

## **The Priority Needs for Strategy Development of Innovative Knowledge Management of Green schools Project in schools under Bangkok Metropolitan Administration**

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### **Abstract**

This research was conducted using a descriptive research method. The objectives of this research were to study the actual state and the priority needs of “Green Schools” project in schools under Bangkok Metropolitan administration. The research studied from returned questionnaires of 450 sampling which calculated by using Krejcie & Morgan (1970) and using Multi-stage sampling. The respondents were teachers in grade 4, 5 and 6. The research instrument in this study was the 5 levels rating scaled questionnaire (Dual Response). The data were analyzed by average, standard deviation and Priority Needs Index (PNI<sub>modified</sub>).

The findings indicated that the overall of actual state and desirable state of “Green School” project of 21 sampling schools under Bangkok Metropolitan administration were at high levels respectively. Research findings also showed that 1. the internal environment that had the highest importance level was the Knowledge Management Process 1. internal environment was at the highest level as follows: Knowledge Management (PNI<sub>modified</sub> = 0.18) 2. The external environment that had the highest importance level was the Environmental Factor external environment was at the highest level as follows: Environment (PNI<sub>modified</sub> = 0.24).

**Keywords:** Knowledge Management, Innovation, Needs Assessment of Green School Project

### **1. Introduction**

Thailand has a very high biodiversity which makes it to be one among those tops of the world. Unfortunately, it is rapidly being destroyed due to the major causes from human activities that effect a huge impact on ecosystem changes. It is now accepted that this is a global crisis caused from focusing on economic development that leads to many undesirable consequences. The United Nations accordingly agrees that the development of every country must change to a new paradigm which is "Sustainable development". Many countries therefore tried to find supportive measures for pushing the environmental awareness campaigns through proper educational management. The most important aim of educational management is to strengthen sustainable development by focusing on skills and behavior developing till become proficient, especially teacher development that focusing on integration of teaching and learning to allow students to practice linking and integrating what they have learned previously with the real-world situations that empower to raise awareness of

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sustainable development in the future (UNESCO, 1978; Dillon, et al., 2006; Thathong & Leopenwong, 2014; Stavrianos & Spanoudaki, 2015; Parit Siribanpithak, 2010)

Therefore, a clear educational management policy aims to integrate the sustainable development as well as to develop the students to keep up with technology and be able to response the 21st century challenges occurred from the conditions changing of today's society that has a high competition. It affects educational organizations, the way of thinking and personnel working process. Thus, modern educational organizations pay attention to the importance of knowledge resources to develop the potential of administrators, teachers and educational personnel to be professional with the ability to bring knowledge for innovation creating as a driving force to develop solutions for social problem. This makes the educational guidelines of the world to be changed. It focuses on child and youth development to create conscious, awareness and attitude to love the environment. Thai educational management industry values knowledge as an important driving force for success. Educational institution administrators must have the strategies to implement in educational management to meet the national development in the age of knowledge society. Schools are the most powerful source to create knowledge. Several important factors that can affect the schools to be successful including people and knowledge management processes especially technology in knowledge management processes. (Napat Woracharoensri, 2010; Yupha Noen Haad, 2012; Wararee Kaewnuam, 2013 cited in Wichian Panich, 2004; Somporn Supsawat, 2011; Sunee Banno, 2016; Bureau of Educational Research and Development, 2017; Nipitporn Komonkittisak, 2017; Education Council Secretariat, 2018)

The Green Schools project is an integration of innovative knowledge management to develop teachers to learners. It is an educational management that provide accessibility toward opportunities and equality in all contexts of educational institutions. It develops manpower to have work capacities and emphasizes them to participate in social contribution. It operates learning activities via Platform and learning posters source on VRB, the solar vertical recycle box which is a work that won the Invention Award of the year 2017 from the National Research Council of Thailand in a very good level of education study. Later, environmental knowledge management innovation has been developed continuously in terms of recycle materials sorting of school and surrounding communities. Currently, there are 21 schools under Bangkok Metropolitan Administration that accept to join the project installation and the innovation is disseminated as it is a quality education recognized by all relevant sectors that take part in driving educational management in this economic knowledge base under the principle of sufficiency economy leading to successful action. Kasetsart University and partners support the "Green Schools" project and this is the origin of a Pilot study to promote creative innovation construction towards the changes by adopting Bio Circular Green Economy: BCG in Action: The New Sustainable Growth Engine which is an economic model for sustainable development. Various organizations, including the Institute of Knowledge Management for Society aims to encourage government and private agencies to implement the concept of knowledge management until they reach their success and disseminate the concept of knowledge management continuously.

The Green Schools project was established for this reason to promote and build the schools network to create conscious, awareness, attitude and the environmental protection learning through innovative environmental media that integrates various sciences learning. Since the start of "Green Schools" project in 2017 until present, problem was found according to the statistics of 21 schools under Bangkok Metropolitan Administration who participated in the project. The statistics showed that the environmental protection knowledge management in the learning platform of Green Schools project was not yet successful. It could be seen from the volume of promoting users to study and search for knowledge that was below the target. Hence, it is necessary to develop a strategy to promote the creation of innovative knowledge management of the project to achieve the set goals according to the project objectives.

### **2. Significance of the Study**

The research studied the needs and requirements for the development of innovative knowledge management strategies of "Green Schools" project for the educational institutions under the Bangkok Metropolitan Administration. It needed to survey the benefits that might scarce and to study the current condition and desirable conditions for the urgent needs selection to be addressed for problem solving. This needed the directions planning, possibility of desired results achievement opportunity, assessment of action planning under the appropriate choices, efficient operating, worthiness, and verifiable ability.

### **3. Review of Related Studies**

#### **Needs Assessment**

"Need" means exploring what benefits are scarce, necessary and desired to have. In Thai translation, we can use many words by example need and necessary. It is a form of assessment that systematically analyzes

information to present the differences or Gap, Current Results and Desired Results. It brings all obtained results together and arrange them according to gaps or Need for urgent needs selection to solve problems. It is also very helpful for giving direction into planning and possibility of desired results achievement opportunity, The assessors are able to plan their operation under the appropriate choices, operate the work efficiently with worthiness and verifiable ability. This make the research assessors for the Need to be more important in the process of work or organizational development because it is necessary to do evaluation in every step of the implementation to provide solid evidence for decision-making (Ronda & Kusy, 1995; Witkin & Altschld, 1995; Kaufman, 1981 cited in Suwimol Wongwanich, 2019).

### **Needs Assessment for Planning and Implementing**

Assessment for systematic concept of Kaufman & English (1981) which was the 3<sup>rd</sup> era of needs assessment that emphasize on need assessment at all stages of organizational development. It is covering all stages of work and organizational development. Kaufman's concept defines the needs wider than other scholars by proposing a cyclical model of operation which steps and concepts similar to Stufflebeam's CIPP and Alkin et al. CSE model. Project development must begin from an assessment of the problem conditions in order to set organizational goals consistent with the needs of relevant people. If it was later discovered that the aim of the project actually did not meet the needs of the relevant people, it will be a waste of time and resources because the results cannot be used to improve the project.

There are 6 keys of operational steps from the study of Kaufman's systematic concepts. By the time that problems need to be solved, it must start from 1. Determine the problem (Alpha) as the first step. It is the study of Needs status, Current Results, Desired Results, the most urgent and important needs and problems that follow. After defining organizational problems then the second step follows. 2. Study the possible alternatives used to solve the problem (Beta) by studying the conditions under each problem. 3. Decision making to select the most appropriate solution (Gamma). 4. Implement the selected strategy into action (Delta). 5. Following-up the performance result after the strategy implementing to determine its effectiveness (Epsilon) 6. Improve practices to achieve the highest operational goals that are connected (Zeta).

In conclusion, the analysis according to Kaufman's conceptual shows that at every stage of the operation, the relevant people need to analyze the necessary needs in order to meet the desired end result as much as possible. Therefore, if we choose to use Kaufman's concept no matter what the operation according to the step of performance following up and evaluation, the progress assessment process, or the summary assessment, every step is necessary because there must be an analysis of what is the most necessary action.

### **Complete needs assessment**

The needs assessment process provides complete information and carries out the identified needs activities. Afterwards, it analyzes causes of factors that causing problems and study alternatives to deal with the causes of problems, and determine alternatives to implement. Therefore, a complete needs assessment involves three main steps: need's identification, causes of needs analysis, and corrective guidelines determination.

1. Need's identification is the process of identifying different conditions of the determinate desirable condition and the real current condition that has been arranged according to the important of each condition.

2. Causes of needs analysis is the process of analyzing the causes that affect the needs.

3. Corrective guidelines determination is the process of eliminating the needs to disappear with the decision to have a final conclusion which option is the most appropriate one for implementation.

The needs prioritization is necessary and important. The complete needs assessment will help the needs assessors to get the information they need or the real problem that should be resolved urgently before others. There are many ways to help sorting the needs. Assessors must carefully choose and operate well within a period of time and with limited resources. This research has prioritized needs by using the Modified priority need index (PNI Modified) formula. This formula, Nongluck Wirachchai and Suwimol Wongwanich, has adapted from the Priority needs index (PNI) method that find the difference between expected conditions (I) and the real current condition (D) with the real current condition value (D) by applying the principle to determine the necessary needs from the real current condition level to be as a standard score (Bosin, 1992; emphasis added). Suwimol Wongwanich, 1999; Piyamaporn Chokhuaychai, 1997; Komsorn Wongraksa, 1997)

### **Innovation**

Economic innovation is the adaptation of new ideas or the use of existing ones in the new ways to bring economic benefits or "doing something different from others by applying the various changes that occur around to be the opportunities and transfer these new ideas to benefit oneself and society." This concept was developed

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in the early 20th century focusing on creativity, research and development in sciences and technology which will lead to the technological innovation mainly for commercial benefits. Innovation also means the ability to learn and put into practice effectively.

Innovation, in Thai educational field in term of educational nomenclature by the Education Vocabulary Committee, Ministry of Education, comes from the English word of the verb innovate which means to do something new. In the original Thai language, the word "innovation" was used as "Na-Wa-Karm". Later, this word had an inaccurate meaning therefore it had been switched to the word "Na-Wat-Ta-Karm" means bringing new things and, or, changing the existing methods for a better use. No matter what the industry or any business, at the time that new changes are introduced to improve the work, it can be called innovations in that field, for example, in the education industry, it is called "educational innovation", for those who act or adapt new changes they are called "innovators".

In conclusion, the innovation meaning definition is something new or the existing ones that have been adapted or improved to be applied in a new way that appropriates for the situations by collecting efficient knowledge and bring the creativity to integrate with administrative capacity or the new knowledge construction that create inventions and ideas which can occur in every process and every step. Every new thing that results from the use of new knowledge and the new knowledge exchange creates useful creative ideas in the knowledge management. These new knowledge management ideas are important and appropriate to the situation. They encourage the courage to make a decision to initiate operating action, to evaluate and then to learn. Innovation is related to social and technological changes. It is able to be applied to benefit oneself, organization, society, nation, and the world more effectively than before.

### **Knowledge Management**

Knowledge Management means the knowledge obtained in an organization that must be considered about the validity of knowledge that should be useful and appropriate with the person at the right time. There should be an exchange of knowledge in work operation by focusing on the organizational operation improvement together with a good working environment to facilitate the access of information about knowledge construction and to transfer the knowledge effectively. Various organizations, including the Institute of Knowledge Management for Society, aims to encourage government and private agencies to implement the concept of knowledge management until they achieve their success and for them to disseminate to public. Thailand educational management industry is even more give importance to knowledge as the driving force to success. Educational administrators must value the knowledge management in order to develop teachers into learners according to school vision (Sallis; & Jones. 2002: 2-10). The national education development expects the schools as the educational units that closest to the learners to keep up with rapidly changing technology (Enriquez, 2001). School administrators must have strategies for educational management that response to national needs in the age of knowledge society (Ministry of Education, 2002). Schools are the most powerful source of knowledge creation (Wijarn Panich, 2004). Several key factors for success including people and knowledge management process especially technology in knowledge management processes (Franklin, 2005).

The success of innovative knowledge management from Nonaka and Takeuchi (1995) suggests that rapid knowledge transfer across the organization effectively is the importance of knowledge transfer such as reporting, training, and job rotation. The organization should encourage individuals to learn and develop oneself in problem solving. The organization should evaluate experimental test including support a good working environment for organizational personnel such as the open-mindedness of ideas exchanging and the work quality improvement. These are important for knowledge transfer and new things creating in the organization that has many components.

In summary, knowledge management is a systematic process in which information data, ideas, and experience are evaluated to create knowledge or innovation. It is the process of developing organizational personnel to be able to identify knowledge, seek knowledge, create knowledge development, exchange of knowledge as well as to save knowledge systematically. It can also be applied as a learning process that is accessible for everyone starting from individual, group and to all entire organizational levels in order for everyone to access that knowledge thoroughly which will lead to knowledge sharing and knowledge transfer to another person increasing the productivity of the organization successfully according to the goals.

The researcher summarized the result from studying and inspection of relative information that the success of innovative knowledge management from Nonaka and Takeuchi (1995) suggested that knowledge construction is an innovative work or new knowledge that applied from knowledge of people through process called SECI Model. The rapid knowledge transfer across the organization effectively is important for knowledge transfer such as reporting, training, and job rotation. The organization should support individuals to learn and develop oneself in problem solving, evaluate experimental test including support a good working environment

such as the open-mindedness by example, the exchanging of ideas and the work quality improvement which are important for knowledge transfer and new things creating in the organization that has many components that consistent with Sudharatna (2004) on the transfer of knowledge with technology that leaders will support to be more effective leading knowledge to innovation. Moreover, Jularat Busabong (2010) suggested that creating knowledge innovation and knowledge management are related. The components of knowledge management in creating knowledge or creating innovation are able to achieve the objectives of knowledge management. In order to success, the process has to apply the important factor. Firstly, define knowledge management strategies systematically and with a plan. The knowledge management is a factor and is also an important tool to take the obtained knowledge into management and application for development resulting in an efficient organization. This is the interesting reason to study the needs to develop a strategy for “Green Schools” project in educational institutions under the Bangkok Metropolitan Administration for taking the results to develop a strategy for project development hereafter.

#### **4.Objectives of The Study**

1. To study the current condition and the desirable conditions of the “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration.
2. To analyze the necessary needs for strategy developing of the “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration.

#### **5. Population and Sample**

##### **1. Population and Sample**

Research target population is the population of “Green Schools” project which are the 21 schools under Bangkok Metropolitan Region. Informants are 147 teachers of Grade 4, 148 teachers of Grade 5, and 155 teachers of Grade 6.

Determination of the sample size determined by using the ready-made open table method of Krejcie & Morgan (1970). A sample of 205 people came from stratified sampling method, classified by school size and the grade level that the teachers are teaching to cover all small, medium, and large schools and to also cover the teachers of grade 4, grade 5 and grade 6 in a similar proportion.

##### **2. Research instrument**

The research instrument was a questionnaire created by the researcher to collect information about the current condition and the desirable conditions of the internal and external environment that affect the innovative knowledge management of “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration to be used as the basis knowledge for creating innovative knowledge management strategies for “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration. The study questionnaire consisted of 3 parts:

Part 1 General information of the respondents. It is a Check List form.

Part 2 The internal environment of “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration. It is a 5-levels Rating Scale.

Part 3 The external environment that relate to and affect “Green Schools” project in educational institutions under the Bangkok Metropolitan Administration. It is a 5-levels Rating Scale.

##### **3. Tooling production**

The researcher followed the steps as follows:

3.1 Study the documents and researches related to the innovative knowledge management of "Green Schools" project, and analyze them by studying principles, concepts, theories from documents, textbooks, academic articles and related researches both domestic and international for a conceptual framework of the research to develop a tool for data collecting from the sample group.

3.2 Construct the questionnaire by defining the studied points covering the research conceptual frameworks, inspecting the research tool quality, checking the questions in term of structural tool, contents, and the suitability derived from the synthesis of concepts, theories, and related researches as the research conceptual frameworks. The main thesis advisor together with the joined thesis advisors and also the experts examined research tools for the content validity, construct validity, and clearness of the language used. The 5 experts commented and scored to find the IOC: index of item-objective congruence and found that the IOC value was 0.83.

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3.3 Tryout with a group that has characteristics similar to the sample group but is not the sample group in the amount of 30 people and find the Reliability of the questionnaires value by using alpha coefficients according to Cronbach's method. The result found that the whole questionnaire had a confidence value of .96 and in each aspect consideration, the internal environment aspect had a confidence value of .938 while the external environments aspect has a confidence value of .978 which were within the acceptable range that the value was more than .70 (Sarayut Kanlong, 2012).

### 4. Data Collection

The researcher used the google form to collect data by coordinating with the directors of 21 schools. Data was collected from April 15, 2021 to April 30, 2021. A total of 205 respondents were surveyed to study their current condition and the desirable condition of innovative knowledge management of the “Green Schools” project.

### 5. Data analysis

The researcher analyzed the data from the questionnaire by using the descriptive statistics as follows:

5.1 Analyze the basic data of the respondents using Frequency distribution and Percentage. Present the data analysis results in a table format to comprise of the essay.

5.2 Analyze the current condition and desirable condition of the innovative knowledge management of the “Green Schools” project by finding Mean and Standard Deviation (SD). Present the data analysis results in a table format.

5.3 Prioritize the needs of innovative knowledge management of the “Green Schools” project using the Modified Priority Needs index formula.

$$PNI_{\text{modified}} = (I-D)/D$$

PNI stands for Priority Needs Index.

I stands for the mean of the desirable condition (importance).

D stands for the mean of current condition (degree of success)

The needs are prioritized by determination of the issues as follow. The first top 3 issues from each aspect that have a  $PNI_{\text{modified}}$  index value more than the average value of  $PNI_{\text{modified}}$  index indicate the need to be developed due to the weak points and the first top 3 issues from each aspect that have a  $PNI_{\text{modified}}$  index value less than or equal to the average value of  $PNI_{\text{modified}}$  index are considered as the strong points of the need for innovative knowledge management of “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration (Suwimol Wongwanich, 2007).

### Research results

#### 1. General information of the respondents

Basic data of 205 respondents consisting of 28.8% of Grade 4 teachers, 40.5% of Grade 5 teachers and 30.7% of Grade 6 teachers. They were male teachers 37.1% and female teachers 62.9%. The age less than 30 years 36.1%, age between 31-40 years 43.9%, age between 41-50 years 16.1% and age from 51 years and more 3.9%. Educational backgrounds of the respondents were found that they graduated with a degree, Bachelor's degree 89.3% and Master's degree 10.7%. The research could not find a doctorate degree. In terms of working experience with the current educational institutions, the research found that 37.1% of the respondents have less than 5 years experiences, 45.9% have 5-15 years of experiences, and 17.1% have more than 15 years of experiences. This can be said that the sample group covered teachers of grade 4, grade 5 and grade 6 in a slightly different proportion but most of the teachers who answered the questionnaire were female and their age are not over 40 years old. Most of them have a bachelor's degree and have no more than 15 years of working experiences with the current schools.

2. Current condition, desirable condition and prioritizing of the need for innovative knowledge management of the “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration

**Table 1** Current condition, desirable condition and the needs prioritization of the innovative knowledge management in the internal environment of “Green Schools” project in the educational institutions under Bangkok Metropolitan Administration overview

Needs	Current condition (C)				Desirable condition (D)				FN Modified (H/D)	Priority of Importance
	$\bar{X}$	SD	Interpretation	Priority order	$\bar{X}$	SD	Interpretation	Priority order		
<b>Internal environment</b>										
Input	3.81	.81	High	2	4.43	.54	High	3	0.16	3
Process	3.78	.82	High	4	4.45	.56	High	2	0.18	1
Product	3.80	.81	High	3	4.37	.61	High	4	0.15	4
Output	3.88	.87	High	1	4.55	.58	Very High	1	0.17	2
Total	3.82	.83	High		4.45	.57	High			

The results of data analysis from Table 1 revealed that the current condition of the internal environment both in overall and in each aspect were at a high level. The aspect that had a highest average was the knowledge management process aspect which consisted of 1. goals setting/identifying what needs to be learned 2. procurement/ knowledge seeking 3. knowledge processing and screening 4. dissemination/knowledge sharing 5. development/ knowledge creating 6. saving and retrieving of knowledge 7. applying the benefits of knowledge (Office of the Public Sector Development Commission, 2012), followed by the Output aspect or the success of the “Green Schools” project to participate in the creative development and disseminate the research and the use of technology to create knowledge management innovations that is distinguished, famous, accepted and able to expand and increase the number of schools participating in the “Green Schools” project, the next one that followed was the Input factor which was related to the readiness of human resources, budget, management, materials and equipment according to 4 M management principles (Kiattipong Udomthanateera, 2017) and the aspect with the lowest average but still be at a high level was Product aspect which was the result of the students. Here, it referred to learning outcomes of students according to the desirable outcomes of National Education Standards of year 2018 in relation part of the “Green Schools” project.

The overall perspective of desirable condition of the internal environment was at a high level. The consideration for each aspect found that the average in other aspects was at a high level as well, but the Output aspect was at the highest level. Considering from highest to lowest average, it found that the highest to lowest average were Output, Process, Input, and Product respectively. This reflected that the productivity or success of the “Green Schools” project was the highest average aspect in terms of current conditions.

Considering the priorities of needs for internal environment of innovative knowledge management of “Green Schools” project in the educational institutions under the Bangkok Metropolitan Administration, it found that each aspect had the Priority Needs Index (PNI) scores that were not much different. In sorting order, it found that the knowledge management process aspect was the most important aspect, followed by productivity aspect, input factor aspect and outputs aspect respectively.

**Table 2** Current condition, desirable condition and the needs prioritization of the innovative knowledge management in the external environment of “Green Schools” project in the educational institutions under Bangkok Metropolitan Administration

Needs	Current condition (C)				Desirable condition (D)				FN Modified (H/D)	Priority of Importance
	$\bar{X}$	SD	Interpretation	Priority order	$\bar{X}$	SD	Interpretation	Priority order		
<b>External environment</b>										
Political factor	3.72	.75	High	3	4.27	.60	High	6	0.15	5
Economic factor	3.79	.87	High	2	4.55	.53	Very High	1	0.20	3
Social factor	3.92	.75	High	1	4.31	.56	High	5	0.10	6
Technology Factor	3.70	.81	High	4	4.46	.56	High	3	0.21	2
Environmental Factor	3.64	.82	High	6	4.51	.60	Very High	2	0.24	1
Legal factor	3.69	.80	High	5	4.43	.59	High	4	0.20	4
Total	3.74	.80	High		4.42	.57	High		0.18	

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The results of data analysis from Table 2 found that the current condition of the external environment both in overall and in each aspect were at a high level. The aspect that had a highest average was 1. social factor, 2. economic factor, 3. political factor, 4. technology factor, 5. legal factor, and 6. environmental factor.

The desirable condition of external environment in overall was at a high level with the first top 2 that had the highest average which were the economic factor and the environmental factor and if consider the average from highest to lowest, it found that highest average was economic factor followed by environmental factor, technology factor, legal factor, social factor, and political factor respectively.

Considering the needs priorities of innovative knowledge management in the external environment of "Green Schools" project in the educational institutions under the Bangkok Metropolitan Administration, it found that environmental factors was the most important aspect, followed by technology factor, economic factor, legal factor, political factor, and the lowest one was the social factor.

### 6. Discussion of the results

The study of current condition, desirable condition and the needs prioritization of the innovative knowledge management in the internal environment of "Green Schools" project in the educational institutions under Bangkok Metropolitan Administration found that current condition in the internal environment both in overall and in each aspect were at a high level. The aspect that had a highest average was the knowledge management process aspect that consisted of 1. goals setting/identifying what needs to be learned 2. procurement/ knowledge seeking 3. knowledge processing and screening 4. dissemination/ knowledge sharing 5. development/ knowledge creating 6. saving and retrieving of knowledge 7. applying the benefits of knowledge, followed by the Output aspect or the success of the "Green Schools" project to participate in the creative development and disseminate the research and the use of technology to create knowledge management innovations that is distinguished, famous, accepted and able to expand and increase the number of schools participating in the "Green Schools" project, the next one that followed was the Input factor which was related to the readiness of human resources, budget, management, materials and equipment according to 4 M management principles and the aspect with the lowest average but still be at a high level was the Product aspect which was the result of the students. Here, it referred to learning outcomes of students according to the desirable outcomes of National Education Standards of year 2018 in relation part of the "Green Schools" project.

The desirable condition of the internal environment in overall was at a high level. If considering in each aspect, it found that other aspects also had the average at a high level. The Output was at a high level, the aspect that had highest to lowest average were Output, Process, Input, and Product respectively. Considering the needs priorities value of innovative knowledge management of the internal environment of "Green Schools" project in the educational institutions under the Bangkok Metropolitan Administration, it found that each aspect had Priority Needs Index: PNI scores that were not much different and in sorting order it found that knowledge management process was the most important aspect followed by Output, Input, productivity respectively.

The study of current condition, desirable condition and the needs prioritization of the innovative knowledge management in the external environment of "Green Schools" project in the educational institutions under Bangkok Metropolitan Administration, found that the current condition of external environment both in overall and each aspect were at a high level. The aspects that had highest average to lowest average were as followed, 1. social factor, 2. economic factor, 3. political factor, 4. technology factor, 5. legal factor, and 6. environmental factor.

The desirable condition of external environment in overall was at a high level with the first top 2 that had the highest average which were the economic factor and the environmental factor and if consider the average from highest to lowest, it found that highest average was economic factor followed by environmental factor, technology factor, legal factor, social factor, and political factor respectively.

Considering the Priority Needs Index: PNI of the external environment of the innovative knowledge management of "Green Schools" project in the educational institutions under Bangkok Metropolitan Administration, it found that the environmental factor was the most important factor, followed by technology factor, economic factor, legal factor, political factor, and lowest was the social factor.

### 7. Recommendation

Recommendation for applying the research results

1. The internal environment needs; from the research results, it was found that the knowledge management process was the most important aspect. Thus, the educational institutes administrators promote the importance of it as the guidelines for developing and enhancing new things in the knowledge management process within



the educational institutions. The results of the study consisted of 1. goals setting/identifying what needs to be learned 2. procurement/ knowledge seeking 3. knowledge processing and screening 4. dissemination/knowledge sharing 5. development/ knowledge creating 6. saving and retrieving of knowledge 7. applying the benefits of knowledge effectively.

2. The external environment needs; from the research results, it was found that the environmental factor was the most important factor. Therefore, educational institutes administrators promoted the importance of external environment, promoted the quality of life that was friendly to the environment, enhanced the understanding of the natural resource scarcity in the future, including inserted the knowledge learning from the Platform to students for them to learn about the impact (*of environmental problem*) in the future clearly which will lead to the knowledge and awareness of the environmental problem.

### 8. Suggestions for further research

1. There should be more study about the implementation of strategies seriously and study the results occur whether they are close to the desirable condition or not.

2. Further research should study with qualitative research methods such as interview in order to know additional causes of the problem and to know the guidelines to response the deep needs based on the Complete Needs Assessment Principle.

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