Collaborative Practices to Empower Teachers' Capacities for the 21st Century

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Abstract

The objective of this research is to conduct an operation within the project entitled "Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School," which is one of the research project series related to the 21st century education under the Doctoral Program in Educational Administration, Mahamakut Buddhist University, Isan Campus. It employed Participatory Action Research (PAR) methodology and consisted of two cycles of Planning, Acting, Observing, and Reflecting (PAOR) in each academic semester in the 2022 academic year. The expected outcomes of this study included changes in learning and knowledge acquisition resulting from the practical application of the research findings. Moreover, 12 teachers participated both as co-researchers and as the target group for development in this study. The results of the study were evaluated and compared across three phases: before and after the first cycle of PAOR and after the second cycle of PAOR. The findings revealed the followings: 1) a positive change had occurred where a teacher-researcher practiced self-empowerment to develop greater capabilities for the 21st century and both the teacher and their students demonstrated an increased ability to meet the demands of the 21st century. 2) the researcher, co-researchers, and school personnel gained an understanding of the benefits of utilizing the principle of collaborative work, which resulted in more effective outcomes compared to individualistic approaches. This confirmed the significance of the Participative Leadership Theory, which is founded on the idea that combining the thoughts of multiple individuals leads to better decision-making compared to relying solely on an individual's perspective. 3) a grounded theory emerged from practical experience referred to as the "Collaborative Practices Model for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School" in this research work.

Keywords: 21st century education, teachers' capabilities for the 21st century, participatory action research, participative leadership, Benjamitra Wittaya School

1. Introduction

Academics and educational organizations from around the world have discussed the changes in educational paradigms, from the traditional model of the 20th century to a new paradigm for the 21st century, in various dimensions such as teaching pedagogy, curriculum, school leadership, teachers, students, classrooms, libraries, and learning environments, among others. In various dimensions, all parties agree that the key factor to achieving success is the "teacher," as they are the ones who are closest to the students more than anyone else. According to Driscoll (2022), the education 21st century is centered around equipping students with the necessary skills to thrive and fostering the self-assurance to apply those abilities. Rather than solely providing them with a wealth of readily available information, 21st-century education emphasizes the comprehension, sharing, and intelligent application of that information. He further suggests that teachers in this era should act as mentors or guides, rather than the sole source of knowledge. With a vast array of resources at their disposal, students will inevitably have more knowledge on certain subjects than their teachers and may even surpass the technology used in classrooms. Therefore, teachers should be empowered to act as facilitators and motivators of learning, which will enable their students to do the same.

Similar to Sardar's (2018) emphasis on the importance of teachers adapting their roles to become educators of the

21st century to respond to the changing and globalizing world, it is crucial for teachers to play a vital role in improving sustainable education. To achieve this goal, teachers should motivate students in enhancing their employability skills with the aid of digital tools. Therefore, a teacher in the twenty-first century is expected to be proficient in digital teaching skills. They are not only responsible for facilitating student learning, but they are also responsible for training students in various skills such as employability, digital citizenship, critical thinking, creativity, and sustainable learning. Consequently, the success of students is synonymous with the success of teachers. It is consistent with Schleicher (2018) who suggests that not only do we expect them to have a deep and broad understanding of the subjects they teach, and to adequately prepare their students for 21st century challenges; 21st century them to be passionate, compassionate, and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment. In addition to possessing a comprehensive knowledge of the subject matter they teach and effectively equipping their students with the necessary skills to face contemporary challenges, educators are also expected to demonstrate a genuine enthusiasm for their profession, display empathy towards their students, thoughtfully consider their teaching strategies, and foster a sense of belonging and cooperation within the learning community. Furthermore, Telli (2021) states that in the 21st century, the skills that a teacher should possess are diverse and essential for student success. These skills include critical thinking, problem-solving, communication, cooperation, creativity, and leadership. Additionally, skills such as effective guidance, character development, and professional ethics are crucial for teachers to excel. With the advent of technological advancements, teachers are expected to stay abreast of these changes and possess relevant skills to cater to the needs of modern learners.

The expectation of factors that contribute to success relies heavily on teachers. Expectations of new roles for teachers and the acquisition of new skills have placed them in a difficult position as they must develop themselves, while the education system remains largely unchanged from the past. Moreover, Schleicher (2018) also states that the demands we place on educators are increasingly lofty, but our educational institutions have not kept up with the pace of change. Many schools remain virtually unchanged from a generation ago, while teachers frequently lack the pedagogical techniques and competencies necessary to effectively address the varied needs of modern learners. In addition, teachers themselves face issues in their own work, as found in the research of Lomsdal et al. (2022), which identified academic pressure and a need for new competencies as problems in teachers' daily practices. These issues align with the recommendations of the Kenan Foundation Asia (2019) for Thailand to adopt an international model of teacher professional development that offers effective training, hands-on mentoring, and access to high-quality teaching materials and equipment. The recommendations of Kenan Foundation Asia (2019) are consistent with the framework of ideas in this research, which emphasizes the importance of fostering change through action. The research team emphasizes the importance of starting with a review of articles and recommendations for developing teachers' capabilities for the 21st century from the perspectives of academics, developers, practitioners, and researchers worldwide. These proposals are challenging to implement and require careful consideration and application. They are presented in an easily understandable conversational language, accompanied by visual aids and examples that illustrate global/international perspectives. The research team is confident that these proposals will be beneficial to the implementation of the "Collaborative Practices for Empowering Teachers' Capabilities for the 21st century in Benjamitra Wittaya school" project, the school where the first author of the study is an administrator. The researchers employed Participatory Action Research (PAR) methodology, which they believe will bring about the expected changes. This research method emphasizes the importance of participation and democracy in action and the resulting transformative learning and knowledge creation through practice. (Sanrattana, 2018).

2. The Objective of the Study

The aim of this study is to implement the "Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School" project, which is one of the research plans or research project set on 21st century education in the Doctoral Program in Educational Administration, Mahamakut Buddhist University, Isan Campus, using the PAR methodology. In this research, emphasis was placed on initiating the study by examining recommendations for developing Teachers' capabilities for the 21st century from the perspectives of scholars, developers, practitioners, or researchers with global/international perspectives obtained through the internet. These were then integrated with the perspectives gained from the prior experiences of 12 teachers who participated in the research, and who formed both the research team and the target group for development. The expected results from the development are: 1) to bring about changes in practice and to achieve better results than expected and unexpected results; 2) to learn from the practice itself among the researchers, co-researchers, and the educational institution; and 3) to generate new knowledge as a grounded theory from the practice in the specific context of Benjamitra Wittaya

school.

3. Literature Review

As stated in the research objective, this study emphasizes the importance of starting by examining recommendations for developing Teachers' capabilities for the 21st century from the perspectives of academics, developers, practitioners, or researchers from various countries who hold global/international perspectives on the Internet. The aim is to integrate these perspectives with the traditional experiences of teachers, who are both research participants and the target group for development. The research team therefore examined the literature related to six topics: 1) the definition of teachers' capabilities for the 21st century from the perspectives of Agbayani (2019), Ahmedabad International School (n.d.), Cox (2019), Eton institute (2020), Jibrin (2017), Nazarbayev University (2017), and Palmer (2015), 2) the importance of teachers' capabilities for the 21st century from the perspectives of 9ijakids (2018), Classroom Synonym (n.d.), Eton Institute (2020), Northwest Territories Education Renewal (n.d.), Ramesh (2018), and Sardar (2018), 3) the characteristics of teachers' capabilities for the 21st century from the perspectives of Ahmedabad International School (n.d.), Couros (2016), Cox (2019), Daugherty (2015), Eton Institute (2020), Haranaka (2020), Palmer (2015), Parmeswar (2020), Saavedra and Opfer (2020), Sardar (2018), and Stansbury (2011), 4) the principles, ideas, techniques, methods, or activities for empowering teachers' capabilities for the 21st century from the perspectives of Cornelius (2016), Cox (2019), Full Spectrum Education (2020), Grant (2018), Kenan Foundation Asia (2019), Mace (2020), Nishantsinha (2018), Redacción Real Influencers (2019), Robb (2016), Seven Mindsets (2020), Thomas (2020), and Wade (2014), 5) the steps for empowering teachers' capabilities for the 21st century from the perspectives of Applied Educational System (2020), Bates (n.d.), Center for Teaching and Learning, Brigham Young University (2020), Rodriguez (2019), and Sun (2015), and 6) the assessment of teachers' capabilities for the 21st century from the perspectives of Heretape (2020), Orito (2016), and Ravitz (2014).

Based on the literature review conducted on the six aforementioned topics, the fourth topic, "empowering teachers' capabilities for the 21st century," is of significant importance as it provides the research team and participants with academic insights on various principles, concepts, techniques, methods, and activities related to teacher empowerment. The review synthesized 38 sources on teacher empowerment, allowing for a more comprehensive understanding of the topic.

Those 38 items include:

1. Project-based learning

2. Cooperative learning

3. Problem-based learning

4. Thinking-based learning

5. Competency-based learning

6. Blend students' learning

7. Reject "content is king!"

8. Recognize that change is essential

9. View time spent exploring as an investment

10. Design thinking

11. Use technology to make the best use of time

12. Go paperless

13. Be vulnerable with students

14. Project-based learning

15. Provision of quality materials and equipment

16. Make digital citizenship a priority

17. Build in breaks from devices

18. Remember that sharing is caring

19. Use technology

20. Use the power of choice

21. Teach students to create mind maps using diagrams, color and symbols as well as mnemonics to visually represent an idea

22. Build an essential perspective

23. Develop facilitation skills

24. Teaching strategies to be able to teach to all learners

25. Be able to foster student relationships

26. Be forward thinking

27. Be able to embrace change

28. Have students sit in groups of four to six

29. Allow students to choose reading materials

30. Initiate student-led literary discussions

31. Use inquiry learning

32. Invite students to debrief their discussions by asking

33. Have students set goals

34. Integrate technology

35. Have students write about reading

36. Peer review assignments

37. Develop a PLN

38. Encourage students to develop PLNs.

4. The Research Methodology

4.1 The Level of Empirical Research and the Chosen Research Format

Carr and Kemmis (1992) categorized action research into three levels: (1) Technical Action Research, where the key idea is that the researcher positions themselves as an outside expert who provides ideas, plans, or projects for the co-researchers to carry out; (2) Practical Action Research, where the key idea is that the researcher is more involved with the co-researchers and does not impose their own ideas, plans, or projects, but instead serves as a consultant, stimulator, agenda-setter, and facilitator of collective thinking, action, observation, and reflection; and (3) Emancipatory Action Research, also known as Participatory Action Research, where the key idea is that the researcher collaborates with the co-researchers on an equal footing to conduct research. This research utilized the Participatory Action Research (PAR) methodology, as identified through the analytical and synthetic study of Sanrattana (2018)

4.2 The Principles, Ethics, and Roles

The principles of the PAR methodology employed in this research adhere to the ten guiding principles, as follows: 1) specificity of context, 2) diversity of skills, 3) aiming for change, 4) striving for action and results, 5) listening to the perspectives of all research participants, 6) analyzing, interpreting, and evaluating oneself, 7) acknowledging the potential, expertise, and vested interests of community members, 8) learning from both successful and unsuccessful actions, 9) documenting the reflections of all research participants, and 10) promoting sustainable practice or development.

The following is a list of ten ethical principles to be upheld: (1) Responsibility for maintaining confidentiality, (2) Equitable access to research data among researchers, (3) Joint decision-making regarding research direction and expected outcomes, (4) Maximum participation of all researchers in designing the research process, (5) Consultation and approval of ideas and recommendations from all parties involved, (6) Authorization required for observing or examining documents for purposes other than intended, (7) Transparency of project progress and open to suggestions from others, (8) No violation of copyright or intellectual property of others, (9) Disclosure of the nature of the research process from the outset, (10) The influence of participating researchers on the work of those who choose not to participate must be acknowledged and respected in terms of personal rights.

The following are ten roles that researchers should uphold: (1) Be a teacher, (2) Be a leader, (3) Be a good listener, (4) Be a planner, (5) Be a designer, (6) Be an analyzer, (7) Be a synthesizer, (8) Be an observer, (9) Be a reporter of findings, and (10) Be a promoter of support and facilitation.

4.3 Cycle, Steps, and Activities

As mentioned, the PAR methodology is a research approach that employs a participatory action approach involving collaboration between researchers and co-researchers who have equal status. The approach includes the steps of planning, acting, observing, and reflecting (PAOR) in a spiral cycle that continuously progresses. However, due to time constraints imposed by the curriculum, the research team has designated two cycles for this study, each comprising one academic semester, in the academic year 2022. The operations for each cycle and each step are as follows:

4.3.1 Cycle 1

Step 1: Preparation, comprises three activities:

1. Explain the research procedures to the co-researchers in order to ensure their informed and voluntary participation based on ethical principles of "*the researcher must inform the co-researchers about the nature of the research process and the benefits from the outset, those who choose not to participate must be accepted and respected for their personal rights.*"

2. Co-design the collaborative work process according to ethical principles of *"co-researchers must have a role in designing the research process. Consultation and mutual suggestions must be approved by all parties."*

3. Extract lessons according to principles of *"analyze, evaluate, and self-assess, and learn from both successful and unsuccessful experiences to create a systematic learning process together."*

Step 2, Planning, consists of 4 activities:

1. Brainstorming among the research team to answer the question "What should be done and how, to empower teachers' capabilities for the 21st century in Benjamitra Wittaya school?" based on the principle of "*acknowledging the potential, expertise, and participatory roles of the research team members*".

2. The research team presented the teacher's empowering framework derived from relevant literature perspectives of scholars, developers, practitioners, or researchers from various countries on the internet, which held global/international perspectives, for the research team members to understand and comprehend based on the principle of "*ensuring equal access to information among research team members*".

3. Develop an Action Plan by integrating the results of Activities 1 and 2 through the principle of *"listening to everyone's feedback"* and according to the ethical principles of "*consultation and consensus among all parties*" The Action Plan resulted in a teacher's empowering framework consisting of 45 principles, ideas, techniques, methods, or activities, as shown in Table 1.

4. Extract the lesson plan based on the aforementioned principles.

Step 3, Acting, consists of four activities as follows:

1. Develop two sets of assessment forms, namely (1) a self-evaluation form for the research participants to assess their level of practice, and (2) the teachers' capabilities for the 21st century assessment form to assess three phases, which are before and after the first cycle of practice, and after the second cycle of practice, based on the principles of research direction and expected outcomes resulting from joint decision-making.

2. Evaluating the current situation before the first cycle of practice by using (1) the self-evaluation form for the research participants to assess their level of practice, and (2) the teachers' capabilities for the 21st century assessment.

3. Practicing according to the action plan based on the principles of *"specific context, diverse skills, aiming for change, aiming for actions to achieve results, and leading to sustainable development"* and according to the research ethics stating that "*research participants have an influence on the work.*"

4. Extracting lessons learned based on the aforementioned principles.

Step 4, Observing, this process is guided by the principle that "all researchers should keep records of activities and practices" and considers ethical considerations such as obtaining permission before observing or examining documents for other purposes.

Step 5, Reflecting, consists of three activities, which are:

1. Evaluating the current situation after implementing cycle 1 using two assessment tools: (1) self-assessment by research participants regarding their level of practice and (2) the teachers' capabilities for the 21st century assessment.

2. Reflecting on the results of the work done by brainstorming together to reflect on the results of every step in the cycle 1, following the principles of *"listening to feedback from all research participants, analyzing, interpreting, and self-evaluating, and learning from actions, both successful and unsuccessful, to create a systematic learning process."* Additionally, the ethical principle *"the results of the work will continue to be visible and open to opportunities for feedback from others"* is applied. In this activity, the research team used Kurt Lewin's Force-Field Analysis technique (Lunenburg & Ornstein, 2000) to identify the driving forces behind the changes and to determine how much they contributed to the expected changes. The analysis also identified the factors that hindered change. From the factors that hindered change, the team suggested ways to increase the driving forces' effectiveness and reduce or eliminate the factors that hindered change. The results of this activity will be used in the next step (step 6, plan future actions). The actions may involve improving the effectiveness of the existing driving forces or seeking new driving forces that are more effective.

3. Extract the lessons learned from the previous steps according to the aforementioned principles.

4.3.2 Cycle 2

Step 6, Planning, comprises of two activities: 1) preparing an action plan and 2) extracting lessons learned.

Step 7, Acting, involves two activities: 1) carrying out the action plan and 2) extracting lessons learned.

Step 8, Observing, involves collecting data from various activities using observation forms, in-depth interviews or group interviews, checklists, or recording methods (examining/record), similar to what is done in Cycle 1.

Step 9, Reflecting, consists of three activities: 1) evaluating the current state after implementing Cycle 2, using 1) a self-evaluation form by the research participants on the level of performance, and 2) the teachers' capabilities for the 21st-century assessment; 2) reflecting on the results of the work by gathering ideas to reflect on the progress from all steps in Cycle 2, and 3) extracting lessons learned.

Step 10, involves summarizing the research results by bringing the results of observations, interviews, inspections, recordings, evaluations, lesson transcripts. Including the reflection of the results in step 5 and step 9 came together in a seminar between the research team and the research participants. In order for the research results to be validated by the research participants in a manner known as Member Checks according to Creswell (2008), Willis (2007), Locke (2001), Leedy and Ormrod (2001) and according to the principle of "(1) specific context, (2) listening to feedback from all research participants, (3) analyzing, interpreting, and evaluating oneself, and (4) learning from actions, both successful and unsuccessful, to create a systematic learning process together." The research adheres to the ethical principles of "consultation and consent from all parties" and "the results of the work will be visible and will provide opportunities for all involved to benefit from the findings."

4.4 The Research Area and Research Participants

The research area was determined specifically with consideration given to convenience, the potential of the research team, and the willingness to cooperate from research participants at Benjamitra Wittaya School, and 12 teachers were both research participants and the target group for development.

4.5 Research Tools

1. Tools for collecting high-quality data from various activities were selected by the research team based on appropriateness and the situation, following Mills' (2007) ideas. These include 1) in-depth interviews 2) group discussions, 3) an observation form, and 4) the examination/recording of journals, maps, and field notes.

2. A self-evaluation form was developed by the research team and research participants to assess their level of practice before and after the first and second cycles. The form used a 5-rating scale. This self-evaluation form was not subjected to content validity by qualified experts, nor was it subjected to try-out with a sample group. This was due to the fact that the questions in the evaluation form were developed through a "co-construction" process between the research team and research participants.

3. Teachers' Capabilities for the 21st Century Assessment Form: The research team and collaborating researchers developed the Teachers' Capabilities for the 21st Century assessment tool based on the characteristics of Teachers' Capabilities for the 21st Century as described by Ahmedabad International School (n.d.), Couros (2016), Cox (2019), Daugherty (2015), Eton Institute (2020), Haranaka (2020), Palmer (2015), Parmeswar

(2020), Saavedra and Opfer (2020), Sardar (2018), and Stansbury (2011), as well as the assessment concepts of Heretape (2020), Orito (2016), and Ravitz (2014). The assessment tool consists of 36 questions and uses a 5-point rating scale. Content validity was assessed using the Indexes of Item-Objective Congruence (IOC) method according to Rovinelli and Hambleton (1977). Five qualified experts in School Administration and Educational Assessment reviewed the assessment tool and found that the IOC values for each question exceeded the threshold of 0.50, indicating that the questions in the assessment tool align with the developmental objectives described by Chaichanawirote and Vantum (2017). Additionally, the assessment tool was administered to 30 teachers at a different school as a try-out to determine its reliability using Cronbach's alpha or coefficient alpha, which measures the internal consistency of tests. The overall reliability coefficient was found to be 0.95, with domain-specific reliability coefficients of 0.80 for Creativity and Innovation Skills, 0.81 for Critical Thinking Skills, 0.84 for Communication Skills, 0.92 for Technology Skills, 0.90 for Collaboration Skills, and 0.87 for Life-long Learning Skills. When compared to the threshold of 0.70, as recommended by UCLA: Statistical Consulting Group (2016), all domain-specific reliability coefficients were found to be higher.

4.6 Data Collection and Analysis

The collection and analysis of data is a crucial responsibility of both the research team and the collaborators, who use various tools according to the principle of "recording by all researchers about the activities and practices." The quantitative data from the two self-assessment surveys were analyzed using descriptive statistics, namely, mean ($\bar{x}$) and standard deviation (S.D.). As for the qualitative data, which arises from observation, interviews, and recordings, the data analysis process includes (1) checking the completeness of the data based on the research objectives, (2) assessing the credibility of the data to determine if it corresponds to the actual situation, and (3) presenting the data in a thick, critical description format, which involves storytelling factually and neutrally, with supporting evidence.

5. Research Findings

The research team would like to present the research results according to the research objectives as follows: 1) Changes that occurred both expected and unexpected, 2) Learning from the practices that occurred among the researchers, co-researchers, and educational institutions, and 3) The grounded theory knowledge gained from the practices.

5.1 Expected Changes

5.1.1 The Expectation was that the Co-researchers would have a Higher Level of Practice Based on Their Self-evaluation

Twelve co-researchers were evaluated on their practice level in three phases: before and after the first cycle and after the second cycle. The results showed that there was an improvement in practice level. The Mean values increased sequentially, which were 2.72, 3.61, and 4.16. The Standard Deviation values were low in all three phases, which were 0.81, 0.94, and 0.36, respectively. This indicates that the evaluators' opinions in each phase were consistent with low variability. The overall data analysis and the results of each item are presented in Table 1.

Table 1. Comparison of Self-evaluation Results of 12 Research Participants on the Level of Practice in 3 Stages

Principles/Concepts/Techniques/Methods/Activities for Empowering Teachers' Capabilities for the 21st Century	Before Cycle 1		After Cycle 1		After Cycle 2	
	$\bar{x}$	S.D.	$\bar{x}$	S.D.	$\bar{x}$	S.D.
• Teachers should create a good attitude and be good role models for students in learning.	2.83	0.83	3.83	1.03	4.25	0.45
• Teachers use activities to train students to be responsible.	2.75	0.75	3.67	0.98	4.17	0.39
• Teachers use Active Learning in teaching.	2.58	1.16	3.75	1.22	4.25	0.45
• Teachers encourage students to participate in teaching activities and present in class.	2.75	0.75	3.83	1.11	4.33	0.49
• Teachers promote and support students to learn according to their own aptitude.	2.42	1.08	3.50	1.24	4.17	0.39
• Teachers train students to be good leaders and followers.	2.75	0.75	3.83	1.03	4.25	0.45
• Teachers use simulated scenarios to create diverse learning experiences.	2.75	0.75	3.67	0.98	4.17	0.39
• Teachers use "Project-Based Learning"	2.25	0.62	3.17	1.03	4.08	0.29

Principles/Concepts/Techniques/Methods/Activities for Empowering Teachers' Capabilities for the 21st Century	Before Cycle 1		After Cycle 1		After Cycle 2	
	x̄	S.D.	x̄	S.D.	x̄	S.D.
• Teachers use "Cooperative Learning" in teaching.	2.67	0.65	3.58	1.00	4.17	0.39
• Teachers use "Problem-Based Learning" in teaching.	2.25	0.62	3.33	0.89	4.08	0.29
• Teachers use "Thinking-Based Learning" in teaching	2.42	1.00	3.25	0.97	4.08	0.29
• Teachers use "Competency-Based Learning" in teaching.	2.75	0.75	3.50	0.90	4.08	0.29
• Teachers use "Blend Students' Learning" in teaching.	2.92	0.79	3.75	0.87	4.17	0.39
• Teachers reject the notion that "Content is King!"	2.25	0.62	3.17	0.94	4.08	0.29
• Teachers recognize that change is essential.	2.92	1.00	3.92	1.08	4.33	0.49
• Teachers view time spent exploring as an investment.	2.58	1.16	3.58	1.24	4.25	0.45
• Teachers use design thinking.	2.50	0.90	3.50	0.80	4.08	0.29
• Teachers use technology to make the best use of time.	2.83	0.83	3.92	0.67	4.17	0.39
• Teachers go paperless.	3.08	0.67	3.58	0.67	4.00	0.00
• Teachers are vulnerable with students.	2.58	0.90	3.75	0.87	4.17	0.39
• Teachers encourage self-exploration and help students take ownership of learning through project-based learning.	2.67	0.65	3.25	0.75	4.08	0.29
• Teachers provide quality materials and equipment.	2.75	0.75	3.50	0.80	4.08	0.29
• Teachers make digital citizenship a priority.	3.08	0.67	4.00	0.95	4.33	0.49
• Teachers build in breaks from devices.	2.75	0.75	3.42	0.79	4.08	0.29
• Teachers remember that sharing is caring.	2.92	0.79	3.92	1.00	4.33	0.49
• Teachers use technology.	3.08	0.67	3.75	0.75	4.08	0.29
• Teachers use the power of choice.	2.50	0.90	3.67	0.89	4.08	0.29
• Teachers teach students to create "Mind Maps" using diagrams, colors, and symbols as well as mnemonics to visually represent an idea.	2.50	1.00	3.67	1.07	4.25	0.45
• Teachers help students build essential perspectives.	2.58	1.16	3.42	1.00	4.08	0.29
• Teachers develop facilitation skills.	2.83	0.83	3.75	0.97	4.17	0.39
• Teachers use teaching strategies to be able to teach all learners.	2.75	0.75	3.50	1.00	4.17	0.39
• Teachers are able to foster student relationships.	3.25	0.97	4.00	0.95	4.33	0.49
• Teachers are forward-thinking.	3.42	0.79	4.00	0.95	4.33	0.49
• Teachers can embrace change.	2.83	0.83	3.75	0.97	4.17	0.39
• Teachers have students sit in groups of four to six.	2.42	1.00	3.50	1.17	4.17	0.39
• Teachers allow students to choose reading materials.	2.58	1.08	3.50	1.00	4.08	0.29
• Teachers initiate student-led literary discussions.	2.67	0.65	3.25	0.87	4.08	0.29
• Teachers use inquiry learning.	2.75	0.75	3.58	1.00	4.17	0.39
• Teachers invite students to debrief their discussions by asking.	2.75	0.75	3.50	1.00	4.17	0.39
• Teachers have students set goals.	2.75	0.62	3.50	0.80	4.08	0.29
• Teachers integrate technology.	3.08	0.67	3.83	0.83	4.17	0.39
• Teachers have students write about reading.	2.75	0.75	3.50	0.90	4.08	0.29
• Teachers use peer review assignments.	2.83	0.72	3.58	0.79	4.08	0.29
• Teachers develop "Personal Learning Networks (PLN)"	2.33	0.65	3.42	0.90	4.08	0.29
• Teachers encourage students to develop PLN	2.75	0.75	3.50	0.90	4.08	0.29
Total	2.72	0.81	3.61	0.94	4.16	0.36

5.1.2 The Expectation for Teachers to have more Capabilities for the 21st Century

As found in the results of the teachers' capabilities for the 21st century assessment, which compared three periods. The study found that there was an improvement in capabilities, as indicated by the increasing mean values of 2.99, 3.71, and 4.20, respectively. Furthermore, when examining the standard deviation, it was found to be consistently low across all three periods, with values of 0.75, 0.96, and 0.40, respectively. This suggests that the evaluators' opinions were relatively consistent across each period, as evidenced by the overall data analysis, as well as the individual aspects and items presented in Table 2.

Table 2. Comparison of the Results of the Assessment of Teachers' Capabilities for the 21st Century in Three Phases

Expected Teachers' Capabilities for the 21st Century	Before Cycle 1		After Cycle 1		After Cycle 2	
	x̄	S.D.	x̄	S.D.	x̄	S.D.
Have Creativity and innovation skills	2.97	0.70	3.72	0.90	4.18	0.38
• I am interested in exploring new ideas.	3.08	0.79	3.83	1.03	4.25	0.45
• I enjoy thinking about ways to improve the work I am doing.	3.33	0.65	4.00	0.95	4.33	0.49
• I use various techniques to generate ideas.	2.83	0.72	3.75	0.87	4.17	0.39
• I test different ideas and make improvements.	2.83	0.72	3.50	0.80	4.08	0.29
• I create ideas or solutions to problems.	2.67	0.65	3.42	0.90	4.08	0.29
• I implement my ideas to make a positive impact.	3.08	0.67	3.83	0.83	4.17	0.39
Have Critical thinking skills	2.96	0.71	3.71	0.96	4.18	0.39
• I can explain cause-and-effect relationships.	2.92	0.67	3.75	0.87	4.08	0.29
• I prioritize my thoughts in a systematic way.	2.75	0.75	3.58	1.00	4.17	0.39
• When I face with a problem, I try to find multiple solutions.	3.00	0.85	3.58	0.90	4.08	0.29
• I develop and experiment with new problem-solving methods.	2.83	0.72	3.50	1.17	4.25	0.45
• I gather information from multiple sources before making a decision.	3.17	0.58	3.92	0.90	4.25	0.45
• I listen to diverse opinions before making a decision.	3.08	0.67	3.92	0.90	4.25	0.45
Have Communication skills	2.82	0.78	3.51	0.92	4.13	0.33
• I prepare and present work in various formats.	2.67	1.07	3.33	1.07	4.08	0.29
• I decide on appropriate methods of presentation.	2.75	0.62	3.33	0.78	4.08	0.29
• I convey ideas using different media.	2.92	0.67	3.67	0.78	4.08	0.29
• I can answer questions clearly for others.	2.50	0.90	3.25	0.97	4.08	0.29
• I talk and listen to other people's opinions with focus.	3.08	0.67	3.83	0.94	4.25	0.45
• I efficiently incorporate media and technology to communicate.	3.00	0.74	3.67	0.98	4.17	0.39
Have Technology skills	3.18	0.70	3.93	0.91	4.26	0.46
• I use technology or the internet for self-learning.	3.25	0.45	4.08	0.67	4.25	0.45
• I choose appropriate technology or resources for work.	3.08	0.67	3.83	0.83	4.17	0.39
• I use technology to track work.	3.00	0.85	3.83	1.03	4.25	0.45
• I use technology to support collaborative work.	3.33	0.78	4.00	0.95	4.33	0.49
• I have technical skills in specific areas.	3.25	0.87	3.92	1.08	4.33	0.49
• I know how to use technology media equipment safely and appropriately.	3.17	0.58	3.92	0.90	4.25	0.45
Have Collaboration skills	3.11	0.91	3.81	1.11	4.29	0.50
• I work together to gather opinions and set goals.	3.25	0.87	3.83	1.11	4.25	0.62
• I create plans and work together on projects.	3.00	1.13	3.67	1.30	4.33	0.49
• I have the necessary knowledge and skills for working together.	3.17	0.83	3.67	1.07	4.25	0.45
• I provide suggestions to my colleagues.	3.00	1.13	3.75	1.29	4.33	0.49
• I try to adapt my collaboration style with others.	3.00	0.74	3.92	0.90	4.25	0.45
• I am committed to working together and have lifelong learning skills.	3.25	0.75	4.00	0.95	4.33	0.49
Have Life-long learning skills	2.88	0.71	3.56	0.97	4.17	0.37
• I am able to learn about current problems.	2.92	0.67	3.58	1.00	4.17	0.39
• I seek opportunities to learn and improve my ideas and responses to situations.	2.92	0.67	3.58	1.08	4.25	0.45
• I am able to reflect on my learning experiences effectively.	2.58	0.90	3.33	1.07	4.08	0.29
• I can independently search for the meaning and importance of things.	2.83	0.58	3.50	0.90	4.08	0.29
• I can explain things logically and clearly.	2.67	0.65	3.42	0.79	4.08	0.29
• I am able to provide suitable options for everyday life.	3.33	0.78	3.92	1.00	4.33	0.49
Total	2.99	0.75	3.71	0.96	4.20	0.40

5.2 Unexpected Changes

This research has led to unexpected changes in many positive aspects. However, what is important is that before the research, teachers showed little interest in developing themselves to become 21st-century teachers because they were afraid that the workload would increase, which was already high. Teachers also lacked knowledge and skills in new teaching methods and continued to use traditional teaching techniques without using new techniques or using them incompletely. But when the teachers participated in the research process seriously, it resulted in the teachers becoming interested and enthusiastic in using the diverse development approaches from this research to their fullest extent, leading to more learning and exchanging new techniques and problem-solving methods in the classroom.

5.3 Learning from Practice

The research team learned that 1) each individual's basic knowledge and experience are different. If the basic knowledge and experience of each individual, which is diverse, can be brought together to work together, it will affect the success of the work. 2) When teachers are developed, they will be able to develop the potential of their students. 3) Analytical and synthesis thinking skills occur by having a part in the process of reflecting the results from practice. 4) Teamwork, collaboration, open opportunities for idea presentations, and summarizing development and problem-solving strategies together, resulting in development and problem-solving occurring continuously. 5) The use of Buddhist teachings as a basis for work contributes to the quality and success of work.

The research participants learned that 1) integrating research work with normal work helps improve work efficiency, such as Morning Talk, which is a meeting and talking activity. also talked about research activities. 2) Researchers and research participants must have a good relationship with each other. friendly and must help each other express their opinions in the perspectives that they have studied. 3) Work based on individual differences. Being different will help support work and create a friendly learning atmosphere. 4) Participation results in being able to express opinions that are beneficial to development. 5) Integration of research work in the subjects taught or in the work done. Considered as teacher development and teachers are also self-improvement. It has a positive effect on the further development of students.

Benjamitra Wittaya School discovered that: 1) the presence of a friendly relationship between researchers and co-researchers fosters frequent consultation and the expression of diverse opinions, resulting in a more varied and innovative approach to work; 2) teamwork, where individuals think, act, and succeed together, not only enhances work efficiency and effectiveness but also fosters a sense of cohesion; and 3) collaborative work, mutual assistance, and knowledge exchange promote the creation of a good knowledge management system within the school.

Overall, the research team, the research participants, and Benjamitra Wittaya School have collectively learned the benefits of participative leadership theory, which emphasizes the importance of involving multiple individuals in decision-making, leading to better outcomes than relying on the opinion of a single individual (Meiners, 2022).

5.4 The Knowledge Gained from Practical Experience

A research project aimed at enhancing the abilities of 21st-century teachers in Benjamitra Wittaya School over a period of two semesters in the 2022 academic year has resulted in a theory based on practice. The theoretical framework used in this study is the Force-Field Analysis of Kurt Lewin, which was applied to create a cause-and-effect model demonstrating the important factors that act as forces for change and resistance to change in the development process. The researchers and participants were able to overcome obstacles to change and used this knowledge to create a case study that can be applied in similar contexts, as recommended by Coghlan & Brannick (2007) and James et al. (2008).

While the practical research results have limitations in terms of their generalizability to a wider population, they can be used as an example for a case study. Therefore, the conclusion of the research in terms of knowledge that is theory-based on practice is presented as a cause-and-effect model, referred to as the "Model of Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School," as shown in Figure 1.
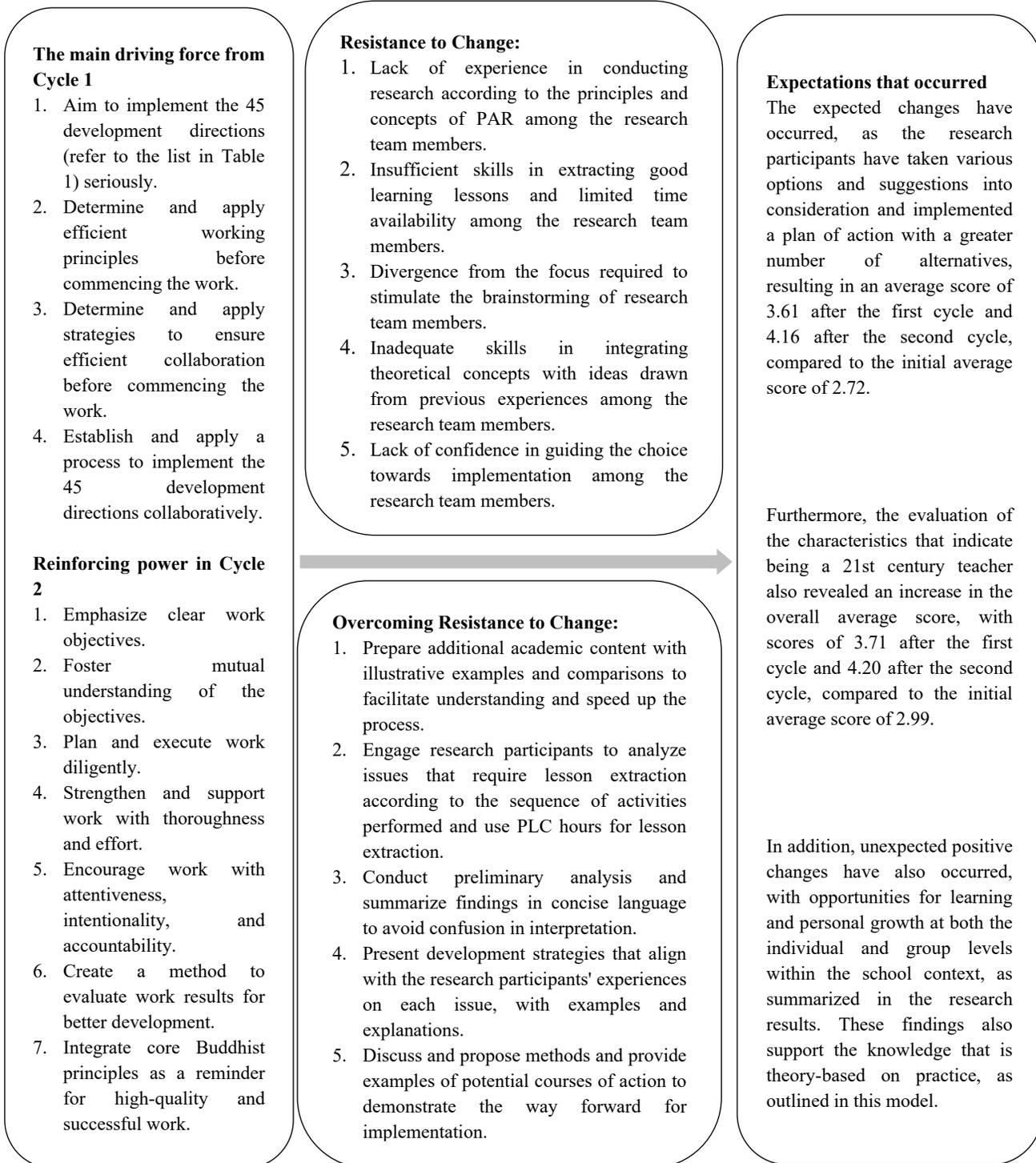
The main driving force from Cycle 1

1. Aim to implement the 45 development directions (refer to the list in Table 1) seriously.
2. Determine and apply efficient working principles before commencing the work.
3. Determine and apply strategies to ensure efficient collaboration before commencing the work.
4. Establish and apply a process to implement the 45 development directions collaboratively.

Reinforcing power in Cycle 2

1. Emphasize clear work objectives.
2. Foster mutual understanding of the objectives.
3. Plan and execute work diligently.
4. Strengthen and support work with thoroughness and effort.
5. Encourage work with attentiveness, intentionality, and accountability.
6. Create a method to evaluate work results for better development.
7. Integrate core Buddhist principles as a reminder for high-quality and successful work.

Resistance to Change:

1. Lack of experience in conducting research according to the principles and concepts of PAR among the research team members.
2. Insufficient skills in extracting good learning lessons and limited time availability among the research team members.
3. Divergence from the focus required to stimulate the brainstorming of research team members.
4. Inadequate skills in integrating theoretical concepts with ideas drawn from previous experiences among the research team members.
5. Lack of confidence in guiding the choice towards implementation among the research team members.

Overcoming Resistance to Change:

1. Prepare additional academic content with illustrative examples and comparisons to facilitate understanding and speed up the process.
2. Engage research participants to analyze issues that require lesson extraction according to the sequence of activities performed and use PLC hours for lesson extraction.
3. Conduct preliminary analysis and summarize findings in concise language to avoid confusion in interpretation.
4. Present development strategies that align with the research participants' experiences on each issue, with examples and explanations.
5. Discuss and propose methods and provide examples of potential courses of action to demonstrate the way forward for implementation.

Expectations that occurred

The expected changes have occurred, as the research participants have taken various options and suggestions into consideration and implemented a plan of action with a greater number of alternatives, resulting in an average score of 3.61 after the first cycle and 4.16 after the second cycle, compared to the initial average score of 2.72.

Furthermore, the evaluation of the characteristics that indicate being a 21st century teacher also revealed an increase in the overall average score, with scores of 3.71 after the first cycle and 4.20 after the second cycle, compared to the initial average score of 2.99.

In addition, unexpected positive changes have also occurred, with opportunities for learning and personal growth at both the individual and group levels within the school context, as summarized in the research results. These findings also support the knowledge that is theory-based on practice, as outlined in this model.

Figure 1. Protocol Model of Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School

6. Discussion

The purpose of this research is to conduct the project "Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School" using Participatory Action Research (PAR) methodology, with the aim of bringing about changes in learning and knowledge acquisition through practical

application. The results of the study showed that 1) positive changes were observed as expected, as evidenced by the evaluation results which showed that the participating teachers were able to empower themselves and improve their capabilities for the 21st century and that their capabilities had also increased. However, there were also some unexpected changes in various aspects. 2) The research team, participating teachers, and the school learned many things, especially about the benefits of working collaboratively or as a team, which led to better results than when working individually as they had done previously. 3) Grounded theory knowledge was derived from the practical application, which in this study is called the "Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School" model. The success of this research is considered equivalent to that of other research projects on 21 st -century education conducted by the Doctoral Program in Educational Administration, Mahamakut Buddhist University, Isan Campus, as well as other researchers who have used PAR methodology, such as "Teachers and participatory action research for developing learning environments" (Thawinwong & Sanrattana, 2022).

The results of this study, along with previous research by other scholars, demonstrate the effectiveness of using the PAR methodology. The researchers believe that this approach can lead to the desired changes from the beginning. Specifically, the study found that the use of the main driving force, which the researchers had studied from the insights about the development of Teachers' capabilities for the 21st century from various countries on the internet, has led to various academic perspectives that are now considered explicit knowledge. This knowledge was then combined with the researchers' previous experiences, which were considered tacit knowledge, to create a comprehensive approach to development that incorporated both explicit and tacit knowledge. In practice, this approach encouraged the researchers to think outside the box, be creative, and choose development strategies that were suitable for themselves and their students, while seeking to enhance the effectiveness of their actions using principles, techniques, or any other methods that could help them achieve their goals in both cycles 1 and 2. Additionally, this approach involved extracting lessons learned from resistance to change and finding ways to overcome such obstacles. Overall, these practices align with the PAR methodology, as Sanrattana (2018) suggests that this methodology is a democratic research approach that involves collaboration between researchers and research participants, who are considered equal partners.

The Planning, Acting, Observing, and Reflecting (PAOR) process operates as a spiral cycle that continuously aims for sustainable development by bringing together all stakeholders in a participatory and collaborative manner. This is due to the inherent responsibility and involvement of all participants in every stage of the process, as well as the principles of equality and justice promoted by Delve (n.d.) in participatory action research. In this context, participatory action research seeks to achieve positive social change by fostering participation and multiple perspectives, raising awareness among participants about their situation, and empowering them to take action. Thus, both researchers and participants benefit from learning and gaining new knowledge through the participatory action research process. According to the Center for Community and Civic Engagement at Carleton College (2018), Participatory Action Research (PAR) is a research framework that places emphasis on the involvement of individuals who are most affected by the research. PAR is based on the belief that these individuals should take the lead in shaping the questions, design, methods, and modes of analysis used in research projects. The framework recognizes the value of both traditional knowledges generated by university-based researchers and historically marginalized knowledge produced within underrepresented communities. According to Mills (2007), the PAR methodology is an action that arises from the participants themselves, without control or coercion from others. Therefore, the views of these individuals not only confirm the importance of the PAR methodology but also affirm the importance of Participative Leadership Theory, which is based on the idea that when the thoughts of different individuals are combined, the decision made is better than a single individual's opinion (Meiners, 2022). This helps to confirm the belief of the research team from the outset that using the PAR methodology will result in the expected changes.

7. Recommendation

Given that the Participatory Action Research (PAR) methodology involves a spiral cycle process that continually progresses through the Planning, Acting, Observing, and Reflecting (PAOR) stages to create a prototype model of *Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century* in this school, the results of this study are only the beginning point for future development. It is important to recognize the principles, concepts, practices, ethics, and roles of PAR researchers and co-researchers that emphasize continuous democracy. Moreover, new driving forces should be sought to supplement the existing ones and recognize the reality that any work will encounter opposition to change. Therefore, it is necessary to extract lessons and find ways to overcome obstacles to

change at every stage in order to foster change, learning, and knowledge improvement from better practices in each education cycle. At the same time, this school should use the PAR methodology to develop other diverse topics to familiarize teachers with the methodology until they become proficient. Although this research is specific to this context and cannot be directly applied to other schools, the principles and concepts of PAR methodology are universal and can be applied to develop research or education practices in any setting.

8. Conclusion

The Collaborative Practices for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School Project employed Participatory Action Research (PAR) methodology which consisted of two cycles of Planning, Acting, Observing, and Reflecting (PAOR) in each academic semester in the 2022 academic year. The expected outcomes of this study included changes in learning and knowledge acquisition resulting from the practical application of the research findings. Moreover, 12 teachers participated both as co-researchers and as the target group for development in this study. The results of the study were evaluated and compared across three phases: before and after the first cycle of PAOR and after the second cycle of PAOR. The findings revealed the followings: 1) A positive change had occurred where a teacher-researcher practiced self-empowerment to develop greater capabilities for the 21st century and both the teacher and their students demonstrated an increased ability to meet the demands of the 21st century, 2) the research team, the research participants, and Benjamitra Wittaya School gained an understanding of the benefits of utilizing the principle of collaborative work, which resulted in more effective outcomes compared to individualistic approaches. This confirmed the significance of the Participative Leadership Theory, which is founded on the idea that combining the thoughts of multiple individuals leads to better decision-making compared to relying solely on an individual's perspective. 3) The knowledge gained from practical experience referred to as the "Collaborative Practices Model for Empowering Teachers' Capabilities for the 21st Century in Benjamitra Wittaya School".

References

9ijakids. (2018). *Evolving roles of teachers in the 21st century*. Retrieved from https://rb.gy/lz8azg

Agbayani, A. G. (2019, June 28). *What does it mean to be a 21st-century teacher*. Retrieved from https://rb.gy/fuupnk

Ahmedabad International School. (n.d.). *Top five characteristics of a 21st century educator*. Retrieved from https://rb.gy/wzfbe0

Applied Educational System. (2020, February 17). *4 Steps to teach 21st century skills in middle school*. Retrieved from https://rb.gy/vxxlrt

Bates, A.W. (n.d.). *Nine steps to quality teaching in a digital age*. Retrieved from https://rb.gy/babk6c

Center for Teaching and Learning, Brigham Young University. (2021, August 30). *Three steps to improve your teaching*. Retrieved from https://rb.gy/3tv5fv

Chaichanawirote, U., & Vantum, C. (2017). Evaluation of content validity for research instrument. *Journal of Nursing and Health Sciences*, *11*(2), 105-111.

Classroom Synonym. (n.d.). *Role of teachers in the 21st century*. Retrieved from https://rb.gy/zneijk

Cornelius, S. (2016, March 25). *21 Tips, tricks, and ideas every 21st century teacher should try*. https://rb.gy/03pvmj

Couros, G. (2016). *10 Essential characteristics of a 21st century educator*. Retrieved from https://rb.gy/32wv6g

Cox, J. (2016, August 5). *5 Essential 21st century teaching strategies*. Retrieved from https://rb.gy/zs1svy

Cox, J. (2019, July 19). *Characteristics of a 21st-century teacher*. Retrieved from https://rb.gy/uheor6

Daugherty, M. (2015, August 7). *8 Undeniable traits of the 21st century teacher*. Retrieved from https://rb.gy/ngbbcw

Delve. (n.d.). *Participatory action research*. Retrieved from https://delvetool.com/blog/participatoryaction

Driscroll, M. (2022, September 7). *Education in the 21st century*. Retrieved from https://bit.ly/3ImEa6f

Eton Institute. (2020, January 24). *The 7 roles of a teacher in the 21st century*. Retrieved from https://rb.gy/qnykqv

Full Spectrum Education. (2020, June 19). *10 Strategies for teaching the 21st century learner*. Retrieved from https://rb.gy/lten9s

Grant, V. (2018). *18 Things a 21st century teacher should do and how to do them*. Retrieved from https://rb.gy/bnnllt

Haranaka, L. (2020, October 15). *21st century skills for teachers*. Retrieved from https://rb.gy/cdrdwm

Heretape, E. (2020, June 1). *Questionnaire for teachers' practices on the 21st century skills*. Retrieved from https://rb.gy/ifdc4a

Jobrin, R. (2017, July 24). *Who is a 21st century teacher*. Retrieved from https://rb.gy/7kyjy3

Kenan Foundation Asia. (2019, June 24). *3 Key elements for developing a 21st century teacher*. Retrieved from https://rb.gy/kkyz6s

Leedy, P. D., & Ormrod, J. E. (2001). *Practical research: Planning and design* (7th ed.). Merrill Prentice Hall.

Locke, K. (2001). *Grounded theory in management research.* Sage.

Lomsdal, S. A., Lyngstad, I. K., & Lagestad, P. A. (2022). Teachers' perceptions of barriers related to implementation of daily physical activity in secondary school: Academic pressure and the need for new competence. *Teaching and Teacher Education*, (115). 1-9. https://doi.org/10.1016/j.tate.2022.103749

Lunenburg, F. C., & Ornstein, A. C. (2000). *Educational administration: Concepts and practices* (3rd ed.). Wadsworth Thomson Learning.

Mace, N. (2020). *8 Strategies to manage the 21st century classroom*. Retrieved from https://rb.gy/03vabb

Meiners, J. (2022, August 6). *Participative leadership theory & examples.* Retrieved from https://bit.ly/3jOC4mp

Mills, G. E. (2007). *Action research: A guide for the teacher researcher* (3nd Ed.). Merrill Prentice Hall.

Nazarbayev University. (2017, April 16). *What does it mean to teach in the 21st century*. Retrieved from https://rb.gy/ott00g

Nishantsinha. (2018, May 9). *5 Essential 21st century teaching strategies.* Retrieved from https://rb.gy/f8zpxe

Northwest Territories Education Renewal. (n.d.). *Reasons for change*. Retrieved from https://rb.gy/7maxzw

Orito, R. (2016, July 19). *21st century skills inventory new competencies*. Retrieved from https://rb.gy/unwxqx

Palmer, T. (2015, June 20). *15 Characteristics of a 21st-century teacher*. Retrieved from https://rb.gy/covy3b

Parmeswar, L. (2020). *Attributes of 21st century teachers.* Retrieved from https://rb.gy/dlpxif

Ramesh, P.V. (2018, August 20). *Changing role of teachers in the 21st century*. Retrieved from https://rb.gy/subtmk

Ravitz, J. (2014, January 31). *A survey for measuring 21st century teaching and learning: West Virginia 21st century teaching and learning survey*. Retrieved from https://rb.gy/1i7kwx

Redacción, R. (2019). *8 Methodologies that every 21st century teacher should know*. Retrieved from https://rb.gy/tegjxk

Robb, E. (2016, December 22). *Help your teachers create 21st century classrooms*. Retrieved from https://rb.gy/mpjxcb

Rodriguez, J. L. (2019, August 28). *Six steps to become a stronger teacher*. Retrieved from https://rb.gy/8mxzwq

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.

Saavedra, A. R., & Opfer, V. D. (2020). *Teaching and learning 21st century skills.* Retrieved from https://rb.gy/vzzui3

Sanrattana, W. (2018). *Research in educational administration: Concepts, practices and case studies* (4th Ed.). Thiphawisut.

Sardar, I. T. (2018, August 20). *Changing role of teachers in the 21st century*. Retrieved from https://rb.gy/upx2ai

Sardar, I. T. (2018, October 20). *Changing role of teachers in the 21st century!* Retrieved from https://bit.ly/2HsDKLD

Schleicher, A. (2018, March 22). *Preparing teachers for 21st century challenges*. Retrieved from https://bit.ly/3RYo99F

Seven Mindsets. (2020). *Here are 4 critical 21st century teaching skills that all teachers can and should master.* Retrieved from https://rb.gy/we4l8j

Stansbury, M. (2011, September 9). *Five characteristics of an effective 21st-century educator.* Retrieved from

https://rb.gy/sw7itv

Sun, Y. (2015, 15 March). *7 Magic steps toward developing teachers as leaders*. https://rb.gy/k4phn9

Telli, E. (2021, February 28). *21st century teacher skills.* https://bit.ly/3YGjonG

Thawinwong, C., & Sanrattana, W. (2022). Teachers and participatory action research for developing learning environments. *World Journal of Education, 12*(3), 17-28. https://doi.org/10.5430/wje.v12n3p17

The Center for Community and Civic Engagement, Carleton College. (2018). *Participatory action research (PAR).* Retrieved from https://participatoryactionresearch.sites.carleton.edu/about-par/

Thomas, H. (2021, January 21). *21st century teaching: 4 Strategies to reach modern French students* Retrieved from https://rb.gy/pt76yo

UCLA: Statistical Consulting Group. (2016, August 22). *What does Cronbach's alpha mean?* Retrieved from https://bit.ly/3RVaIaK

Wade, M. (2014, April 8). *10 Tips to become a 21st century teacher*. Retrieved from https://rb.gy/0nfl68

Willis, J. W. (2007). *Foundations of qualitative research: Interpretive and critical approaches.* Thousand Oaks.

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