implementing educational administration based on the local context. Thongmak (2017) reiterated that educational administration is necessary to understand and take into account the political, social, cultural context, as well as respect for individual differences. Southern provinces in Thailand like Yala, Pattani, and Narathiwat, for example, are considered multicultural areas where people exist with shared differences in ethnicity, religion, and local customs. In 2018, it was found that the basic national educational test scores of grade 6 students in these three border

provinces had consistently shown a grade point average lower than the national average in all subjects especially Thai language, mathematics, science, and English (Narathiwat Provincial Office of Education, 2020), which reflected the students' lack of critical thinking skills.

Part of the intervention program to improve the educational achievement of schools in these provinces was a project to improve learning management known as the "Active Learning" method aimed at developing learners' skills in the 21st century (Iamsam-ang, 2015). This method lets students do real practice, collaborate work with others and find knowledge through self-reliance upon exposing themselves to various learning media. Teachers were able to manage learning in a variety of ways by using innovative media and learning resources, and authentic assessment. The implementation of such a project resulted in a change of the quality of learners, school administrators and teachers in a better way (Office of Monitoring and Evaluation for Basic Education Management, 2019).

While it is true that encouraging learners in school to develop 21st century skills is realizable, it is equally important to check the clarity of the components or factors that make up the primary school administration to help the school directors manage effectively. This premise led researchers to conduct a comprehensive inquiry on the components or factors of primary school administration in promoting 21st century skills through the data collected from the "Active Learning Project" initiative implemented in participating schools from the three border provinces of southern Thailand. Results from this inquiry were used to identify and confirm ways to manage the schools for developing students' learning skills in the 21st century, which was the main objective of this study.

LITERATURE REVIEW

The concept of 21st century skills

The framework for 21st century skills developed by Partnership describes that students must master the skills, knowledge and expertise to succeed in work and life; it is a blend of content knowledge, specific skills, expertise and literacies (California Department of Education, 2021). The essential skills in today's world put emphasis on learning and innovation skills targeting the 4 C's: communication, collaboration, critical thinking, and creativity, which are further supplemented by other areas such as citizenship, character, compassion and civics as well as life and career skills, information, media and technical skills. In the Thai context, these skills are integrated and learned across the expanded core subjects in the Thai Basic Education Curriculum. These include English (reading or language arts), world languages, arts, mathematics, economics, science, geography, history, government and civics.

Theoretical frameworks of primary school administration promoting 21st century skills

There have been various studies conducted that shed light on the theoretical frameworks of primary administration promoting 21st century skills. These educators and organizations included Hanover Research (2011), Kennedy (2011), Torlakson (2011), Somabut (2013), Thailand Development Research Institute (2014), Nongyao (2017), Pluemsamrankit (2017), Santos (2017), Iamkongsri (2018), and Partnership for 21st Century Skills (P21) (2021). The common understanding posited by these researchers identified seven (7) factors: 1) curriculum, learning media and technology 2) teaching and learning management 3) educational evaluation 4) teacher quality development 5) budget for education 6) learning environment and 7) community cooperation. However, the experts from the focus group discussion agreed that volunteer supervision should be added as an additional factor that suits the local contexts in the three border provinces of southern Thailand. With this additional factor, these eight (8) factors are specified as follows:

1. *Curriculum, learning media and technology:* The guidelines for the preparation of the course design, learning materials and technology according to 21st century skills and the context of diverse communities and locality (Thailand Development Research Institute, 2014; Pluemsamrankit, 2017; Santos, 2017; Iamkongsri, 2018), consisting of 5 indicators: 1) course preparation 2) learning media support 3) technology support 4) diversity integration and 5) learning networks.

2. *Teaching and learning management:* The concept and design of teaching and learning management for learners to do, promote complex thought processes, analyze and synthesize learning information, encourage students to be proficient in using technology, and understand the differences in the cultures of the world society (Torlakson, 2011; Somabut, 2013; Iamkongsri, 2018; Partnership for 21st Century Skills (P21), 2021), consisting of 5 indicators: 1) concept of learning management 2) learning design for learners 3) the role of the teacher 4) promoting the use of technology and 5) understanding cultural differences.

3. *Educational evaluation:* The guidelines for evaluation to enhance learning and learner analysis to promote creative analytical thinking (Torlakson, 2011; Somabut, 2013; Thailand Development Research Institute, 2014; Partnership for 21st Century Skills (P21), 2021), consisting of 4 indicators: 1) guidelines for educational evaluation, 2) methods of educational evaluation, 3) assessment of learning outcomes for the course, 4) evaluation of desirable characteristics, and 5) evaluation of 21st century learning skills.

4. *Teacher quality development*: The guidelines for improving teacher quality in the 21st century, teachers have to play an important role in facilitating learning for learners (Thailand Development Research Institute, 2014; Pluemsamrankit, 2017; Santos, 2017), consisting of 5 indicators: 1) self-study, 2) teacher training, 3) study visit, 4) professional learning communities, and 5) teacher competency and performance assessment.

5. *Budget for education*: The budget allocation to promote teaching and learning in the ways that are conducive to learners' learning and to develop learning resources to facilitate student learning (Thailand Development Research Institute, 2014; Pluemsamrankit, 2017), consisting of 5 indicators: 1) guidelines for budget allocation, 2) allocation for teaching and learning management, 3) allocation for personnel development, 4) allocation for learning resources development, and 5)

allocation for technology.

6. *Learning environment*: The creative learning environment conducive to learning to develop learning skills in the 21st century effectively (Hanover Research, 2011; Kennedy, 2011; Somabut, 2013; Partnership for 21st Century Skills (P21), 2021), consisting of 5 indicators: 1) inside classroom environment, 2) outside the classroom environment, 3) school social environment, 4) technology media environment, and 5) community environment.

7. *Community cooperation*: Joint participation with the community from all sectors in managing education to promote 21st century learning skills amongst learners (Hanover Research, 2011; Pluemsamrankit, 2017), consisting of 5 indicators: 1) media supply, 2) learning environment, 3) knowledge transfer, 4) budget provision and 5) supervision participation.

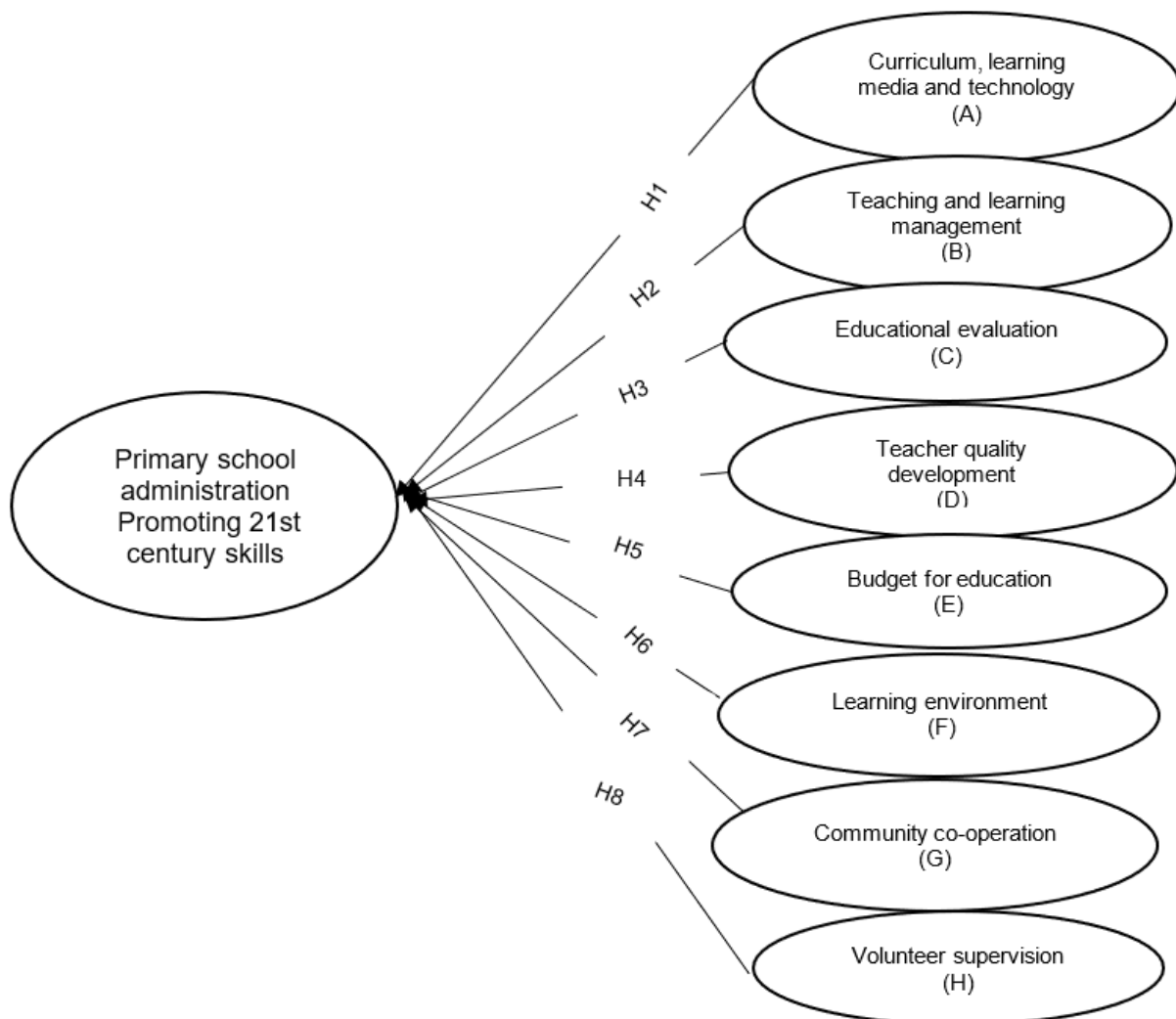


Figure 1. Research model to show the factors of primary school administration promoting 21st century skills.

8. *Volunteer supervision*: The committee with educational experiences volunteering to help for teaching and learning (Torlakson, 2011; Focus group discussion), consisting of 5 indicators: 1) setting up working group, 2) driving teaching and learning policies, 3) supervising learning and teaching, 4) exchanging knowledge between teachers and supervisors, and 5) applying supervision for school management.

RESEARCH METHODOLOGY

Content analysis and focus group discussion

Content analysis and focus group discussion were considered to analyze and synthesize the factors that make up the school administration in promoting 21 st century skills.

The experts for focus group discussion mostly consist of 6 to 10 participants (George, 2021), in this research consisted of 10 representatives who had initiated the implementation of the Active Learning Project. These were composed of 3 school directors, 4 teachers and 3

supervisors.

Confirmatory factor analysis

The Confirmatory Factor Analysis (CFA) as a statistical tool was employed in this study to determine the factors and indicators of primary school administration in promoting 21st century skills.

Population and sample

A total of 644 participants, which included directors and academic headteachers from 322 participating schools in the Active Learning Project comprised the population of this study. The sample consisted of 400 subjects (200 school directors and 200 academic headteachers obtained using proportional multistage randomization to conform to the model. In this technique, a large sample of about 15 to 20 people per variable or not less than 400 people is required (Wiratchai, 1999), as shown in Table 1.

Table 1. The participants in this study.

Provinces	Population		Sample	
	School directors	Academic-head teachers	School directors	Academic-head teachers
Pattani	108	108	67	67
Yala	84	84	52	52
Narathiwass	130	130	81	81
Total	322	322	200	200
	644		400	

Research instrument and data analysis

The study used a structured five-rating scale questionnaire to collect data. Based on the research model and the reviewed literature, a questionnaire comprising 8 sections and 38 items were developed as follows: A. curriculum, learning media and technology (4 items), B. teaching and learning management (5 items), C. educational evaluation (4 items), D. teacher quality development (5 items), E. budget for education (5 items), F. learning environment (5 items), G. community cooperation (5 items), and H. volunteer supervision (5 items). The data was analyzed by second-order confirmatory factor analysis. Wiratchai (1999) suggested the important criteria for measuring structural equation model corresponded with the empirical data based on the empirical Chi-Square/degree of freedom (χ^2/df) ratio should be less than 2 (<2), the p-value should be more than 0.05 (>.05), RMSEA should be less than 0.05 (<.05), and Standardized factor loading should be more than 0.3

(>.3)

RESULTS

The research results are presented according to the objectives as follows:

Analyzing and synthesizing the factors by content analysis and expert-focus group discussion

A total of 8 factors and 38 indicators were analyzed and synthesized as follows: 1) curriculum, learning media and technology (4 indicators), 2) teaching and learning management (5 indicators), 3) educational evaluation (4 indicators), 4) teacher quality development (5 indicators), 5) budget for education (5 indicators), 6) learning environment (5 indicators), 7) community cooperation (5 indicators), and 8) volunteer supervision (5 indicators).

Defining factors and indicators by statistical analysis “Confirmatory Factor Analysis”

Confirmatory factor analysis (CFA) on the factors and indicators of primary school administration promoting 21st century skills are shown in Figure 2 and Table 2.

The results in Figure 2 indicated that the model corresponded with the empirical data based on the empirical Chi-Square (χ^2) = 526.389, $df = 478$ ($\chi^2/df = 1.10$), p -value = .06035, RMSEA = .016, and Standardized factor loadings were between 0.64 - 0.97, so it revealed

that the factor of teacher- quality development (D) with indicators d1-d4 had the highest factor loading, the lower ones were the factor of educational evaluation (C) with indicators c1-c4, the factor of teaching and learning management (B) with indicators b1-b5, the factor of the learning environment (F) with indicators f1-f5, the factor of curriculum, learning media, and technology (A) with indicators a1-a4, the factor of budget for education (E) with indicators e1-e5, the factor of community cooperation (G) with indicators g1-g5, and the lowest one was the factor of volunteer supervision (H) with indicators h1-h5.

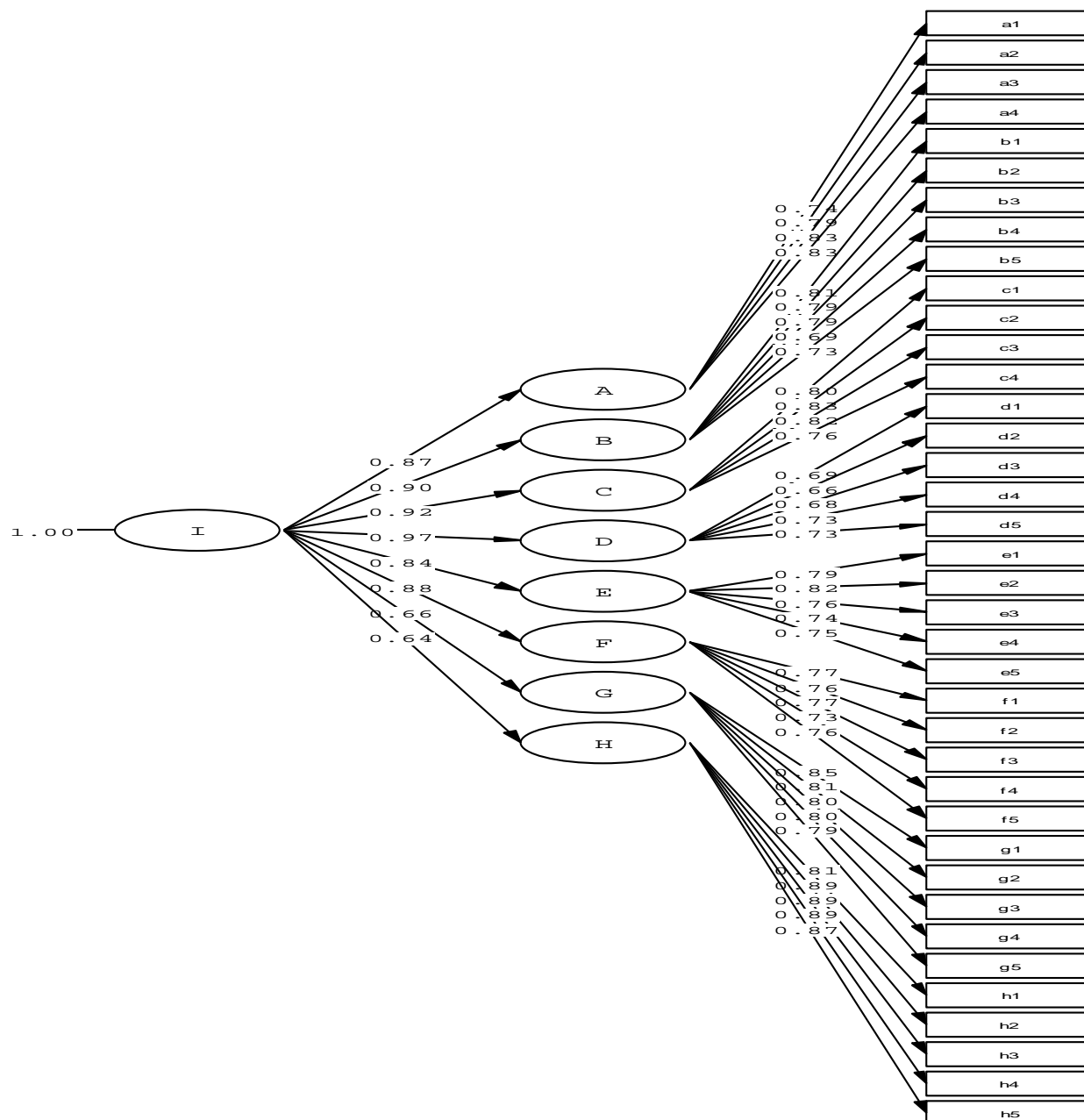


Figure 2. A second-order confirmatory factor analysis model of primary school administration promoting 21st century skills. Chi-Square: (χ^2) = 526.89, $df = 478$, p value = .06035, RMSEA = .016.

Table 2. Factor loadings, covariances of a second-order confirmatory factor analysis model of primary school administration promoting 21st century skills

Model constructs	Standardized factor loading	Standard error	t-Value	R ²
1) Curriculum, learning media and technology (A)	0.87 (5)	0.06	14.38	0.76
2) Teaching and learning management (B)	0.90 (3)	0.06	16.60	0.80
3) Educational evaluation (C)	0.92 (2)	0.05	16.88	0.84
4) Teacher quality development (D)	0.97 (1)	0.07	14.60	0.94
5) Budget for education (E)	0.84 (6)	0.05	15.06	0.71
6) Learning environment (F)	0.88 (4)	0.06	15.43	0.77
7) Community cooperation (G)	0.66 (7)	0.06	12.66	0.44
8) Volunteer supervision (H)	0.64 (8)	0.05	12.09	0.41

The results from Table 2 revealed that all factors of a model of primary school administration promoting 21st century skills demonstrated positive factor loading between 0.64 and 0.97 at the statistical significance of 0.05 level. Ranking from highest to lowest factor loading as follows: teacher quality development (D), educational evaluation (C), teaching and learning management (B), learning environment (F), curriculum, learning media, and technology (A), budget for education (E), community cooperation (G), and volunteer supervision (H). All of those respectively with 0.97, 0.92, 0.90, 0.88, 0.87, 0.84, 0.66, and 0.64 factor loadings. The measurement of all factors (R²) also indicated positive reliability ranging between 0.41 and 0.94 which is as exhibited in Table 2 for a second-order confirmatory factor analysis model using the Goodness of Fit statistics.

DISCUSSION

The results from a second-order confirmatory factor analysis model indicated that there were 8 important factors which were well corresponded with the empirical data considering from Chi-Square = 526.389, df = 478, P-value = .06035, RMSEA = .016, and Standardized factor loadings were between .64 - .97 with positive reliability (R²) ranged between 0.41-0.94, which could be arranged from factor loadings (highest - lowest) as follows:

1. *Teacher quality development* consisted of 5 indicators: 1) self-study, 2) teacher training, 3) study visits, 4) professional learning communities, and 5) teacher-competency and performance assessment.
2. *Educational evaluation* consisted of 4 indicators: 1) guidelines for educational evaluation, 2) methods of educational evaluation, 3) assessment of learning outcomes for the course, 4) evaluation of desirable characteristics, and 5) evaluation of 21st century learning skills.
3. *Teaching and learning management* consisted of 5 indicators: 1) concept of learning management, 2) learning design for learners, 3) the role of the teacher, 4) promoting the use of technology, and 5) understanding

cultural differences.

4. *Learning environment* consisted of 5 indicators: 1) inside classroom environment, 2) outside the classroom environment, 3) school social environment, 4) technology media environment, and 5) community environment.

5. *Curriculum, learning media, and technology* consisted of 5 indicators: 1) course preparation, 2) learning media support, 3) technology support, 4) diversity integration, and 5) learning networks.

6. *Budget for education* consisted of 5 indicators: 1) guidelines for budget allocation, 2) allocation for teaching and learning management, 3) allocation for personnel development, 4) allocation for learning resources development, and 5) allocation for technology.

7. *Community cooperation* consisted of 5 indicators: 1) media supply, 2) learning environment, 3) knowledge transfer, 4) budget provision and 5) supervision participation

8. *Volunteer supervision* consisted of 5 indicators: 1) setting up working group, 2) driving teaching and learning policies, 3) supervising learning and teaching, 4) exchanging knowledge between teachers and supervisors, and 5) applying supervision for school management

All factors discussed and expressed based on importance, are explained briefly as follows:

1) Teacher quality development: The results showed that the teacher quality development earned the top priority amongst the factors consisting of 5 indicators; such as self-study, training or joining the professional learning communities of teachers themselves to develop their competencies. This correlated with Santos (2017) who mentioned that teachers can use technology as a tool for learning. Chuchat (2016) studied "Factors Affecting Teacher's Ability to Manage Learning to Promote Learning Skills of 21st Century Learners, Suphanburi Province", which was found that one of the factors affecting teachers' ability was self-improvement of teachers because teachers played an important role for students. 21st century teachers are those who are not just skilled enough to teach but are also ready to learn to

develop themselves for skills of 21st century learning.

Based on the results of this research, it is concluded that the development of the teacher quality is the most essential, as it directly affects learners. For teacher quality development guidelines, Pluemsamrankit (2017) discussed that the guidelines on teacher competency development to promote 21st century learning skills of learners can be done in many ways, including encouraging teachers to study and research on their own as well as giving teachers the opportunity to attend seminars, training and study visits. This is also according to the concept of Thailand Development Research Institute (2014), which has provided suggestions for improving the teacher quality that professional learning community (PLC) and networking should be encouraged. The teachers' competency and performance assessment system should also be used to develop the teachers' potential to motivate teachers and develop themselves as quality professional mentors.

2) Educational evaluation: The results showed that the educational evaluation had the second priority weight, consisting of 4 indicators; such as assessment of learning outcomes for promoting 21st century learning skills of the students. The teachers should attend to guidelines and methods for an educational evaluation to evaluate desirable characteristics and 21st century learning skills. According to one expert (supervisor) from focus discussion, *“Evaluation and evaluation tools should be developed to be appropriate for assessment of 21st century learning skills and should be assessed on a regular basis”*; and another expert (teacher) added, *“Evaluation should be diverse in assessing skills in the 21st century requires measuring skills in many areas; especially, in the context of the three border provinces of southern Thailand, it must be consistent with the cultural background”*.

It is further understood that from the results of this research, assessment as a process indicates the development of students, how they are progressing. It should be focused on educational assessment for promoting students' 21st century learning skills, consistent with the goals that should be happened to the learners; therefore, the 21st century skills assessment approach should be an authentic assessment, formative and summative assessments that measure student mastery of 21st century skills, suitable variety of methods and tools (Partnership for 21st Century Skills (P21), 2021; Saengprateepthong, 2018), consistent with Choochun (2017) and Somabut (2013) who discussed the educational evaluation approach in the aspect of promoting learners to develop 21st century learning skills that there should be a qualitative assessment, with emphasis on practicality integrated assessment methods and use a variety of measuring tools; such as portfolio or technology to evaluate effectively. The highest

performing school systems in the world prepare their students to apply rigorous academic content knowledge to real-life situations (Torlakson, 2011).

3) Teaching and learning management: The results showed that teaching and learning management had the third priority weight, consisting of 5 indicators such as the concept of learning management, learning design for learners, the role of the teachers, promoting the use of technology, or understanding cultural differences which are consistent with Nongyao (2017) who studied school management model to develop students have 21st century learning skills. The author found that schools that manage education effectively mostly use cognitive-based education concepts. There are various learning arrangements such as brain-based learning (BBL), problem-based learning (PBL), after-action review (AAR), and story-telling techniques.

Additionally, the results of this research supported learning management in schools in the 21st century that should go beyond subject matter in learning skills for life. Teachers need to design exploratory learning activities for students to become independent learners. They must also explore innovative learning methods that integrate the use of supportive technologies, inquiry and problem-based approaches and higher-order thinking skills that suit learners' differences and diverse backgrounds (Partnership for 21st Century Skills (P21), 2021; Suwanmanee, 2014). Torlakson (2011) claimed that McKinsey study of 25 of the world's school systems, including 10 of the top performers, found that investments in teachers and teaching are central to improving student outcomes, and found that the top school systems emphasize developing them into effective instructors and ensuring that the system can deliver the best possible instruction for every child.

4) Learning environment: The results showed that the learning environment had the fourth priority weight, consisting of 5 indicators; such as inside-outside classroom environment, school social environment, or technology media and community environment. This is consistent with Nunthawit (2015) who studied the 21st century model of basic education administration under the Secondary Educational Service Area Office 2. The results of the study revealed that there should be an emphasis on the arrangement of the building and the condition of an environment that is conducive to learning management.

The results of this research reaffirmed that the learning environment plays an important role in human learning, affecting learners directly and indirectly. Providing a learning environment that is conducive to learning management in the 21st century such as, inside classroom design should accommodate diverse learning needs and outside the classroom should provide spaces like courtyards or project rooms (Hanover Research,

2011). Supporting expanded community and international involvement in learning, both face-to-face and online will contribute to the promotion of 21st century learning skills for learners (Partnership for 21st Century Skills (P21), 2021). Kennedy (2011) mentioned that about the 21st century learning environment, the school should take action to improve technology infrastructure, take innovation into the organization to provide students the opportunity to learn effectively. Learners and teachers should have appropriate technology equipment for learning together.

5) Curriculum, learning media, and technology: The results showed that the curriculum, learning media, and technology had the fifth priority weight, consisting of 5 indicators; such as course preparation, learning media and technology support, diversity integration, or learning networks. Thongmak (2017) studied the strategies of academic administration to raise the quality of education, it was found that teachers and learners must work together to study and analyze the curriculum of the school by planning and creating a curriculum that responds to the needs of students, parents, and the community; continuous and systematic monitoring and also evaluating the curriculum implementation.

This research regarded school courses as a guideline for organizing learning experiences for learners themselves, the community and society. It is an action plan of the school administrators for managing according to the educational policy; such as learning media and technology support for learners to understand the lessons easily and be able to exchange information (Iamkongsri, 2018) and also Santos (2017) mentioned that the topmost skills of the teachers or students are using technology as a tool for learning; therefore, the curriculum of schools should develop guidelines for educational management, content, activities and experiences provided to learners; as well as, assessment methods to enable learners to develop in various fields as specified by the course.

6) Budget for education: The results showed that the budget for education had the sixth priority weight, consisting of 5 indicators; such as guidelines for budget allocation for teaching and learning management, personnel development, learning resources development or technology. This is according to Nanthawit (2015) who had studied the 21st century model of the Secondary Educational Service Area Office 2. The results of the research revealed that the educational establishment should have a conceptual framework and methodology to manage the budget contributing to the administration of education in the 21st century, including the preparation of budget plans promoting educational management.

The results of this research also considered the educational budget a tool for efficient allocation of resources in various parts. It can be said that it is

important in supporting learning management for learners in the 21st century to achieve their goals. Pluemsamrankit (2017) mentioned factors affecting learners' 21st century skills. He added that the budget was important for the implementation of teaching and learning to provide learners with 21st century skills. To support learners in learning in the 21st century, it was necessary to provide an adequate budget.

7) Community cooperation: The results showed that community cooperation had the seventh priority weight, consisting of 5 indicators; such as media supply, learning environment, knowledge transfer, or budget provisions. Providing the community an opportunity to participate in the development of education must relate directly to the context of that area and the way of life in the community. Such claims paralleled the research by Sompong (2017) who studied the model of primary school administration based on the concept of multicultural education in the three southern border provinces. It was found that building relationships with communities were an opportunity for the community to participate in the development of education in accordance with the context of that area.

This research further supported that community cooperation is essential in the effective promotion of learners in the 21st century learning skills. This is according to Hanover Research (2011) which stated the importance of community cooperation, it opined that community cooperation will enable shared services to provide what is needed. The involvement of the community in various processes with different perspectives will contribute to the mutual support of schools in the various factors contributing to learning in the 21st century. This is a goal that both communities and schools want to bring these skills to learners.

8) Volunteer supervision: The results showed that the volunteer supervision had the eighth priority weight, consisting of 5 indicators; such as, setting up working groups, driving teaching and learning policies, supervising learning and teaching, exchanging knowledge between teachers and supervisors, or applying supervision for school management. Volunteer supervision is an operation unique to the three border provinces of southern Thailand, where there are frequent unrests, causing teachers to fear and lack morale in their works (Yamo, 2013); thus, the volunteer supervision team represented by retired educators, school directors, or parents must help teachers.

Based on the results of this research, it is concluded that volunteer supervision is an important mechanism for the development, improvement and efficiency of education in schools. Difficult situations affect the normal life of people including teachers and students (Office of Academics, 2017). In this regard, volunteer supervisors can be mitigators who can extend help or aid for teachers

and students to cope with anxiety, demands, and stress in school. They can assist teachers for knowledge, course understanding, and ability to manage to teach and learning effectively for promoting active learning and the 21st century learning skills because volunteer supervisors are composed of retired-school directors, educators, or qualified parents who know well about local society, culture, language, can advise for teaching character and promoting trustworthiness, respect, responsibility, fairness, caring or good citizenship. According to one expert (supervisor) from focus group discussion, "*Among the differences in the area of the three provinces, which is a multicultural society, if there are volunteer supervision from various people such as teachers, parents, school directors with educational knowledge have an opportunity to help the school, it will give a stronger education*"; Torlakson (2011) also mentioned about education supports with parent involvement that if schools engage parents involvement on campus by offering volunteer opportunities, it will give children a strong foundation for success in educational achievement, as well as social and emotional growth.

CONCLUSIONS

Based on the above results, *teacher quality development* being ranked and considered as the most significant factor consisted of 5 indicators that justified the importance of expertise and training in professional development as crucial determinants in promoting 21st century skills in primary school administration. The research results showed that if the teachers have good knowledge, good skills, and a good attitude about teaching, they will be able to improve their students in acquiring 21st century skills. Therefore, the school administrators should encourage teachers to have the skills by studying and finding information on their own, to attend professional development training both local and abroad, to join professional learning communities and networks. Also, a competency and performance assessment system should be used to stimulate the development of teachers' potential. Thus the development of a teacher for quality training cannot be compromised. Teachers and schools who seek quality must invest in proper training. Such accountability must be seriously considered since teacher quality development affects learners' learning skills directly.

RECOMMENDATIONS

For primary school administration, the school directors should develop teachers in many ways; such as encouraging teachers to create professional learning communities and networking, including the implementation of a competency and performance assessment system to stimulate the development of

teachers' potential because PLC is a learning exchange process for teachers to know how to manage the classroom to stimulate learners' learning skills in the 21st century.

It is further suggested that there should be supervision, monitoring and evaluation for teachers' performance by the school volunteer supervision team together with the supervision team in the educational area. Additionally, there should have a mutual exchange of knowledge in the operation between the teachers, the volunteer supervision teams, school directors, and communities to improve teaching effectively for promoting 21st century skills of primary school students.

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