

Development of Strategies to Promote the Learning and Innovation Skills of Students For Schools under the Secondary Educational Service Area Office

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ABSTRACT

The purposes of this research were: 1) to study the components and indicators of students' learning and innovation skills for schools under the Secondary Educational Service Area Office; 2) to study the current conditions and factors contributing to the promotion of students' learning and innovation skills; 3) to create and review strategies that promote students' learning and innovation skills. The sample groups consisted of 357 school administrators and teachers. The tools used in this study were interviews, current condition questionnaires and factors contributing to the promotion of students' learning and innovation skills and the construction and strategies assessment. The data were analyzed by using percentage, frequency, mean, and standard deviation. The research results were found: 1) The components and indicators of learning and innovation skills of students consisted of 3 compositions and 11 indicators, 2) The current conditions promoting learning and innovation skills, Creativity and innovation, critical thinking and problem solving, and communication and collaboration were at a high level. Additionally, internal and external factors were at a high level. Share value and technology were at the highest level, 3) Assessing suitability and the implementing strategies consisted of 4 strategies, 14 minor strategies, strategies verification by suitability assessment and implementing strategies by experts, Strategy 1 Staff development has the highest average in the overview

Keywords

Development of Strategies, Promotion, Learning and Innovation Skills

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Introduction

In the present, the modern world has changed rapidly and radically in all dimensions such as society, economy, politics, and technology which accelerate many countries to adjust and develop policies to keep up with the changes and be able to take up space in society. The quality of people is a significant factor which supports and encourages policies to succeed and achieve the international standards. To develop the country to be as developed as other countries, it is necessary to upgrade from being a technology purchaser to be the innovator. Therefore, educational development is an immense factor which leads to personnel development and a shift of body of knowledge. To create a society of learning, educators are required to have people prepare for change and emphasize the importance of creating innovations. (Office of the Education Council: ONEC, 2016)[1] The 21st century is the productivity era, the era of creating innovation competition to respond to daily life and work life of every occupational class. Hence, Thais need to learn new technology and be innovators who create and develop innovations according to the context of Thai society. (Upper Secondary Education Bureau (Office of the Basic Education Commission: OBEC), 2017)[2] In accordance with the 12th National Economic and Social Development Plan [3] which focuses on the Philosophy of Sufficiency Economy, sustainable development and people-centered development are concentrated. Moreover, the economic growth which decreases inequality, the growth of productivity acceleration based on wisdom and innovations are targets. (Office of the National Economic and Social Development Council, 2016)[4] Reformation of the learning process responding to changes in the 21st century, development and promotion of

human resources, and the improvement of the learning system to encourage 21st century skill development are mentioned in the National Strategies 21 years (2018-2037). Encouraging Thai people to create and develop technology and innovation for the country, transforming social values and culture, providing opportunity and equality, promoting the area of development based on technological and innovative knowledge, the progression of science, technology, and innovation are also stated. According to the strategies mentioned, being a lifelong learning and adaptive person are necessary for Thai people. Traditional education is inadequate to survive in the modern world. Hence, every Thais need to learn to adjust themselves to survive in society. (Administration and Knowledge Development Institution of King Mongkut's University of Technology of Thonburi, 2017) Three factors leading to the potential of creative organization focus for innovation are people, knowledge, and skills of human resource. (Hoy and Miskel, 2008)[5] The education needs to be adapted to suit the learning of the 21st century for creating a learning person without focusing on a body of knowledge but skills, especially creative and innovative skills which are necessary skills in the 21st century. Those skills prepare people for being creative entrepreneurs in the future because the creative and innovative skills are crucial factors to support achieved and survived organization. (Von Stamm, 2008)[6] According to the analysis results of sample countries consisting of China, Vietnam, Japan, Korea, Germany, and Finland, "A person of Quality" is used as a guideline to develop countries. In China and Vietnam, special skills of the population are mainly developed, and likewise, science, technology, and educational innovation are promoted to be equal to other countries. To develop human to have potential

for high competition in Western countries, Asia, and recently opened socialist countries, comparing the overall of “a person of quality” found that there are similar features which are having high learning and working skills, being a learning enthusiast with ability to produce and create new innovations. Similarly in Germany and Finland, culture of learning is the main educational culture. Therefore, one quality policy is innovative development for competitive potential. (Sinlarat et al, 2010)[7]

Development of the innovation creators or the “innovators” is extremely challenging. Hence, interest and capacity in creating new knowledge to solve problems are essential skills. (Yaboonthong, 2020, p.142-143)[8] The quality of Thai education is necessarily adjusted to improve students’ potential by focusing on creating people with 21st century skills, especially learning and innovative skills, the necessary skills for the modern world. (Thailand Development Research Institution: TDRI, 2013)[9] Therefore, innovators in the education segment need to understand the causes and methodologies of educational management for the successful educational disruptive innovation. (Pakotang, 2020, p.19)[10]

According to the importance and problems stated, the researchers are interested in studying the current conditions and conditions encouraging development of strategies to promote learning and innovation skills of students in school under the Secondary Educational Service Area Office. The results of the research can be applied to develop students’ quality and used as the guideline for schools with the same context as target schools. Moreover, academics, educators, directors, and people who are involved in education can adapt and apply the results in other schools which led to sustainable development.

Research Objectives

- 1) To study the components and indicators of students’ learning and innovation skills for schools under the Secondary Educational Service Area Office.
- 2) To study the current condition and factors contributing to the promotion of students’ learning and innovation skills for schools under the Secondary Educational Service Area Office.
- 3) To create and review strategies that promote students’ learning and innovation skills for schools under the Secondary Educational Service Area Office.

Research Methodology

Research Design

This study was a qualitative research carried out by the following procedures;

- 1) To study the components and indicators of students’ learning and innovation skills for schools under the Secondary Educational Service Area Office, documentary, articles, journals, and research were synthesized and expert interviews were arranged to verify the components and indicators.
- 2) To study the current conditions and factors contributing to the promotion of students’ learning and innovation skills

for schools under the Secondary Educational Service Area Office, online questionnaires were applied.

- 3) To create and review strategies promoting students’ learning and innovation skills for schools under the Secondary Educational Service Area Office, inner factors (7s McKinsey) and outer factors (PEST) were analyzed into the TOWS Matrix table. Furthermore, the Workshop was arranged by experts to create and verify strategies and the experts used the Connoisseurship method to examine strategies.

Key Informants

- 1) The synthesis of documentary, articles, journals, and research, and components and indicators verification by interviewing 11 experts were exploited to study the components and indicators of students’ learning and innovation skills.

- 2) Studying the current conditions and factors contributing to the promotion of students’ learning and innovation skills, 357 random samples consisting of school administrators and teachers randomized by a table of Krejcie and Morgan (Krejcie&Morgan) responded to online questionnaires proved by 5 experts.

- 3) Creating and reviewing strategies, analyzing inner factors (7sMcKinsey) and outer factors (PEST) into the Town Matrix table was operated. Additionally, to create strategies, a workshop by 11 experts was arranged, and the Connoisseurship was applied by 9 experts to examine strategies.

Research Tools

- 1) To study the components and indicators of students’ learning and innovation skills, the synthesis table was used and a structural interview was arranged to verify the components and indicators.

- 2) To study the current conditions and factors contributing to the promotion of students’ learning and innovation skills, online questionnaires were used. The questionnaires consisted of 4 sections as followed; Section 1: Check list questionnaire containing basic information of respondents, Section 2: Questions of current conditions contributing to the promotion of students’ learning and innovation skills, Section 3: Questions of factors contributing to the promotion of students’ learning and innovation skills for schools under the Secondary Educational Service Area Office, and Section 4: Questions surveyed for suggestion of promoting students’ learning and innovation skills. The second and third sections of the questionnaires are 5-point rating scale questionnaires which is different form Section 4 containing open-ended questions.

- 3) To create and review strategies, a workshop was arranged to create and verify strategies. Furthermore, rating scale questionnaires which were used for assessing suitability and implementation were applied to examining strategies.

Data Analysis

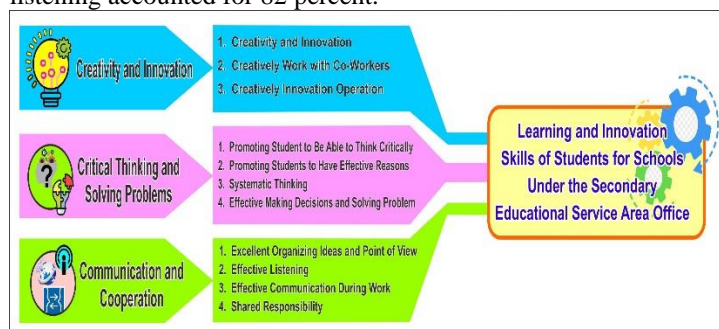
- 1) Studying the components and indicators of students’ learning and innovation skills, statistical analysis was calculated for percentage.

2) Studying the current conditions and factors contributing to the promotion of students' learning and innovation skills, online questionnaires proved by 5 experts using the Index of Item Objective Congruence: IOC were applied and statistical data was analyzed by using mean and standard deviation (S.D.)

3) To create and review strategies, create and verify strategies, a workshop was arranged, and 5 points rating scale questionnaires along with Connoisseurship were used to survey the suitability and implementation. Mean and standard deviation were calculated.

Research Results

1) According to the study of components and indicators of students' learning and innovation skills for school under the Secondary Educational Service Area Office, three components were found. To verify the components and indicators of students' learning and innovation skills for school under the Secondary Educational Service Area Office found that Component 1: Creativity and innovation has the majority opinion which accounted for 100 percent followed with Component 2: Critical thinking and problem solving which is 97.75 percent and Component 3: Communication and cooperation (93.25 percent). The Component 1: Creativity and innovation included the indicators as followed; 1) Creativity and innovation, 2) Creatively work with other people, and 3) creatively innovative operation. These indicators have the same response rate which are 100 percent. Next, Component 2: Critical thinking and problem solving consisted of 3 indicators with the same opinion rate, 100 percent; 1) Promoting students to be able to think critically, 3) Systematic thinking, 4) effective making decisions and solving problems. And Indicator 2: Promoting students to have effective reasons accounted for 91 percent. Lastly, Component 3: Communication and cooperation discovered that Indicator 1: Organizing idea and point of view and Indicator 3: Competent communication in work have the same response rate which accounted for 100 percent. Additionally, Indicator 4: Shared responsibility has 91 percent of response rate and Indicator 2: Effective listening accounted for 82 percent.



Picture 1: Components and indicators contributing to the promotion of learning and innovation skills of students in schools under the Secondary Educational Service Area Office

2) The overview of current conditions promoting students' learning and innovation skills for schools under the Secondary Educational Service Area Office is at a high average ($x = 3.95$ S.D. = 0.73). Considering each indicator

individually found that the average of creativity and innovation indicator is the highest ($x = 3.99$ S.D. = 0.73). In contrast, the communication and cooperation indicator and critical thinking and problem solving indicator have the lowest average ($x = 3.92$ S.D. = 0.71). The factors contributing to the promotion of students' learning and innovation skills for school under the Secondary Educational Service Area Office have the high average in overview ($x = 4.05$ S.D. = 0.76). Obviously, inner factors have the highest average ($x = 4.10$ S.D. = 0.75) followed with outer factors ($x = 3.96$ S.D. = 0.77), when considered the indicators separately. The overview of inner factors contributing to the promotion of students' learning and innovation skills for schools under the Secondary Educational Service Area Office has a high average ($x = 4.11$ S.D. = 0.75). When the indicators are considered individually, it is found that share value has the highest average ($x = 4.27$ S.D. = 0.72) followed with structure ($x = 4.15$ S.D. = 0.77), strategy and staff ($x = 4.14$ S.D. = 0.71) which also have high averages. On the contrary, the average of the system is the lowest ($x = 3.95$ S.D. = 0.73). The results of outer factors contributing to the promotion of students' learning and innovation skills for schools under the Secondary Educational Service Area Office have a high average in the overview. The average of technology is the highest ($x = 4.10$ S.D. = 0.68) followed with policy and politics ($x = 4.03$ S.D. = 0.75), social ($x = 3.90$ S.D. = 0.79). The lowest average is economy ($x = 3.85$ S.D. = 0.83) when individually considered each indicator.

3) Creating strategies and promote students' learning and innovation skills for schools under the Secondary Educational Service Area Office requires 4 master strategies, 14 minor strategies, 21 objectives, 28 indicators, and 31 guidelines, as followed:

Master Strategies: Strategy 1 Staff Development

Minor Strategies

1. Create positive power and be good colleagues who are open-minded at work.
2. Create ideologies, values, and creativity when work together
3. Strengthen productive and applying innovation skills of school administrators, teachers, and students.
4. Encourage teachers to manage the classroom for 21st century learners.
5. Strengthen competencies of students which led to the development of 21st century learners.

Objectives

1. Staff are good co-workers with unity and cooperate to solve problems.
2. Staff are open-minded, listen to different opinions and perspectives, and work democratically.
3. Staff accept changes and work flexibly according to the context of schools which moves with the times.
4. Staff recognize and involve in creating ideologies and values.
5. Staff recognize and be creative during work.
6. School administrators, teachers, and students present their innovations in sharing forums and competitions.
7. Teachers manage various teaching methodologies to encourage students' learning and innovation skills.

8. Students have competencies leading to 21st century learner development.

Indicators

1. Percentage of the number of staff who are good colleagues with love and unity.
2. Percentage of the number staff who regularly participate in assisting PLC and solve learning management problems.
3. Percentage of the number of open-minded staff and work democratically.
4. Percentage of the number of staff who have ability to work following the policy of the affiliated agency which is flexible according to the context of school and keeps up with the times.
5. Percentage of the number of staff who have ideologies and values at work.
6. Percentage of the number of curative and cooperative staff.
7. Percentage of school administrators, teachers, and students who present their innovation in sharing forums or competitions once in an academic year.
8. Percentage of the number of students who have at least a good level of satisfaction with teachers' learning management.
9. Percentage of the number of students who think outside the box, think creatively, set alternatives for solving problems, and choose a suitable way to solve the problems.
10. Percentage of the number of students who are able to identify conceptual relationships.
11. Percentage of the number students who have 10 key competencies.

Guidelines

1. Arrange activities to create positive power, love, and unity of staff and encourage good relationships between co-workers.
2. Regularly organize PLC activities for exchange information and solve learning management problems.
3. Create activities to promote staff to be open-minded and work democratically.
4. Work following the policy of the affiliated agency which is flexible according to the context of schools and moves with the times.
5. Provide activities promoting staff to cooperatively create ideologies and values.
6. Arrange activities to encourage creativity of staff during working together.
7. Arrange sharing forums for innovation presentations of school administrators, teachers, and students once in an academic year.
8. Provide various learning management such as GPAS, Active Learning, PBL, STEM, and SEEEM to strengthen students' learning and innovation skills.
9. Teach students based on questioning methods focusing on creativity and freedom of thought.
10. Create activities promoting students to share logical ideas, discuss reasonably, summarize logic reasons, be able to distinguish personal opinions and biases, and create innovation.

11. Arrange ingenious and creative activities challenging students to overcome obstacles.

12. Promote students to identify problems, collect and analyze data to determine the causes, set alternatives for solving problems, and choose a suitable way to solve the problems.

13. Organize activities for students to relate the conceptual relationships.

14. Arrange activities to strengthen students' key competencies. Thai people have English communication skills, high capacity, and are socially conscious.

Master Strategy: Strategy 2 Modern Media, Technology, and Innovation Development

Minor strategy

1. Encourage teachers and students to create and apply media and information technology for learning and innovation development.

Objectives

1. Teachers and students produce and implement media, information technology, E-learning, and online media for continual learning and innovation development.
2. High speed Internet, computers, media, and modern materials and tools are provided for students adequately.
3. Students apply media, and information technology productively.
4. Teachers are able to use educational platforms.
5. Teachers are able to assess the performance of educational platforms
6. Information Center is provided for people involved in education to get information and share ideas to staff or schools publicly.

Indicators

1. Percentage of the number of teachers producing and applying media, information technology, E-Learning, and online media.
2. Percentage of the number of students who cooperatively produce and present innovations.
3. Percentage of the number of students applying media, information technology, E-Learning, and online media as learning tools.
4. Percentage of the number of students using high speed Internet system, computers, media, and modern materials and tools.
5. Percentage of the number of students with media literacy have a high level of effective information technology skills.
6. Percentage of the number of teachers who are able to apply educational platforms.
- 7 The number of educational platforms which is assessed the performance (At least 1 per an academic year)
8. Percentage of people involved in education who have a good level of satisfaction with the Information Center.

Guidelines

1. Promote teachers to produce and apply media, information technology, E-Learning, and online media for continual learning and innovation development.
2. Encourage students to cooperatively produce and present innovations (At least 1 innovation per a group in an academic year)
3. Encourage students to implement media, information technology, Internet system, E-Learning, and online media as learning tools.
4. Improve high speed internet systems, computers, media, modern materials and tools to provide for students adequately.
5. Strengthen student's media literacy, techniques of using media and technology, and accurate and appropriate usage for communication.
6. Encourage teachers to apply educational platforms.
7. Teachers assess performance of educational platforms using learning methodology through educational platforms of students as criteria.
8. Manage service system, Information Center for people involved in education to get information and share ideas to staff and school publicly.

Master strategy: Strategy 3 Management System Development

Minor strategies

1. Develop operational plans, projects which contribute to promotion of students' creativity and innovation and align with policies of the affiliated agency.
2. Encourage the appointment of staff to be responsible for promotion of students' creativity and innovation
3. Strengthen the supervision system.
4. Promote the internal quality insurance.

Objectives

1. Visions, operational plans, and projects which contribute to promotion of students' creativity and innovation and align with the policy of the affiliated agency are set by the cooperation of staff.
2. The staff are appointed for promotion of students' creativity and innovation.
3. Advisory and following up the creating innovation of staff are provided.
4. The effective internal quality insurance is set.
5. The form of performance assessment relating to the school achievement is set.

Indicators

1. Percentage of the number of staff and people involved in school have at least a good level of satisfaction with operational plans and projects.
2. Percentage of the number of projects and project reports which contribute to the promotion of students' creativity and innovation.
3. Percentage of staff who are satisfied with the operation promoting students' creativity and innovation.

4. Percentage of school administrators and teacher who were supervised and followed up the innovation (At least once a semester)
5. The results of internal quality insurance are at least at an excellent level.
6. Percentage of school administrators and teachers have work relating to the school achievement.

Guidelines

1. Cooperatively set the visions, operational plans, and projects which contribute to promotion of students' creativity and innovation and align with policies of the affiliated agency.
2. Implement policy promoting students' creative and innovative skills to actualize students' potential.
3. Strengthen students' learning and innovation skills by applying shared responsibility and creativity.
4. Supervise and follow up the innovation production of school administrators and teachers at least once a semester.
5. Apply a quality system for management and implement the quality assurance.
6. Assess the performance of school administrators and teachers using the school achievement as a criteria.

Master strategy: Strategy 4 Network Development

Minor strategy

1. Promote systematic working with the network to develop students' creativity and innovation.

Objectives

1. Build cooperative networks to create innovation and strengthen students' thought and intelligence continually and rapidly.
2. Strengthen networks by exchanging great innovation practice.

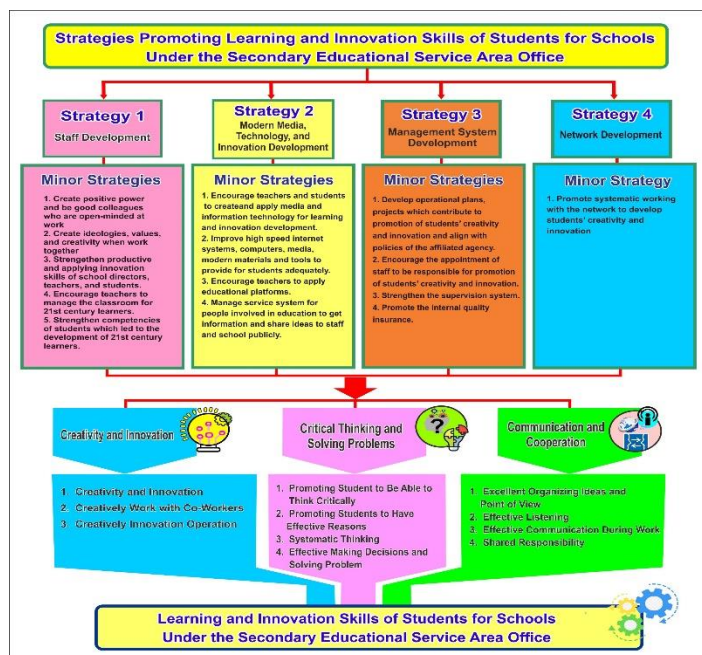
Indicators

1. The level of satisfaction of the networks towards students' creativity development is at the good level.
2. The number of times of network cooperation when arranging activities promoting students' creativity and innovation.
3. There is a good creating innovation practice of the networks to compare with students' methodologies.

Guidelines

1. Encourage students to build networks and share responsibility to develop students' creativity and innovation.
 2. Cooperatively arrange activities promoting creativity and innovation to find the empowerment concept to drive the idea into action.
 3. Encourage the discovery of good innovation practice to compare with students' methodologies.
- The overview of examining strategies by suitability assessment and acceptance of strategies promoting students' learning and innovation skills for schools under the

Secondary Educational Service Area Office are $x = 4.83$ S.D. = 0.40 which is considered as the highest average. When strategies were considered individually, it was found that Strategy 1: Staff Development has a high average ($x = 4.89$ S.D. = 0.33) followed with Strategy 2: Modern media, technology, and innovation Development ($x = 4.86$ S.D. = 0.40), Strategy 3: Management Development ($x = 4.82$ S.D. = 0.39), and Strategy 4: Network Development ($x = 4.74$ S.D. = 0.49).



Picture 2: Strategies promoting learning and innovation of students for schools under the Secondary Educational Service Area Office

Discussion

Components and indicators of students' learning and innovation skills for school under Secondary Educational Service Area Office are as followed: 1) Creativity and innovation consisting of the indicators 1.1) Creativity and innovation, 1.2) Creatively work with others, 1.3) Creatively innovation operation, 2) Critical thinking and problem solving along with 3 indicators: 2.1) Promoting students to be able to think critically, 2.2) Promoting students to have effective reasons, 2.3) Systematic thinking, 2.4) effective making decision and solving problem, 3) Communicate and cooperation consisted of 4 indicators, 3.1) excellent organizing idea and point of view, 3.2) effective listening, 3.3) effective communication during work, 3.4) shared responsibility. The components and indicators aligned with Neelayothin (2016)[11] who studied The Indicators of Students' skills in the 21st Century for the Fundamental Education: The development of Structural Relationship Model and also agreed with Meedee and Lincharoen (2015)[12] studied The Guidelines of Assessment Development of Learning and Innovation Skills of Students According to the Idea of Learner in the 21st Century Assessment.

In the overview, Component 1: creativity and innovation of current conditions which promote students learning and innovation for school under the Secondary Educational

Service Area Office have high average. Considering the components separately found that creatively work with other people has the highest average, but creativity and innovation and creatively innovative operation have the lowest average. Additionally, Component 2: critical thinking and solving problems has a high average in the overview and systematic thinking has the highest average when considered the components individually.

Effective making decisions and solving problems, having effective reasons, and critical thinking have the lowest average. The average in the overview of Component 3: communication and cooperation is high. The indicators considered separately found that organizing ideas and point of view has the highest average, whereas shared responsibility, effective listening, and effective cooperation during work have the lowest average. The current conditions are consistent with the study A Model of the 21st Century Desired Characteristics for Students Quality Development of Nanjatee and Chuchart (2017)[13]. The study found that setting management systems, cooperatively organizational development, and the development of curriculum and learning process, learning management for technological and communicative potential of students are the most essential components to develop learners to have the 21st century desired characteristics.

In the overview, the average of inner factors contributing to the promotion of students' learning and innovation skills for schools under the Secondary Educational Service Area Office is at a high level. In contrast, considering inner factors individually found that share value has the highest average, followed with structure, strategy, and staff which have the same average. In addition, the inner factors with the lowest average are skill, style, and system. For the outer factors contributing to the promotion of students' learning and innovation skills for schools under the Secondary Educational Service Area Office, the average is high in the overview. Moreover, when the outer factors are examined separately, technology has the highest average which is considered in the high level, and the outer factors with the lowest average are; policy and politics, social, and economy. The stated results are agreeable with Chimthongdee (2014). The study School Management Strategies for Creating Learning Management Innovations found that enrichment of creative culture, strategic planning, and creating innovation procedures are the strengths.

Creating strategies promoting students' learning and innovation skills for school under the Secondary Educational Service Area Office consists of 4 master strategies, 14 minor strategies, 21 objectives, 28 indicators, and 31 guidelines, examining strategies by assessment of suitability, and acceptance of strategies promoting students' learning and innovation skills for school under the Secondary Educational Service Area Office has high average in the overview. Considering strategies individually, it is found that Strategy 1: staff development has the highest average and it is consistent with the 12th National Economic and Social Development Plan, the development center. (Office of the National Economic and Social Development Council, 2016, p.4)[14] Strategy 2: modern media, technology, and innovation development has the second average level followed with strategy 3: management system development and Strategy 4: network development which

are consistent with the study of Sriweraskul (2010)[15] Strategies to Enhance Good Character of Students in Schools under the Foundation of the Church of Christ in Thailand. The study found that 1) to strengthen teachers and school members' existing capabilities by pooling together their strengths, skills, knowledge, devotion and commitment, 2) to improve management qualities of the school and teachers and 3) to synergize the family, community and related organizations outside the schools are effective strategies which agree with the study named Academic Administration Strategies to Promote 21st Century Skills of Students in Alternative Private Schools of Chaisooksung (2014, p. 194-195)[16]. The suitable and possible strategies discovered from the study are Master strategy 1) reforming the evaluation to promote 21st century skills of students 2) enhancing the learning environment to promote 21st century skills of students 3) creating excellence of the professional development to promote 21st century skills of teachers. Moreover, the results of studies align with the study named A Study of 21st Century Learning Skills for High School Students in Cao Bang Province, Vietnam of Nguyen (2018, p.14)[17]. The study presented the guideline of encouraging 21st century learning skills as the following; learning management focusing on theory and practices, practicing creativity and problem solving skills, providing competitions and training on 21st century skills and learning by doing.

Conclusion

The components and indicators of students' learning and innovation skills for school under the Secondary Educational Service Area Office are 1) Creativity and innovation which consists of 3 indicators; 1.1) Creativity and innovation, 1.2) Creatively work with others, 3) Creatively innovation operation, 2) Critical thinking and problem solving along with 3 indicators; 2.1) Promoting students to be able to think critically, 2.2) Promoting students to have effective reasons, 2.3) Systematic thinking, 2.4) Effective making decision and solving problem, 3) Communicate and cooperation consisted of 4 indicators, 3.1) Excellent organizing idea and point of view, 3.2) Effective listening, 3.3) Effective communication during work, 3.4) Shared responsibility.

The current conditions of promoting secondary students' learning and innovation which proceeded with the components and indicators of student's learning and innovation are ranked as following; Component 1: Creativity and innovation, Component 3: Communication and cooperation, Component 2: Critical thinking and solving problems. Share value is in the first rank of inner factors contributing to the promotion of students' learning and innovation skills followed with structure, strategy, staff, skill, style, and system. The outer factors contributing to the promotion of students' learning and innovation are technology, policy and politics, social, Economy. The strategies promoting student's learning and innovation are Strategy 1: Staff development, Strategy 2: Modern media, technology, and innovation development, Strategy 3: Management system development, and Strategy 4: Network development.

To summarize, secondary school teachers should apply the components contributing to the promotion of students' learning and innovation skills which are found in the study to develop students to contain learning and innovation skills and be consistent with the content of school. Furthermore, the affiliated agency of secondary schools should encourage school administrators to support learning and innovation skills of secondary students by promoting, supporting, and resource management. Study the recommendation of secondary school policies to accelerate the development of learning and innovation skills to be systematics and genuinely developed.

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