



Education Quarterly Reviews

Athan, M., & Thacha, W. (2022). Online Program to Develop Teachers to Enhance Students' Adaptability Skills. *Education Quarterly Reviews*, 5(3), 97-109.

ISSN 2621-5799

DOI: 10.31014/aior.1993.05.03.528

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Education Quarterly Reviews* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Education Quarterly Reviews* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of education, linguistics, literature, educational theory, research, and methodologies, curriculum, elementary and secondary education, higher education, foreign language education, teaching and learning, teacher education, education of special groups, and other fields of study related to education. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Education Quarterly Reviews* aims to facilitate scholarly work on recent theoretical and practical aspects of education.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

Online Program to Develop Teachers to Enhance Students' Adaptability Skills

Manmit Athan¹, Witoon Thacha²

¹ Mahamakut Buddhist University, Isan Campus, Thailand. E-mail: rightmanptk@gmail.com

² Mahamakut Buddhist University, Isan Campus, Thailand. E-mail: thachatoon@gmail.com

Abstract

This research aimed to develop an online program for the development of the teachers' skills to enhance the students' adaptability. The research materials consisted of the teacher's learning manuals and teacher guidelines for student development. Based on the Research and Development (R&D) methodology, the implication of the R1&D1 and the R4&D4 steps, six sets of teacher's learning manuals, and one workshop manual were obtained. Then the R5&D5, the one group pretest-posttest experimental research methodology, was used with 15 teachers and 324 students in the Faculty of Education of Mahamakut Buddhist University, Isan Campus. These groups of samples were randomized to adequately represent the population of the main campus of Mahamakut Buddhist University and its other campuses. It was observed that the online lessons developed for this research could significantly increase the teacher's post-test scores that meet the reference criteria of 90/90. As for the students, their post-test scores on adaptability skills were significantly higher than the scores observed in the pre-test. This showed that the online programs developed in this research are effective educational innovations. This result ascertains that the findings from this research can be disseminated for the benefit of the target population from all campuses of Mahamakut Buddhist University.

Keywords: Adaptability skills, Online program, Self-learning, Research and Development (R&D)

1. Introduction

The advancement of science in today's world brings about many positive changes to the present day's life. Each country must adapt to the changes that occur all the time and be prepared to face some unanticipated incidences. These technological changes have put Thailand in both internal and external challenges. To cater to these changes, it is required that serious education reforms be accelerated. The first major driving force is the Digital Revolution which has played an important role both in daily life and in the business world. The impact that digital revolutions have a comparable impact on society as industrial revolutions of the past. Moreover, the "Internet of Things (IoT), which allows devices or household gadgets to be connected to the Internet, enables people to control the use of various devices even when they are away from home. As a result, lifestyles and transactions have changed drastically and rapidly. In the industry, robots are increasingly being used in industry. In particular, artificial intelligence (AI) robots will take on the role of humans and the functioning pattern of industry and energy will be changed accordingly.

Therefore, education management must be adapted to keep up with the technological revolution. People should be aware of the fact that some conventional occupations will disappear amidst the emergence of many newly developed careers. Inevitably, learning style will also change in the way that the learners are trained to self-study learners who take care of their learning and learning evaluation. Learning is directed to a life-long stage and is not limited only to classroom teaching. Thai people are required to have the essential skills for the 21st century, which include learning and innovation skills, media and technology skills, and occupational and life skills (Office of the Education Council, 2018). Since the emergence of Thailand 4.0, Thai people are required to have adaptability skills to help them learn to live in harmony with the changing world. Thailand 4.0 has been developed by the government to drive the country's economy out of the middle-income trap to become a high-income country. Accordingly, Thai education should prepare its people to cope with the mutual changes driven by the Digital Revolution (Office of the Education Council, 2017).

Adaptability which is also known as learnability, is the skills of the future that helps students adapt to new situations, environments, and programs as well as learn new skills quickly. It expands the students' capacity to handle change and the effects extend beyond employment. Students with adaptability are more likely to participate in class, enjoy school, have higher self-esteem, and be more satisfied with life (Extended Notes, 2019). Martin, Nejad, Colmar, Liem, and Collie (2015) conducted research into the importance of adaptability skill development among students. They examined whether adaptability plays a role in promoting perceived control among students. They investigated whether adaptability reduces the experience of constructs that are known to be detrimental to; students' academic and non-academic development, academic anxiety, disengagement, performance-avoidance (i.e., where students are motivated by the desire to avoid disappointing others), and self-handicapping (i.e., sabotaging one's chance of success to have an excuse in case of failure). The results showed that when students were more adaptable, they also tended to perceive that they had greater control over their academic outcomes. In turn, greater perceived control was associated with reduced levels of the four detrimental outcomes.

Adaptability is a soft skill that means being able to rapidly learn new skills and behaviors in response to changing circumstances. In a world that is going to continue to throw new situations for leaders to navigate, the need for adaptability in the workplace - to learn and unlearn - is critical to future success (Wheatley, 2021). Therefore, adaptability in the classroom is the most important quality that every teacher must possess. Adaptability is a teachable skill that gives them the ability to handle unexpected situations without evident frustration. In addition, teachers can reinforce this skill by educating students on setting achievable goals, scaffolding, and other classroom activities (Darvell, 2021).

Martin, Collie, and Nagy (2021) provided codes of conduct for developing students' adaptability. It was advised that the teachers adjust students' behavior, thinking, and feelings to help them navigate disruption. For example, to adjust the students' behavior the teachers may need to seek out information and resources, or asking for help, and adjust attitude by thinking about the new task differently. Emotional adjustments can be done by minimizing negative feelings, or shifting the focus to positive feelings when engaged in unfamiliar activities.

Adaptability is an important skill that teachers can develop for their students. There have been many suggestions available online about how to develop students' adaptability. The research team believes that it is important to carefully review various works of literature about the issues related to definitions, importance, characteristics or attributes, development guidelines, development steps, and the concept of assessment. Different scholars may refer to each of the above elements of adaptability quite differently. However, putting these varieties of perspectives together to form the scope of learning will enhance the power of learning more deeply and broadly. Bringing those diverse perspectives into a systematic and research-based action should help obtain a set of knowledge that can be used for teacher learning. The teachers then can apply the learned knowledge for the development of their students' adaptability skills, which is one of the key skills of 21st-century education. Students at the higher educational level also need training on adaptability skills because they are seeking knowledge and experience. It is an age that is developing skills for life and society. Particularly in this research, the students from three departments, the Teaching Thai Language Department, English Language Teaching, and Social Studies of the Faculty of Education, Mahamakut Buddhist University, Isan Campus were selected as the research participants. The first researcher was a teacher who used to teach at that university and the second researcher is still a teacher there.

Therefore, the researchers studied different literature relating to adaptability skills in a variety of issues and perspectives to adequately obtain a set of knowledge needed for the development of the online program to develop teachers who would, in return, use the learned knowledge for the development of their students' adaptability skills. Sanrattana (2018) postulated that the Research and Development (R&D) methodology be used in to help create educational innovation for teacher learning. Then the teacher can bring that learning result to the development of the students. The working principle behind this thinking is that teachers should be well trained to earn enough knowledge before placing that knowledge into practice (action). This can be described via this pattern of "Knowledge + Action = Power" or as the saying goes, "Make Them Know What To Do, Then Encourage Them Do What They Know."

2. Literary Review

To obtain an adequate foundation for the development of the online program for teachers' development and the enhancement of the students' adaptability skills, the researchers examined several concepts and schools of thought about adaptability skill development. The diversifying perspectives were derived from academic or research perspectives, and work experience perspectives. The researchers systematically put these ideas together based on research methodology to form valid content for the teachers' training. There were 6 areas of content included in the research as follows:

1. Definitions of adaptability skills were based on the perspectives of Cjones Skills Weekly (n.d.), Cleverism (n.d.), Esoft Skills Team (n.d.), Half (n.d.), Martin (2012), Oliver and Lievens (2014), Prince (2012), Reddy (n.d.), and Smith, Sorokac and Widmaier (n.d.),
2. Importance of adaptability skills which were based on the perspectives of Agrawal (2016), Collie and Martin (2016), ERM Academy (n.d.), Ferguson (2011), Half (n.d.), Reid (2018) The Conversation (2018), and Thurlings, Evers and Vermeulen (2015),
3. Characteristics of the indicators of adaptability skills were based on the perspectives of Alessandra (2016), Boss (2015), Chron Contributor (2020), Keating (2018), the University of Bradford (n.d.), and Whitehall (2018)
4. Guidelines for the development of adaptability skills were based on the perspectives of Baker (2014), Half (n.d.), Leading Effectively Staff (2021), Life Simplified (n.d.), Oyster Connect (2019), Prince (2019), Reddy (n.d.) Vanderbloemen (n.d.), and Williams (2017)
5. Model for the development of adaptability skills which were based on the perspectives of Berger and Johnston (2015), David (2019), J-Pierre (2019), and Newell (2016)
6. Assessment of adaptability skills which were based on the perspectives of Kane (2019), Brent, Sidney, Robert, Gabriel, Michael, and Andrea (2013), Workable (n.d.), the University of Alberta (n.d.), and Zorzie (2012)

From the 6 areas of perspectives mentioned earlier, the researchers put the suggestions that were about "principles/concepts/techniques/methods/activities" as the "research inputs." The suggestions focusing on the creation of the model of the development were marked as the "research process." Finally, the ideas that are about characteristics or attributes of adaptability skills were reckoned as the "research output." When putting them all together, the whole idea of the knowledge from the review of the literature resulted in a systematic concept of the input-process-output model.

It is a systematic concept that represents a wide range of options for the teachers to apply to their students as they deem appropriate after the teacher development session. It is considered a conceptual framework for the learning and implementation of teachers shown as below:

Table 1: The systematic approach of academic or theoretical alternative proposals for teachers' learning and implementation

Input Suggestions Principles / concepts / techniques / process / activities for developing adaptability skills	Process Suggestions Procedures for developing adaptability skills	Output Suggestions Characteristics or expected qualities of students with regard to adaptability skills
<p>Baker (2014)</p> <ol style="list-style-type: none"> 1. Adjust as you go versus waiting until half-time 2. Vision long term and plan short term 3. Take some risk and move forward without all the data 4. Minimize the knee-jerk reactions 5. Know where you are on the change curve 6. Put the oxygen mask on yourself first 7. Get aligned with the change <p>Half (n.d.)</p> <ol style="list-style-type: none"> 1. Learn from others 2. Find the silver lining 3. Be willing to make mistakes 4. Ask questions <p>Leading Effectively Staff (2021)</p> <ol style="list-style-type: none"> 1. Be curious 2. Don't get too attached to a single plan or strategy 3. Create support systems 4. Understand your own reaction to change 5. Immerse yourself in new environments and situations <p>Life Zemplified (n.d.)</p> <ol style="list-style-type: none"> 1. Accepting 2. Learning 3. Creating 4. Suggesting 5. Being receptive 6. Being spontaneous 7. Embracing 8. Altering 9. Volunteering <p>Oyster Connect (n.d.)</p> <ol style="list-style-type: none"> 1. Intellectual flexibility 2. Being receptive 3. Creativity 4. Adapting behavior <p>Prince (2019)</p> <ol style="list-style-type: none"> 1. Look for opportunities to try new things that will keep you learning 2. Research suggests that people who are able to come up with solutions to a problem are better able to cope with problems than those who can't 3. Research suggests that people who are able to come up with 	<p>Berger and Johnston (2015)</p> <ol style="list-style-type: none"> 1. Ask different questions 2. Accept multiple perspectives 3. Consider the bigger picture 4. Experiment and learn <p>David (2019)</p> <ol style="list-style-type: none"> 1. Redefine your motivation 2. Observe and learn 3. Ask questions 4. Prepare alternative solutions 5. Make easy transitions 6. Stay calm and confident 7. Acquire new skills 8. Set small goals 9. Find the upside 10. Be willing to make mistakes <p>J-pierre (2019)</p> <ol style="list-style-type: none"> 1. Stop whining) 2. There's no 'right' and 'wrong' 3. Improve your coping mechanism 4. Be open to change 5. Have the whole alphabet for your plan 6. Engage in a positive self-talk 7. Stick to your natural inclinations 8. Think big 9. Don't blame yourself 10. Learn how to balance your life 11. Stop waiting <p>Newell (2016)</p> <ol style="list-style-type: none"> 1. See it. Acknowledge change is needed 2. Own it. Take ownership of the situation 3. Solve it. Develop your action plan 4. Do it. Execute the change 	<p>Alessandra (2016)</p> <ol style="list-style-type: none"> 1. Flexibility 2. Vision 3. Attentiveness 4. Versatility 5. Self-correction <p>Boss (2015)</p> <ol style="list-style-type: none"> 1. Adaptable people experiment 2. Adaptable people see opportunity where others see failure 3. Adaptable people are resourceful 4. Adaptable people think ahead 5. Adaptable people don't whine 6. Adaptable people talk to themselves 7. Adaptable people don't blame 8. Adaptable people don't claim fame 9. Adaptable people are curious 10. Adaptable people adapt 11. Adaptable people stay current 12. Adaptable people see systems) 13. Adaptable people open their minds 14. Adaptable people know what they stand for <p>Chon Contributor (2020)</p> <ol style="list-style-type: none"> 1. Prepare alternative solutions 2. Make easy transitions 3. Keep calm and confident 4. Acquire new skills 5. Diversify your knowledge <p>Keating (2018)</p> <ol style="list-style-type: none"> 1. Adaptable leaders have flexible ways of thinking 2. Adaptable leaders plan ahead 3. Adaptable leaders are curious <p>University of Bradford (n.d.)</p> <ol style="list-style-type: none"> 1. Intellectual flexibility 2. Receptiveness 3. Creativity <p>Whitehall (2018)</p> <ol style="list-style-type: none"> 1. A willingness to experiment

Input Suggestions Principles / concepts / techniques / process / activities for developing adaptability skills	Process Suggestions Procedures for developing adaptability skills	Output Suggestions Characteristics or expected qualities of students with regard to adaptability skills
<p>solutions to a problem are better able to cope with problems than those who can't</p> <p>Reddy (n.d.)</p> <ol style="list-style-type: none"> 1. Tune in to know the situation 2. Try different situations 3. Listen more 4. Practice emotional intelligence 5. Only for naturally flexible employees 6. For very organized employees 7. Consider the bigger picture 8. Take wide variety of perspectives into consideration 9. Create a balanced life 10. Just stop waiting for right time and situation <p>Vanderbloemen (n.d.)</p> <ol style="list-style-type: none"> 1. Be more spontaneous 2. Be calm and accepting when unexpected changes happen 3. Learn how to alter your schedule when changes happen 4. Find someone you admire with high adaptability and learn from them 5. Volunteer in a role that requires extra-ordinary flexibility in order to grow in this area <p>Williams (2017)</p> <ol style="list-style-type: none"> 1. Being open-minded) 2. Asking for help 3. Measuring the pros and cons 4. Being solution-oriented 5. Prioritizing what's important to you 6. Being flexible 		<ol style="list-style-type: none"> 2. Unafraid of failure 3. Resourcefulness 4. Able to see the big picture 5. Engaged in positive self-talk 6. Curiosity 7. Being present <p>AND</p> <p>The expected adaptability skills of students on this skill assessment form can be found in the appendix and on the website: https://bit.ly/3An4Tfq (In Thai original)</p>

3. Research Objectives

The purpose of this research was to conduct research with Research and Development (R&D) methodology that would enable the effective online program to develop teachers who would, in turn, use the learned knowledge to enhance students' adaptability skills. This online program consists of a teacher's learning development project and a teacher project that brings learning outcomes to improve student adaptability skills. There was a set of self-learning modules for the teachers and a practical manual for teachers to use as a guideline for student development.

4. Research Hypothesis

The researcher had studied the relevant literature from various perspectives before binding the obtained knowledge to the making of the research manual and conducting the quality inspection. The manual was used in an educational institution randomly assigned as an experimental area based on the R&D methodology. This research's operation was believed to yield effective educational innovations. The research hypothesized that the developed manual would be effective based on the following reference criteria. 1) The teachers had the post-development test score with standard criteria of 90/90 and had a statistically significantly higher mean score than the pre-development,

and 2) The students' score of the adaptability skills tested after development was significantly higher than before development.

5. Research Methodology

5.1. Concept and procedure

This current research involved the development of an online program to develop teachers and enhance students' adaptability skills based on the Research and Development (R&D) methodology through the viewpoint of Sanrattana (2018). It was reckoned as a research methodology that helped produce effective educational innovation that can be used for teachers' learning. Then the teacher can bring that learning result to develop their students. The working concept behind this research paradigm was "Knowledge + Action = Power," which can be explained that the teachers should be equipped with a proper level of knowledge (Knowledge) and they are encouraged in the later step to put that knowledge into practice (Action). The application of knowledge creates power (Power), which can be the ability to generate positive changes on the student side. The above paradigm can be briefed as a saying goes, "Make Them Know What To Do, Then Encourage Them Do What They Know."

The key element of the R&D methodology is the careful review of related literature. Particularly this research provides sufficient knowledge for the development of an online program that consists of a project and a learning module. The project consisted of a learning manual for teacher self-study and a module-based manual for teachers' practices. Therefore, the steps of the R&D methodology used in this research start from the study of related literature as R1&D1, R2&D2, R3&D3, and Ri&Di as detailed in the sections below.

R1&D1: This step involved studying works of literature relating to definitions, significance, characteristics or attributes, development guidelines, development processes, and assessment. The review of these areas of literature led to the creation of an online program for teachers' learning and students' adaptability skills development that consisted of 1) Teacher Learning Development Program, consisting of 6 sets of manuals for teachers' self-learning, and 2) Teachers' practical guide for student development.

R2&D2: At this step, the focused group discussion technique was used with 10 lecturers from Yasothon Theological Seminary which was a campus of Mahamakut Buddhist University but not the experimental area to be used in the real research. This step was to investigate the questions' manual glitches both in terms of clarity and usefulness of the content, appropriateness of the language used, the attractiveness of the content presented, etc.

R3&D3: At this step, a focused group discussion technique was applied with 15 lecturers, 8 from Lanchang Campus, and 7 from Lanna Campus. These participants were from other campuses of Mahamakut Buddhist University but were not the real experimental area. This process was to check for defects in the manual both in terms of clarity and usefulness of the content, the appropriateness of the language used, the attractiveness of content presentation, etc.

R4&D4: Study additional relevant literature to create 2 sets of research tools: 1) Teacher Knowledge Test, and 2) Student Adaptability Skills Assessment Form.

R5&D5: A Pre-experimental research trial was conducted on Mahamakut Buddhist University, Isan Campus that was an experimental area. The trial was done in the second semester of the academic year 2021 and divided into two phases.

Phase 1: Teachers' self-development. At this step, the experimental group of teachers conducted self-learning online via the teacher manual. The activities and the duration of the online learning were: 1) Explain details about the research to experimental groups' teachers and pre-test. This process took 2 days, 2) Teachers' online learning. This self-learning was without interruption from the researchers or other third parties, taking about 1 month, 3) Teachers' post-test and correcting the errors on the manual, taking about 2 days, and 4) Analyze the results, the teacher's post-test was compared

with the standard efficiency value of 90/90. Then the pre-test and post-test results were analyzed using t-test dependent, taking about 2 days.

Phase 2 Exploitation of self-study results. This stage involved using the teachers' skills obtained from online learning to develop the student's adaptability skills. The activities and their designated time are as follows: 1) Clarify the details of the research to the research participants and complete pre-testing on adaptability skills, taking 2 days; 2) Teachers who were in experimental groups used the learning outcomes to develop adaptability skills for students without intervention from the researchers or other people, taking 2 months, 3) The teachers from the experimental group checked and corrected the manual errors and post-test, taking 2 days, and 4) Comparing the pre-test and post-test results using t-test dependent. This step took 2 days to be completed.

5.2. Research Tools

1. The Teacher's Learning Test: This test was multiple choice questions with 4 options, which was intended to test the teachers' learning outcomes before and after the experiment. The content of the test was based on the definitions, the importance, the characteristics, the development guidelines, and the assessment. The characteristics of the exam were based on the cognitive domain theory of Benjamin S. Bloom's The Revised Taxonomy (2001). The questions included in the test were designed to test the learners' adaptability skills ranging from lower-order thinking to higher thinking skills, which included remembering, understanding, applying, and analyzing, evaluating, and creating, respectively (Armstrong, 2010) was an online google form assessment that was assessed for quality:

1.1 Content Validity was tested using the Index of Item-Objective Congruence (IOC) of Rovinelli and Hambleton (1977). The analysis by the five experts, who were professors in the areas of Curriculum and Teaching, and Measurement and Evaluation showed that all test questions had an IOC value of more than 0.50 (Chaichanawirote & Vantum, 2017).

1.2 Trial test was conducted with 30 teachers from Mahamakut Buddhist University, Lanna Campus, and Roi-Et Campus, these people were not the targets in the real experiment. The result revealed that 1) All exam questions were tested with the index of difficulty between 0.20 to 0.80, and the power of discrimination between 0.20 to 1.00. 2) The KR-20, which represents the confidence coefficient, was rated at the level of 0.92, which was higher than the specified rate that had been set at 0.70 or higher, 3) The test difficulty was rated at 48.43, which was an appropriate range of difficulty score.

2. Students' Adaptability Skills Test Form: The test was a rating scale ranging from *the highest, high, moderate, low, and the lowest*. These questions were based on the characteristics or attributes of adaptability skills which were derived from the perspective of various scholars including: Alessandra (2016), Boss (2015), Chron Contributor (2020), Keating (2018), the University of Bradford (n.d.), and Whitehall (2018). The assessment of adaptability skills was based on the ideas of: Kane (2019), Brent et al. (2013), Workable (n.d.), the University of Alberta (n.d.), and Zorzic (2012). The tests were conducted using google form and the obtained data were used for the following validity inspections.

1.1 Content validity was examined using the Index of Item-Objective Congruence (IOC) of Rovinelli and Hambleton (1977). The analysis by the five experts, who were professors in the areas of Educational Administration, and Measurement and Evaluation fields. The results of the data analysis revealed that the IOC values of all questions were above the 0.50 threshold. It shows that the questions in the adaptability skills assessment of students used in this research can be applied to what they want to measure or meet the objectives that they want to measure (Chaichanawirote & Vantum, 2017).

1.2 Trial assessment was conducted with 30 students from Mahamakut Buddhist University, Roi-Et Campus which were a different group of participants in the real experiment. It was shown that the alpha coefficient of reliability of the entire questionnaire was 0.96. In an itemized analysis, the following dyads show the areas of the test contents and the scores they were rated for; Learning aspect, 0.79, self-actualization=0.76, Attitude: 0.85, Interpersonal relationship: 0.82. Problem-solving and decision making: 0.88, and Knowledge of special ability: 0.79. All of these alpha coefficients of confidences were higher than 0.70, thus indicating that this quality of student development assessment could be used properly in the experiment (UCLA: Statistical Consulting Group, 2016).

5.3. Data Analysis

1. The post-test scores of the teachers' learning outcomes match the standard criteria of 90/90, where the first 90 means the percentage of the mean scores of the whole group of teachers from the proficiency test. The latter 90 means the percentage of teachers who were able to pass the test according to all objective criteria (Yamkasikorn, 2008).
2. T-test-dependent analysis was used to compare the teachers' learning outcomes and the adaptability skills of the students in the pre-and post-test.

6. Results

The implementation of the R1&D1 research process resulted in the creation of an online program for teacher development to enhance students' adaptability skills. There were two projects, each consisting of the following manuals.

1. Project for the development of the teachers' learning: This project had 6 self-learning manuals, each reflecting the perspectives of the academics as described below.

1.1 Manuals for the study about the definitions of adaptability skills based on the perspectives of Cjones Skills Weekly (n.d.), Cleverism (n.d.), Esoft Skills Team (n.d.), Half (n.d.), Martin (2012), Oliver and Lievens (2014), Prince (2012), Reddy (n.d.), and Smith et al (n.d.).

1.2 Manuals for the study about the importance of adaptability skills based on the perspectives of Agrawal (2016), Collie and Martin (2016), ERM Academy (n.d.), Ferguson (2011), Half (n.d.), Reid (2018) The Conversation (2018), and Thurlings et al (2015).

1.3 Manuals for the study of the indicators of adaptability skills based on the perspectives of Alessandra (2016), Boss (2015), Chron Contributor (2020), Keating (2018), and the University of Bradford (n.d.), and Whitehall (2018).

1.4 Manuals for the study of the developmental guidelines of adaptability skills based on the perspectives of Baker (2014), Half (n.d.), Leading Effectively Staff (2021), Life Simplified (n.d.), Oyster Connect (2019), Prince (2019), Reddy (n.d.) Vanderbloemen (n.d.), and Williams (2017).

1.5 Manuals for the study of the model for the development of adaptability skills based on the perspectives of Berger and Johnston (2015), David (2019), J-Pierre (2019), and Newell (2016)

1.6 Manuals for the assessment of adaptability skills based on the perspectives of Kane (2019), Brent et al (2013), Workable (n.d.), the University of Alberta (n.d.), and Zorzie (2012).

2. Students' Learning Development Project: The key elements included in the manual of this project were: 1) Characteristics of adaptability skills expected from the students, 2) Guidelines for adaptability skills development, and 3) Steps to the development of adaptability skills. At the end of the handbook, there is a teacher's self-assessment on how to apply suggestions from each of the above guidelines to actual teaching. The last section of the manual was about the teachers' reflections on the strengths and weaknesses of the manuals and the areas of the models that teachers thought should be improved.

The completion of R2&D2 to R5&D5 resulted in a teacher's learning guide and a manual for knowledge implication to develop the students' adaptability skills. The websites given below are the links to the teacher's learning outcome test and the student's adaptability assessment form (note: originally written in Thai).

- 1) Link for teachers' self-study manual <https://bit.ly/3unT7gO>
- 2) Link for the evaluation form for the teachers' choices of student development <https://bit.ly/3NK2K0a>
- 3) Link for the Teachers' learning summative test <https://bit.ly/3aefj6l>
- 4) Link for the students' adaptability skills evaluation form <https://bit.ly/3P4oKEk>
(For the English version, please see the appendix sections)

The research tools such as manuals, tests, and assessments obtained from the completion of the R2&D2 to R5&D5 phases were placed on experimental research. The pre-experiment research involved using one group pretest-posttest design with the samples from the experimental area, Mahamakut Buddhist University, Isan Campus. The participants were 15 full-time teachers drawn equally from the Thai Teaching program, English Teaching program, and Social Studies program. A total of 324 students were recruited from the three programs, each with a number of 90, 171, and 63 students, respectively.

The research results were under the set assumptions. The online program for the teacher's development to enhance students' adaptability skills consisted of 2 projects: (1) Project for Teachers' Learning Development, equipped with 6 sets of learning manuals, and (2) Project for knowledge implication for student development, equipped with 1 workshop manual. These interventions matched the specified criteria. Therefore, they can be disseminated for the benefit of the target population which are the teachers and students in the fields of Thai Teaching program, English Teaching program, and Social Studies program at the main campus of Mahamakut Buddhist University and its other campuses across the country.

1. The post-test score of the instructors in the experimental group met the standard of 90/90. The first 90 standard criteria show the percentage of the mean scores of the post-test. It was found that the average post-test score was 33.47 out of the total point of 36 (92.96%), which is higher than the specified threshold of 90 percent. The latter 90 in the above dyad represents the percentage of instructors who can pass the test through all objectives. It was found that 94.44 percent of the 15 teachers were able to pass the test through all objectives, the number is higher than the specified threshold of 90 percent.
2. The results from the pre-development test of 15 teachers showed a mean of 29.47, S.D. of 2.20, while the scores for the post-development test were presented with a mean of 33.47, S.D. of 1.13. The t-test-dependent analysis showed that the teachers' mean score after development was higher than before development with the significance at the level of 0.05 (t value = 7.483, $p > 0.05$).
3. The results from the adaptability skills assessment of 324 students before development were shown with the mean value of 3.59, S.D. of 0.27, while the score tested after the experiment was with the mean of 4.08, S.D. of 0.24. When analyzing the t-test dependent, it was found that the students' mean after development was higher than before development with the significance at the level of 0.05 (t value = 42.830, $p > 0.05$).

7. Discussion

Table 1 presents various systematic viewpoints and alternative proposals for teacher learning and knowledge implementation. The researchers regarded the "development guidelines," from the perspective of; Baker's view (2014), Half (n.d.), Leading Effectively Staff (2021), Life Simplified (n.d.), Oyster Connect (2019), Prince (2019), Reddy (n.d.) Vanderbloemen (n.d.), and Williams (2017). The combination of the suggestions from the above scholars resulted in a collection of more than 50 suggestions. The results of the frequency analysis of the teacher's self-assessment questionnaire showed that the teachers had applied "principles/concepts/techniques/methods/activities" to develop the students' adaptive skills at the moderate to the highest level while few cases were reported to have applied at a low level. The first 10 propositions that were most applied to the students' adaptability development were; 1) Getting aligned with, 2) Accepting, 3) Being flexible, 4) Learning from others, 5) Embracing, 6) Learning, 7) Quitting following the rules, 8) Volunteering, 9) Being receptive, and 10) Considering a wide variety of perspectives, respectively.

The researcher presented the "Model of Development Process," based on the viewpoint of Berger and Johnston (2015), David (2019), J-Pierre (2019), and Newell (2016). The analysis of the frequency distribution of the instructors' Self-assessment on how to apply those suggestions to students showed that one of two of the instructors had applied all of the suggestions in the model for the student's development. This showed that the professors in the experimental group each had their own independent decision on the implication of the model. But it was noted that no teacher had adapted the concepts of the given perspectives when exploiting them with their students. This may be because each of the perspectives given in the model had different concepts that cannot be applied together.

Simply, it may be because the teacher found it more convenient to choose one viewpoint rather than having to interact with it with many other points of view.

The pieces of perspectives and suggestions that were included in the model and the processes of this research were selected from well-known authors and, most importantly, these data are available on the internet. This proves that the internet can be a good source of learning as a saying goes, “*The Internet Is Knowledge and Knowledge Is Power*” (Bolutife, 2019). Some research addressed the use of the internet among the higher education student that “learning, especially in the context of higher education, means creating, storing, sharing and using knowledge in a complex way, both for personal and societal benefits.” Therefore, knowledge management is possible both at home and in universities. Students are in favor of the Internet and integrating it into their studies and research to increase their knowledge, not just to communicate with peers. However, a study that involved the behaviors of the use of the internet among students all over the world suggested that the Internet facilitates learning and the spread of information. However, at the present, the internet is not efficiently used. The internet is not only an efficient tool that helps learners acquire knowledge but also the creation of valuable knowledge (Florina, Alexandra, & Lucian (2014).

These aforementioned values of the internet confirm the usefulness of developing the “online program for teacher development to enhance students’ adaptability skills.” Based on the R&D methodology, the researchers focused on studying literature related to adaptability skills. For this purpose, a large number of perspectives were obtained from the Internet and used systematically in this research, which resulted in the creation of proper manuals that were used for the development of both the teachers and the learners.

8. Suggestions

The knowledge presented on the internet is up to date and splendid as presented in Aydemira, Benzerb, Karahanc, and Akmençed (2013), and Essential Education (2019). This scholar agrees that the internet allows unlimited access to information which is the main advantage for both teachers and students in their in-depth study of their class contents. To obtain more data, internet users should learn to use other search engines in addition to the regular google search. The alternative search engines include; Academic Search Engines such as Google Scholar, Microsoft Academic, Educational Resources Information Center, ResearchGate, Bielefeld Academic Search Engine, Connecting Repositories, and Semantic Scholar (Post University, 2020)

References

- Agrawal, A.J. (2016, June 23). *Success is the biggest benefit of being adaptable*. <https://www.entrepreneur.com/article/271303#:~:text=Opinions%20expressed%20by%20Entrepreneur%20contributors,to%20be%20ready%20for%20it>.
- Alessandra, T. (2016, November 3). *The first half of the high-adaptability formula: flexibility*. <https://www.success.com/do-you-have-adaptability/>
- Armstrong, P. (2010). *Bloom’s Taxonomy*. Vanderbilt University Center for Teaching. <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>.
- Aydemira, H., Benzerb, A., Karahanc, O., and Akmençed, E. (2013). The evaluation of university students’ views on internet resources. *Procedia - Social and Behavioral Sciences*, 103, 1067 – 1074. DOI: 10.1016/j.sbspro.2013.10.433
- Baker, J. (2014, November 3). *Seven tips to build your leadership adaptability*. <https://www.people-results.com/7-tips-build-leadership-adaptability/>
- Berger, J.G. & Johnston, K. (2015, September 3). *4 steps to becoming more adaptable to change*. <https://www.fastcompany.com/3043294/4-steps-to-becoming-more-adaptable-to-change>
- Bolutife, A. (2019, January 10). *The internet is knowledge and knowledge is power*. <https://www.internetsociety.org/blog/2019/01/the-internet-is-knowledge-and-knowledge-is-power/>
- Boss, J. (2015, September 3). *14 signs of an adaptable person*. <https://www.forbes.com/sites/jeffboss/2015/09/03/14-signs-of-an-adaptable-person/?sh=416c192a16ea>
- Brent, M., Sidney, D., Robert, A., Gabriel, R., Michael, H., Andrea, T. (2013, January 8). Individual differences in multitasking ability and adaptability. *The Journal of the Human Factors and Ergonomics Society* 55(4), 776-788. DOI:10.1177/0018720812470842

- Chaichanawirote U. & Vantum, C. (2017). Evaluation of content validity for research instrument. *Journal of Nursing and Health Sciences*, 11 (2), 105-111.
- Chron Contributor. (2020, July 20). *How to demonstrate adaptability on the job*. <https://work.chron.com/demonstrate-adaptability-job-15407.html>
- Cjones Skills Weekly. (n.d.). *Flexibility and adaptability*. <https://cjoneskills.weebly.com/flexibility--adaptability.html>
- Cleverism. (n.d.). *Adaptability skills*. <https://www.cleverism.com/skills-and-tools/adaptability-skills/>
- Collie, R.J., & Martin, A.J. (2016). Adaptability: An important capacity for effective teachers. *Educational Sciences: Theory and Practice*, 38(1), 27-39. DOI:10.7459/ept/38.1.03
- Darvell, B. (2021, July 27). *How to teach adaptability in your classroom*. <https://bsd.education/how-to-teach-adaptability-in-your-classroom/#:~:text=Adaptability%20is%20a%20teachable%20skill,scaffolding%2C%20and%20other%20c lassroom%20activities.>
- David, V. (2019, October 4). *How to demonstrate adaptability in the workplace*. <https://www.careeraddict.com/demonstrate-adaptability-on-the-job>
- ERM Academy. (n.d.). *Why adaptability is important in helping you manage change*. <https://www2.erm-academy.org/publication/risk-management-article/why-adaptability-important-important-helping-you-manage-change/>
- Esoft Skills Team. (n.d.). *Adaptability & flexibility*. <https://esoftskills.com/10-soft-skills-you-need-adaptability-and-flexibility-7/>
- Essential Education. (2019, September 25). *The internet – unlimited knowledge or distraction?* <https://www.essentialeducationguide.com/news-and-features/The-Internet-Unlimited-Knowledge-Or-Distraction>
- Extended Notes. (2019, March 15). *Adaptability: 5 strategies to teach this skill of the future*. <https://www.extendednotes.com/after-school-articles/adaptability-5-strategies-to-teach-this-skill-of-the-future>
- Ferguson, R. (2011, August 2). *What are the benefits of adaptability?* <https://www.fergusonvalues.com/2011/08/what-are-the-benefits-of-adaptability/>
- Florina, P., Alexandra, Z., & Lucian, A. (2014, November 14). Knowledge development through the internet. *ICICKM 2014 11th International Conference on Intellectual Capital, Knowledge Management & Organisational Learning, Sydney*. DOI:10.13140/2.1.3002.1443
- Half, R. (n.d.). *How to improve your adaptability skills*. <https://www.roberthalf.co.nz/career-advice/career-development/adaptability-skills>
- J-Pierre, J. (2019, April 24). *How to be adaptable in 11 simple steps*. <https://www.dumblittleman.com/how-to-be-adaptable/>
- Kane, N. (2019, October 11). *How adaptable are you? Take this adaptability quotient (AQ) test and find out*. <https://www.executiveagenda.com/resources/blog/how-adaptable-are-you-take-adaptability-quotient-aq-test-and-find-out>
- Keating, K. (2018, March 10). *3 traits of adaptable leaders*. <https://www.td.org/insights/3-traits-of-adaptable-leaders>
- Langworthy, M. & Neufeld, P. (2017) Fresno unified, the futures challenge, and 21c learning design. *Fresno Personalized Learning Initiative, Year 1 Report*, 1-25. Redmond: Microsoft.
- Leading Effectively Staff. (2021, August 24). *Adapting to change requires flexible leadership*. <https://www.ccl.org/articles/leading-effectively-articles/adaptability-1-idea-3-facts-5-tips/>
- Life Zemplified. (n.d.). *Adaptability increases well-being*. <https://lifezemplified.com/adaptability-increases-wellbeing/>
- Martin, A. J., Nejad, H., Colmar, S., Liem, G. A. D., & Collie, R. J. (2015). The role of adaptability in promoting control and reducing failure dynamics: A mediation model. *Learning and Individual Differences*, 38, 36-43. <http://dx.doi.org/10.1016/j.lindif.2015.02.004>
- Martin, A.J. (2012). Adaptability and learning. *Encyclopedia of the sciences of learning*, (pp.90-92). Springer US. DOI:10.1007/978-1-4419-1428-6_267
- Martin, A.J., Collie, R.J., Nagy, R.P. (2021, August 16). *Students who are more adaptable do best in remote learning – and it's a skill we can teach*. <https://theconversation.com/students-who-are-more-adaptable-do-best-in-remote-learning-and-its-a-skill-we-can-teach-165003>
- Newell, M. (2016, July 26). *4 steps to develop your AQ and make change happen*. <https://www.inc.com/partners-in-leadership/4-steps-to-develop-your-aq-and-make-change-happen.html>
- Office of the Education Council. (2017). *National Education Plan 2017 – 2036*. Prikwan Graphic Company.
- Office of the Education Council. (2018). *Status of Thai education in 2016/2017. Guidelines for reforming Thai education to move towards Thailand 4.0 era*. Chiliwan Company Limited.

- Oliver, T., & Lievens, F. (2014). Conceptualizing and assessing interpersonal adaptability: towards a functional framework. In D. Chan (Ed.) *Responding to change at work: New directions in research on individual adaptability*. (pp. 52-72). Organizational and Management Series, Taylor and Francis Group.
- Oyster Connect. (2019, December 9). *How to develop adaptability - One of the top 10 21st century skills for graduates*. <https://www.oysterconnect.com/blogs/how-to-develop-adaptability-one-of-the-top-10-21st-century-skills-for-graduates/>
- Post University. (2020, May 31). *Top educational search engines for students*. <https://post.edu/blog/7-great-educational-search-engines-for-college-students/#:~:text=Enter%20Google%20Scholar,the%20typical%20Google%20keyword%20search>
- Prince, E. S. (2019, June 25). *Personal development: How to increase your adaptability*. <https://www.trainingzone.co.uk/deliver/coaching/personal-development-how-to-increase-your-adaptability>
- Prince, E.S. (2012, May 13). *Adaptability – A key skill we must develop in ourselves and in others*. <https://www.trainingzone.co.uk/community/blogs/emma-sue-prince-unimenta/adaptability-a-key-skill-we-must-develop-in-ourselves-and>
- Reddy, C. (n.d.). *Importance of adaptability and flexibility in the workplace*. <https://content.wisestep.com/importance-adaptability-flexibility-workplace/>
- Reid, J. (2018, May 11). *How adaptability improves teachers' well-being*. <https://www.theeducatoronline.com/k12/news/how-adaptability-improves-teachers-wellbeing/249789>
- Rovinelli, R.J., & Hambleton, R.K. (1977). On the use of content specialists in the assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research*, 2, 49-60.
- Sanrattana, W. (2018). *Research in educational administration: Concepts, practices and case studies* (4th Ed.). Thiphawisit.
- Smith, A., Sorokac, K. & Widmaier, C. (n.d.). *Flexibility and adaptability*. <https://sites.google.com/site/21stcenturyskills21/skill-1>
- The Conversation. (2018, May 7). *Being able to adapt in the classroom improves teachers' well-being*. <https://theconversation.com/being-able-to-adapt-in-the-classroom-improves-teachers-well-being-95788>
- Thurlings, M., Evers, A. T., & Vermeulen, M. (2015). Toward a model of explaining teachers' innovative behavior: A literature review. *Review of Educational Research*, 85(3), 430-471. <https://journals.sagepub.com/doi/10.3102/0034654314557949>
- UCLA: Statistical Consulting Group. (August 22, 2016). *What does Cronbach's alpha mean?* <https://stats.oarc.ucla.edu/spss/faq/what-does-cronbachs-alpha-mean/>
- University of Alberta. (n.d.). *Competency assessment for demonstrating adaptability and flexibility*. <https://www.ualberta.ca/human-resources-health-safety-environment/media-library/learning-and-development/pathways-learning-series/adaptandflexassessmentguide2017.pdf>
- University of Bradford. (n.d.). *What makes a person adaptable/flexible?* <https://www.bradford.ac.uk/careers/develop-skills/adapt-flex/>
- Vanderbloemen. (n.d.). *Adaptability: The characteristic of successful people*. <https://www.vanderbloemen.com/blog/adaptability-the-characteristic-of-successful-people>
- Wheatley, M. (2021, July 19). *The need for adaptability in the workplace — to learn and unlearn — is critical to navigating new and novel situations*. https://www.ey.com/en_uk/workforce/how-adaptability-skills-can-help-to-tackle-novel-problems
- Whitehall, L. (2018, November 18). *7 signs you're an adaptable person*. <https://transformandthrive.co.uk/blog/7-adaptability-skills/>
- Williams, R. S. (2017, November 6). *6 ways adaptability can help you succeed*. <https://www.sunlife.ca/en/tools-and-resources/health-and-wellness/mental-wellness/6-ways-adaptability-can-help-you-succeed/>
- Workable. (n.d.). *Adaptability interview questions*. <https://www.workable.com/get-started?l1sd=resources-adaptability-interview-questions>
- Yamkasikorn, M. (2008). How to use efficiency criterion in media research and development: The Difference between 90/90 Standard and E1/E2. *Education Journal Burapha University*, 19(1), 1-16.
- Zorzie, M. (2012). *Individual adaptability: Testing a model of its development and outcomes*. Master's thesis, Doctor of philosophy Psychology, Graduate School, Michigan State University.

Appendix

The student's Adaptability Skills Self-Assessment Form.

Characteristics or indicators of adaptability skills	Levels of opinion				
	5	4	3	2	1
Learning					
1) I tell myself to keep learning.					
2) I enjoy the new method of learning at the university.					
3) I like to learn something new before other friends.					
4) I continually learn some new skills to prepare for a job.					
5) I can quickly imagine things based on my existing knowledge.					
6) I read the passage to prepare for the class.					
Self-Actualization					
7) I am proud of myself.					
8) I know what is important to me and I based my decision on good reasons.					
9) I have a clear and meaningful vision of my life.					
10) I know that life is about change and it sometimes does not follow our wishes.					
11) I know how to regain my confidence after having lost it.					
12) I can identify my weak points when working with others.					
Attitude					
13) Usually, I live my life in a good way.					
14) I believe that there will always be a solution to the problem.					
15) I have a good sense of humor and I can still laugh when having a problem.					
16) I understand that new experiences and learning make me grow up.					
17) I do not waste time sitting on things that are out of my control.					
18) Failure gives me chance to create innovation.					
Interpersonal Relationship					
19) I am open to connecting with other people.					
20) I know that flexibility is important when contracting with others.					
21) I know what other people are thinking.					
22) I based my interaction with others on trust.					
23) I adjust myself when having to be with other people.					
24) I accept new members and the team's ways of working.					
Problem-solving and decision making					
25) I learn new methods for problem-solving.					
26) Students usually have different problem-solving methods.					
27) I can manage myself and prioritize things even under depression.					
28) I have my way to manage changes and deal with the unexpected.					
29) I can control my emotion when facing some depression.					
30) I can gather resources under depressing or new situations.					
Knowledge about Talents					
31) I can talk freely about my gift and talent.					
32) I know the skills that I will need for my future job.					
33) I know what other people in the university are expecting from me.					
34) I know what my skills level is when compared to peers and the university.					
35) I know which perspectives of behaviors are proper to perform in the university.					
36) I never stop with one success but keep on finding other successes proactively.					