

Developing Teachers to Enhance Students' Effective Teamwork Skills

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Abstract

This research was conducted in order to develop teachers to enhance the effective teamwork skills of their students in secondary schools. This was a part of a research project, which was based on advances in digital technology and the knowledge-based society of the 21st Century. Various useful perspectives on developing effective teamwork skills were collected from the internet and applied by utilizing Research and Development methodology. The aim was to achieve an educational innovation called an "Online Self-Training Program to Develop Teachers to Enhance Their Students' Effective Teamwork Skills". This program was intended to empower teachers with knowledge and skills that could be applied to classrooms and could ultimately enhance the learning outcomes of students. From the research resulted in such educational innovations that have been verified by teachers who are interested in implementing this educational innovation and through experimental research in the field, found that it is effective according to the specified criteria, namely 1) The teacher learning outcome on the posttest score met the standard criteria of 90/90 and the posttest score was significantly higher than the pretest score, and 2) The posttest score from the students' effective teamwork skills assessment was significantly higher than the pretest score. Therefore, it showed that this educational innovation can be disseminated for the development of teachers and students in secondary schools nationwide.

Keywords: 21st-century skills, online self-training program, knowledge and action are power, effective teamwork skills, research, and Development (R&D) methodology

1. Introduction

The 21st century has brought in the golden era of endless opportunities and new openings and dimensions, which ultimately has revolutionized the education system completely. That being said, it has also made us aware of how in today's world, to thrive only survival tactics won't be enough. 21st-century skills help students build character and cultivate compassion and empathy, which are crucial as social collaborative beings. These skills also ensure that as children grow up, they are ethical and have integrity so that they can collaborate and function well with others and thereby create a better future. (Team Varthana, 2022). In our current world, the rapid advancement of technology has brought about many changes in society. Adapting to situations requires the development of education, teacher training, and of essential skills to expand the learners' skill sets, which is necessary for living a successful life in the 21st Century. It is of great importance that young people accomplish the following: 1) become critical thinkers, 2) become good decision-makers by making their decisions on the basis of morality and ethics, and 3) collaboratively create and develop progress in various fields for every level of society. Developing learners with the necessary skills for the 21st Century is a new dimension in the education sector (Sinthapanon, 2015). The skills for the 21st Century were proclaimed in UNESCO's education management: Learning to know, Learning to do, Learning to live together, Learning to be. In a world where so many people are focused on what they do, it is refreshing to see the "Four Pillars of Education" as an important part of a successful educational system. (Saikat, 2022). Therefore, enhancing content knowledge, specific skills, expertise, and literacy are important variables that must occur to promote learning in the era of a rapidly changing society in the 21st Century. Therefore, setting strategies and creating the readiness to cope with the changes is a challenge for all people. The creation of various learning innovations should help people to cope with the aforementioned changes.

Presently, the use of information technology is becoming increasingly integrated into our daily lives. As a result, traditional educational methods that focus on passing on knowledge may not be suitable for students in this current era. Many things are becoming riskier due to economic volatility and constant change. Therefore, it is necessary to plan and manage learning in a way that provides the best opportunities for learning. According to the National Education Plan (2017-2036), the learning content should be acquired by way of student research. Teachers should guide and design activities that help each student to make progress in learning on their own. Everyone should learn throughout their lives, specifically through the 3R x 7C skills. The 3R skills are Reading, Writing, and Arithmetic, and the 7C skills consist of 1) Critical thinking and problem-solving; 2) Creativity and innovation; 3) Cross-cultural understanding; 4) Collaboration, Teamwork, and Leadership; 5) Communications, Information, and Media literacy; 6) Computing and ICT Literacy; and 7) Career and learning skills (The Policy and Planning Division, Buriram Rajabhat University, 2020).

In the case of teamwork skills, there are suggestions and recommendations for principles, concepts, techniques, methods, and activities that can be used as guidelines to enhance various skills. Some examples are establishing trust, practicing feedback, providing a good work environment, offering enthusiasm, being consistent, putting forth a united effort, clarifying purposes and goals, having a strong sense of group commitment, solving teamwork problems and conflicts, establishing effective communication, getting feedback from everyone, increasing trust and respect, clearly outlining roles and responsibilities, organizing team processes, recognizing good work, mediating conflicts quickly and efficiently, giving frequent feedback, understanding the importance of leadership, making high-quality decisions as a team, encouraging informal social events, leading by example, encouraging contributions, clearly defining roles in sub-groups, establishing team rules, showing gratitude, encouraging reasonable risks within the team environment, making creativity and innovation the norms, engaging in continuous improvement, practicing participative leadership, clarifying roles and goals, rewarding excellent teamwork, using project management tools, encouraging socialization, cultivating open communication, allowing team members to actively participate in decision-making, maintaining balance with respect to work, making hiring a team responsibility, and taking time to celebrate. (Heathfield (2021), Pope (n.d.), Price (n.d.), SmashVC (n.d.), and Wigston (2017)).

The previous passage highlights the importance of teamwork skills and the recommendations of various experts that can be utilized to develop effective teamwork skills. The concept of "knowledge and action are power" is emphasized. This is particularly true when it applies to teachers, who should help to ensure that their students keep up with a society that is rapidly changing. However, as research has shown, any form of development often faces resistance. Some common reasons for resistance to change within school organizations include the following: 1) interference with fulfillment of needs, 2) selective perceptions, 3) habits, 4) inconvenience or loss of freedom, 5) economic implications, 6) security in the past, 7) fear of the unknown, 8) threats to power or influence, 9) knowledge and skill obsolescence, 10) organizational structures, and 11) limited resources. (Yılmaz & Kılıçoglu, 2013).

Therefore, this research team placed emphasis on the importance of utilizing Research and Development (R&D) methodology to develop an innovative educational program called an "Online Self-Training Program to Develop Teachers to Enhance Their Students' Effective Teamwork Skills." If this research methodology is followed, it should result in an efficient educational innovation that can be disseminated and utilized to enhance the teachers' learning capacities in order to provide benefits for those students in the secondary schools under the jurisdiction of the Office of the Basic Education Commission, which was the target population for this research. In accordance with the principles of R&D methodology, any developed innovation must be subjected to quality assurance and the creation of tools for high-quality research. The innovation must also be tested in a randomized experimental research area that is representative of the population. If the results of the experiment have shown that the innovation has met the criteria, it can then be disseminated for the benefit of the population targeted in the research. Furthermore, since the Online Self-Training Program was developed in the digital era and is not a document-based program like the traditional print-based programs, it has significant potential for widespread dissemination, is more cost-effective, and demonstrates a greater effectiveness in achieving its intended results.

1.1 The Research Objectives

This research aimed at developing effective teamwork skills through R&D methodology, based on various perspectives and recommendations, in order to create an innovative educational program called an "Online Self-Training Program to Develop Teachers to Enhance Their Students' Effective Teamwork Skills." This program can be further disseminated in order to strengthen the learning of the teachers, who could then apply the acquired knowledge to their teaching in order to benefit their students, based on the concept that "knowledge and action are power." The Online Self-Training Program was composed of two parts: 1) a project to strengthen the teachers'

learning of topics that were related to definitions, importance, characteristics, developmental processes, and the evaluation of effective teamwork skills, and 2) a project for teachers, in which they could apply the learning to their teaching and could, thereby, improve their students' learning outcomes in areas, such as learning, problem-solving, decision-making, open & constructive communication, team relationships, responsibility, time management, and flexibility. The first project consisted of six sets of online self-training modules for teachers, while the second project consisted of a teacher's guide for practical application.

1.2 Research Assumptions

During the research process, the research team studied the literature on Effective Teamwork Skills based on the various topics and perspectives found on the internet in order to develop the online self-training modules. Those teachers, who were the target audience, were invited to verify the quality of the modules. The research team created tools to conduct high-quality research and then implemented them in a randomized school setting as a part of the R&D process. It was believed that this would lead to an effective educational innovation. Therefore, it was expected that the innovation of the research, an "Online Self-Training Program to Develop Teachers to Enhance their Students' Effective Teamwork Skills," would meet the following criteria: 1) the post-test scores from the teachers' learning outcomes would meet the standard criteria of 90/90, and the post-test scores would be higher than the pre-test scores with a statistical significance; and 2) the post-test scores from the evaluation of the Students' Effective Teamwork Skills would be higher than the pre-test scores with a statistical significance.

1.3 The Literature Review

In this study, the researchers began by exploring the literature related to Effective Teamwork Skills in order to provide diverse academic recommendations and perspectives for the development of Online Self-Training Modules for teachers. There were six sets of modules, which consisted of the following: 1) Definitions from iEdu Note (n.d.), Course Hero (n.d.), Sinha (n.d.), and The Happy Manager (n.d.); 2) Importance from Doyle (2022), LMA (n.d.), Quain (2019), and Sinha (n.d.); 3) Characteristics from Bridgeman (2018), Cameron (2019), Center for Management & Organization Effectiveness (n.d.), DeBattiste (2015), Deering (n.d.), Kalesi (2019), Pole (2017), Pope (n.d.b), Rose (2022), and Wroblewski (2019); 4) Developmental approaches from Heathfield (2021), Pope (n.d.a), Price (n.d.), SmashVC (n.d.), and Wigston (2017); 5) The Steps to Development from Cardinal (2015), Eigen (2019), Herrity (2022), and Maloney (2019); and 6) Assessment from Birmingham (n.d.), Bright HUB Education (n.d.), Idros et al. (2012), Mind Tools (n.d.), Mugavin (2020), Question Pro (n.d.), and from So Go Survey (n.d.).

In the aforementioned 6 topics, developmental approaches were considered to be important information because they can provide the appropriate methods, which the teachers can use for student development in different contexts. The researchers synthesized the following 51 developmental approaches:

- 1) Establishing trust
- 2) Practicing feedback
- 3) Providing them with a good work environment
- 4) Tapping into shared resources
- 5) Offering an enthusiastic, consistent, and united effort
- 6) The role of leaders
- 7) Clarifying purpose
- 8) The team is clear about its mission and goals.
- 9) Having a strong sense of group commitment
- 10) Solving teamwork problems and conflicts
- 11) Establishing effective communications
- 12) Getting feedback from everyone
- 13) Building trust and respect
- 14) Clearly outlining roles and responsibilities
- 15) Organizing team processes
- 16) Recognizing good work
- 17) Mediating conflict quickly and efficiently

- 18) Starting team traditions
- 19) Using size to advantage; giving frequent feedback
- 20) Understanding the importance of leadership
- 21) Making high-quality decisions as a team
- 22) Encouraging informal social events
- 23) Leading by example
- 24) Clearly defining roles in sub-groups
- 25) Establishing team rules
- 26) The team environment encourages reasonable risks.
- 27) Creativity and innovation are the norms.
- 28) Engaging in continuous improvement
- 29) Practicing participative leadership
- 30) Clarifying roles
- 31) Specifying goals
- 32) Rewarding excellent teamwork
- 33) Using project management tools
- 34) Encouraging socialization
- 35) Cultivating open communication
- 36) Allowing team members to actively take part in decision-making
- 37) Maintaining the balance of work
- 38) Making hiring a shared team responsibility
- 39) Taking time to celebrate
- 40) Creating a unanimous focus on a common goal
- 41) Employing periodic and temporary suppression of the ego
- 42) Recognizing and rewarding
- 43) Accepting differences
- 44) Team members are viewed as unique people.
- 45) Using task management software
- 46) Focusing on strengths
- 47) Developing teamwork
- 48) Exercising together
- 49) Encouraging contributions
- 50) Showing gratitude
- 51) Meeting regularly and mixing it up

2. The Research Methodology

2.1 Concepts and Steps

This research utilized Research and Development (R&D) methodology in accordance with the perspective of Sanrattana (2018). This methodology aims at developing "people" towards the development of "work." The goal is to stimulate knowledge to action, which will create the power to achieve more efficient work. The idea that "knowledge and action are power" was a founding concept of this research, which was initiated by strengthening the teachers' learning abilities and then having them apply the acquired knowledge to their teaching in order to benefit their students.

Therefore, this research placed emphasis on the importance of studying the literature on Effective Teamwork Skills in various areas so that knowledge and different perspectives could be gained. The purpose was to create Online Self-Training Modules that could effectively enhance the teachers' learning abilities. The research procedure consisted of the four following steps:

Step 1: Studying the content that was related to Effective Teamwork Skills in the following 6 aspects:

- Definitions
- Importance
- Characteristics
- Developmental approaches (principles/ideas/techniques/methods/activities)
- Developmental processes
- Evaluations

The goal was to create an online self-training program consisting of 6 online self-training modules for teachers and 1 handbook for teachers (please see the original Thai version of the online self-training module at <https://bit.ly/3U2CxPI>).

Step 2: Checking the quality of the online self-training program that had been developed in 2 stages by using the focus group discussion method, as follows:

- The Preliminary Field Testing & Revision was conducted with 5 teachers from a school that was not the experimental research site.
- The Main Field Testing & Revision was carried out with 10 teachers from another school that was not the experimental research site.

Step 3: Developing 2 research tools: 1) The Teacher Test and 2) The Student Evaluation Form.

Step 4: Implementing the online self-training program in a selected school, "Khon Kaen Wittayayon II school (Samarn Sumeth)" by using a purposive sampling method with a one-group pre-test and post-test experimental research design. The experimental group consisted of 18 teachers and 268 students, and the program took place during the 2nd semester of the Academic Year of 2022. The study was divided into 2 stages:

- A 1-month project implementation using the Online Self-Training Modules with both a pre-test and a post-test for teachers
- A 2-month project implementation with both a pre-test and a post-test for students, based on the learning outcomes of the teachers.

2.2 The Research Instruments

2.2.1 The Teacher's Learning Outcome Test

The tool used in this research was a learning outcome test for teachers in the form of an online assessment using Google Form. It consisted of 36 four-choice questions, which were aimed at testing the teacher's learning outcomes before and after the experiment. The researchers created the test based on the content that was presented in an online self-training module, consisting of the definitions, importance, characteristics, developmental approaches, developmental processes, and an evaluation of the cognitive domain according to The Revised Bloom Taxonomy 2001 by Benjamin S. Bloom, which lists cognitive skills from the lowest level to the highest level: remembering, understanding, applying, analyzing, evaluating, and creating. The remainder of the test was evaluated in the following manner:

2.2.1.1 Using the Method of Rovinelli and Hambleton (1977), which is Called the Indices of Item-Objective Congruence (IOC) to Check the Content Validity?

Five qualified individuals in the fields of Curriculum and Educational Measurement analyzed the data and found that all questions had exhibited IOC values, which were higher than the threshold of 0.50 (Chaichanawirote & Vantum, 2017).

2.2.1.2 The Test was Experimentally Administered to 30 Teachers in a School other than the Experimental Site

The data analysis showed the following: All questions had shown an index of difficulty within the range of 0.20-0.80 and a power of discrimination within the range of 0.20-1.00. The KR-20 value, which indicates the reliability coefficient, had been 0.90, which was higher than the threshold of 0.70. The difficulty of the test was 59.91.

2.2.2 The Student's Teamwork Skills Assessment Form was an Online Assessment Using Google Form

It consisted of 35 questions with a 5-point rating scale, ranging from the highest to the lowest. The research team created the assessment based on the characteristics of teamwork skills demonstrated by Bridgeman (2018), Cameron (2019), the Center for Management & Organization Effectiveness (n.d.), DeBattiste (2015), Deering (n.d.), Kalesi (2019), Pole (2017), Pope (n.d.), Rose (2022), and Wroblewski (2019), as well as the ways of assessing teamwork skills from the perspectives of Birmingham (n.d.), Bright HUB Education (2020), Idros et al. (2012), Mind Tools (n.d.), Mugavin (2020), Question Pro (n.d.), and So Go Survey (n.d.).

2.2.2.1 The Content Validity was examined by Using the Method of Rovinelli and Hambleton in Which Five Qualified Experts in the Fields of Education Conducted the Examination

The results of the data analysis indicated that the questions had shown an Item-Objective Congruence (IOC) score of higher than 0.50 for all questions. This demonstrated that the questions in the teamwork skills assessment, which were used in this research, could be used for measuring purposes (Chaichanawirote & Vantum, 2017).

2.2.2.2 In Order to Analyze the Alpha Coefficient of Reliability Using Cronbach's Method, the Evaluation Form was piloted in another School with 30 Participants

The results showed that the alpha coefficient of reliability of the entire assessment had been 0.75. When analyzed by dimension, the Learning, Problem-Solving & Decision-Making, Open & Constructive Communication, Team Relationships, Responsibility, Time Management, and Flexibility dimensions had shown reliability coefficients of 0.71, 0.71, 0.79, 0.71, 0.75, 0.87, and 0.73, respectively. When compared to the criterion of a reliability coefficient greater than or equal to 0.70, the obtained values had been higher. This indicated that the items had demonstrated a relatively high internal consistency.

2.3 Data Analysis

- The standard 90/90 was used to compare the post-test results of teachers, in which the first 90% referred to the percentage of average scores obtained by the group of teachers from the knowledge test, and the second 90% referred to the percentage of the number of teachers, who had been able to pass the test in accordance with all objectives. (Yamkasikorn, 2008)
- Data analysis was employed to compare the pre-test and post-test results for both teachers and students by using the dependent t-test statistical method.

3. Research Results

Based on the results of the post-test of the teacher's learning after implementing the first project, which was the "Teacher Development Project," the goal was to determine whether the developed online self-training modules had resulted in significant learning outcomes for the experimental group of 18 teachers according to the standard criteria of 90/90, and to determine whether there had been a statistically significant improvement in the learning outcomes of the teachers after the experiment. In addition, the goal was to determine whether the teachers had been able to apply the learning outcomes to improve the learning of the experimental group of 268 students in the second project, which was "Teachers Apply Learning Outcomes to Teaching for Student Improvement." The results showed the following:

The results of the research project on teacher development for learning were as follows:

- The results of the post-test of the teacher learning achievement compared to the standard criterion of the first 90 tests showed that the average score of teachers had been 34.22 out of a full score of 36, which is 95.22% when calculated as a percentage. This represented a percentage that was higher than the standard of 90%.
- The results of the post-test of the teacher learning achievement compared to the standard criterion of the second 90 tests showed that 98.15% of teachers had been able to pass all the set learning objectives. This represented a percentage that was higher than the standard of 90%.
- The results of the statistical analysis comparing the significant differences between the mean scores before and after the experiment showed that, out of a full score of 36, the teachers had had a Pre-test score of 372, with an average of 20.67, and a Post-test score of 616, with an average of 34.22. When analyzed and compared by a t-test dependent, it was found that the average score of teachers in the experimental group after the experiment had been significantly higher than before the experiment at the level of 0.05, as shown in Table 1.

Table 1. A Comparison of the Teachers’ Average Scores from the Pre-test and Post-test Using a t – test Dependent

| Testing | Sample sizes | Means | Standard Deviations | t |
|-----------|--------------|-------|---------------------|---------|
| Pre-test | 18 | 20.67 | 1.81 | 23.660* |
| Post-test | 18 | 34.22 | 1.48 | |

* p < 0.05

The results of the introduction of the teachers’ learned knowledge for the development of the 268 students, which were observed in the two phases of the research, are as shown in Table 2.

Table 2. The Results of Student’s Effective Teamwork Skills on the Pre-test and Post-test

| The Indicators of Effective Teamwork Skills | The Results of the Assessments | | | |
|--|--------------------------------|-------------|-------------|-------------|
| | Pre-test | | Post-test | |
| | χ | S.D. | χ | S.D. |
| The Indicators of Learning | 3.59 | 0.99 | 3.68 | 0.98 |
| 1) Telling yourself to be a consistent learner | 3.93 | 0.91 | 3.82 | 0.97 |
| 2) Enjoying learning from new activities at school | 3.68 | 1.07 | 3.71 | 1.00 |
| 3) Often studying and learning new skills to lead peers | 3.58 | 0.99 | 3.76 | 1.00 |
| 4) Being able to quickly imagine new things from old ideas | 3.54 | 1.00 | 3.68 | 0.96 |
| 5) Studying content ahead of the class | 3.23 | 1.00 | 3.44 | 0.99 |
| The Indicators of Problem-Solving and Decision-Making | 3.62 | 1.00 | 3.75 | 0.96 |
| 6) Learning new problem-solving techniques quickly | 3.87 | 0.99 | 3.99 | 0.96 |
| 7) Having various options for problem-solving | 3.41 | 1.06 | 3.54 | 0.92 |
| 8) Being able to control the related emotions when experiencing stress in any aspect of life | 3.75 | 0.98 | 3.73 | 1.04 |
| 9) Seeing problems that arise in different situations as opportunities to learn by using various problem-solving methods | 3.48 | 0.98 | 3.94 | 1.01 |
| 10) Enjoying the process of creating ideas or approaches to solving problems | 3.60 | 0.99 | 3.57 | 0.86 |
| The Indicators of Open and Constructive Communication | 3.60 | 1.01 | 3.73 | 0.98 |
| 11) Being able to communicate effectively in various situations | 3.86 | 0.99 | 3.89 | 0.97 |
| 12) Communicating in various formats | 3.46 | 1.01 | 3.44 | 0.92 |
| 13) Enjoying the process of asking teachers and classmates questions | 3.50 | 1.01 | 3.61 | 0.98 |
| 14) Listening to the opinions of classmates using interactive communication methods | 3.66 | 1.04 | 3.95 | 0.97 |
| 15) Believing that creativity is not inherent but can be developed | 3.50 | 1.02 | 3.75 | 1.04 |
| The Indicators of Team Relationships | 3.53 | 0.98 | 3.70 | 0.98 |
| 16) Taking care of my classmates' feelings, and respecting and cooperating with them | 3.38 | 0.96 | 3.66 | 0.96 |
| 17) Adjusting my behavior to be able to have a good relationship with others | 3.60 | 1.00 | 3.67 | 0.92 |
| 18) Not participating in the bullying of or mocking of classmates when they make mistakes | 3.61 | 1.01 | 3.66 | 0.98 |
| 19) Sharing important information with my classmates and encouraging the process of learning together | 3.71 | 0.97 | 3.84 | 0.97 |
| 20) Using empathy to build relationships with others | 3.34 | 0.97 | 3.65 | 1.05 |
| The Indicators of Responsibility | 3.52 | 0.98 | 3.74 | 0.96 |

| The Indicators of Effective Teamwork Skills | The Results of the Assessments | | | |
|--|--------------------------------|-------------|-------------|-------------|
| | Pre-test | | Post-test | |
| | \bar{X} | S.D. | \bar{X} | S.D. |
| 21) Being punctual; knowing one's responsibilities and performing them well. | 3.72 | 0.97 | 3.85 | 0.98 |
| 22) Being brave and accepting the mistakes that result from one's actions | 3.32 | 0.95 | 3.54 | 0.85 |
| 23) Having empathy, being respectful, and honoring others | 3.65 | 0.98 | 3.66 | 0.99 |
| 24) Accepting punishment when making mistakes and when making improvements | 3.43 | 0.99 | 3.77 | 0.94 |
| 25) Always considering how actions will impact the people around one before taking action | 3.46 | 1.03 | 3.89 | 1.05 |
| The Indicators of Time Management | 3.47 | 1.02 | 3.55 | 0.97 |
| 26) Thinking about the possible outcomes before taking action | 3.68 | 0.95 | 3.80 | 0.98 |
| 27) Planning work and setting a clear schedule | 3.38 | 0.99 | 3.43 | 0.88 |
| 28) Planning to collect information on topics that are being discussed | 3.55 | 1.10 | 3.35 | 1.01 |
| 29) Being able to allocate time for studying and participating in activities | 3.48 | 0.96 | 3.70 | 0.94 |
| 30) Having the ability to prioritize and determine what should be done first or last | 3.28 | 1.10 | 3.49 | 1.02 |
| The Indicators of Flexibility | 3.48 | 1.01 | 3.62 | 0.99 |
| 31) Believing that being flexible in communicating with others is important | 3.67 | 0.97 | 3.80 | 0.99 |
| 32) Believing that having diverse opinions leads to the best problem-solving | 3.40 | 1.02 | 3.71 | 0.96 |
| 33) Having the ability to adapt the context of the work in accordance with changing situations | 3.53 | 1.06 | 3.52 | 0.97 |
| 34) Having confidence in one's own abilities and those of the team members | 3.54 | 0.98 | 3.37 | 0.92 |
| 35) Conducting the work with great flexibility in order to maximize team benefits. | 3.25 | 1.02 | 3.70 | 1.08 |
| Totals | 3.54 | 1.00 | 3.68 | 0.97 |

From the evaluation results shown in Table 2, when analyzing the data by t-test dependent, it was found that the students' post-test mean was significantly higher than before the experiment at the 0.05 level as detailed in Table 3.

Table 3. A Comparison of Students' Average Scores of the Pre-test and the Post-test Using t – test Dependent

| Evaluations | Sample sizes | Means | Standard Deviations | t |
|-------------|--------------|-------|---------------------|--------|
| Pre-test | 268 | 3.54 | 1.00 | 8.512* |
| Post-test | 268 | 3.68 | 0.97 | |

* $p < 0.05$

The results of the aforementioned research support the beliefs of the researchers that were expressed in the introduction. Conducting research and development to obtain educational innovations, such as the "Online Self-Training Program to Develop Teachers to Enhance Their Students' Effective Teamwork Skills," will result in efficient innovations according to the defined criteria. These innovations can be disseminated for use in the basic education level schools under the supervision of the Basic Education Commission, which is the target population throughout the country for this research work. Following the R&D methodology, any educational innovation that is developed must be tested in a representative population sample area by using the principles of R&D methodology. If the results of the experiment demonstrate the effectiveness of the innovation in accordance with the established

criteria, it can then be disseminated for use by the population reference group for research benefits, especially for an online self-training program that has been developed in the digital era rather than a document-based program from the past. This will enhance the usefulness of the innovation and will, thereby, make it more economical, efficient, and effective.

6. Discussion and Recommendations

This research reflects the development of educational innovations received from the opportunities of the current digital society. It is a society that widely uses digital technology in every aspect of daily life, including the use of computers, the Internet, mobile devices, and other digital tools for work, education, healthcare, communication, and for entertainment. The use of digital technology in this digital society has created a new landscape for human interactions, leading to numerous benefits for individuals and for businesses. For example, it enables people to access knowledge instantly, to access more information than ever before, to share information easily and widely, and to communicate more quickly and easily than ever before. This has led to a more connected world - a digital universe (Digital Mahbub, 2022). The factors that complement this research are the ability to search for articles, videos, and teaching materials for learning from the vast knowledge that is available on the Internet. This increases the opportunity to develop new innovations and creative ideas. As can be seen from this research, the literature on Effective Teamwork Skills was explored in order to provide diverse academic suggestions and perspectives from the Internet. This includes defining the concept, its importance, characteristics, development strategies, development processes, and evaluation, especially the "developmental approach," which has been synthesized as an option that can be utilized in developing teachers and leaders to develop students, with up to 51 options. (Please go back to the literature review section.)

All of the 51 developmental approaches were derived from the perspectives of academics from various countries, who had presented them as articles that provide a comprehensive explanation of the developmental approach, which is difficult to find in documents or textbooks. In the opinion of the researchers, most of the content presented was based on broad concepts or principles, and there are limitations to finding reference documents or textbooks as much as can be searched for on the internet. Information obtained from the internet is considered to be derived from a global perspective, which represents a new perspective that has been selected from articles that are considered high-quality and have content that is directly relevant to what is needed.

Considering the research findings, it was found that educational innovations that focused on searching for information from the Internet effected in teachers and students achieving the results according to the research assumptions as follows: 1) The teacher learning outcome on the posttest score met the standard criteria of 90/90 and the posttest score was significantly higher than the pretest score, and 2) The posttest score from the students' effective teamwork skills assessment was significantly higher than the pretest score. From the above results, it confirmed the suitability of such operations.

Therefore, there are recommendations for those, who seek new knowledge in order to develop educational innovations according to the R&D methodology discussed in this research, which states that in a digital society in which data sources from documents or textbooks are limited, digital technology should be used to benefit information retrieval. In addition to using commonly used search engines like Google, there are many other available search engine options, which can be started with a familiar search engine before moving to the less familiar ones. These include Google Scholar, Academic Info, iSeek Education, WorldCat, ERIC (Education Resources Information Center), Wolfram Alpha, BASE (Bielefeld Academic Search Engine), CORE, Science.gov, Semantic Scholar, Google Books, RefSeek, ResearchGate, DataONE Search (formerly CiteULike), DataElixir, LazyScholar – browser extension, CiteseerX – digital library from Penn State, The Lens – patents search, Fatcat – wiki for bibliographic catalogs, Lexis Web – Legal database, Infotopia (a part of the VLRC family), Virtual Learning Resources Center, Jurn, WorldWideScience, DOAJ (Directory of Open Access Journals), Baidu Scholar, PubMed Central, MEDLINE®, Microsoft Academic, and Scizzle (Joannah, 2022; Research Leap, n.d.).

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