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The Application of Management Program Learning Module for Development of Educational Policy and Strategic Planning

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Abstract
This research uses research and development (R&D) many academics often apply knowledge creation for enriching the efficiency and quality of learning achievements. However, 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 Educational Policy and Strategic Plan Development of Students (ED341306) at Northeastern University, Khon Kean, during the academic year 2020. The results were: 1) The efficiency of the action process in the learning module was 91.56, while the efficiency of knowledge was 84.17, which is higher than the specified criterion of 80/80; 2) the quality of the learning module, in relation to propriety, congruence, feasibility, and utility aspects was at "The Highest" level. 3) The effectiveness index of students was 0.7679; 4) the post-test learning achievement was significantly higher than the pre-test at .01; 5) significant differences occurred between the post-test and the pre-test, indicating that learning retention had been achieved; 6) students' satisfaction with the learning module was at "The Highest" mean level at.4.92. Knowledge Management using the following six-step model: 1) knowledge identification 2) knowledge creation 3) knowledge preservation 4) knowledge active learning 5) knowledge sharing and 6) knowledge application, put into the implementation of the program learning Module on Developing leading students in educational Policy and Strategic Plan development were 1) Survey of former experience 2) Developing of creative Student conceptions 3) The Application of thinking approach 4) Practice in classroom 5) Supervision, follow up, and evaluation and 6) Feedback and Reinforcement.

Keywords:
Action learning, Construction and Development, Learning Module, Knowledge Management, Education Policy Strategic Plan.

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1. 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 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 of Thailand is focused on allowing students to acquire the necessary 21st-century knowledge and skills for their daily life and career advancement, and for contributing to the development of the Thai economy and society. The educational management should be aligned with Thailand's education policies, which include the following:

1. The 20-year national strategy (2018-2037), which is the third strategy in the development and enhancement of human resources. The major development goals are to develop every dimension of human resources' skill at all age levels. Human resources and students for the 21st century are to be virtuous, intelligent, quality individuals with 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 ages are to be skillful, competent, and self-developed citizens. The development of educational management is supported by the Sufficiency Economy Philosophy. This philosophy addresses the global changes in the 21st century, which indicate students must possess the skills of 3Rs8Cs, namely reading, writing, and arithmetic (3Rs), and. analytical thinking, critical thinking, problem solving, creativity, innovation, understanding cultural differences, cross-cultural appreciation, collaborating, teaming, and leadership. They should also possess ethics, mercy, discipline, and compassion (Institutions of Community Colleges, 2018).

The teachers' role must meet the current context of global society as well as adapt to the changed students' requirements, which include external factors such as social-cultural trends, information, communication, and technology. These needed developments are supported by 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 able to use research as a part of the learning process. (Chantarasombat, 2020)

Section 30 specifies that the schools should develop efficient instructional processes and enable the teacher's ability to research, so 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 techniques that are essential to change or develop new concepts in instructional management to meet contemporary times appropriately (Dechakupt, 2011). The teacher's role is shifting from just giving lectures in front of classes to becoming more of a facilitator or a coach who provides suggestions, recommendations, and assistance when needed. In this regard, Panich (2013) asserted that teachers have to change their role of lecturers, and become more coaches and initiators. In order to create a sustainable learning management network, teachers and students should systematically and continuously share their learning experiences, and create a 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. This can be achieved step by step and by investigating the efficiency of the module carefully (Sigkabundit & Sigkabundit, 2011). According to Lawrence (1973), the learning module is a systematic instructional process including various teaching methods used for self-studying, based on individual differences. 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 students' learning potential.

The authors agreed with instructors at Northeastern University and collaborated with instructors in the master's degree program of educational administration during the first semester of 2020. They constructed one major pilot course for studying the appropriate innovation in the form of the learning module Educational Policy and Strategic Plan Development for Students (ED41306). 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 and groups, and benefit higher educational institutions in the future.

2. BACKGROUND

The Result of Developing Secondary School Students' Public Conscience through Process-Knowledge Management in Thailand (Homsin, Chantarasombat & Yeamsang. 2015: 240) This research uses Mixed–Methodology applied research and development together with participatory action research. The model is appropriate for the context environment. The participants were able to complete the learning activities in participatory forms of knowledge management, using the following five-step model: 1) Knowledge Identification 2) Knowledge Creation 3) Knowledge Preservation 4) Knowledge Sharing and 5) Knowledge Application. Action research involved 7 main activities down to the operating activities, thus developing public participation in 15 sub-activities.

These results are also supported by Donbund (2018). who found the overall posttest learning performance was significantly higher than the pretest ($p < .01$). 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.

In first semester 1, 2020, we had started the learning module for doctoral students in Educational Administration and Leadership at Northeastern University, Khon Kaen, Thailand, by studying elements and factors including the current and desirable condition of Thai learning management in enhancing the critical 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" (Chantarasombat, Udombunyanupap, & Songsri, 2018), by applying the approach/theory of supervision, the Route to Excellence and Coaching and four learning modules. The project participants included teachers, school supervisors, and administrators. 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, group relationships were developed, and the 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 Highest" level. The findings were consistent with Charoenpong's (2012) work. This author's research findings showed 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. thinking of the secondary school teachers before creating the program by using google classroom technique for critical Comparative analysis of Thai education management Global and regional society (Chantarasombat & Sombatsakulkit, 2021), Sirisuthi & Chantarasombat, 2021), and Chantarasombat, Sombatsakulkit & Chaikirin (2021).Chantarasombat (2022). We used 5 experts and 2 pre-test groups who were not our research population to evaluate our module. Their feedback had been used to develop the module for improving learning and teaching focusing on participating between teachers, administrators, and academic persons before offering the module to the doctoral students. Therefore, the researcher is interested in developing a module for lifelong learning and 24 hours a day for students in course 41306 by applying the Google Classroom software package because it wants learners to learn with real practice, according to the jointly planned program. There is learning with both learners, teachers, learning resources, and research in the classroom as well. In order to summarize the lesson and extend the results at the graduate level.

Research Questions

The authors determined the following research questions to design, construct, and develop the learning module:

1. Would the efficiency of the learning module Educational Policy and Strategic Plan Development for Students meet the specified criterion 80/80 and how would it meet or surpass that target?

2. What level of propriety, feasibility, congruency, and utilities would follow after the evaluation by scholars and experts?

3. What value would the effectiveness index in the learning management for the students be?

4. Would the learning achievement of students' posttest scores be higher than the learning achievement of their pretest scores and how can the post-test scores be higher?

5. What would the students' learning retention be?

6. What level of satisfaction would the students have and how to achieve a "High Level" or "Highest Level"?

Research Objectives

In this study, the authors aimed to:

1. Construct and develop the learning module for lifelong learning and 24 hours a day for students in course 41306 by applying the Google Classroom software package by using 80/80 standard efficiency criteria.

2. Evaluate the quality of the learning module by scholars' and experts' review.

3. Search for the effectiveness index of students.

4. Compare the pre-test and post-test scores in students' learning achievement.

5. Analyze students' learning retention.

6. Analyze students' satisfaction.

Research Delimitation

The population of this study consisted of 14 selected and 12 volunteer Doctor's Degree students in educational administration and Leadership of Northeastern University during the second semester of the 2020 academic year. The participants were continuously engaged in the program Educational Policy and Strategic Plan Development (ED41306).

The independent variable was the learning management of the learning module. The dependent variables included learning achievement and satisfaction.

The authors conducted the study during the secondary semester of the 2020 academic year. They divided the content material into learning units or submodules which included:

1. Management and implementation.

2. Planning defines the vision, mission, goal of the educational plan.

3. Educational development planning into action.

4. Practice planning participatory into action.

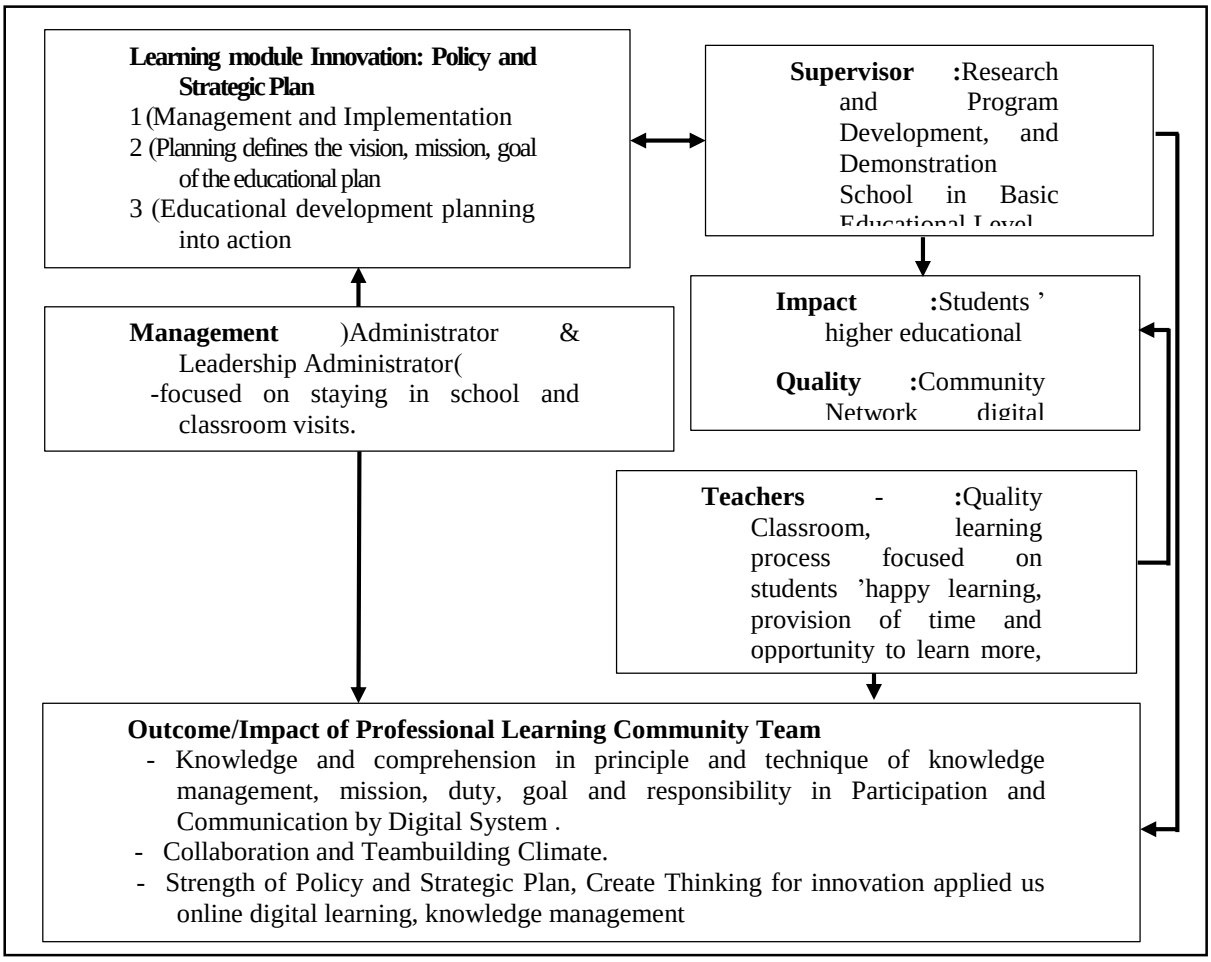
5. Creation and educational innovation.

Research Conceptual Framework

The authors determined the development of the learning module of Educational Policy and Strategic

Plan Development for Students and the conceptual framework by experts' evaluations. The innovation of the learning module of Educational Policy and Strategic Plan Development for Students. As show in figure 1.

Figure 1. Conceptual Framework of the study of developing the program of leader students in learning management for enhancing module of Educational Policy and Strategic Plan Development for Students.



Construction and development of research instruments

Learning Module Educational Policy and Strategic Plan Development for Students

The learning module Educational Policy and Strategic Plan Development for Students consisted of the following development steps and discoveries:

1. The authors conducted the collaborative determination of issues in the development and planning of the learning module at the Faculty of Education, Educational Administration, Northeastern University, Khon Kaen Province.

2. The researchers analyzed the documents of subjects related to Educational Policy, Strategy, and Technique for determining the appropriate content and innovative techniques in enhancing the level of learning performance. They also surveyed the cases of best practices by studying: The theoretical approaches in educational quality during the 21st century, the leaders' development by supervising and coaching, the construction and development of PLC, the Educational Supervision Clinique the Route to Excellence (Deanery, 2016), Chantarasombat and Udombunyanupap (2016) approach/theory of supervision for

excellence., Peter Kadley's 2013, as cited in Chantarasombat et al., open classroom, the field trip study for the construction of a PLC focused on Open Classroom and Application of Student-Centered learning of Rayong Primary Educational Service Area Office 2 (Poompuang, 2019), and the implementation performance of mathematics in primary education of Ban Kam Bong School 1, Mukdahan primary educational service area (Chaimayo 2016).

3. The authors divided the construction and development of the learning module Educational Policy and Strategic Plan Development for Students into five sub modules: Supervision Planning, Technique for Higher-Order of Supervision, Educational Quality Assurance, Enhancement of Student Support System, and Development of Supervision Network.

4. They presented all of the five learning submodules to five experts for the evaluation of the propriety and congruency of the content. The five experts included: Professor Dr. Chaiyong Brahmawong, Professor Dr. Precha Prathepha, Associate Professor Dr. Boonchom Srisa-ard and Associate Professor Dr. Siri Thearsana, and Associate Professor Dr. Santi Wijakkanaluk, and The experts' found that all five learning sub-modules were at "The Highest" level with regards to propriety, feasibility, congruency, and utility.

5. The authors tested all five learning submodules on nontarget groups, groups of 1-5 students, subgroups and individually on 9 students who were educational administrators and Doctor's degree students in educational administration. The efficiency of the tests was 83.47/82.59. The authors improved and revised the learning modules as a part of the handbook for participants. They published the five learning submodules and used them in the final test with the target group which included 16 Doctor's degree students in educational administration at Northeastern University.

Construction Steps and Examination of the Quality of Learning Achievements

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

1. The authors studied the theoretical approaches and rationales for constructing the learning achievement test and applied Srisa-ard's (2002) criterion reference test as guideline for creating the learning achievement test.

2. The learning achievement test included questionnaires with four multiple choice answers and 80 mandatory test items out of 100.

3. The authors presented the learning achievement test to the experts to evaluate the congruency between the test and its behavioral objectives. The scoring criteria were as follows:

a. +1 when the participant was confident that the measurement of the test was based on the behavioral objective.

b. 0 when the participant was not confident that the measurement of the test was based on the behavioral objective.

c. -1 when the tester was confident that the test did not provide the correct measurement, based on the behavioral objective.

4. The authors analyzed the index congruency between the test items and its behavioral objectives using Pattiyatani's (1998) the item-objective congruence (IOC) formula. They completed this step by selecting the test with the IOC index ranging from 0.5 to 1.00 as the criterion of available content validity; then, they used this index to acquire the desired item numbers.

5. They tested the tests with the IOC value with a nontarget group. test supervisors were 14 school administrators who were graduates in educational administration, teachers, and educational supervisors under the jurisdiction of Khon Kaen provincial education office who acted as coaching teams to the participants. The authors carried out the test at I Hotel, Khon Kaen province, with a total of 60 participants. The goal of the

test was to study the participants' reaction and response to the trial test, reaction time in completing the test, and comprehension of the presented questions.

6. The researchers analyzed the obtained scores to search for item difficulty (P) and item discrimination in each test item. The analytic findings showed that the item difficulty ranged from 0.40 to 0.80, and the item discrimination ranged from 0.20 to 0.60. The authors determined the reliability of the total test (rtt) by the KR 20 formula, and obtained rtt = 0.84.

Students' Satisfaction

The construction steps and quality investigation of the 12-item questionnaire determine the satisfaction of the students and were as follows:

1. The researchers studied Soontrayut's (2008) theoretical approaches of satisfaction.

2. They used Boonchom Sri sa-ard's (2003) guidelines for basic research to study the techniques for designing the satisfaction questionnaire.

3. They based the 5-level rating scale on Likert's principle; they used the above-mentioned scale to determine the guidelines and rationale for constructing the satisfaction questionnaire.

4. They constructed the questionnaire based on its objective, according to the 5-level rating scale.

5. They presented the satisfaction questionnaire 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 (see point 3 of the subsection Construction Steps and Examination of the Quality of Learning Achievements above).

6. They analyzed the index of congruence between question items of the questionnaire and the behavioral objective 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 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.

7. The researchers tested the questionnaire on the same non-target group as in point 5 of the subsection Construction Steps and Examination of the Quality of Learning Achievements above. The item discrimination (rxy) ranged from 0.32 to 0.83. They determined the total issue reliability of the questionnaire by the Cronbach's alpha coefficient (-Coefficient), which calculated the total issue reliability of the questionnaire was = 0.93. Then, they printed and used the satisfaction questionnaire as a research tool to collect data.

Data collection

The authors acquired theoretical knowledge by pre-test and post-test learning scores from the learning achievement test. They collected the learning retention data after the pre-test and the post-test, which was performed two weeks after, and the satisfaction data by the satisfaction questionnaire.

Data analysis

1) The efficiency and effectiveness of the learning module was analyzed by using the Mean and

Percentage of Brahmawong (2013). The efficiency was searched for using E1/ E2 formula, as follows:

(1) $E_1 = \frac{\sum X/N}{A} X 10$ (2) $E_2 = \frac{\sum F/N}{B} \times 10$

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

Effectiveness Index (E.I.) = $\frac{\text{The sum of the post-test score – The Sum of the pre-test score}}{\text{(Student number X full score) - The Sum of the pre-test score}}$

2) The student's knowledge and learning retention data was collected by pre-test and post-test learning score from the learning achievement test while the learning retention had to be collected after the post-test which was performed 2 weeks later. Comparison of the learning achievement of the learning module was analyzed by mean values of t-test (dependent) comparative analysis between pre-test and post-test (Sri sa-ard, 2010).

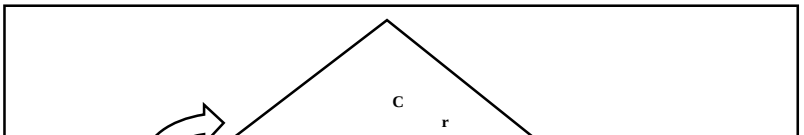
3) The satisfaction on the learning module data was collected by using the satisfaction questionnaire. It was analyzed by using the mean value ($\bar{X}$) and standard deviation (SD) for measuring the satisfaction level.

3. RESULTS

3.1 The Factors of Critical Thinking of the Secondary School Teachers Comprised of 10 Factors and Knowledge Management of 6 activities

1) teachers prepared various learning activities, 2) teachers presented motivated activities, 3) teachers offered learning activities in different places, 4) teachers offered learning activities emphasizing on child center, 5) teachers used technology in learning management, 6) teachers offered activities related to daily life, 7) teachers used innovation in learning activities, 8) the activities were cooperated with the community, 9) the activities were emphasized on teaching moral, and 10) the activities were assessed and evaluated. The study found that the current condition of learning management for enhancing critical thinking of the secondary school students was at moderate level. When considering each factor, the experts agreed with the teachers about preparing various learning activities and using technology in learning management. The desirable condition was at the highest level, too. As shown in Figure 2.

Figure 2. Creative Module of Teacher Leadership Program for Learning Management in Enhancing the Critical Thinking of: Educational Policy and Strategic Plan Development students and knowledge management activities



The program in learning management for enhancing critical thinking of the secondary school students including: 1) the principal of the program, 2) the objectives of the program, 3) the goal of the program, 4) the content of the program development. The content included into 9 modules: 1) the survey of experiences, 2) the planning, 3) the concepts, 4) the applied concepts, 5) the classroom implementation, 6) the supervision, monitoring and evaluating of the study, 7) the feedback and reinforcement, 8) the seminar for strengthening, and 9) the presentation at the academic conference. The final parts of the module focused on doing activities outside the classroom. The researchers defined activities on learning by doing under advising and helping continuously. The learners who participated must have plans, and review the principals from the beginning to face with real practicing. It meant that there were advisors who gave advice, taught, and gave feedback continuously. This process could make the understanding. The treatment included training, and self-development which included 6 steps; 1) preparation, 2) training, 3) understanding thoroughly, 4) verifying and evaluating, 5) strengthening, and 6) giving feedback. The results from the experts' evaluation showed that the benefits, possibilities, correcting, and suitability at the highest level (= 4.69, SD=0.42).

3.2 The Results from the Research about the Module Found Its Achievement as Follows

Table 1. Process Efficiency vs. Effectiveness of Results for Developing Knowledge Managers in Leader Teacher in Creative Thinking for Enhancement the Doctor

Number	Score after 2 weeks) 60)	Pre-test)60(	Practical Score for program							Post-test (60)
			Survey/ former)40)	Develop Creative)20(	Applying of Thinking)20(	Practice)20(	Supervision)20(	Feedback/ seminar)40(	Total practical)160)	
1.	58	40	38	18	18	18	18	38	148	49
2.	58	38	38	18	18	18	18	39	149	56
3.	58	41	37	18	18	17	17	38	145	52
4.	53	39	37	18	17	18	18	38	146	54
5.	57	34	37	18	18	18	18	37	146	50
6.	58	30	37	18	18	18	18	38	147	50
7.	59	34	37	18	18	18	18	38	147	52
8	58	28	37	18	17	18	17	38	145	50
9.	60	28	37	18	17	17	18	38	145	51
10.	60	26	38	17	18	18	17	38	146	50
11.	58	27	38	18	18	18	17	38	147	48
12.	58	29	38	17	17	18	18	37	145	47
13.	58	52	37	18	18	18	18	38	147	50
14.	57	24	38	17	18	18	18	38	147	45
15.	60	42	38	17	17	18	18	38	146	49
16	60	45	38	18	18	18	18	38	148	55
Total	**930**	**557**	**600**	**284**	**283**	**286**	**284**	**607**	**2,344**	**808**
$\bar{X}$	**58.13**	**34.81**	**37.50**	**17.75**	**17.69**	**17.88**	**17.75**	**37.94**	**146.50**	**50.50**
S.D.	**1.71**	**7.96**	**0.52**	**0.45**	**0.48**	**0.34**	**0.45**	**0.44**	**1.21**	**2.85**
$\bar{X}$ %	**96.88**	**58.02**	**93.75**	**88.75**	**88.44**	**89.38**	**88.75**	**94.84**	**91.56**	**84.17**

From Table 1 it was found that the results of evaluating the efficiency of the process and the efficiency of the results of the development of learning resource leaders in planting wild mustard greens. The overall efficiency of the process on the efficiency of the results was 91.56/84.17 which was higher than the criteria at 80/80. The effectiveness index for program was at 0,7679 which explained the resource leader's higher knowledge 76.79%

Table 2: Comparison of Learning Achievement on Online Learning Program by Using Google Classroom, Subject: ED41306 (*Educational Policy and Strategic Plan Development*)

Test	Amounts of Students (Ph.D.)	($\bar{X}$) (Total 60 Scores)	Standard Deviation)SD)	t	Sig
Pretest	16	35.05	0.79	9.3897	0.01**
Posttest	16	50.59	0.54		

**Sig, 0.01= 2.518

From Table 2, found that after learning through the Online Learning Program by Using Google Classroom, Subject: ED41306 (Educational Policy and Strategic Plan Development) the posttest scores were higher of the significance score at 0.01.

Table 3: Comparison of Learning Achievement on Online Learning Program by Using Google Classroom, Subject: ED41306 (Critical Comparative Analysis of Thai Education Management)

Test	Amounts of Students (Ph.D.)	($\bar{X}$) (Total 60 Scores)	Standard Deviation)SD)	t	Sig
Test 1 (Having a posttest immediately(	16	50.59	0.54	7.8053	0.01**
Test 2 (Having a second posttest again after having the first posttest 2 weeks)	16	58.18	0.21		

**Sig, 0.01= 2.518

From Table 3, the second posttest after learning through the Online Learning Program by Using Google Classroom, Subject: ED41306 (Educational Policy and Strategic Plan Development) was higher than the first posttest of the significance score at 0.01 which shown that students had durability in learning and this tended

to show that their learning will be developed.

And after consideration in each aspects the result of satisfactory for students to lecturer and support have indicator learning was: 1) contents 2) theory teaching skill 3) teaching skill of practical teachers 4) teacher characteristics 5) relationship between teachers and students 6) learning support 7) assessment and evaluation and 8) in summary, the teachers are efficient and effective in teaching and learning as table 4.

Criteria	Teaching Assessment Components	Satisfaction level		Interpretation
		$\bar{X}$	S.D.	
1 .Contents	1.1 The subjects taught are consistent /covering the setting objectives.	4.86	0.51	The most
	1.2 The content of the teaching is important and useful for practical application.	4.95	0.49	The most
	Total	**4.91**	**0.50**	**The most**
.2Theory Teaching Skills	2.1 Teach step by step, easy to understand	4.59	0.51	The most
	2.2 Describe straight to the point and provide examples to clearly understand	4.82	0.41	The most
	2.3 The use of research results or current information in teaching	4.86	0.51	The most
	2.4 Link the content into the application or career	4.82	0.49	The most
	2.5 Many teaching methods and stimulate student interest	4.82	0.49	The most
	2.6 Use teaching time in value and efficiency.	4.77	0.43	The most
	2.7 Include moral ideas, morality during teaching	4.86	0.41	The Most
	2.8 Assign homework appropriately	4.73	0.45	The Most
	2.9 Gain knowledge, ability in the subjects taught	4.77	0.43	The most
	Total	**4.78**	**0.42**	**The most**
3 .Teaching skills of practical teachers	3.1 Teach step by step, easy to understand follow the learning module lessons	4.82	0.49	The Most
	3.2 Explain / demonstrate / give examples for clearly understand follow methods and procedures	4.91	0.39	The Most
	3.3 Gain knowledge and ability in using equipment /materials	4.91	0.39	The Most
	3.4 The amount of time in practicing, achieve the goals set.	4.77	0.43	The Most
	3.5 Documents / practice manual, clearly explanation	4.82	0.49	The most
	3.6 motivate students to practice	4.95	0.22	The most
	3.7 The ability to solve problems happen during practice	4.95	0.22	The Most
	Total	**4.88**	**0.40**	**The Most**
4 .Teacher Characteristics	4.1 Firmly emotion, stable, discreet	4.53	0.50	The most
	4.2 polite and appropriate gestures	4.71	0.37	The most
	4.3 Dress modestly	4.71	0.37	The most
	4.4 Neutral Caring for students	4.71	0.37	The most
	4.5 Be a good role model for students	4.59	0.62	The most
	4.6 Punctual in time to attend and stop teaching	4.71	0.37	The most
	4.7 Teaching regularly and learn with students	4.71	0.37	The most
	Total	**4.66**	**0.50**	**The most**

5 .Relationship between teachers and students	5.1 Encourage to comments / exchange experiences	5.00	0.00	The most
	5.2 Encourage to think, critic creatively	5.00	0.00	The most
	5.3 Time for students outside class	5.00	0.00	The Most
	5.4 Assist, counsel individually caused students occupy intellectual skills and analytical thinking	4.95	0.16	The Most
	5.5 Paying attention / being friend to students and encourage both individual and group work	4.86	0.32	The most
	5.6 Students ask questions and promote to work both individual and group work	4.91	0.14	The most
	5.7 Listen to comments / criticisms from students In order to improve	4.94	0.12	The most
	Total	4.94	0.24	The most
6 .Learning support	6.1 Places, learning resources support for teaching and learning activities	4.95	0.13	More
	6.2 Media quality, books, textbook, innovation, lessons, modules and learning sets	4.95	0.13	The Most
	6.3 Media, learning material are interesting and help students understand lessons and lesson modules well.	4.95	0.13	The Most
	6.4 Media, learning material are in accordance with the nature of subject and give examples of case studies	5.00	0.00	The Most
	6.5 General atmosphere support in learning online.	5.00	0.00	The Most
	6.6 Study visit and real practice to display the students learning outcomes	4.95	0.13	The Most
	Total	**4.97**	**0.11**	**The Most**
7 .Assessment and evaluation	7.1 Set criteria for appropriate academic assessing performance	4.91	0.14	The most
	7.2 .Evaluation and evaluation of learning / information / activities.	4.91	0.14	The Most
	7.3 Report the results of learning assessment and evaluation and activity practice	4.91	0.14	The Most
	7.4 Assess and evaluate students correctly / fairly	4.91	0.14	The most
	7.5 Provide students with portfolio / assignments for evaluating individual and group work.	4.91	0.14	The Most
	7.6 After learning, the learners had higher knowledge, ability, intellectual skills and good attitude.	4.95	0.13	The most
	Total	**4.93**	**0.13**	**The More**
8 .In summary, the teachers are efficient and effective in teaching and learning.		5.00	0.00	The most
Over all Total		**4.92**	**0.14**	**The most**

From the table 4, the results of the student satisfaction is in the quality of teaching and teachers and support Course 41201 Internal supervision in the first semester of the academic year 2564 found that the overall satisfaction of the students was at the highest level with an average of 4.92 and a standard deviation of 0.14 with consistent opinions and there are suggestions, strengths, innovation, learning, lessons, modules on internal supervision in the school, resulting in new knowledge to be applied in accordance with the local context:

1) The program had the efficiency of the process for the learning outcome (E1 / E2) at 91.56/ 84.17 which was higher than the criteria at 80/80.

2) The effectiveness index for the program was at 0.7679 which explained that students gain higher knowledge 76.79%.

3) The students who were taught by the module gained their learning post-test score higher than their pre-test scores significantly at .01. After teaching, their learning retention data showed the students gained similar scores from the posttest and after 2 weeks of teaching. It was clear that students' learning retention scores by the module was stable.

4) The students' satisfaction from the module was at the highest level ($\bar{X}$ =4.56, SD=0.42). The highest levels of mean values ranking in order from high to low are as follows:

• Lecturing and providing the learning activity management by lecturer and students.

• In the Higher-Order Educational Supervision Technique, the satisfaction was in "The Highest"

level ($\bar{X}$= 5.00, SD = 0.00).

• In the Enhancement for Student Support System, satisfaction was in "The Highest" level (= 4.92, SD = 0.36).

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

4. DISCUSSION

The efficiency index (E1/E2) of the learning module Educational Policy and Strategic Plan Development for Students was 84.76/82.26 and above the specified criterion of 80/80. The following factors contributed the high scores and overall high satisfaction:

1. The authors thoroughly studied the curriculum, related documents, and research literature in constructing the learning module, which they revised, corrected, and improved by the experts' recommendations. The research findings highlighted that the overall quality of the developed learning module, after the experts' evaluation, was at "The Highest" level. The quality of propriety, feasibility, congruency, and aspects, was also at the "The Highest" level.

2. The authors tested the developed learning model with the sampling groups they had selected and also the group that had volunteered. The trial results showed 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. The students' 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 content of the learning module included 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, namely 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. As a result, the researchers created, published and made available a handbook 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 checked the learning module until they were confident that it was perfect and could meet the target's criterion.

The high efficiency index of the developed learning model is consistent with Inruengsri's (2011) findings. The research findings indicated 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. by Donpraipan (2013) achieved similar scores. The efficiency of the learning module in Sufficiency Economy Philosophy was 79.66/82.77 with a specified criterion 80/80. Krongdanern (2016) found that the learning module Sequence had an efficiency of 83.30/84.55, which was higher than the specified criterion. Hasakun (2016) established the training module for instructional management as a part of a handbook of a short-term training program management in IOP model application, and found that the suitability of programs was in "The Highest" level and "High" level. 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 and practical aspect. Papapasit (2018) found that the efficiency of the self-study Classroom Research was higher than the standard criterion 80 / 80, at 81.53/88.46. Rowland (1995) found that the developed learning module, was efficient, and that the students obtained supplementary knowledge and discipline.

The authors applied the correct theoretical approach and practices, which resulted in a learning model that was appropriate for teachers to utilize for students' development. Indeed, the learning module is an effective educational innovation that can assist students in achieving their full potential. Chantarasombat (2020) found out that the efficiency of the self-study Classroom Research was higher than the standard criterion 80 / 80, at 84.67/83.00. Besides, Chantarasombat observed the effectiveness index management of students learning module for students was 0.6577, indicating that the students had an increased knowledge for

65.77 %.

The students 'post-test learning achievement scores were significantly higher than the pre-test at .05 level, because the learning activity was an action learning process, as the activities focused on authenticity, real-world situations, and student-centered learning. It was necessary to provide the students with as many tangible practices as possible, so that they 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. (Chantarasombat, 2018) Chantarasombat & Meekhamtong 2020, Chantarasombat & Sombatsakulkit (2021), Sirisuthi & Chantarasombat (2021), and Chantarasombat, Sombatsakulkit & Chaikirin (2021), Chantarasombat (2022). This view is supported by Dechakupt 's (2011) assertion that the student-centered instructional management guidelines focused on the development of new knowledge and also innovative thinking through intellectual processes and teamwork. The students must interact and participate as well as learn how to become a teacher, and eventually be capable of applying the gained knowledge. Experts investigated the applied learning module and found that the efficiency was also at "The Highest" level. Students viewed that the activities were stimulating and the language of the questions was easy to understand, which enabled them to answer more accurately. No significant differences occurred in post-test learning achievement scores and post-test learning achievement scores after two weeks, suggesting that the learning module had allowed to achieve learning retention.

The learning module motivated students because of their direct participation in the activities, as they gained new knowledge from elements and surroundings with which they were familiar Awareness and relatable environments produce good conduct through simple techniques without excessively complicated activities. Each learning sub-module included activities in analytical thinking techniques and synthesis. Selecting simple, recognizable stimulates enthusiasm. When selecting an appropriate learning activity, a teacher has to ensure basic knowledge in the learning management principle and determine the learning objective in order to guide the students. Familiarity stimulates learning interests, entices better cooperation, and improves learning competency; also, 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 (2013) findings that the effectiveness index of students' learning management through the learning module Educational Policy, Strategy, and Strategic Plan (EDA6201) was 0.6577 or 65.77% with Chantarasombat (2020). This author showed that 65.77% of the students could learn more and were content. A pleasant learning experience is the ideal instructional setting; thus, 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 and meaningful, the learning activities should be diverse, the learning media should be interesting, evaluation should be emphasized on each student's potential, and the interaction between the teachers and students should be friendly, compassionate, encouraging, and supportive of each other.

Knowledge, skill practice, and students' attitude should be key 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. Samersak's (2005) research supported the same level of success based on the high vocational certificate program 2003 in the Electrical Power Course. 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 (2008) found that the overall post-test score was significantly higher than the pretest at .01. Krongtanern (2016) found that the post-test scores in learning achievement of students in the mathematics learning module Sequence were significantly higher than those in the pre-test at .01 level. Nelson (1994), who constructed the learning module for enhancing and encouraging patients being treated by nitroglycerin, found that their knowledge and morale were increased more than those of patients who only studied through documents at .001 level.

The students' overall satisfaction was in "The Highest" level, because the developed learning module was innovative and interesting, and had diverse learning activities that coincided with the students' competency. The learning activities challenged the students' interests. This is consistent with Koonchon Na

Ayudthaya's (1993), Chantarasombat & Meekhamtong 2020, Chantarasombat & Sombatsakulkit (2021), Sirisuthi & Chantarasombat (2021). theoretical approach and principle in the construction of learning modules. This author recommended the following:

1. Learning module constructors should regularly consider the general objective of the program and carefully examine whether the objective of the lesson can develop students' competency as specified. The instructional activity management should be congruent with the instructional philosophy of the program.

2. Teachers should define the competency to be learned by students.

3. The designers should determine the level of basic competency for the students and should only be centered on the basic issue of the lesson. If possible, they should set the basic competency at the minimum level for flexibility.

4. Basic evaluations should always be refined, so that the 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 designers should participate in the diagnosis of the weak points.

5. The designers should provide various alternatives to 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. The teacher should prioritize the learning activities and inform the students, so that they are aware and understand each stage of the activities before commencement.

7. The students' selected activities 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. The designers should specify corrective learning activities appropriately. These activities should be dependent and specific, and must be applied after pretest evaluations. Corrective learning activities can also be included as a selective choice for students to participate.

10. The description of the learning module should be precisely defined.

11. The designers 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. The designers 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 students' requirements and satisfaction. Charoenpong (2012), Chantarasombat & Rooyuenyong (2020) Chantarasombat & Meekhamtong 2020, Chantarasombat & Sombatsakulkit (2021), Sirisuthi & Chantarasombat (2021), Chantarasombat & Sirisuthi(2022), Chantarasombat & Ponzue(2022). successfully applied many of the suggestions of the advocated learning module.: This author found that the students' satisfaction was in "The Highest" level.

5. CONCLUSION

The developed learning module was successful and achieved the following results: 1) The efficiency of

the action process in the learning module was 91.56,while the efficiency of knowledge was 84.17, which is higher than the specified criterion of 80/80; 2) the quality of the learning module, in relation to propriety, congruence, feasibility, and utility aspects was at "The Highest" level; 3) the effectiveness index of students was 0.7679; 4) the posttest learning achievement was significantly higher than the pretest at .01; 5) no significant differences occurred between the posttest and the pretest, indicating that learning retention had been achieved; 6) students' satisfaction with the learning module was at "The Highest" level.

Therefore, a study and research on the development of innovative module lessons of course 41306 by applying it to the Google Classroom software package, which has a manual for both learners and learners. Teachers have a relationship in accordance with the context and local conditions, atmosphere, can learn together with both learners. Fellow students' online learning resources Instructors have adapted themselves to be facilitators. It has raised the quality of students in the knowledge sector, practical skills, good knowledge to study this course and love to learn continuously throughout. Be creative in implementing.

6. RECOMMENDATIONS

Recommendations for Application and Development

The learning module School-Based Supervision for Students is an innovative and effective learning module, also because students must prepare themselves for continuous self-education. Students and teachers must collaborate to make adjustments and modifications to improve the lessons and activities (Chantarasombat & Sirisuthi, 2019). The learning module can be adjusted so that the schedule and duration are flexible, and can be hosted in diverse locations. Before-action review and after-action review 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 the authors 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 is published and given to all the participants in 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. Designers should always study and analyze supplementary learning modules and techniques to ensure that a continuous process of research and development of the learning module takes place.

Recommendations for Future Research

Many universities in Thailand provide learning management through learning modules. However, there is a lack of relevant research studies. This is evident from the small number of research literature related to learning modules in higher education, including bachelor's degree, master's degree, and doctoral degree students.

The authors suggest the development of learning modules be applied at the graduate school level and doctoral degree program in Educational Management and Leadership, in order to support the development of creative thinking and 21st-century innovations.

The authors also recommend a comparative study of the learning achievement between the learning module techniques with other teaching methods for educational management in higher education.

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