The Development of Learning Module of School-Based Supervision of Students in Thailand

Chalard Chantarasombat*, Chaiyuth Sirisuthi

Faculty of Education, Northeastern University, Khon Kaen 40000, Thailand

Abstract

Knowledge creation is often applied by many academics for enriching the efficiency and quality of learning achievements. But can knowledge creation also be used in low technology situations such as school-based supervision of students? This paper describes the development and application of the learning module of "School-based Supervision of Students (ED8013307)" at Northeastern University, Khon Kean during the academic year 2019. The results were: 1). The efficiency of the action process in the learning module was 84.76, the efficiency of knowledge was 82.16, higher than the specified criterion of 80/80. 2) The quality of the learning module, propriety, congruence, feasibility and utility aspects was at "The Highest" level. 3) The effectiveness index of students was 0.7578. 4).The post-test learning achievement was significantly higher than the pre-test at .05.5) There were no significant differences between the post-test and the pre-test, indicating that learning retention had been achieved. 6) Student's satisfaction with the learning module was at "The Highest" level.

Keywords: Construction and development; Learning module; School-based supervision; Action learning

INTRODUCTION

Changing demographics is challenging the ability of master's degree program students in educational administration at Northeastern University, Thailand. The sustainability and viability of transferring knowledge to the next generation through traditional methods are circumvented by the trend of students relocating to more urbanized areas of Thailand. Rapid economic, environmental and social development changes have impacted every country and unskilled or low skilled labor is more likely than ever to be eventually replaced by robotics and technology. Every country is determined to raise production levels with competent and specialized skilled human resources. These demands can be achieved through education and educational management. In response to the changing trend, the educational management for Thailand is focused on the 21st-century skills of students with the goal for students to obtain the necessary knowledge and skills for use in their daily life, career advancement and contribute to the development of the national economy and Thai Society. The educational management should be aligned with Thailand's education policies which include: 1) The 20-year national strategy (2018-2037), which is the 3rd strategy in the development and enhancement of human resources. The major development goals are to develop every dimension of human resource skill at all age levels. Human resource and students for the 21st century is to be virtuous, intelligent, be a quality individual that has public awareness and responsibility to society and others. They should be economical, generous, disciplined, ethical and respectable citizens. They must have decent English and foreign language skills, be learning-oriented and pursue self-development. 2) The 12th Issue of National Economic and Social Development Plan emphasizes that Thais of all age levels are to be skillful, competent and self-developed citizens. The educational management development is supported by the Sufficiency Economy Philosophy which reflects and addresses the global changes in the 21st century where students must possess the skills of 3Rs8Cs which include: reading, writing, and arithmetic. They must also possess the 8Cs comprising of: analytical thinking, critical thinking, problem-solving, creativity, innovation, understand the cultural differences and have a cross-cultural appreciation, can collaborate with others, is a good team player and also a leader that can guide others. They should also possess ethics, mercy, discipline, and compassion (Institutions of Community Colleges).

The role of teachers must be under the current context and environmental situation of global society as well as to

adapt to the changes based on the students' requirements which include external factors such as social-cultural trends, information, communication, and technology. These needed developments are supported with the 3rd Issue of Thailand's National Education Act, Category 4, Section 24 (5) of the Educational Management Guidelines which states: "Learning Management, the schools, and related working units should enhance and support the teachers to be able to provide the climate, environment, learning media, and facilities for the students' education. The students and teachers must be knowledgeable and be able to use the research as a part of the learning process".Section 30 specifies that the schools should develop efficient instructional processes and enable the teacher's ability to research developing appropriate learning processes with students at each educational level. Teachers are the most important resource in educational quality development and are tasked with providing and developing education so that students obtain knowledge and competency with complete potentiality. Teachers must apply various instructional management techniques that are essential to change or develop new concepts in instructional management techniques that are appropriate for contemporary times [1]. Teachers are changing their roles from just giving lectures in front of classes to become more of a facilitator or a coach who provides suggestions, recommendations, and assistance when needed. The role changes are supported by Panich's assertion, that the teachers have to change their role from lecturers and become more coaches and initiators[2]. To create a sustainable learning management network, teachers and students should systematically and continuously share their learning experiences called Professional Learning Community (PLC). The learning module or module lesson is a collection of educational innovation and technology that can be utilized for revising and improving the different courses or educational processes to be more efficient. This can be achieved if it was produced step by step and the efficiency of the module carefully investigated [3].This opinion is shared by Lawrence in which the learning module is a systematic instructional process including various teaching methods used for self-studying based on individual differences [4]. Learning modules can help students keep pace with their education and reveal the student's level of competency or progress in each stage. The learning module is an instructional innovation with a collection of learning content that can enhance the learning potential of students.

The authors agreed with instructors at Northeastern University and collaborated with instructors in the master's degree program, Educational Administration during the first semester of 2019 and constructed 1 major pilot course for studying the appropriate innovation in the form of a learning module "School-based Supervision of Students (ED8013307)". The module was focused on learning through practice, action learning, creative thinking, innovative development, expert competence, creation of new knowledge and the ability to transfer that knowledge by coaching and instructing others. The goal of the module was to be an efficient and effective criterion that can be extended to interested individuals, groups and benefit higher educational institutions in the future.

BACKGROUND

The authors' study in "The Development of Innovation for Improving the Learning Achievement of Schools, under the jurisdiction of Nakon Panom Primary Educational Service Area Office 2", by applying the approach/theory of supervision, the Route to Excellence and Coaching and 4 learning modules. The project participants included teachers, school supervisors, and administrators. The overall results, the Mean value of efficiency was=90.69/81.02 which was higher than the specified criterion of 80/80. The Mean value of post-test efficiency was significantly higher than the pretest at .01 level. The effectiveness index of development was=0.7480. This indicated that the trainees obtained 74.80% of additional knowledge. As a result, the learning community was developed in both classroom and school levels. Teamwork, cooperative participation, and a learning network were successfully achieved through action learning. Teachers were confident and group relationships were developed and participants supported each. The overall Mean value of satisfaction on the improvement of teachers, school administrators and supervisors was=4.60. The satisfaction of the learning module was at the "The Highest" level[5]. The findings were consistent with Charoenpong, "Engineering Mechanics for High Vocational Certificate Qualification"[6]. The research findings found that the post-test scores after learning through the learning module "Engineering Mechanics for High Vocational Certificate Qualification", were significantly higher than the pretest at .05 level. The highest level of students' satisfaction was in the enhancement of creative thinking. The results are also supported by Donbundit's, "The Development of Learning Module in Analytical Chemistry Course in Higher Education through Discovery Cycle", found that the overall post-test learning performance was significantly higher than the pretest at .01 level [7]. Moreover, the Mean value of learning score in each aspect including the learning achievement, Scientific Process Skill, and Critical Thinking Ability after trying out the module, was significantly higher than the cutting point at .01 level.

RESEARCH QUESTIONS

The research questions were determined by the authors to design, construct and develop the learning module. The questions include:

- Would the efficiency of the learning module of "School-Based Supervision for Students", meet the specified criterion 80/80 and how would it meet or surpass that target?
- What level of propriety, feasibility, congruency, and utilities would follow after the evaluation by scholars

and experts?

- What value would the effectiveness index in the learning management for the Students" be?
- Would the learning achievement of the post-test scores of students be higher than the pre-test scores and how can the post-test scores be higher?
- What would the students' learning retention be?
- What level of satisfaction would the students have and how to achieve a "High Level" or "Highest Level"?

RESEARCH OBJECTIVES

- To construct and develop the learning module by using 80/80 standard efficiency criteria.
- To evaluate the quality of the learning module by scholars and experts.
- To search for the effectiveness index of students.
- To compare the pre-test and post-test scores in the learning achievement of students.
- To analyze the learning retention of students.
- To analyze the students' satisfaction.

RESEARCH DELIMITATION

- The population of this study consisted of 14 selected and 12 volunteer Master's Degree students in the Educational Administration of Northeastern University during the first semester of the 2019 academic year. The participants are registered students of Northeastern University who studied and continuously participated in the program "School-Based Supervision for Students" (ED8013307).
- The independent variable was the learning management of the learning module. The dependent variables include learning achievement and satisfaction.
- The duration of the study was conducted during the first semester of the 2019 academic year.
- The content material was divided into learning units or sub-modules which include;

1) Supervision Planning, 2) Technique for Higher-Order of Supervision, 3) Educational Quality Assurance, 4) Enhancement of Student Support System and 5) Development of Supervision Network.

RESEARCH CONCEPTUAL FRAMEWORK

The development of the learning module of "School-Based Supervision for Students" and the conceptual framework was determined by the authors with experts' evaluations. The innovation of learning module of "School-Based Supervision for students" consisted of 5 learning sub-modules including 1) Supervision Planning, 2) Technique for Higher-Order of Supervision, 3)Educational Quality Assurance, 4) Enhancement of Student Support System and 5) Development of Supervision Network (Figure 1).

CONSTRUCTION AND DEVELOPMENT OF RESEARCH INSTRUMENTS

The learning module of "School-Based Supervision of Students" consisted of the Following development steps and discoveries as follows:

- The collaborative determination of issues in the development and planning of the learning module was conducted at the Faculty of Education, Educational Administration, Northeastern University, Khon Kaen Province [8].
- Document analysis of subjects related to Educational Policy, Strategy and Technique were studied for determining the appropriate content and innovative techniques in enhancing the level of learning performance. The cases of best practices were also surveyed by studying: The theoretical approaches in educational quality during the 21st century, The leaders' development by supervising and coaching, The construction and development of professional learning community (PLC), The Educational Supervision Clinique the Route to Excellence (ESC) [9]. The approach/theory of supervision for excellence by Chantarasombat and Udomboonyanupap [10]. The open classroom of Peter Kadley cited in Chantarasombat, Udomboonyanupap and Songsri [5], The field trip study for the construction of Professional Learning Community (PLC)focused on Open Classroom and Application of Student-Centered learning of Rayong Primary Educational Service Area Office 2 [11] and the implementation performance of mathematics in primary education of Ban Kam Bong School 1, Mukdahan primary educational service area [12].
- The construction and development of the learning module "School-Based Supervision for Students" was divided into 5 sub-modules: 1) Supervision Planning, 2) Technique for Higher-Order of Supervision, 3) Educational Quality Assurance, 4) Enhancement of Student Support System and 5) Development of Supervision Network.
- All of the 5 learning sub-modules were presented to 5 experts for evaluation for propriety and congruency of the content. The five experts included:1) Professor Preecha Pratepa, 2) Professor Notai Boonyanupab, 3) Assistant Professor Yanapat Seehamongkon, 4) Assistant Professor Prasert Reunnakan and 5) Assistant Professor Tharintorn Namwan. The experts' found that all 5 learning sub-modules, in regards to propriety, feasibility, congruency, and utility, were at "The Highest" level.
- All 5learning sub-modules were tested on non-target groups, groups of 1-5 students, sub-groups and tested

individually on 9 students who were educational administrators and master's degree students in educational administration. The efficiency of the tests was82.67/83.89. The learning modules were improved and revised as a part of the handbook for participants. The 5 learning sub-modules were published to be used in the final test with the target group which included 12 master's degree students in educational administration, Northeastern University.

The construction steps and examination of the quality of learning achievements were as follows:

- Study the theoretical approaches and rationales for constructing the learning achievement test and applied Srisaard's criterion reference test as the guidelines for creating the learning achievement test [13].
- The learning achievement test included questionnaires with 4 multiple choice answers and 80 mandatory test items from 100.
- The learning achievement test was presented to the experts to evaluate the congruency between the test and its behavioral objectives. The scoring criteria's include: 1) the score +1 was given when the participant was confident that the test's measurement was based on the behavioral objective, 2) The score 0 was given when the participant was not confident of the test's measurement based on the behavioral objective and 3) The score -1 was given when the tester was confident that the test did not provide the correct measurement based on the behavioral objective.
- The index congruency between the test items and its behavioral objectives were analyzed using Item Objective Congruence (IOC) Formula outlined by Pattiyatani [14]. This was done by selecting the test with the IOC Index ranging from 0.5 to 1.00 as the criterion of available content validity and was then used to acquire the desired item numbers.
- The tests with the IOC value was tested with a non-target group. The tests were supervised by 14 school administrators who were graduates in educational administration, teachers and educational supervisors under the jurisdiction of Yasothon provincial education office who acted as coaching teams to the participants. The test was done at J.P. Emerald Hotel, Yasothon province with a total of 60 participants. The goal of the test was to study the participant's reaction and response to the trial test, the participants' reaction time in completing the test and comprehension of the presented questions.
- The obtained scores were analyzed to search for Item Difficulty (P) and Item Discrimination in each test item. The analytic findings found that the Item Difficulty of the test ranged from 0.40 to 0.80. Item Discrimination ranged from 0.20 to 0.60. The Reliability of the Total Test (rtt) was determined by using the KR 20 formula and resulted in an rtt=0.84.

The construction steps and quality investigation of the 12 item questionnaire do determine the satisfaction of the students was as follows;

- The theoretical approaches of satisfaction were studied from the book of
- Reformed Administration and Management by Soontrayut [15].
- The construction and techniques in designing the satisfaction questionnaire were studied from Boonchom Srisaard's guidelines for basic research [16].
- The 5 Level Rating Scale was based on Likert's principle and used to determine
- The guidelines and rationale for constructing the satisfaction questionnaire.
- The questionnaire was constructed based on its objective according to the 5
- Level Rating Scale.
- The satisfaction questionnaire was presented to the group of experts for

The evaluation of the congruence between question items and the behavioral objectives.The scoring criteria are identical to the scoring criteria in the learning achievement test (step 2.3).

The Index of Congruence between question items of the questionnaire and the behavioral objective was analyzed by using the IOC Formula and determined that the IOC of the questionnaire ranged from 0.80 to 1.00. The group of experts recommended that the language of the questions should be written based on sentence structure and their obvious meaning. They also recommended that the question items with similar meanings be organized into one item.

The questionnaire was tested on the same non-target group in step 2.5. The Item

Discrimination (r_{xy}) ranged from 0.32 to 0.83. The total issue reliability of the questionnaire was determined by using Cronbach's Alpha Coefficient (-Coefficient) which calculated the total issue reliability of the questionnaire was=0.93. The satisfaction questionnaire was then printed and used as a research tool to collect data.

DATA COLLECTION

- Theoretical knowledge was collected by pre-test and post-test learning scores from the learning achievement test.
- The learning retention data was collected after the pre-test and the post-test which was performed 2 weeks after.
- The satisfaction data were collected by using the satisfaction questionnaire.

DATA ANALYSIS

The efficiency and effectiveness of the learning module "School-Based Supervision for Students" was analyzed by using the Mean and Percentage of Promwong (1994) as follows:

The efficiency of the learning module was searched for by using E_1/E_2 Formula as follows:

$$E_1 = \frac{\sum X / N}{A} X100$$

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

Comparison of the learning achievement of the learning module was analyzed Utilizing Srisaard's mean values of t-test (Dependent) comparative analysis between pre-test and post-test [16].

The effectiveness index of the learning module was analyzed by using the following E.I. formula.

Effectiveness Index (E.I.) = Thesum of the post-test score – the sum of pre-test score (Student Number X Full Score) - The sum of the pre-test score

The learning retention was analyzed and compared by using the t-test (Dependent) value and comparing it with the data after 2 weeks.

The satisfaction on the learning module was analyzed by using the Mean value($\bar{X}$) and Standard Deviation (S.D.) for measuring the satisfaction level.

RESEARCH FINDINGS

The efficiency of the process and outcome of knowledge in the learning module of "School-Based Supervision for Students", (E1/E2) was=84.76/ 82.16, higher than the specified criterion of 80/80.

The overall quality of the learning module evaluated by experts was in the "Highest level $\bar{X}$" (Mahasarakham University=4.96, SD=0.02).

The quality ofthe learning module evaluated by experts was in "The Highest" level. The effectiveness index of the learning module was=0.7578, indicating that the students obtained more than 75.78% of their knowledge.

The post-test learning achievement scores were significantly higher than the pre-test at .05.

There were no significant differences in their post-test learning achievement scores between their post-test scores and their post-test learning achievement scores after 2 weeks. This indicated that the students achieved a satisfactory level of learning retention through the learning module.

The students' overall satisfaction was in "The Highest" level ($\bar{X}$=4.77, SD=0.13).

The highest level of Mean values ranking in order from high to low are as follows:

- Lecturing and Providing the learning Activity Management by lecturer and students.

Higher-Order Educational Supervision Technique, the satisfaction was in "The Highest" level ($\bar{X}$=5.00, SD=0.00).

The Enhancement for Student Support System, satisfaction was in "The Highest" level ($\bar{X}$=4.92, SD=0.36).

The Construction of Supervision Network in Lecturing and Practicing, the satisfaction level was in "The Highest" level ($\bar{X}$=4.82, SD=0.34).

DISCUSSION

The efficiency index (E1/E2) of the learning module "School-Based Supervision for

Students", was=84.76/82.16 and above the specified criterion 80/80. The high scores and overall high satisfaction are contributed by the following factors;

- The authors thoroughly studied the curriculum, related document and research literature in constructing the learning module which was revised, corrected and improved by the experts' recommendations. The research findings found that the developed learning module after experts' evaluation and the overall quality, was at "The Highest" level. The quality Propriety, Feasibility, Congruency and Utility aspects, were also at the "The Highest" level.
- The developed learning model was tested by the authors themselves with the sampling groups which were selected and also the group that volunteered. The trial results found that efficiency was=82.67/83.89. During the trial test, the authors personally collected the data from the participants and were present during the tests. Participation in the activities and observations were not perfect but they were continuously improved upon to find the strengths and weaknesses during the trial period. The team of experts indicated that the learning module's content used a variety of diverse activities that can create innovative knowledge and ignite creativity. The experts also noted that the learning module can be applied to other educational programs and curriculums. The experts also pointed out the weakness in the construction, that the efficiency of the trial test would be muted or not as efficient because the participants lacked a handbook or reference guide of the learning module. The lack of a handbook was rectified, created, published and made available to all participants before the test trials began thus making the learning module complete. Trial tests with the sampling group were satisfactory and the authors carefully considered the learning module until they were confident that it was proficient and can meet or succeed the target criterion.

The high-efficiency index of the developed learning model is

consistent with the findings of Inruengsri, "The Development of learning module in Life and Thai Culture for High Vocational Certificate of Automotive Industrial Technical College" [17]. The research findings found that the learning module including the rationale, reason, objective, basic knowledge, basic evaluation, learning activity, post-test evaluation, and remedial teaching, had an efficiency of 83.88/85.96. Similar scores were also achieved by Donpraipan, "The Development of learning module in Sufficiency Economy Philosophy for Matayomsuksa 2 Students" [18]. The efficiency of the learning module in Sufficiency Economy Philosophy was=79.66/82.77with a specified criterion 80/80. Krongdanern, "The Development of Mathematics learning module", found that the learning module titled "Sequence" had an efficiency of=83.30/84.55which was higher than the specified criterion [19]. Hasakun, "The Development of Short Term Management Model by using Training module in Instructional Management for Schools under Office of Vocational Education Commission", established the training module for instructional management as a part of handbook of a short term training program management in IOP Model application, found that the suitability of programs was in "The Highest" level and "High" level [20]. The Congruency was in the "High" level in every aspect. The theoretical achievement was=81.60/80.49%.The achievement was=79.42%. The theoretical achievement was=82.32/81.41%.In practice, the achievement was=79.91% which was higher than the criterion in both the theoretical aspect and in practice. Papapasit, "The Innovation for Developing Teachers' Potentiality in Conducting Research: A Case Study in Constructing the learning Package by Themselves and Consultation", found that:1) the efficiency of self-studying titled "Classroom Research", the efficiency was higher than the standard criterion80/80, at 81.53/88.46. Rowland:"The Development of learning module for Enhancing and Preparing the Readiness in Teacher Training Students' Discipline", the research findings found that the developed learning module, was efficient and the students obtained supplementary knowledge and discipline [21].

The authors applied the correct theoretical approach and practices which resulted in a learning model that was appropriate for teachers to utilize in the development of students. The benefit of the learning module is that it is an effective educational innovation that can assist students in achieving their full potential. Chantarasombat's "The Development of Learning Module titled Educational Policy, Strategy and Strategic Plan (EDA6201) for Students in Master of Educational degree", found that: 1) The efficiency of self-studying titled "Classroom Research", the efficiency was higher than the standard criterion80/80, at 84.67/83.00, 2) The effectiveness index management of students learning module for students was=0.6577, indicating that the students had an increased knowledge for 65.77% [22].

The student's post-test learning achievement scores were significantly higher than the pre-test at .05 level because the learning activity was an action learning process, the activities focused on authenticity, real-world situations and based on student-centered learning. It was necessary to provide students with as many tangible practices as possible so that the students would have direct experience and properly exercise their skills. Practices and activities should be based on their satisfaction and divided into individual activities, group activities, and activities for the entire class. Student-centered learning activities provide students with more skill practices and are an important factor that increases the speed of self-learning in acquiring new knowledge and development of critical thinking processes. This view is supported by Dechakupt's assertion that the student-centered instructional management guidelines focused on the development of new knowledge and also innovative thinking through intellectual processes and teamwork [1]. The students must interact and participate as a student as well as learning how to become a teacher and eventually be capable of applying the gained knowledge. The applied learning module was investigated by experts and found that the efficiency was also at "The Highest" level. Students viewed that the activities were stimulating, the language of the questions were easy to understand which enabled them to answer them more accurately.

There were no significant differences in post-test learning achievement scores and post-test learning achievement scores after 2 weeks, suggesting that learning retention was achieved through the learning module.

The learning module motivated students because of their direct participation in the activities as they gained new knowledge from elements and surroundings that they are familiar with. Awareness and relatable environments produce good conduct through simple techniques without excess complicated activities. Each learning sub-module included activities in analytical thinking techniques and synthesis. Selecting simple, recognizable stimulates enthusiasm. The selection of an appropriate learning activity, one has to obtain basic knowledge in the learning management principle and determine the learning objective so that the students would go into their behavior according to the specified direction. Familiarity stimulates learning interests as well as entices better cooperation, improve learning competency and the students can apply it in their daily life.

Consideration of the participants' differences and creating an enjoyable learning atmosphere simplified the learning activities and provided a welcoming instructional ambiance. Creating a pleasant learning atmosphere throughout the learning activities is consistent with Kaemmanee's findings that the effectiveness index of students' learning management through a learning module titled, "Educational Policy, Strategy andStrategic Plan (EDA6201)"was=0.6577 or 65.77% [23]. It was shown that 65.77% of students could learn more and were content. A pleasant learning experience is the ideal instructional management setting and that

teachers and instructors should seek out various learning techniques and adopt them in the student's development. The important factors to contemplate include: the lessons must be useful, meaningful, the learning activities should be diverse, the learning media should be interesting, evaluation should be emphasized on each student's potential,the interaction between the teachers and students should be friendly, compassionate, encouraging and be supportive of each other.

Knowledge, skill practice and the attitude of students should be a factor when conducting evaluations. Behavioral observation, performance scrutiny, examination and evaluating findings should be performed and informed regularly to improve the efficiency of the activity. The learning media should be based on an informal instructional process with minimum complexity. Systematically utilizing the developed learning module yielded efficient learning achievements and a high effectiveness index. The same level of success is supported by Samersak's,"The Application of Censor Equipment in Control System of Industrial Work Course" based on the high vocational certificate program 2003 in Electrical Power Course [24]. The results concluded that the experimental group's learning achievement scores were significantly higher than those of the control group students at .01 level. Donbundit's, "The Development of learning module of Analytical Chemistry in higher education by Discovery Cycle", found that the overall post-test score was significantly higher than the pre-test at .01 [7]. Krongtanern's,"The Development of Mathematics learning module titled Sequence" found that the post-test scores in learning achievement of students learned through Mathematics learning module titled "Sequence",was significantly higher than the pre-test at .01 level. Nelson who constructed the learning module for enhancing and encouraging patients being treated by Nitro Glycerin, found that the learning module increased their knowledge and morale than those that only studied through documents at .001 level [25-28].

CONCLUSIONS

The student's overall satisfaction was in "The Highest" level because the developed learning module was innovative, interesting, had diverse learning activities that coincided with the student's competency. The learning activities challenged the interests of the students. This is consistent to the theoretical approach and principle in the construction of learning modules of Koonchon Na Ayutthaya, recommends: 1) Learning module constructors should regularly consider the general objective of the program and carefully examine whether the objective of the lesson can develop the competency of students as specified. The instructional activity management should be congruent with the instructional philosophy of the program. 2) Define the competency to be learned by students. 3) The constructors should determine the necessary basic competency level for the students and should only be centered on the basic issue of the lesson. If possible, the basic competency should be set at the minimum level for flexibility. 4) Basic evaluations should always be refined so that criterion could accurately measure the students' competency relating to the objective. The evaluation should be grounded in reality and provide feedback for students. The most efficient measurement technique should be taken into consideration and constructors should participate in the diagnosis of the weak points. 5) The constructor should provide various alternatives to be selected by students so that they could select what would be most helpful for them to succeed and be congruent with their learning styles. The learning experience should also help them to learn in a short period. The students should have an opportunity to select and construct their activities with their teachers' support. 6) Prioritize the learning activities and inform the students so that they are aware and understand each stage of the activities before commencement. 7) The selected activities of the students should provide equal opportunity for all participants to practice. 8) The pre-test should be reliable and must accurately measure the student's achievements. Pre-test evaluations should follow the same guidelines for the basic evaluation. 9) Constructors should specify corrective learning activities appropriately. The corrective learning activities should be dependent and specific. Corrective learning activities must be applied after the pre-test evaluations. Corrective learning activities can also be included as a selective choice for students to participate in. 10). The description of the learning module should be precisely defined. 11) The constructor should allow as many co-workers and students as possible, to comment on the learning module so the constructed lessons and activities can be corrected and improved. 12) Constructors should always revise to see whether the completed lesson focused on the competency of student development and if the lesson is a good example of efficient education. 13) Learning modules and activities must always be flexible and allowed to be modified and adapted to meet the requirements and satisfaction of the students.Many of the advocated learning module suggestions were successfully applied by Charoenpong (2012): "Engineering Mechanics for High Vocational Certificate", found that the students' satisfaction was in "The Highest" level.

RECOMMENDATIONS

Recommendations for application and development

The learning module "School-Based Supervision for Students", is an innovative and effective learning module and students must prepare themselves for continuous self-education. Students and teachers must collaborate to make adjustments and modifications to improve the lessons and activities. The learning module can be adjusted so that the schedule and duration are flexible and can be hosted in diverse locations. Before Action Review (BAR) and After Action Review (AAR) will improve the learning module to have more meaning if students and teachers choose to

apply the learning module to self-improvement or group development programs. One of the weaknesses that were rectified during the construction of the learning module "School-Based Supervision for Students", was the need and publication of a handbook. It is recommended that a handbook for the learning module be published and given to all participants of the program. The handbook should include all learning sub-modules, activities and guidelines. The handbook can be used individually or as a group assignment and is most efficient when all the activities are strictly followed. Supplementary learning modules and techniques should always be studied and analyzed to ensure that there is a continuous process of research and development of the learning module.

Recommendations for future research

There are many universities in Thailand that provide learning management through learning modules. However, there is a lack of research studies. This is evident from the small number of research literature related to learning modules in higher education including the Bachelor's Degree, master's Degree, and Doctoral Degree Students.

- The authors would like to suggest the development of learning modules be applied at the graduate school level and doctoral degree program in Educational Management and Leadership to support the development of creative thinking and 21st-century innovations.
- Comparative study of the learning achievement between the learning module technique with other teaching methods for educational management in higher education.

ACKNOWLEDGMENT

The authors would like to express our appreciation to the Dean of the Faculty of Education, Northeastern University for providing and promoting the development and potentiality of the academics of the Doctoral Degree Program in Educational Management and Leadership.

REFERENCES

Dechakup P. Student-Centered Instruction: Instructional Approach, Method and Technique. Bangkok: Institute of Academic Development (IAD). 2011;1-2.

Panich W. Teacher for Student to build Classroom. Bangkok: Siam Commercial Foundation. 2013;8.

Sigkabundit S, SigkabunditS. Module. Bangkok: Srinakharinwirot University. 2011;2-3.

Lawrence G. Florida modules on Generic Teacher Competencies: module on modules. Florida: The University of Florida. 1973;1-3.

Chantarasombat C, Udomboonyanupap N, Songsri C. The Innovation Development for Enhancing the learning Performance of Schools under Nakon Panom Primary Educational Service Area Office 2. Journal of Education. Mahasarakham University. 2018;12:3;18-35.

Charoenpong A. Module Lesson titled Engineering Mechanics for High Level of Professional Qualification. The 5th National Conference on Technical Education, Faculty of Industrial Education, King Mongkut's University of Technology, North Bangkok. 2012;133.

Donbundit P. The Development of learning Model for Analytical Chemistry Course in Higher Education by Discovery Cycle. Doctor of Education Thesis (Science Education) Bangkok: Graduate School, Srinakarinwirot University. 2018;148-150.

Chantarasombat C. Coaching Teams: How to improve Educational Quality? Khon Kaen Provincial Education Office and Pitchayabundit College.2018

Deanery W. Developing doctors to deliver (3D) Annual Report 2015-2016. Cardiff University.2016

Chantarasombat C, Udomboonyanupap N. Learning Package 6: Supervision for Excellence. Mahasarakham: Research and Community Strength Development andKnowledge Management. Faculty of Education, Mahasarakham University. 2016;2-16.

Poompuang P. Innovative School Quality. Ka-Pao Road Temple School. Rayong Primary Educational Service Area Office 2.2019

Chaimayo T. The Lesson from Supervision by using Lesson Study Innovation for Enhancing Strong School-Based Supervision. Journal of Educational Supervision and Development, Mahasarakham University. 2016;1:1;79-87.

Srisaard B. Teaching Development. 5th edn. Bangkok: Ragdek Club. 2002;63-71.

Pattiyatani S. Educational Measurement. 6th Edition, Kalasin: Prasan Printing. 1998;167.

Soontrayut T. Management Reform: Educational Theory and Practice. Krungthep: Netikun Karn Phim Ltd. 2008;5-24.

Srisaard B. Foundation of Research. 8th Ed. Bangkok: Suwiriyasan. 2003;109.

Inruengsri S. The Development of learning Lesson in Life and Thai Culture Course for High Vocational Certificate Students in Automotive Industry Technical College. Master of Education Thesis (Knowledge Management) PraNakon Sri-Ayutthaya: Ayutthaya Rajabhat University. 2011;70-71.

Donpraipan S. The Development of learning Lesson titled Sufficiency Economy Philosophy for Matayomsuksa 2 Students. Master of Education Thesis in Agricultural Education, Faculty of Industrial Education and Technology, King Mongkut's Institute of Technology Ladkrabang (KMITL). 2013;48.

Krongdanern P. The Development of Mathematics module titled Sequence. Master of Education Thesis in Mathematics Education, Chiengmai University. 2016;60.

Hasakun R. The Development of Model for Short Term Program Management for Schools under the Office of Vocational Education Commission. Technical Education Journal, King Mongkut's University of Technology North Bangkok. 2016;7:2;53.

Rowland S. The Development and Implementation of an Instructional module that Prepares Pre-service Teacher to Address the Needs of Students with Attention Deficit Hyperactivity Disorder (ADHD). 1995;143.

Chantarasombat C. The Development of Learning Module titled Educational Policy, Strategy and Strategic Plan (EDA6201) for Students in Master of Educational degree. Journal of Education. Mahasarakham University. 2020;14:1;19-31.

Kaemmanee T. Science of Teaching: Body of Knowledge for Efficient learning Process Management. 5th edn. Bangkok: Chulalongkorn University Printing. 2013;31.

Samersak S. The Development of module Lesson for Control System for Industrial Work Course Titled Censor Equipment Application for High Vocational Certificate Students in Saraburi Technical College in Electrical Mechanics. Master of Industrial Education Thesis in Electrics, Graduate School, King Mongkut's University of Technology Thonburi. 2005

Nelson M. A Programmed Instruction module for Cardiac Patients Taking Nitroglycerin.1994;86.

Koonchon Na, Ayudthaya C. Program Development Document. Bangkok: Srinakharin Wirot Pratoomwan University. 1993;93-85.

Chantarasombat C, Sirisuthi C. Learning Package: School-Based Supervision. Educational Administration and Leadership, Faculty of Education, Northeastern University. 2019.

Rayong Promwong C. The Efficiency Testing of Instructional Package: Teaching Handout of Educational Technology and Communication Unit 1-5. Bangkok: Sukothai Thammathirach Open University. 1994;479-498.