The needs assessment of internal supervision of teachers in the
department sciences and mathematics of Khon Kaen
University demonstration secondary school (Suksasat)

Metta Marwiang

Department of Mathematics, Faculty of Education, Khon Kaen University, Thailand
corresponding author’s e-mail address: metmaw@kku.ac.th

ABSTRACT. The research procedures in the study of the needs assessment of internal supervision of secondary school teachers in the department sciences and mathematics of Khon Kaen University Demonstration School (Suksasat) consisted of three following steps: 1) to identify the concept to study the actual and desired model of internal supervision in six dimensions; including (i) internal supervision planning, (ii) direct support for teachers, (iii) group-working skill development, (iv) professional development, (v) curriculum development, and (vi) learning assessment and evaluation, 2) to investigate the actual and desired model of internal supervision of secondary school teachers in the department sciences and mathematics of Khon Kaen University Demonstration School (Suksasat) in all dimensions. The result showed that the overall actual internal supervision was in a high level (X = 3.64, S.D. = 1.09) while the desired internal supervision was in a strongly high level (X = 4.78, S.D. = 0.49). Therefore, the needs assessment of internal supervision of secondary school teachers of Khon Kaen University Demonstration School (Suksasat) in all dimensions. The results indicated that the participants need internal supervision with the between 0.29 and 0.34, and with the overall of 0.30. The was found at the highest (0.34) when the direct support for teachers was independently considered.

1. Background
According to National Education Act B.E. 2542 [14], the educational administration or learning administration aims to enhance knowledge for the learners to further obtain self-learning and self-development by focusing on the learners as priority. Thus, teachers must have strong command in the educational administration to reach the standards of curricular and national education. Also, the school must maintain its potential to manage the development of the quality assurance and educational evaluation system as well as upgrading the leading schools under the Office of the Basic Education Commission to become the World-Class Standard School, where all personnel must be engaged in the management collaboratively. Internal supervision is an important tool in building partnerships between teachers and educational personnel. Internal supervision is a collaborative process for teachers and administrators to develop curriculum and teaching and learning in order to solve learners’ learning problems and broaden their skill. The information concerning quality of education in the school is used as an indicator for the development of school management work in all aspects. However, the access to information for non-school personnel is limited. As a result, it is necessary that the personnel must cooperate closely in identifying the problems to solve and develop in accordance with the
existing data and educational information according to Office of the Basic Education Commission [15].

One of the important tasks for school administrators, executives and staff in the school is to supervise, especially in school internal supervision is widely used to improve the quality of education. The school internal supervision aims to solve academic deficiencies and encourage teaching and learning to achieve its goals; as a consequence, the school curriculum is responsive to the needs of all school personnel. When the internal supervision is implemented precisely and Appropriately, the school management is accepted by the school staff resulting in the positive internal and external evaluation.

The supervision in the school is a collaborative work process among administrators and school personnel to guide, support, and promote teaching and learning procedures to meet school standards [3]. The objectives of internal supervision are to develop staff in the organization, motivate teachers to obtain wider the knowledge and skills to develop the curriculum, teaching and learning management, coordinate and collaborate to ensure good understanding among related staff and departments. Moreover, it creates confidence and job security in the profession as a teacher, which in turn, encourages developing teaching and learning to reach the greater quality of the educational administration as expected. Hence, the internal supervision should be highlighted in all schools and complied with the STEM Education management. Particularly, sciences and mathematics learning holds fundamental structure of knowledge in any subjects that facilitates teachers to teach and combine knowledge in other fields since learners are encouraged to utilize problem-solving skills, seeking to meet the rapid pace of world’s change. Therefore, the collaboration among teachers in different departments is key success in learning management. This helps develop skills required in the globalized world in the 21st century [6], [17], [4].

The commitment of Khon Kaen University Demonstration Secondary School (Suksasat) is to develop the academic abilities of learners, life skills and desirable attributes to produce graduates, and provide academic services and educational innovations while maintaining the national culture to be accepted in the international arena. The school is a leading demonstration school in ASEAN that does not only develop innovative education and research but also co-produce graduates with the Faculty of Education of Khon Kaen University. As a learning society, the school and university collaboration mainly supports the excellence of learners’ academic identity, and encourages learners to have confidence to express their vision [7].

Furthermore, school internal supervision is essential in learning management and the quality of education development to achieve the school goals. Therefore, the school administrators and all personnel in the educational institution are obliged to cooperate in all development tasks of the educational institution. The Education Service Area Office, as a main agency who is responsible for educational management, seek ways to ensure that the importance of supervision in the school has been addressed as imposed in the standards of the Education Service Area Office. In the statement, the school internal supervision is suggested to be used as a guideline for the establishment of standards for educational institutions for greater effectiveness in practice.

Nevertheless, in the actual practice, the implementation of internal supervision has faced with numerous obstacles. For example, Kunnatham School Center under the operation of Yuwa Sathiratham Foundation [10] tested follow-up internal supervision to voluntarily support the counseling and share educational vision among the staff which helps to establish the unity in team building process leading to sustainable success in the future.

In addition, Ratanawitoon [16] studied the setting academic events in elementary school which is under the jurisdiction of the Office of Nan Provincial Primary Education, and noted that ‘the internal school supervision is often found with the lack of supervision staff and understanding in internal school supervision management.’ The study also investigated that the current situation of the internal supervision and found that personnel development is insufficient for the current issues and needs. These results were consistent with the findings of the Office of the National Primary Education
Commission [12] mentioning that the school has limited competent personnel to supervise the school and supervision skills.

The needs assessment is considered as the first critical step in the assessment cycle to help diagnose problems and solutions. In the context of the school, research needs assessment can identify what is needed by the administrators and teacher, which is further used in the design of teaching and learning development. The learning assessment and evaluation are used to point out weaknesses and strengths that should be developed and promoted. They are also used to determine the direction that school administrator leads the school. In addition, the assessment and evaluation is beneficial to seek the most appropriate development methods, [18], [11] leading school development to a clearer and more direct to the goals. Due to the importance of the needs assessment, certain schools are required to report the assessment results in the school financial sheet as critical information used in supporting financial activities or projects of the school.

According to the importance of internal supervision in the department of sciences and mathematics for developing operational tasks of Khon Kaen University Demonstration Secondary School (Suksasat) and its needs assessment, the researcher team is aware that it is essential to identify the actual internal supervision in the current situation and the desired internal supervision that the administrators, teachers in the department of sciences and mathematics, and staff would preferred in order to develop teaching and learning management in line with STEM Education approach. Since education in the secondary level is strong foundation for students to further education in the higher level, the school must ensure that prospective graduates are fully equipped with knowledge to perform in their future career and serve the society in various fields. On the other hand, if the education in the secondary level is poor, the learning outcomes in the higher level will undoubtedly dissatisfied.

Thus, the effective implementation of internal supervision in the department of sciences and mathematics is one of the key factors to success influencing the quality of teaching and learning in school, especially in students’ learning outcomes. In this study, the needs of internal supervision of Khon Kaen University Demonstration Secondary School (Suksasat) are assessed to develop the model of internal supervision in the department of sciences and mathematics in accordance with the particular context of Khon Kaen University Demonstration Secondary School (Suksasat)

2. Purpose of Study
1. To develop a conceptual framework in the study of the actual and the desired internal supervision development in the current circumstances
2. To investigate the current development of the internal supervision model of the teachers of Khon Kaen University Demonstration Secondary School (Suksasat)
3. To assess the needs for internal supervision of the teachers of Khon Kaen University Demonstration Secondary School (Suksasat)

3. Concept of Study
The purpose of the research is to reach the scope of the study to
1) identify the needs assessment of internal supervision of teachers and staff of Khon Kaen University Demonstration Secondary School, and
2) develop the model of actual and desired internal supervision in six dimensions, including (i) internal supervision planning, (ii) direct support for teachers, (iii) group-working skill development, (iv) professional development, (v) curriculum development, and (vi) learning assessment and evaluation.

The internal supervision model development is designed as a conceptual framework of the study as shown in Figure 1.
4. Population and Samples
The population was 80 secondary school teachers of Khon Kaen University Demonstration School (Suksasat). A total of 28 samples were selected by purposive sampling.

5. Research Tools
In this study, the questionnaires were used as research tool designed by the author from the theoretical frameworks and concepts to obtain the information of the internal supervision. The questions are divided into 3 parts. The first part is mainly asked to obtain general information of the respondents: gender, age, education background, work position, work experience, and the questions regarding model internal supervision using checklist technique. In the second part, the questions are concerning the current issues and the needs assessment of internal supervision by using 5-Likert's scale, cited in Kaiyawan [8]. The final part of the questionnaire focuses on the needs assessment and suggestions for internal supervision by using open-ended questions.

6. Research Tool Testing
1. The validity of research tool was used to indicate that the content is related to the scope of the study. The questionnaire was developed and revised by the recommendations of experts in all dimensions with the objective congruence (IOC) values of 0.6 - 1.00.
2. The reliability of the questionnaire was used to try out with the respondents, namely teachers and staff at the Khon Kaen University Demonstration Secondary School (Mordindaeng). The reliability were 0.97.

7. Results
The result of needs assessment of internal supervision in the department of sciences and mathematics of secondary school teachers of Khon Kaen University Demonstration School (Suksasat) is shown in Table 1.

---

**Figure 1. Conceptual framework of the study**

| Independent Variables | Dependent Variables |
|-----------------------|---------------------|
| Attributes of teachers and staff in the department of science and mathematics of Khon Kaen University Demonstration Secondary School (Suksasat) | Dimensions in the internal supervision |
| | 1. Internal supervision planning |
| | 2. Direct support for teachers |
| | 3. Group-working skill development |
| | 4. Professional development |
| | 5. Curriculum development |
| | 6. Learning assessment and evaluation |

---
Table 1. Results of overall needs assessment of internal supervision in the department of sciences and mathematics of secondary school teachers of Khon Kaen University Demonstration School (Suksasat)

| Dimensions in Internal Supervision | Actual implementation | Desired implementation | PNI\textsubscript{Modified} | Rank |
|-----------------------------------|-----------------------|------------------------|-----------------------------|------|
| 1. Internal supervision planning  | X = 3.69, S.D. = 1.02 | X = 4.74, S.D. = 0.59  | 0.29                        | 6    |
| 2. Direct support for teachers    | X = 3.61, S.D. = 1.05 | X = 4.82, S.D. = 0.52  | 0.34                        | 1    |
| 3. Group-working skill development| X = 3.61, S.D. = 1.13 | X = 4.80, S.D. = 0.50  | 0.33                        | 2    |
| 4. Professional development      | X = 3.73, S.D. = 1.09 | X = 4.84, S.D. = 0.39  | 0.30                        | 5    |
| 5. Curriculum development        | X = 3.59, S.D. = 1.12 | X = 4.74, S.D. = 0.46  | 0.32                        | 4    |
| 6. Learning assessment and evaluation | X = 3.62, S.D. = 1.13 | X = 4.76, S.D. = 0.51  | 0.33                        | 2    |
| Total                             | X = 3.64, S.D. = 1.09 | X = 4.78, S.D. = 0.49  | 0.32                        | -    |

8. Discussion

Based on the results of the research, the needs of internal supervision in the department of sciences and mathematics of the teachers of Khon Kaen University Demonstration Secondary School (Suksasat), the significant data were found as follows:

**Part 1:** The descriptive study was used to identify current issues of internal supervision of teachers in the department of sciences and mathematics of Khon Kaen University Demonstration Secondary School (Suksasat) in order to indicate its needs for future development. This research method allows an insight into the key issues of actual internal supervision occurred in the school as described below.

First, educators are required to assist the teachers directly by providing a summary of the teachers’ performance to solve their problems or obstacles in teaching and learning. This is a key factor to improve teaching activities development and evaluation. However, the validity of the evaluation is varied from different evaluators [9] Amphol [1] also pointed that human resources development should be implemented based on the actual practice in a specific context in order to facilitate and encourage the staff effectively.

Second, the overall result the actual practices of internal supervision in the department of sciences and mathematics of teachers of Khon Kaen University Demonstration Secondary School (Suksasat) showed the following statistic data: mean (3.64), and SD (1.09). The three highest mean of all six dimensions of the internal supervision was professional development (X = 3.64, S.D. = 1.09), followed by internal supervision planning (X = 3.73, S.D. = 1.09), and assessment and evaluation (X = 3.69, S.D. = 1.13), respectively.

Third, the overall desired practices of internal supervision in the department of sciences and mathematics of teachers of Khon Kaen University Demonstration Secondary School (Suksasat) showed the three highest mean of 4.80, and S.D. of 0.49. When each dimension of the internal supervision was independently considered, it was found that three highest mean of all six dimensions was professional development (X = 4.84, SD = 0.39), followed by direct support for teachers (X = 4.82, SD = 0.52), and group-working skill development (X = 4.80, SD = 0.50 ), respectively.

**Part 2:** The results of needs assessment of internal supervision of teachers of Khon Kaen University Demonstration Secondary School (Suksasat) are described below.
First, the needs of internal supervision of respondents of Khon Kaen University Demonstration Secondary School (Suksasat) were found in all dimensions with the $PNI_{\text{Modified}}$ between 0.29 and 0.34 with the average of 0.32. The dimension of direct help for teachers was found with the highest $PNI_{\text{Modified}}$ of 0.34, followed by group-working skill development and assessment and evaluation with $PNI_{\text{Modified}}$ of 0.33, and internal supervision planning with $PNI_{\text{Modified}}$ of 0.29, respectively.

The results in this study were consistent with the strategy of the Office of the Public Sector Development Commission [14], mentioning about the national development plan of Thai public sector in the span of 2008 – 2012. The purpose of the strategic plan for Thai public sector development section III was established to lead government organizations to become a high-performing with talented and competent staff so that they are able to learn, innovate, adapt and adjust to different circumstances.

In the context of the educational institute assessment of Khon Kaen University Demonstration Secondary School (Suksasat), the Balanced Scorecard (BSC) in the perspective of internal education management was used as an assessment tool. The implementation of internal supervision was consistent with the approach because it is a process of developing instructional effectiveness. The actual teaching was observed and found with the innovation using ‘Lesson Study’, which requires the educators to directly assist the teachers, to develop curriculum and learning assessment and evaluation.

According to Chindanurak [5], teachers must have sufficient knowledge and skills to develop learners with the appropriate qualifications that help develop country under the national policy, called ‘Thailand 4.0 Policy’. This means that teachers must be able to analyze and apply accumulated knowledge to improve the teaching and learning process.

The results reflected that the respondents were developed by the Faculty of Education to develop the understanding toward bureaucracy which was in compliance with government’s quality management guidelines that highlighted the awareness of globalization under the educational policy of STEM Education. This approach is anticipated to solve the current bureaucratic issues while improve the test results e.g. PISA which lead the citizens to gain wider knowledge [2]. In the era of information-driven society, the pursuit of knowledge becomes common that leads teachers to share knowledge, understanding and awareness of internal supervision. Thus, the curriculum of the Faculty was aligned with the national development strategies.

In summary, it can be concluded that the results of needs assessment of internal supervision of Khon Kaen University Demonstration Secondary School (Suksasat) are consistent with the preliminary actual and desired implementation of inter supervision. As a consequence, the results can be used as a guideline for the model development of internal supervision. The results are also in accordance with the concept of quality management the development of government’s quality management

9. Recommendations

Based on the results and discussion in the study, the practical recommendations for future internal supervision practices and further academic research are presented as follows.

9.1 Practical implications

9.1.1 Practical implications for policy planning

- The results showed that supervisors had limited time to supervise teachers in certain topics. Moreover, there was no clear evidence showing that the school administrators have seriously applied the knowledge of internal supervision into the development of teaching and learning in practice. Hence, the school administrators should play a key role in taking internal supervision application from the empirical results into account as part of an internal supervision approach.
• From the findings, it can be suggested that the internal supervision model should be implemented in line with the country’s sustainable strategic development. Also, the model should enable teachers to be aware of the importance of internal supervision; as a result, teachers can improve and develop their practices constantly.
• Schools should impose systematic and long-term plan and policies to develop human resources of Khon Kaen University Demonstration Secondary School (Suksasat) to maximize their effectiveness while promoting their morale.

9.1.2. Practical implications for implementation
• Each learning department should schedule meeting to supervise the staff in every semester or establish training for internal supervision skill development.
• Develop a project to study the model of supervision in accordance with the government’s sustainable management of education.
• Support and promote the visit to external agencies that have similar characteristics, at least one time per academic year to allow human resources to understand the internal supervision of other agencies and apply it appropriately in their organization.

9.2 Suggestions for future research
• There should be an analysis of the needs assessment, guidelines, and solutions designed for a particular department of teacher group; as a result, teachers can implement accordingly.
• It is recommended that all participants should collaboratively design the model of internal supervision in order to acquire the accurate data from different positions and meet the needs of organization as a whole.

10. Acknowledgment
The dedication of Khon Kaen University Demonstration Secondary School in this study was deeply appreciated.

References
[1] Amphol R 2015 Practice of Internal Supervision of School Administrator under the Office of 1st Education Service Area Ayutthaya (Krungkao Rajabhat Journal 2nd year vol 1) pp 25-32
[2] Blackley S, Sheffield R, Maynard N, Koul R and Walker R 2017 Makerspace and reflective practice :Advancing pre-service teachers in STEM education (Australian Journal of Teacher Education Online vol 2) chapter 3 pp 22
[3] Boonya C 2003 Principles and Concepts of New Age of Supervision (Supervision Department and Education Management Office of General Education Educational Service Area Office Area 8)
[4] Breiner JM, Carla CJ, Harkness SS and Koehler CM 2012 What is STEM? A discussion about conceptions of STEM in education and Shelly Sheats Harkness Partnerships (School Sci and Math vol 112) chapter 1 pp 3-11
[5] Chindanuluk T 2017 Education 4.0 Management and Sustainable National Development, retrieved on 12 December 2017, from http://adacstou.wixsite.com/adacstou/single-post/01/09/2017/
[6] Dejarnette NK 2012 America’s children :providing early exposure to STEM )science, technology, engineering and math (initiatives Edu vol 133) chapter 1 pp 77-84
[7] Demonstration School Khon Kaen University 2015 Annual Report (Secondary Department (Suksasat)Khonkaen University)
[8] Kaiyawan Y 2002 Research Foundation 4th edn (Bangkok :Suweeriyasarn)
[9] Kanjanawasee S 2007 Theories of Evaluation (Bangkok :Chulalongkorn University)
[10] Kunnathom School Center under Yuwa Sathiratham Foundation 2017 2nd edn Bangkok :
Sahamit Printing and Publishing Public Company Limited

[11] Marwiang M 2013 *The Development of A Model for Mathematic Classroom Assessment : Collaborative Assessment Pyramid* (Philosophy Doctoral Thesis of Education Assessment and Evaluation Faculty of Education Khon Kaen University)

[12] Office of the National Primary Education Commission 1991 *Evaluation Manual for Education* (National Education Standards Bangkok : MPT)

[13] Office of the National Education Commission 1999 *The National Education Act* (Bangkok : Prig wan Communication)

[14] Office of the Public Sector Development Commission 2009 *Good Governance Rating* (Bangkok: Premier Pro Company Limited)

[15] Office of the Basic Education Commission 2010 *Principles of Quality Assessment for General Education Standards : Internal Quality Assessment of Educational Institutes* (Bangkok : Office of Educational Testing . Department of Education)

[16] Rattanawitoom S 2007 *Supervision Behavior of Administrators of Model Schools : Recognition of Teachers* (Office of Nan Provincial Primary Education)

[17] Wayne C 2012 *What is S.T.E.M and why do I need to know?* (Retrieved 28 July 2018 from https://issuu.com/carleygroup/docs/stem12online)

[18] Wongvanich S 2007 *Research of Needs Assessment 2nd edn* (Bangkok : Thammada Place)