

Empowering Teachers' Learning to Develop Innovative Skills for Students

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Abstract

This research aims at empowering teachers' learning to develop innovative skills for students at high schools under the Office of the Basic Education Commission. It is one of the research projects in the research series regarding 21st century skills which are the outcomes of the advancement of digital technology as well as society becoming knowledge-based in the 21st century by processing many different views which have been proposed globally across the Internet and sorting them to create educational innovation. The objective of the research and development methodology is to develop an individual which will then lead to the development of the work; provided that a person who has knowledge is then encouraged to put it in action, it will supposedly result in more efficient work according to the concept of "knowledge + action = power". This concept itself has led to the study's idea of "empowering teachers' learning and applying the results in their teaching". Therefore, the result of the study is an educational innovation called "online self-training program to empower teachers' learning in order to develop students' innovative skills" which has been approved of its quality by the stakeholder teachers who have used this educational innovation and approved through experimental field research which was efficient as hypothesized in the research. As a result, this online self-training program can be publicly disseminated to develop the teachers to afterwards develop their students in high schools under the Office of the Basic Education Commission who were primarily the target group of this study across the country.

Keywords: 21st century skills, online self-training program, knowledge + action = power, innovative skills, R&D methodology

1. Introduction

Future is a space for people with creative and innovative potential. There is a demand of people with these types of competencies in all professional fields. Hence, the development of learners to become creative and proficient in applying their creativity in creating an innovation is called "innovation creation skills" (Wongyai & Pattaphol, 2019). An important thinking skill which humans should be encouraged to successfully acquire in this era is innovative thinking skill because with this skill, they will be able to solve problems, design, and create new things resulting in a successful life (Weiss & Legrand, 2011). To develop the learners in applying their creativity in the development of an innovation, it is essential for 21st century educational management to develop students in both the core subjects and the 21st century skills which consist of learning and innovative skills, life and career skills, information, media, and technology skills in schools. Therefore, the executives must be responsible for efficient educational management by knowingly improving themselves, coming up with new management strategies, changing work pattern, highlighting the relationships among employees within and outside the organizations as well as focusing on organizational traditions which is goal-focused. Moreover, it is important for them to pay attention to appropriate teaching science, take part in changing teaching pattern of teachers, and adjust contents according to the curriculum. Additionally, they need to develop new skills for the teachers, encourage them in applying technology in improving quality of education as well as adjust roles in building learning network both inside and outside schools to develop the learners to become more competent, proficient and accepted internationally and to be able to live happily (Amdonkloy, 2013). Panich (2012) stated that to have innovative skills requires this basic set of 21st century skills which every human

needs to continuously practice because the world will only change faster and become more complicated. Those people who do not have proficiency in learning and innovative skills will have a hard time catching up - life could be difficult for them. These skills are at the peak of Knowledge-and-Skills Rainbow which is the heart of survival skills in the 21st century - learning how to learn or learning skills as well as change leading skills. Innovative skills comprise of: 1) critical thinking and problem solving which are defined as expert thinking, 2) communication and collaboration which are defined as complex communicating, and 3) creativity and innovation which are defined as the application of imagination and invention.

Furthermore, the collection of the different views proposed on the internet globally showed many interesting suggestions for the reinforcement of innovative skills for students such as to be expert learners; stay informed or get left behind; focus on building great relationships; don't just adopt technology, embrace it; empower your colleagues with solutions; take classroom from a space to a place and to a home; allow for, support, make time for, and praise creative work; let students ask questions; make hands-on learning a regular event; introduce students to famous innovators; allow time for innovation and creativity; give students freedom of choice; encourage collaboration; reassess how you assess; ask open-ended questions; create flexible learning environments; use problem-finding; use the design-thinking process; seek out new experiences; share ideas; build on existing idea; improve efficiency, creative work environment for fostering innovation; focus on changing behavior instead of acquiring technical skills; use an e-learning production framework that cultivates innovation; choose technologies that enable e-learning innovation. (Cleverism, 2020; Juliani, 2017; Lynch, 2018; Markovic, 2019; Poh, 2019; Shulman, 2018; Teach Thought Staff, 2019).

According to what was previously mentioned, innovative skills are clearly essential and there are many suggestions for the development of innovative skills for students using the concept of "knowledge and action is power". This concept can be especially applied to "teachers" as well because they are an important mechanism in the development of "learners" to develop the basic skills that people in the 21st century should always have ready. However, the rapid change in social context led to new educational paradigm which immensely differs from the one in the 20th century and thus resulted in many challenges and obstacles to the development. There is a study showing that some common reasons for resistance to change within school organizations include interference with need fulfilment, selective perception, habit, inconvenience or loss of freedom, economic implications, security in the past, fear of the unknown, threats to power or influence, knowledge and skill obsolescence, organizational structure, and limited resources. (Yılmaz & Kılıçoğlu, 2013). So, this study gave priority to the research and development in order to create an educational innovation called "Online Self – Training Program to Empower Teachers' Learning to Develop Innovative Skills for Students" which, as long as it is done according to Research & Development (R&D) methodology, will be efficient in accordance with the set criterion and can be publicly disseminated nationally to empower the teachers' learning which later will have an impact on the students in high schools under the Office of the Basic Education Commission, Ministry of Education who are the target group of the dissemination of the results of this study. The principle of R&D methodology states that when an innovation which is created during research and piloted in any area of an experimental research that has the potential to be a representation of the population is proven to be efficient according to the set criterion, that innovation can be disseminated for useful purpose with the population which is a reference group in the research. Moreover, this innovation is an online self – training program, which has been developed in the digital era - it is not a document-based program like in the past; it doubles the benefits of the application and dissemination of the innovation because it saves money, is efficient, can be disseminated widely, and thus will be more successful.

2. Research Objective

This research aims at empowering the teachers' learning to develop innovative skills for the students in high schools under the Office of the Basic Education Commission. It is a research project in a research series regarding the 21st century skills by Doctoral Program in Educational Administration, Mahamakut Buddhist University, Isan Campus. It studies many different views about the development of innovative skills for students and processes the data using R&D methodology in order to get an educational innovation called "Online Self – Training Program to Empower Teachers' Learning to Develop Innovative Skills for Students" which can be disseminated to empower the teachers' learning so that they can apply their learning results in their teaching that will hopefully produce the same results with the concept of "knowledge + action = power". This online self – training program consists of: 1) a project of empowering teachers' learning regarding innovative skills including its definition, importance, qualities, development guidelines, development procedures, and evaluation and 2) a project where the teachers apply their

learning outcome in their teaching which can affect critical thinking, creativity, initiative, teamwork, and networking skills of the students. There are 6 sets of the online self – training modules in the first project and one copy of operational manual for the teachers in the second project.

3. Research Hypothesis

To create an efficient educational innovation, this research has studied various literature regarding innovative skills from many different points of views more than the first time and has applied what is found in creating an online self – training program inclusively and efficiently. The educational innovation was used by the target group of teachers and tested for its quality; a research tool was created efficiently and piloted in a randomly selected school within the experimental research area. This research was believed to be able to potentially create an efficient educational innovation, so the research hypothesis was that the result of the development of the “Online Self – Training Program to Empower Teachers' Learning to Develop Innovative Skills for Students” would be, according to the set criterion, efficient as follows: 1) the post-test scores of the teachers’ learning outcome correspond with the 90/90 standard criterion and would be statistically significantly higher than the pre-test scores and 2) the post-test scores of the evaluation of the students’ innovative skills would be statistically significantly higher than the pre-test scores.

4. Literature Review

The literature review of this study included many different views regarding innovative skills as well as academic suggestions in order to create the following 6 different online self-training modules for teachers: 1) the definition of innovative skills by Bellevue College (2016), Catapult Learning (2016), and U.S. Digital literacy (n.d.), 2) the importance for innovative skills by Cleverism (n.d.), Caprelli. (2020), Canvas Instructure (n.d.), and Nimetz (2019), 3) indicative qualities of innovative skills by Campbell (2016), Dancker (n.d.), Eich (2018), Esade Entrepreneurship Institute (2019), Innovation Resource Consulting Group (n.d.), Leviss (2016), Mind Shift (2013), Newquist (2015), Patel (2018), Premuzic (2013), Rosales (n.d.), Spencer (2016), Tucker (2017), Woods (2016), and Zenger (2015), 4) a guideline of development of innovative skills (principles / concepts / techniques / methods / activities) by Cleverism (n.d.), Juliani (2017), Lynch (2018), Markovic (2019), Poh (2019), Shulman (2018), and Teach Thought Staff (2021), 5) a procedure of development of innovative skills by Asad (2012), Barnes (n.d.), Machtley (2017), Simpson (2017), Stahl (2019), and Zaidi (2016), and 6) an evaluation of innovative skills by Bukidnon State University (2018), Butter and Beest (n.d.), and Chell and Athayde (2009).

In case of a guideline of the development of the students' innovative skills (principles / concepts / techniques / methods / activities), the data is very important because the guideline is for the teachers to develop their students, and the researchers have synthesized the data into 52 different guidelines as follow:

- Be expert learners
 - Create a creative classroom environment
 - Mindset
 - Crossover learning
 - Incidental learning
 - Context-based learning
 - Computational thinking
 - Embodied learning
 - Adaptive teaching
 - Focus on changing behavior instead of acquiring technical skills
 - Personalized action plan
 - Podcasts and blogs
 - The latest technology
 - Use the design-thinking process
 - Analytics of emotions

- Self-reflection
- Stay informed or get left behind
- Empower colleagues with solutions
- Focus on building great relationships
- Encourage collaboration
- Pretend
- Create flexible learning environments
- Let students take risks and fail
- Maintain a keen sense of curiosity
- Share ideas
- Ask open-ended questions
- Insights on future trends from e: learning innovators
- Don't just adopt technology, embrace it
- Build on existing ideas
- Improves efficiency
- Creative work environment for fostering innovation
- Choose technologies that enable e: learning innovation
- Let students ask questions
- Give students freedom of choice
- Use problem-finding
- Practice mindfulness
- Stay persistent
- Take solitude breaks
- Adopt a people-centered approach
- Consider a flipped classroom model
- Seek out new experiences
- Interactive storytelling example
- Take classroom from a space, to a place, to a home
- Forget about labeling learning
- Make hands-on learning a regular event
- Introduce students to famous innovators
- Introduce brain-friendly solutions
- Invite entrepreneurs and innovators into the classroom
- Experienced learning designers' go-to resources for innovation include
- Gamified scenario
- Overcomes monotony,
- Feed students an inspirational diet.

5. Research Methodology

5.1 Concept and Procedure

This research to create an educational innovation called “Online Self – Training Program to Empower Teachers' Learning to Develop Innovative Skills for Students” used Research and Development (R&D) methodology according

to Sanrattana (2018) who thought that the objective of educational innovations which were developed by R&D methodology is to develop “people” which then leads to the development of the “work” with the idea that if people have knowledge and then are stimulated to put it in action, it will result in power and efficiency of the work according to the concept of “knowledge + action = power”. This concept has inspired this research to “start with the empowerment of the teachers' learning which then leads to their application of their learning outcome in their teaching with students”. Hence, it was essential to study the literature regarding innovative skills in terms of those matters mentioned earlier to create the online self-training modules so that they include knowledge from diverse sources and points of views and that the innovation will empower the teachers' learning efficiently. Therefore, the procedure of R&D methodology applied in this study started with the literature regarding innovative skills in the pattern of R1&D1...Ri&Di as follow:

R1&D1: study innovative skills for students in the following topics: 1) definition, 2) importance, 3) qualities, 4) development guidelines (principles / concepts / techniques / methods / activities), 5) development procedure, and 6) evaluation” to create an online self – training program which consists of 6 online self – training modules and a manual as a practice guideline for teachers (*Please see the original Thai version of the modules from <https://bit.ly/3TpG7CQ>*)

R2&D2: test the quality of the developed online self – training program twice using focused group discussion; the first time was the Preliminary Field Testing and Revision with 5 teachers outside of the experimental research area and the second time was the Main Field Testing and Revision with 10 teachers outside the experimental research area.

R3&D3: build 2 sets of tools for experimental research which included the teachers' learning outcome test and an evaluation of the students' innovative skills.

R4&D4: pilot the online self – training program at Nampongsuksa School which was randomly selected as an experimental research area using one group pre-test to post-test with an experimental group of 18 teachers and 660 students during the second semester of the 2022 academic year. There were 2 phases: 1) a 1-month online session of the 6 self-training modules of the project of empowering teachers' learning including a pre-test and post-test for the teachers and 2) a 2-month time of the application of the teachers' learning outcome in their teaching including a pre-test and post-test for the students.

5.2 Research Tools

5.2.1 Teachers' Learning Outcome Test - a Google form with 36 Items with Multiple Choices

The objective was to test the teachers' learning outcome before and after the piloting of the self-training program. The test was about innovative skills including the definition, importance, qualities, development guideline, development procedure, and the evaluation, and the characteristic of the test was based on cognitive domain according to The Revised Taxonomy 2001 by Benjamin S. Bloom which ranks thinking skills from lower to higher which are remembering, understanding, applying, analyzing, evaluating, and creating (Armstrong, 2010). The test was tested in the following matters:

- Content validity using Rovinelli and Hambleton (1977)'s Indexes of Item-Objective Congruence (IOC) and 5 senior experts in Curriculum and Instruction and Educational Measurement and Evaluation. The result of the data analysis showed that IOC of every item was higher than the 0.50 criterion (Chaichanawirote & Vantum, 2017)

- Practicality by piloting the test with 30 teachers in a school outside of the experimental research area. The result of the data analysis showed that: 1) the index of difficulty of every item was in accordance with the criterion which were between 0.20-0.80 as well as the power of discrimination from 0.20-1.00, 2) the value of KR-20 which indicates the coefficient of validity was 0.90 which was higher than the 0.70 criterion, and 3) the difficulty of the test was 59.63.

5.2.2 The Evaluation of the Students' Innovative Skills

It is an online assessment form using google form with 35 questions on a 5-level rating scale. (the most, much, medium, little, the least) items. It was developed as a result of the study of the indicative qualities of innovative skills from the points of views of Campbell (2016), Dancker (n.d.), Eich (2018), Esade Entrepreneurship Institute (2019), Innovation Resource Consulting Group (n.d.), Leviss (2016), Mind Shift (2013), Newquist (2015), Patel (2018), Premuzic (2013), Rosales (n.d.), Spencer (2016), Tucker (2017), Woods (2016), and Zenger (2015) as well as a result of the study of the evaluation guideline of innovative skills from a point of view of Bukidnon State University (2018), Butter and Beest (n.d.), and Chell and Athayde (2009). The evaluation was tested of its quality in the following

matters:

- Content validity by using Rovinelli and Hambleton's methods and 5 senior experts in Educational Administration and Educational Measurement and Evaluation. The result of the data analysis showed that the IOC of every item was higher than the 0.50 criterion which means that these items can be used with the objectives needing to be evaluated (Chaichanawirote & Vantum, 2017).

- Practicality by piloting the evaluation with 30 students from a school outside of the experimental research area to find the value of alpha coefficient of reliability using Cronbach's method, and the analysis showed that the value alpha coefficient of reliability of the whole evaluation was 0.83. When analyzing each part, it was found that it was 0.81 for the critical thinking part, 0.82 for the creativity part, 0.83 for the initiative part, 0.81 for the teamwork part, and 0.81 for the networking part. When comparing reliability coefficient with the set criterion which was equal to or higher than 0.70 (UCLA: Statistical Consulting Group, 2016), it showed a higher value than the set criterion meaning that the items have relatively high internal consistency.

5.3 Data Analysis

- Data analysis to compare the post-test results of the teachers with the 90/90 standard criterion; the first 90 refers to percentage of an average score of the whole group of the teachers from the knowledge test, and the second 90 refers to percentage of numbers of the teachers who pass the test in every objective of the set criterion (Yamkasikorn, 2008).

- Data Analysis to compare the pre- and post-test scores of both the teachers and students by using t – test dependent statistics.

6. Research Result

These are the results after the first project, which was “*The Development for Teachers' Learning*”, which was to see whether the developed online self – training modules have led to the 90/90 standard learning outcome of the experimental group of 18 teachers and whether they have their learning outcome after the experiment would be statistically significantly higher than the before the experiment including the post-test scores after the teachers applied their learning outcome in developing the experimental group of 660 students in accordance with the second project, which was “*The Teachers' Application of Their Learning Outcome in Teaching Students*”. The results are as follow:

6.1 Research Result of the Development of Teachers' Learning

- The scores of the teachers' learning outcome after the experimental training program were at the average of 33.89 out of the total score of 36 which was 94.14% - higher than the first 90 in the standard criterion.

- 98.15% of the teachers passed all the set learning objectives in the test which is higher than the second 90 in the standard criterion.

- The result of the data analysis when comparing the statistically significant difference between the average scores of the pre-test and post-test showed that the teachers scored 466 on the pre-test out of the total score of 36 which is 25.89 on average and 610 out of 36 for the post-test which is 33.89 on average. When comparing the scores using t – test dependent, the teachers in the experimental group have higher average scores of the post-test than the pre-test statistically significantly at the level of 0.05 as shown in Table 1.

Table 1. The Comparison of Average Scores of the Pre-test and Post-test of Teachers by t – test Dependent

Testing	Sample size	Mean	Standard Deviation	t
Pre-test	18	25.89	0.44	11.501*
Post-test	18	33.89	0.21	

* $p < 0.05$

6.2 Research Result of the Teachers' Application of Their Learning Outcome in Teaching Students

The evaluation of innovative skills of 660 students was done in 2 phases which were before and after the experiment, and the results of it were as shown in Table 2.

Table 2. The Results of the Assessment of the Students' Innovative Skills before and after the Experiment

Indicative Qualities of Innovative Skills in Students	Result of Assessment			
	pretest		posttest	
	\bar{X}	S.D.	\bar{X}	S.D.
Critical Thinking	3.57	0.98	4.54	0.66
1) Students can purposefully ask questions.	3.68	1.02	4.65	0.57
2) Students have courage to try different ways to solve problems.	3.62	0.97	4.60	0.62
3) Students have new ways to solve problems.	3.77	1.03	4.55	0.64
4) Students are earnest with questions or problems they are facing.	3.27	0.88	4.51	0.67
5) Students can understand ambiguity of a problem.	3.72	1.03	4.52	0.68
6) Students usually research from more than one source before making decision.	3.33	0.93	4.43	0.73
7) Students listen to other people's opinions even if they disagree.	3.59	0.98	4.52	0.68
Creativity	3.60	0.96	4.50	0.70
8) Students think differently and apply different perspectives.	3.66	1.00	4.48	0.73
9) Students use instincts and knowledge in initiative.	3.27	0.88	4.44	0.77
10) Students come up with new ways to put concepts in action.	3.74	0.97	4.57	0.64
11) Students use resources creatively.	3.72	1.04	4.44	0.72
12) Students try to develop their thinking to be useful.	3.75	1.01	4.52	0.67
13) Students seek ways, techniques, or new tools when working.	3.45	0.83	4.53	0.65
14) Students always have time for new things.	3.58	1.00	4.49	0.70
Initiative	3.53	1.02	4.47	0.73
15) Students support work improvement to support new concepts.	3.54	1.09	4.43	0.78
16) Students can answer complicated open-ended questions.	3.34	0.87	4.42	0.78
17) Students can produce new work unexpectedly without being asked to.	3.47	0.98	4.56	0.67
18) Students can persuade others to support their initiative.	3.62	1.14	4.47	0.72
19) Students can systematically apply new concepts in their work.	3.70	1.09	4.41	0.75
20) Students work quickly and energetically.	3.53	0.96	4.54	0.67
Teamwork	3.45	0.96	4.48	0.72
21) Students pay attention when someone is talking and respectfully involve in a discussion.	3.38	0.84	4.47	0.75
22) Students accept creative opinions from their co-workers.	3.52	0.91	4.53	0.70
23) Students always reconcile after a conflict with others.	3.53	0.87	4.52	0.69
24) Students collaborate and assist their teammates creatively.	3.39	1.06	4.47	0.73
25) Students give advice for others' changes.	3.57	0.95	4.49	0.71
26) Students can work well, understand and empathize with others.	3.40	0.93	4.47	0.72
27) Students provide important information for their co-workers and stimulate co-learning environment.	3.35	1.02	4.41	0.74
28) Students usually succeed in verbal communicating with others.	3.49	1.11	4.48	0.74
Networking	3.49	0.95	4.51	0.70
29) Students appropriately and promptly share information with the stakeholders.	3.53	0.95	4.54	0.70
30) Students build relationships with people outside their teams.	3.34	0.89	4.44	0.77
31) Students can attract people from outside since the beginning.	3.59	0.96	4.53	0.67
32) Students can work in diverse environments.	3.63	0.96	4.60	0.63
33) Students meet up with others who have different concepts and perspectives to broaden their awareness.	3.52	0.95	4.53	0.69
34) Students show confidence in themselves and co-workers.	3.29	0.99	4.43	0.73
35) Students manage different opinions in a way that everyone can get involved.	3.51	0.94	4.50	0.71
Total	3.53	0.97	4.50	0.70

From both phases of the evaluation of the students' innovative skills, when analyzing the data using t – test dependent, the average score of the students' post-test was higher than the pre-test statistically significantly at the

level of 0.05 as shown in Table 3.

Table 3. The Results of the Data Analysis of the Students' Average Pre-test and Post-test Scores Using t – Test Dependent

Evaluating	Sample size	Mean	Standard Deviation	t
Pre-test	660	3.53	0.97	70.095*
Post-test	660	4.50	0.70	

* $p < 0.05$

The research results showed that the educational innovation called “Online Self – Training Program to Empowering Teachers' Learning to Develop Innovative Skills for Students” which was developed as part of the research is proven to be efficient in accordance with the set criterion. Additionally, it can be disseminated across the country for useful purposes in high schools under the Office of the Basic Education Commission who are the target population for the dissemination of this study.

7. Discussion and Suggestions

As it was mentioned previously that this study focuses on the various views of suggestions about the development of innovative skills for students from sources on the internet and then analyzed the data R&D methodology in order to create an educational innovation which is called “Online Self – Training Program to Empower Teachers' Learning to Develop Innovative Skills for Students”. This program can be disseminated to empower teachers' learning for them to apply what they have acquired in their teaching with the concept of “knowledge + action = power”, and this online self – training program consists of the project to empower the teachers' learning regarding innovative skills in terms of the definition, importance, qualities, development guideline, development procedure, and evaluation as well as the project for the teachers to apply their learning outcome in their teaching so that their students acquire critical thinking, creativity, initiative, teamwork, and networking skills. There are 6 online self – training modules for the teachers in the first project and a manual of practice guideline in the second project.

The concept mentioned above is consistent with the research ideas used by other research teams in the Doctoral Program in Educational Administration of Mahamakut Buddhist University's Isan Campus, such as the research on Online Program to Develop Teachers to Enhance Students' Adaptability Skills of Athan and Thacha (2022), on An Online Program to Empower Teachers' Knowledge to Develop Students' Collaborative Skills of Dhanapañño and Sutheejariyawattana (2022), on An Online Program to Empower Teachers' Learning to Develop Students' Critical Thinking Skills by Jakkaphatto and Dhammapissamai (2022), and on Developing Teachers to Enhance Project Management Skills for Students by Nukoonkan and Dhammapissamai (2023).

In the case of emphasizing various perspectives that are suggested to develop the student's Innovative Skills, focusing on searching for information from the Internet. Because this research requires information to be used in the form of an article that shows the author's perspective used to enhance the learning of teachers with knowledge presented in a variety of ways on the internet. It is limited information if searched from books or textbooks that are mostly presented as principles, concepts or theories. This is a consequence of the current knowledge-based society which generates, shares, and utilizes knowledge for the prosperity and well-being of its people (Rahman, 2009), the internet has become very useful in terms of learning and development of research. There are many advantages of the internet; some examples, according to Bastis Consultores (2021), are ease of communication, comparatively cheap and fast dispersal of information, wealth of information, and sending e-mail messages and receiving feedback. However, Basmo (n.d.)'s concern about the reliability of each source is also considered meaning that only quality and trustworthy sources can be selected. Therefore, it is suggested that in the research and development of any educational innovation in the same way can apply this concept y searching for information that looks like an article that reflects the author's point of view, which in one article Writers often write about various issues that are useful for use in the development of teacher learning, such as writing about definitions, importance, characteristics, development guidelines, development steps. Including guidelines for evaluation, etc. Because from the results of this research, it was found that the educational innovation obtained from this research was effective according to the research hypothesis. both in the case of teacher learning outcomes and in case of outcomes that happen to students. These results are also supported by the previous studies such as the research about "An Online Program to Enhance Teacher Learning to Develop Students'

Self-Directed Learning Skills.” (Arnandho & Sutheejariyawattana, 2022), "An Online Program for Teacher Learning to Enhance Students' Media Literacy Skills" (Namjaidee & Dhammapissamai, 2022), and "An Online Program to Empower Teachers' Knowledge to Develop Students' Collaborative Skills" (Dhanapañño & Sutheejariyawattana, 2022).

In case of the emphasis of the empowerment of the teachers' learning to develop their students. It is considered the heart of the development of the teaching profession in the modern era which is different from the past. Because in the past, they always aimed to develop for teachers to gain knowledge, regardless of whether teachers actually applied it to students or not. It is a development based on the concept emphasizing “Knowledge is power”, not the concept “Knowledge and action are power” used in this research. It was a result from a new concept of the development of teachers by Gusky (2000); Hoy and Miskel (2001) who think that any development provided for the teachers should consider the usefulness of it later on with the students' development as well as the ultimate goal. Additionally, Kampen (2019) stated that, “Students' achievement should be the ultimate goal of any teacher professional development activities”, and Holloway (2006) proposed that, “The right kinds of professional development for both teachers and school leaders can directly contribute to improved student performance.” Hence, the future teachers' development programs either from inside or outside schools or organizations should not only consider what the teachers will acquire but also how they will apply their learning outcome in their teaching to result in the students' learning as well.

In the case of focusing on the concept of "knowledge + action = power", it is an emphasis on emphasizing the importance of enhancing the learning power for teachers and teachers bringing learning outcomes to teaching to have an effect on students. It is an emphasis according to the Philosophy of ‘unity of knowledge and action’ by Lv and Wu (2017) who have stated in their research that, “The ‘unity of knowledge and action’ helps us to learn from failure and successes, learn from mistakes of predecessors and institute a behavior that prevents repetition of these mistakes. The ‘unity of knowledge and action’ helps improve the academic atmosphere and prepare for the future.” Also, there are some academics who think that, “Knowledge is power but knowledge without action is useless” (Ofpad, the School of Genius, n.d.) which is similar to what Napoleon Hill has said that, “Knowledge is not power ... it is only potential power. It becomes power only when, and if, it is organized into definite plans of action and directed to a definite end.” In addition, Margot (2019) suggested that to build a culture of action, one will have to consider committing to taking action, losing the perfectionist tag, simplifying, investing in learning, facing the fear, and measuring the right things. Therefore, the concept of “knowledge + action = power” is a new concept about any development that it should put emphasis on putting what is learnt in action, unlike the old concept of “knowledge is power”.

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