IJRES International Journal of Research in Education and Science

www.ijres.net

Online Research Training for Improving Public School Teachers' Action Research Competencies

Alvin Odon Insorio [1*]

San Pedro College of Business Administration, San Pedro Relocation Center National High School, Philippines, 0000-0002-4746-6225
Corresponding author: Alvin Odon Insorio (alvin.insorio001@deped.gov.ph)

Article Info

Article History

Received:
25 July 2025

Revised:
15 November 2025

Accepted:
25 December 2025

Published:
1 January 2026

Keywords

Action research
Competency
Template
Training

Abstract

Public school teachers have low research competencies, which contributes to poor action research production. Furthermore, few studies have been conducted to improve the action research competencies of public school teachers in the Philippines. As a result, this study improved the action research competencies of public school teachers through online research training, including research templates, coaching, and mentoring sessions. A practical action research method was used, with sixty-four public school teachers freely participating in and completing a five-day training program. Action research competencies were assessed before and after training using a validated questionnaire developed by field specialists, and semi-structured interviews were performed to elicit feedback. Statistical analyses such as median, interquartile range, Wilcoxon signed-rank test, and rank biserial were performed using Jamovi (v 2.4.14), while interview transcripts were analyzed thematically. The findings revealed that participants' action research competencies improved, as evidenced by a statistical difference between before and after participating in the online research training. However, suggestions were made, including extra writing time for peer review exercises, face-to-face training with more examples of each section of research articles, and a longer proposal presentation period. As a result, twelve action research proposals were presented to their supervisors for feedback. The study was conducted in one location and focused solely on public school teachers. Therefore, DepEd authorities may continue to improve public school teachers' action research competencies through online or in-person research training to generate more action research addressing educational problems in the classroom.

Citation: Insorio, A. O. (2026). Online research training for improving public school teachers' action research competencies. *International Journal of Research in Education and Science (IJRES), 12*(1), 116-139. https://doi.org/10.46328/ijres.5353

ISSN: 2148-9955 / © International Journal of Research in Education and Science (IJRES).

Introduction

Action research promotes professional development among teachers, enables them, and connects research with practical application (Tirol et al., 2022). In carrying out action research, teachers recognize deficiencies in their pedagogical practices, reflect, and formulate actions to address the identified improvement areas. Conversely, research activities conducted by secondary education teachers mainly demonstrate the teaching strategies they implement (Fitria et al., 2019). Hence, the teachers in basic education are in the early stage of research competency development and require multiple initiatives and efforts (Garcés & Granada, 2016). Therefore, conducting action research in K to 12 classrooms remains necessary (Albalawi & Johnson, 2022).

Republic Act 9155, Chapter 1, Section 7(5) in the Philippines mandates enhancing educational research within basic education. This legislation requires the Department of Education (DepEd) to conduct studies and educational research to establish a basis for essential reforms and formulate policy recommendations. DepEd Order No. 43, s. 2015, referred to as the Revised Guidelines for the Basic Education Research Fund (BERF), underscores the significance of evidence-based policy development through improving implementation procedures and promoting accountability and transparency. Therefore, schools recognized by DepEd must promote the development of a research culture across all grade levels, from kindergarten to twelfth grade. However, research productivity in basic education is limited, attributed to the minimal participation of teachers in action research (Cortes et al., 2021).

Action research programs predominantly exist within colleges and universities (Cortes & Reyes, 2021; Jugar & Cortes, 2022), yet they are primarily limited to basic education. Despite the aforementioned initiatives for encouraging research projects, DepEd must enhance its efforts to motivate teachers to participate in research activities effectively. Despite implementing various programs and initiatives, teachers encounter challenges conducting action research (Tirol et al., 2022). The question of why teachers participate so little in research activities is still ongoing (Mapa, 2017). Hence, their research competency requires further development (Cortes & Reyes, 2021; Wong, 2020).

The San Pedro City Schools Division Office (SDO) documented thirty-two completed research reports for the academic year 2023-2024. Fifteen of these are action research, while seventeen are basic research. Moreover, this arises from San Pedro City's inadequate research culture and the teachers' limited research capabilities, diminished enthusiasm, and challenges in conducting research. Despite twenty-eight schools under SDO San Pedro City, few schools can produce action research by the end of the school year, although master teachers are required to produce action research or in-depth studies annually. Eventually, teachers must be more confident and capable of executing action research methods to address classroom problems.

The study aims to improve the action research competencies of public school teachers through online research training. Specifically, it seeks to determine teachers' action research competencies before and after the online research training in terms of researchable topic selection, action research project planning, research ethics, data analysis and presentation, technology utilization and reflection, and result dissemination. Also, it aims to elicit

suggestions for improving online research training. By the end of the training, the titles of the action research proposals produced by the teachers were presented.

The study's findings offer significant insights for DepEd officials at SDO San Pedro City on how to enhance the action research competencies of the teachers. The findings from this study guided DepEd staff in formulating capability-building training, delivering technical support, advancing research projects, and constructing a research manual. Division and school administrators may acquire information about their teachers' strengths and limitations in formulating research initiatives. Thus, they offered technical support to tackle the difficulties encountered by teachers in conducting action research.

Literature Review

Action research enables teachers to identify issues that directly impact the teaching-learning process. Through engagement in action research, teachers may deliberate on the instructional strategies they implement in their classrooms to positively impact students' academic achievement and foster their professional growth (Khan et al., 2019). Action research has helped teachers get better at many areas of education, such as pedagogy and teaching (Cortes et al., 2020; James & Augustin, 2017; Pennington, 2015), using technology in the classroom (Kuo, 2015), and assessment (Pang, 2020).

Classroom-based research in Philippine public schools has enhanced teaching practices and professional growth (Ulla, 2018), enabling teachers to identify innovative instructional methodologies and strategies for successful lesson delivery (Ulla et al., 2017). Furthermore, engaging in action research helps teachers recognize the needs of students and address pressing challenges inside the classroom or educational institution (Morales et al., 2016). However, Anzaldo and Cudiamat (2019) advocate for extensive capacity training programs for public school teachers through seminar workshops, whereas Cortes et al. (2021) propose professional growth programs for teachers. Teachers must undergo capacity-building training to effectively conduct action research and articulate the results following standard academic writing conventions. Empowering teachers with action research competencies transforms them into catalysts for educational transformation. Nonetheless, teacher action research training might be more comprehensive and thoroughly recorded (Morales et al., 2016).

Meanwhile, research competency refers to the ability of individuals, organizations, and systems to conduct and disseminate high-quality research effectively and efficiently (Kho et al., 2017; Macabago, 2017). It is frequently asserted that teachers require enhanced skills to perform, apply, and distribute research proficiently. On the other hand, teachers have various views on conducting action research, which leads to confusion and challenges in starting an action research proposal. Similarly, Tulung et al. (2022) discovered that teachers encounter challenges conducting action research due to insufficient understanding. So, to address the problem, online professional development training is conceptualized and implemented. Through the said training, teachers are equipped with confidence and enthusiasm to conduct action research and write action research reports following the prescription of DepEd.

Conversely, teachers' competencies in conducting action research encompass selecting researchable topics, formulating action research projects, collecting, analyzing, and presenting data, utilizing technological tools, incorporating ethical considerations, and reflecting on and disseminating research findings (Cortes, 2019; Cortes et al., 2021; Morales et al., 2016). Cortes et al. (2021) defined the aforementioned competencies as essential domains necessitating teachers' professional growth via training programs. The research competencies empower the teacher to autonomously conduct research activities following established principles, regulations, and standards. Therefore, there is a great need to enhance the teachers' action research competencies through research training that capacitates teachers to conduct research.

The research competencies of teachers are developed by enhancing their skills through online research training. The research training requires planning to include research methods, ethics, and data analysis with hands-on activities (Rose et al., 2024). Furthermore, few studies concentrate on enhancing research competencies, and little literature assesses teachers' research competence (Toquero, 2020).

Research training can enhance teachers' professional growth (Abad & Pineda, 2018). Research training is a process by which students gain theoretical and research-oriented information, experience, and interpersonal skills essential for their personal and professional growth (Abad et al., 2023). Also, it should prioritize the cognitive and technical competencies necessary for identifying and resolving challenges (Vasquez-Martinez et al., 2022). Therefore, research training is needed to develop the teachers' research competencies. The training enhances the teachers' competence and abilities, especially the professional engagement (Reisoğlu, 2021).

Training and guidance can effectively fix the teachers' low research competency issue (Basilio & Bueno, 2019). Furthermore, mentoring and coaching can aid teachers in resolving issues and sustaining progress in their endeavors to improve teaching methodologies (Mertler, 2021). Mentoring is a multifaceted process encompassing emotional support, professional socialization, and pedagogical instruction (Dağ & Sari, 2017). On the other hand, coaching involves collaborating with others in a stimulating and innovative process that motivates them to optimize their personal and professional competencies (International Coaching Federation, 2020).

Enhancing teachers' action research competency is fundamental in establishing research practice inside a school via teacher training, coaching, and mentoring (Tulung et al., 2022). Mentored research training possesses significant potential to enhance teachers' professional growth and transform educational theory into practice (Abad & Pineda, 2018). Therefore, a teacher's research training is the initial step to empower them. Educational research training capacitates teachers to acquire competencies and abilities in the conception and execution of action research projects to establish themselves as self-directed researchers in their field (Tirol et al., 2022).

Teachers' training makes the skills better learned or updated. Therefore, this study fills the literature gap of developing research competencies in basic education through online research training that serves as a professional development program. The said training is composed of 5 days of training with the provision of action research templates, coaching, mentoring, and proposal presentation. Improving their research competencies through formal research training is crucial to aid teachers in doing action research.

Theoretical and Conceptual Framework

The present study is grounded in Bandura's self-efficacy theory, which emphasizes that an individual's belief or conviction influences their ability to effectively accomplish a specific task or goal. Teachers' convictions shape their views and evaluations, affecting their classroom conduct and teaching methodologies (Allinder, 2015). This indicates that a teacher-researcher with high research competency has confidence in executing and finishing research activities (Pamatmat, 2016). Teachers' self-efficacy in conducting research influences their research qualities, competencies, and motivation. However, teachers' self-efficacy is solidified through training (Hatlevik, 2017).

In addition, self-concept theory offers a framework for understanding how an individual organizes their views about themselves. The individual's self-views indicate their competence in doing tasks (Lamar et al., 2019). If the teachers have positive self-views in their research competence, they can conduct action research. Therefore, improving self-concept to conduct action research also improves research competence.

Teachers must continuously learn to gain competencies (Sancar et al., 2021). Therefore, research training is conducted via Zoom teleconference to enhance the teachers' action research competencies. Five Saturday training sessions are provided with interested teachers from twenty-eight schools under SDO San Pedro City. The speakers are an education program supervisor, a master teacher, and a guest from a state college. The teacher participants receive formal training sessions lasting a total of 20 hours. Also, action research templates in Filipino and English versions are provided as writing guides; mentoring and coaching are also provided upon the teachers' request. Moreover, action research proposals are presented to education program supervisors for the provision of technical assistance. Teacher training improves research competencies (Perines, 2021). All interested teachers are invited to participate freely in the research training to enhance their research skills. Therefore, the training matrix for the online research training is presented in Table 1, composed of date, time, objectives, topic, and expected outputs.

Table 1. Matrix for Teachers' Online Research Training

Date & Time	Objectives	Topic	Expected output
October 26, 2024 1:00 PM – 5:00 PM	1. Equip teachers with essential knowledge, skills, and attitudes toward conducting action research 2. Teachers become oriented with the action research journey	• DepEd Educational Research and Division Research Development and Management Guidelines • Educational Action Research Journey	• Gap analysis • Decision-making model • Research Title
November 9, 2024 1:00 PM – 5:00 PM	1. Gain writing skills in writing an action research proposal 2. Be familiar with the research tools, citation, and	• Writing an Action Research Proposal • Mentoring and coaching session	• Action research proposal • Cost Estimates •

Date & Time	Objectives	Topic	Expected output
	referencing		
December 14, 2024 1:00 PM – 5:00 PM	1. Be familiar with MAXQDA and JAMOVI software 2. Utilize data analysis software for qualitative and quantitative data	• Qualitative Data Analysis Using Software • Quantitative Data Analysis Using Software	• Data analysis plan • Timetable • Action plan • Plan of Dissemination and Advocacy
January 11, 2025 1:00 PM – 5:00 PM	1. Be familiar with the action research report template 2. Gain competencies in writing an action research report	• Writing an Action Research Report • Mentoring and coaching session	• Revised action research proposals
February 15, 2025 1:00 PM – 5:00 PM	1. Gain competencies in writing an action research report for publication and conference presentation 2. Gain research presentation skills	• Writing research papers for publication and conference presentation • Presentation and critiquing the action research proposal	• PowerPoint Presentation of action research proposal

Training alone is insufficient to empower teachers, as conducting action research poses significant challenges for them (Albalawi & Johnson, 2022). Also, teachers failed to conduct research due to limited time and lack of training (Damşa, 2018; Murillo et al., 2017; Perines & Murillo, 2017). Therefore, technical assistance is offered to participants to guarantee the effective implementation of research methodologies and proficiency in writing action research reports. Technical assistance in the form of coaching and mentoring is essential in guiding them in doing research activities. Consequently, the evaluations and recommendations from the participants are considered to enhance the training for the subsequent implementation cycle.

Research mentoring enhances the research competencies of teachers in educational settings (Abad & Pineda, 2018; Cornell-Pereira, 2019; Gholam, 2018). Research mentoring promotes the cultivation of essential research attitudes and competencies, including scientific curiosity, critical thinking, collaboration, self-confidence, and autonomy (Abad et al., 2023). Coaching and mentoring are important because they boost teachers' competence (Dewi, 2021). Therefore, coaching and mentoring sessions must be part of the teachers' training. Murray et al. (2022) found that research training enhances knowledge, improves writing skills, and clears research misconceptions. Training is fundamental for enhancing research capacity (King et al., 2022).

Figure 1 depicts the study's flow. The online research training comprises formal training sessions, provision of action research templates, coaching and mentoring sessions, and presentation of proposals aimed at improving the

action research competencies of the teacher participants. The targeted action research competencies are researchable topic selection, action research project planning, research ethics, data analysis and presentation, technology utilization, and reflection and result dissemination. Teachers are trained to utilize digital software for data analysis like MAXQDA and Jamovi with a hands-on workshop and explore online websites for literature search because they generally possess insufficient knowledge and skills to fully leverage the potential of digital technology (Lindberg et al., 2017; Moltudal et al., 2019; Samad et al., 2016).

The competencies are measured before and after joining the training to determine the significant difference. Also, action research proposals are collected as evidence of gained competencies. Moreover, interviews are conducted to verify the participants' gained competencies and to collect suggestions for improving the research training.

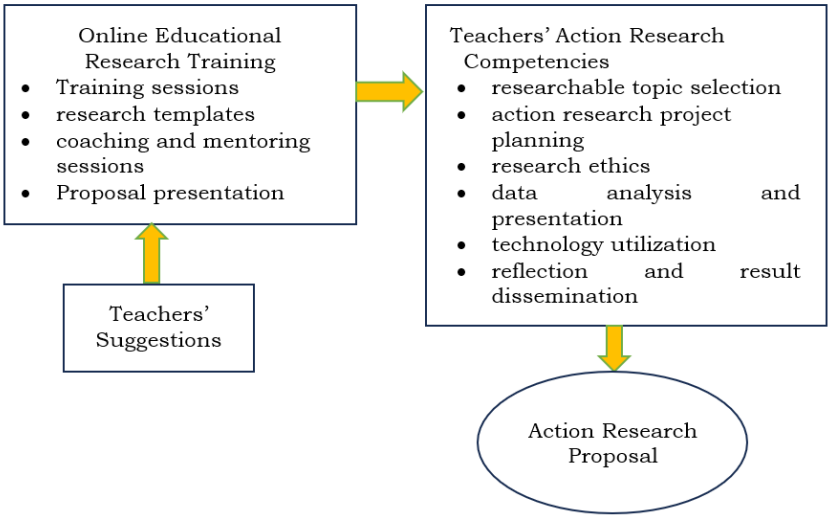

Figure 1. Conceptual Paradigm

Method

Research Design

The study's design was practical action research that aimed to enhance the action research competencies of public school teachers through online research training. Action research promptly addresses urgent issues within educational settings (Chen & Lin, 2019; Chevalier & Buckles, 2019; Ulla, 2018). Specifically, practical action research tackles the issue by employing local resources within the researcher's capabilities (Stowell & Kramarova, 2022) to cultivate the research competencies of teachers. A practical action research approach was the most appropriate for enhancing teachers' action research competencies through online research training.

Participants of the Study

The study participants were teachers from public school teachers under SDO San Pedro City for the school year 2024-2025, comprising 64 who voluntarily participated as research enthusiasts. Voluntary participation is the criterion for choosing the participants because when individuals engage in learning voluntarily, they become more

dedicated to learning (Pineda et al., 2022). The participants came from elementary and secondary schools and attended the research training completely. These individuals undergo online training sessions via Zoom teleconference, coaching, mentoring, and presentation of proposals. Some participants could submit action research proposals and present them online for technical assistance from their education program supervisors.

Sixteen participants were from elementary schools, aged twenty-five to fifty-three years old. Of these, four were male and twelve were female. At the same time, forty-eight participants were from secondary schools aged twenty-four to fifty-five. Of these, fourteen were male, and thirty-four were female. Out of sixty-four, seven were master teachers, while fifty-seven were teacher 1 to 3 designations. Concerning the highest educational attainment, thirty participants had Bachelor's degrees, thirty-one had Master's degree units, and three had Master's degrees. Hence, twenty-five had less than ten years of teaching experience, twenty-nine had eleven to twenty years, and ten had more than twenty years. On the other hand, one participant had completed action research before, while no one had published a research paper.

Instrumentation

The first instrument was a survey questionnaire modified from the research of Cortes et al. (2020) titled Teacher's Competence in Action Research and Russo (2016) with a 6-point scale ranging from 0 to 5 for assessing research competencies. Adjustments were made to tailor the questionnaire to the local situation and participants. The study included seven demographic variables: age, sex, grade level taught, highest educational attainment, years of teaching experience, quantity of completed action research, and number of published research articles. The questionnaire had six dimensions of action research competency, each accompanied by seven statements. This assessed the participants' action research competency levels before and after joining the research training. The second instrument was an interview guide with five questions to elicit qualitative comments about enhancing teachers' research competencies during the training and suggestions for improvement.

Table 2. Reliability Indices of the Questionnaire

Variable	n	α	Interpretation
researchable topic selection	7	.929	Excellent
action research project planning	7	.931	Excellent
research ethics	7	.933	Excellent
data analysis and presentation	7	.934	Excellent
technology utilization	7	933	Excellent
reflection and result dissemination	7	.923	Excellent

The research instruments were subjected to content validation by professionals in education, including education program supervisors, school administrators, head teachers, and senior education program specialists. Consequently, experts' recommendations were rigorously adhered to in reevaluating the two instruments. Suggestions such as simplicity of statement, grammar correction, sequencing of items, utilization of common words, and proper punctuation marks were strictly followed in the revision. Then, the revised versions of the two

instruments were returned to them for approval. After the approval, pilot-testing of survey questionnaires to 40 non-respondents in one school was conducted. Subsequently, reliability indices were calculated utilizing Cronbach's alpha to assess the questionnaire's internal consistency, as shown in Table 2.

Data Gathering Methods

After securing permission from the Schools Division Superintendent, formal letters were sent to the school heads to inform the teachers to participate voluntarily. After the school heads' approval, the link to the survey questionnaire via Google Forms was distributed to the school heads. The pre-survey was done in the second week of October 2024, measuring the teachers' action research competencies before attending online research training. Results were stored on a personal computer for future comparison. Then, the participants underwent online research training via Zoom from the last week of October 2024 to the second week of February 2025.

Only sixty-four of the participants had finished their participation out of one hundred registered teachers. Then, the post-survey was conducted in the third week of February 2025, followed by semi-structured interviews with the twenty-five participants in the last week of February 2025. However, to check the accuracy and completeness of qualitative data, member checking was done on the third week of March 2025 by returning the transcript and analysis to the participants and seeking their approval.

For positionality, the researcher advocates for research training and serves as one of the speakers in the teacher training. He has been in the teaching profession for eighteen years, promoting a culture of action research. He bracketed his concepts and impacts on the attendees. He relinquished his presuppositions that the participants would fully engage in the training, generate high-quality action research reports, and provide satisfactory replies in surveys and interviews.

Ethical Considerations

All research endeavors must comply with the tenets of research ethics (Astaneh & Masoumi, 2018; Stockemer, 2019). An official letter was sent to the authors of the survey questionnaire soliciting permission to utilize their work as part of the procedure. The researcher initially secured authorization from the school heads to inform interested teachers about participation via a school memorandum. Participation by the participants is optional, with no incentives provided in return. However, they may withdraw their participation and are not obligated to respond to the survey or interview. Also, the training was free to all public school teachers under SDO San Pedro.

The study report did not reveal the participants' identities, and their data were handled with secrecy to prevent unfavorable leakage. In addition, only summary data were included in the result section. Hence, data were secretly analyzed on a personal computer for proper storage. Consequently, data were retained on the researcher's computer for two years only. Subsequently, all data will be eradicated. The study report was distributed via conferences, forums, faculty meetings, and publications as part of dissemination.

Data Analysis

The Jamovi version 2.4.14 was employed to calculate the median ($\tilde{x}$) and interquartile range (IQR) to describe the quantitative data. Also, the study employed the Wilcoxon signed-rank test for hypothesis testing to ascertain significant differences in research competency levels before and after attending online research training and rank biserial to evaluate practical significance for ordinal data (Wilcox, 2019).

Table 3 presents the scale for measuring the participants' action research competencies. The competencies were measured from 0 to 5, showing their self-efficacy to conduct action research and manifesting teachers' competencies.

Table 3. Scale Used to Interpret the Action Research Competencies

Scale	Competency description
5	Very highly competent (VHC)
4	Highly competent (HC)
3	Competent (C)
2	Moderately competent (MC)
1	Slightly competent (SC)
0	Not competent (NC)

Qualitative data were analyzed using a thematic method. The interview responses were transcribed, read, and re-read to assign codes. Then, codes were grouped into categories representing big concepts, and categories were combined to form themes representing the true participants' suggestions. Only themes were presented and discussed to reveal the participants' suggestions to improve online research training.

Results

Table 4 depicts the participants' action research competencies for topic selection before and after attending the online research training. Before, participants were moderately competent in selecting a research topic from their schools that aligned with their interests. Also, choosing timely, relevant, and objective topics was challenging for them. However, after attending the online research training, participants could choose a timely and relevant topic of their interest. They also became capable of doing literature reviews from reliable sources. Overall, the participants' research topic selection competencies were enhanced, and they became highly competent ($\bar{X}$=4).

Table 4. Research Topic Selection Competencies Before and After the Online Research Training

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
1. I can make sure the topic I will be researching is based on the realities of the school.	2	.25	MC	4	0	HC
2. I can select inquiries that my counselors, administrators,	2	0	MC	4	0	HC

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
and teaching colleagues might find interesting.						
3. I can discern topics that align with my interests before deciding.	2	1	MC	4	0	HC
4. I can conduct an exhaustive search for literature and review my chosen topic.	2	1	MC	4	0	HC
5. I can focus the research topic into a manageable concept.	2	1	MC	4	0	HC
6. I can choose a timely, relevant, objective research topic.	2	1	MC	4	0	HC
7. I can use the researchable topic in doing a literature review.	2	1	MC	4	0	HC
Overall	2	.75	MC	4	0	HC

Table 5 shows the participants' action research competencies for research project planning before and after attending the online research training. Before, the participants were moderately competent in planning action research projects. They moderately engaged in research activities with sound methodological contributions and found difficulties in utilizing research methods and finding literature sources. After joining the online research training, participants became highly competent in planning an action research project. They conducted an exhaustive literature review to identify the research gap, chose rigorous action research methods, and selected appropriate research instruments. Similarly, they could construct proper citations of borrowed ideas and references following the standard writing style. Overall, they became highly competent ($\bar{X}$=4) in planning action research projects after participating. Teacher training allows teachers to acquire research competencies to develop research projects independently.

Table 5. Action Research Project Planning Competencies Before and After the Online Research Training

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
1. I am capable of formulating research inquiries using layman's terms.	2	1	MC	4	.50	HC
2. I can recognize previous research accomplishments and identify the gaps.	2	1	MC	4	1.25	HC
3. I can assess the credibility and reliability of my sources during the literature search and review.	2	1	MC	4	1	HC
4. I can engage in research activities methodically and rigorously.	2	1	MC	4	1	HC
5. I can identify suitable data sources to establish rigorous methods and triangulation.	2	1	MC	4	1	HC
6. I possess knowledge of the use and constraints associated with diverse qualitative or quantitative data collection instruments.	2	1	MC	4	.25	HC

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
7. I can make proper citations and references to give credit to the authors.	2	1	MC	4	0	HC
Overall	2	1	MC	4	.75	HC

Table 6 presents the participants' action research competencies for research ethics before and after attending the research training. Before, participants were moderately competent in integrating research ethics. They seldom secure parental consent and assent before conducting action research following ethical standards. Also, they do not know how to share the research findings responsibly and protect the data confidentiality and participants' privacy. However, after the online research training, they became highly competent in obtaining permission from the head of the office, parents, and participants through formal letters, practicing voluntarism, and properly storing data and sharing findings. In addition, they anticipated possible ethical issues that may arise and applied ethical practices. Overall, the participants' research ethics competencies were enhanced ($\bar{X}$=4) after participating in online research training.

Table 6. Research Ethics Competencies Before and After the Online Research Training

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
1. I can secure parental consent and assent before doing action research.	2	1	MC	4	1	HC
2. I know the protocols for obtaining consent from my school head and target participants.	2	.25	MC	4	1	HC
3. I can apply the fundamental research ethics principles outlined in numerous codes and guidelines.	2	0	MC	4	1	HC
4. I can anticipate potential ethical issues during an action research endeavor.	2	.25	MC	4	2	HC
5. I can effectively convey information to participants.	2	1	MC	4	2	HC
6. I can protect the participants' rights and the data's confidentiality.	2	1	MC	4	1	HC
7. I can effectively deliver and share research findings following established ethical principles and norms.	2	0	MC	4	1	HC
Overall	2	1.50	MC	4	1.25	HC

Table 7 reveals the participants' action research competencies for data analysis and presentation before and after attending the research training. Before, participants were moderately competent in analyzing and presenting data. They found difficulty in analyzing data using software by choosing appropriate data analysis tools. Also, presenting data using tables and graphs was challenging for them. However, their enhanced competencies made them highly competent in analyzing qualitative and quantitative data using the appropriate data analysis tools. Also, they could interpret the data to extract the meaning, which provided comprehensive information for the

readers. Overall, participants became highly competent ($\bar{X}$ =4) after participating in online research training. If the teachers are highly competent in conducting action research due to their participation, they can do it independently.

Table 7. Data Analysis and Presentation Competencies Before and After the Online Research Training

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
1. I can read, describe, and classify research data in preliminary and iterative processes before moving on to data analysis.	2	1	MC	4	2	HC
2. I can analyze collected data dependably and accurately.	2	1	MC	4	1.50	HC
3. I can appropriately select the correct statistical test for parametric and nonparametric data to address validity challenges.	2	1	MC	4	1	HC
4. I can interpret quantitative data, irrespective of whether the test pertains to descriptive or inferential analysis.	2	1	MC	4	2	HC
5. I can discern emergent themes using inductive analysis when examining qualitative data.	2	1	MC	4	1	HC
6. I can create visual representations that facilitate the comprehension of information for the reader.	2	1	MC	4	1	HC
7. I can deduce the fundamental meaning or significance of the data.	2	1	MC	4	1	HC
Overall	2	1	MC	4	1.25	HC

Table 8 depicts the participants' action research competencies for technology utilization before and after attending the online research training. Before, participants were moderately competent in using technology to write action research papers. They found it challenging to use online applications, statistical software, and qualitative data analysis software. However, after joining the research training, they became highly competent ($\bar{X}$=4) in using websites for literature searches, Grammarly checking software, statistical software, qualitative data analysis software, and anti-plagiarism software. The said training allowed them to use the software properly in the workshop, allowing them to explore and experience software applications practical for research activities. Also, hands-on workshops using data analysis software are included in the training because of insufficient skills in utilizing digital technology.

Table 8. Technology Utilization Competencies Before and After the Online Research Training

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
1. I can use different search engines to investigate	2	0	MC	4	1	HC

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
websites as sources to review relevant literature.						
2. I can use the websites to find related literature and studies.	2	1	MC	4	1	HC
3. I am comfortable using a computer MS Office application for research activities.	2	1	MC	4	1	HC
4. I can use computer application software to make a reference list.	2	.25	MC	4	.25	HC
5. I can use grammar-checking software while writing my research paper.	2	0	MC	4	1	HC
6. I can analyze qualitative and quantitative data using computer application software.	2	1	MC	4	1	HC
7. I can use anti-plagiarism checking software.	2	.25	MC	4	1	HC
Overall	2	1.50	MC	4	1	HC

Table 9 shows the participants' action research competencies for reflection and result dissemination before and after attending the online research training. Before, participants were moderately competent in writing the reflection and disseminating the research findings. They found it difficult to reflect on their actions, construct action plans and financial reports, and are not familiar with writing action research reports and submitting them for publication. However, after joining the training, they became highly capable of reflecting on their practices, writing the terminal report based on the prescribed format from the DepEd with complete parts, and presenting action research papers in conferences, forums, or meetings. In addition, they became familiar with academic writing for publication using conventional style and submitted to a journal publication. Overall, they became highly competent ($\bar{X}$=4) in reflecting practices and disseminating research findings. Therefore, online research training effectively enhances public school teachers' action research competencies.

Table 9. Reflection and Result Dissemination Competencies Before and After the Online Research Training

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
1. I can reflect on the results of my actions in research.	2	1	MC	4	1	HC
2. I can design an action plan and financial report based on my research findings.	2	1	MC	4	.25	HC
3. I am familiar with the fundamental organizational structure of an action research report.	2	1	MC	4	1	HC
4. I am familiar with academic writing guidelines and style conventions.	2	1	MC	4	2	HC
5. I can compose the action research report in an academic writing style.	2	1	MC	4	1	HC
6. I can present my action research paper in forums,	2	1	MC	4	2	HC

Statement	Before			After		
	$\bar{X}$	IQR	VI	$\bar{X}$	IQR	VI
conferences, or meetings.						
7. I can publish action research papers in journals and at conferences.	2	1	MC	4	2	HC
Overall	2	1	MC	4	1.50	HC

Table 10 presents the significant difference and effect size of the participants' action research competencies before and after the online research training. The Wilcoxon signed rank test justifies the existence of significant differences (p=.000) between the participants' action research competencies before and after. It shows that the action research competencies were enhanced after joining the online research training in terms of researchable topic selection, action research project planning, research ethics, data analysis and presentation, and reflection and result dissemination. Moreover, the effect size justifies the strong practical significance of online research training. Therefore, the online research training must continue for the subsequent implementation.

Table 10. Significant Difference and Effect Size of the Participants' Action Research Competencies Before and After the Online Research Training

Variable	Wilcoxon W	p-value	Interpretation	Effect size	Interpretation
researchable topic selection	1883	.000	Significant	.991	Strong
action research project planning	1770	.000	Significant	1	Strong
research ethics	1830	.000	Significant	1	Strong
data analysis and presentation	1883	.000	Significant	.992	Strong
technology utilization	1881	.000	Significant	.989	Strong
reflection and result dissemination	1755	.000	Significant	.983	Strong

Figure 2 shows the participants' suggestions to improve online research training.

Figure 2. Suggestions for the Improvement of Online Research Training

Participants suggested having more training time for writing a research paper with peer review exercises to develop their critiquing skills. Also, more examples of each part of the research report must be provided during the training so that they become familiar with it. Hence, face-to-face training is also suggested, with more time allocated for proposal presentation so that many participants can present their proposals.

Excerpts from the interview transcripts support the findings above.

> "Conduct peer review exercises to help participants learn from each other." – Teacher 1
>
> "I would suggest to have more enough time for the presentation of the proposal so that we could hear more insights and suggestions from the critiquing team." – Teacher 18

Table 11 presents the action research proposal presented by the teachers during the proposal presentation. The education program supervisors critically examined twelve proposals to improve their content, clarity of writing, and proper execution of actions once they implemented them. Four proposals were aligned in Filipino subjects: two for mathematics, one for science, two for social studies, one for health, and two for technology and livelihood education. Of these, eleven were under teaching and learning themes, while one was under school governance.

Table 11. Titles of the Action Research Proposal Presented by the Participants

No.	Title	Author/s	School
1	PAGSUBAYBAY: Pagpapaunlad ng Kasanayan sa Pagsulat at Pagbaybay ng Wikang Filipino sa Ikawalong Baitang	Liliosa I. Mequiz	Pacita Complex National High School
2	Pagtataya sa Paggamit ng Grapikong Pantulong sa Pagbasa ng Teksto: Isang Mungkahing Interbensyon	Jainahbel R. Visey & Cristina A. De Leon	San Pedro Relocation Center National High School
3	Tatlumpung Araw ng Masayang Pagbasa (TAMP): Interbensyon para sa mga Mag-aaral na may Mababang Kasanayan sa Pagbasa	Ma. Michelle V. Valles	Pacita Complex National High School
4	Proyektong 4P's (Pampleto ng Pinakaunang Panulat ng Pilipino): Interbensyon sa Kalinangan ng Pagbasa at Pagsulat	Jhenny Mae J. Zamora & Marissa C. Joren	Pacita Complex National High School
5	Game-Based Activities as a Strategy in Improving Learners' Mathematical Performance and Engagement	Daniel M. Macandog	San Pedro Relocation Center National High School
6	Effectiveness of Targeted Interventions in Improving the Mathematics Performance of Grade Six Learners	Lito A. Panganiban	Southville 3A Elementary School
7	Flipping the Script: Enhancing Student's Engagement and Academic Achievement in Science Through Flipped Classroom Instruction	Mark Anthony E. Gahite	Calendula National High School
8	Optimizing School Garden Watering Systems: A	Michelle S.	Calendola National High

No.	Title	Author/s	School
	Proposed Autonomous Gardening Robot in Addressing Plant Needs	Matusalem, Lily D. Nalicat, & Lorna A. Legaspi	School
9	Enhancing Grade 7 Students' Academic Performance in Araling Panlipunan Through Flash Card Games	Cherrie C. Manaloto	San Pedro Relocation Center National High School
10	Tracking Dietary Habits: A Longitudinal Study on How BMI is Affected by Different Factors	Hersey Lou Manio	Southville 3A Elementary School
11	Project REAL: Remedial Enhancement Activity for Learners	Filemon Cesar & John Darwin M. Labian	Calendola National High School
12	Summary with Reflection: A Reflective Assessment of Student Learning in Personal Development	Clarissa A. Benigno, Kayeden M. Cubacob & Janeth M. Baal	San Pedro Relocation Center National High School

Discussion

The study aimed to enhance the action research competencies of public school teachers through online research training. The study was conducted in San Pedro City, where sixty-four school teachers voluntarily and completely participated. The questionnaire measured the action research competencies before and after participation, while a semi-structured interview was used to elicit the participants' suggestions to improve the online research training. In addition, an evaluation form was used to collect pieces of evidence of the effectiveness of the said training.

Teachers' action research competencies were moderated before they joined the online research training. However, they became highly competent after completing the training. Through online research training, they became equipped with research knowledge, skills, and a proper attitude in conducting action research and widened their insight on how to write the action research proposal and report. Similarly, the workshop empowered them to use data analysis software for quantitative and qualitative data. Teacher training allows teachers to acquire research competencies to develop research projects independently (Tirol et al., 2022).

A significant difference was found in teachers' action research competencies before and after joining the online research training. Therefore, online research training effectively enhanced public school teachers' action research competencies, parallel to Morales et al. (2016) and Tirol et al. (2022) findings. Both technical and cognitive competencies were developed through research training (Vasquez-Martinez et al., 2022). Also, hands-on workshops using data analysis software were included in the training because of insufficient skills in utilizing digital technology, supporting the findings of Lindberg et al. (2017), Moltudal et al. (2019), and Samad et al. (2016). Research training enhanced teachers' research competencies, supporting Murray et al.'s (2022) findings.

If the teachers are highly competent in conducting action research due to training participation, they can do it independently (Cortes et al., 2021). Similarly, the participants evaluated the online research training as highly effective since they gained competencies supporting Sancar et al. (2021) and Perines' (2021) findings. In addition, the provision of action research templates, coaching, and mentoring sessions complements the acquired research skills because training was not enough to enhance teachers' skills (Albalawi & Johnson, 2022). Training with mentoring and coaching improves teachers' research strengths and addresses areas of improvement (Basilio & Bueno, 2019).

The participants' suggestions were elicited to improve the online research training, such as providing peer review exercises with more examples of each part of research manuscripts, face-to-face training with more extended time, similar to the findings of Anzaldo and Cudiamat (2019), and more time for action research proposal presentation. Hence, the participants submitted action research proposals to manifest acquired action research competencies and were critically examined by the education program supervisors.

The researcher admitted that the online research training was not perfect, and lapses were identified, such as limited days for the training, limited time, and few examples of research papers. Therefore, for the following research training, a combination of face-to-face and online training will be conducted over a more extended period, and a one-day proposal presentation will be conducted to ensure that all participants have a slot to present their action research proposal. Similarly, more examples of completed action research reports will be presented with workshops in writing, aside from software applications.

Through the lens of self-efficacy theory, public school teachers became confident in conducting and completing their action research work if they had a high degree of competency (Pamatmat, 2016). Online research training enhanced the teachers' research competencies because their self-efficacy in conducting research was also enhanced. Through training, teachers' self-efficacy increases and solidifies (Hatlevik, 2017). Therefore, the study supported the importance of enhancing the self-efficacy of public school teachers to empower them to do specific tasks or achieve goals. This contributes to the self-efficacy theory that online research training enhances teachers' self-efficacy, which motivates them to pursue research work. On the other hand, through self-concept theory, enhancing self-view enhances research competence in conducting research work. The competence of teachers is based on their self-views (Lamar et al., 2019).

Practically speaking, online research training equips teachers to become confident in executing and continuing action research work independently. Hence, online = research training contributes to public school teachers' self-efficacy and self-view enhancement in conducting action research. Teachers who are confident in conducting action research possess a high level of competency in finishing their work and sharing it with others for critiquing. The study was limited to one city and involved public school teachers as participants. Private school teachers are excluded since they are not expected to conduct action research. Due to budget constraints, the training is conducted online to make it accessible to all targeted teachers. In addition, the online = research training is conducted on Saturdays to avoid disrupting classes from Monday to Friday. Hence, challenges in writing an action research proposal or conducting action research are not part of the study.

Conclusions

Before joining the online research training, the teachers were moderately competent in researchable topic selection, action research project planning, research ethics, data analysis and presentation, and reflection and result dissemination. However, they became highly competent after joining. Therefore, the participants' action research competencies improved after the online research training. However, they suggested having more time for writing and face-to-face training with more time for proposal presentations. Also, they wanted to have peer review exercises during the training and more examples on each part of the research paper. As the output of the said training, action research proposals produced by the participating teachers are collected, which are eleven classroom-based action research projects under the teaching and learning theme, and one for school governance.

Recommendations

The online training lasted for five months and included the provision of research templates, coaching, and mentoring. Based on the lapses, a more extended implementation period may be conducted in version two of the research training with face-to-face sessions. Therefore, school administrators may motivate their teachers to consistently join in training sessions and provide technical assistance to the teachers. Similarly, the DepEd officials may craft programs and projects to motivate the teachers to conduct action research and constantly promote research training. However, future researchers may conduct a study parallel to the present study using qualitative research to understand the participants' experiences deeply.

Acknowledgements

The researcher thanks SDO San Pedro City for allowing division-wide action research to ignite the passion of teachers in action research. Also, thank you to San Pedro Relocation Center National High School for encouraging the researcher to think creatively to make a difference by transforming challenges into learning opportunities. Enrique R. Malimata, Principal IV, thank you for supporting my study and enabling teachers to do educational action research.

I like to recognize the significant efforts of Nicanor A. Limjuico in offering technical support and constructive ideas to improve the study. Lastly, I express my gratitude to all the teachers at SDO San Pedro City who participated in this action research. Your eagerness to understand research methodologies, concepts, and intricacies drives me to extend my expertise to others.

References

Abad, J. V., & Pineda, L. K. (2018). Research training in language teacher education: Reflections from a mentee and her mentor. *Íkala, Revista de Lenguaje y Cultura, 23*(1), 85–98. https://doi.org/10.17533/udea.ikala.v23n01a07

Abad, J. V., Regalado Chicaiza, J. D., & Acevedo Tangarife, I. C. (2023). Pedagogical relationships and identities in research incubators: Reconceptualizing research training for language teachers. *Profile: Issues in Teachers' Professional Development, 25*(1), 17–32. https:// doi.org/10.15446/profile.v25n1.94333

Albalawi, A., & Johnson, L. N. (2022). Action research skills among public school teachers: A cross-cultural study. *International Journal of Research in Education and Science (IJRES),* 8(2), 286-310. https://doi.org/10.46328/ijres.2548 +

Allinder, R.M. (2015). An examination of the relationship between teacher efficacy and curriculum-based measurement and student achievement. Paper presented at the *Remedial and Special Education,16*(4),247-54

Anzaldo, G., & Cudiamat, M. (2019). Teachers' perception in writing action research in a public elementary school in the Philippines. *International Educational Research, 2*(3), 15-22 https://doi.org/10.30560/ier.v2n3p15

Astaneh, B., & Masoumi, S. (2018). From paper to practice: Indexing systems and ethical standards. *Science and Engineering Ethics, 24*, 647–654. https://doi.org/10.1007/s11948-017-9899-x

Basilio, M. B., & Bueno, D. C. (2019). *Research skills and attitudes of master teachers in a division towards capability training.* 19th CEBU Philippine International Conference on Economics, Education, Humanities and Social Sciences.

Chen, CS., & Lin, JW. (2019). A practical action research study of the impact of maker-centered STEM-PjBL on a rural middle school in Taiwan. *International Journal of Science and Mathematics Education*, 17 (1), 85–108, . https://doi.org/10.1007/s10763-019-09961-8

Chevalier, J. M., & Buckles, D. J. (2019). *Participatory action research: Theory and methods for engaged inquiry*. Routledge. https://www.researchgate.net/profile/Daniel-Buckles/publication/331183566_Participatory_Action_Research_Theory_and_Methods_for_Engaged_Inquiry/links/5e99df67a6fdcca789207460/Participatory-Action-Research-Theory-and-Methods-for-Engaged-Inquiry.pdf

Cornell-Pereira, I. (2019). Actividades didácticas que propician la transferencia de conocimientos para su aplicación en la práctica cotidiana. *Revista Conrado, 15*(70), 361–369. https://bit.ly/2Uuw0CP

Cortes, S. T. (2019). Needs assessment on action research competencies of teacher-researchers in Surigao del Sur, Philippines. *Journal of Education Naresuan University, 21(*4), 1-19.

Cortes, S., Pineda, H., & Geverola, I. J. (2020). Development and validation of a scale on teacher's competence in action research. *International Journal of Research Studies in Education, 9*(6), 77-85. https://doi.org/10.5861/ijrse.2020.5041

Cortes, S., Pineda, H., Lorca, A., Gador, S., Mangompit, R., & Pacaldo, F. J. (2021). Examining perception on action research of basic education teachers. *Malaysian Online Journal of Educational Sciences, 9*(2),1-11. https://files.eric.ed.gov/fulltext/EJ1294901.pdf

Cortes, S. T., & Reyes, M. S. Jr. (2021). Challenges in conducting action research: Experiences from Biology teachers of a Province in Mindanao, Philippines. *Journal Pendidikan Progresif, 11*(2), 151-164. https://doi.org/10.23960/jpp.v11.i2.202102

Dağ, N., & Sari, M. H. (2017). Areas of mentoring needs of novice and preservice teachers. *International Electronic Journal of Elementary Education, 10*(1), 115–129. https://doi.org/10.26822/iejee.2017131892

Damşa, C. (2018). Research and development tasks in teacher education: Institutional framing and student experiences. In Reconfiguring Knowledge in Higher Education (pp. 149-167). Cham, Switzerland: Springer. https://doi.org/10.1007/978-3-319-72832-2_9

DepEd Order No. 43, s. 2015 – Revised guidelines for the Basic Education Research Fund (BERF). https://www.deped.gov.ph/wp-content/uploads/2015/09/DO_s2015_43.pdf

Dewi, I. F. (2021). A mentoring-coaching to improve teacher pedagogic competence: An action research. *Journal of Education, Teaching and Learning, 6*(1), 1-6. http://dx.doi.org/10.26737/jetl.v6i1.2270

Fitria, H., Kristiawan, M., & Rahmat, N. (2019). Efforts to improve teacher competence through classroom action research training. *Abdimas Unwahas, 4*(1), 14–25. https://publikasiilmiah.unwahas.ac.id/index.php/ABD/article/viewFile/2690/2651

Garcés, A. Y. C., & Granada, L. M. (2016). The role of collaborative action research in teachers' professional development. *Profile: Issues in Teachers' Professional Development, 18*(1), 39-54. https://revistas.unal.edu.co/index.php/profile/article/view/49148

Gholam, A. (2018). A mentoring experience: From the perspective of a novice teacher. *International Journal of Progressive Education, 14*(2), 1–12. https://doi.org/10.29329/ijpe.2018.139.1

Hatlevik, O. E. (2017). Examining the relationship between teachers' self-efficacy, their digital competence, strategies to evaluate ınformation and use of ICT at school. *Scandinavian Journal of Educational Research, 61*(5), 555–567. https://doi.org/10.1080/00313831.2016.1172501

International Coaching Federation (2020). Global coaching study. https://coachingfederation.org/research/global-coaching-study

James, F., & Augustin, D. S. (2017). Improving teachers' pedagogical and instructional practice through action research: Potential and problems. *Educational Action Research, 26*(2), 333-348. https://doi.org/10.1080/09650792.2017.1332655

Jugar, R., & Cortes, S. (2022). Embedding action research in Philippine teacher education. In M. S. Khine & Y. Liu (Eds.), *Handbook of research on teacher education* (pp. 703-719). Singapore: Springer.

Khan, R., Grijalva, R., & Enriquez-Gates, A. (2019). Teachers as change agents: Promoting meaningful professional development using action research to support international educational reform. *FIRE: Forum for International Research in Education, 5(*2). https://doi.org/10.32865/fire201952167

Kho, M. G.W., & Ling, Y. L. (2017). A study of perception and capability to undertake action research among lecturers at a Polytechnic in Sarawak. *Teacher Education and Curriculum Studies, 2*(4), 41-46. http://bit.ly/2O99ivV

King O. A., Wong Shee, A., Howlett, O., Clapham, R., & Versace, V. L. (2022). Research training incorporating education and mentoring for rural and regional allied health professionals: An evaluation study. *Australian Journal of Rural Health, 30,* 654–665. https://doi.org/10.1111/ajr.12879

Kuo, N.C. (2015). Action research for improving the effectiveness of technology integration in pre-service teacher education. *Inquiry in Education, 6*(1). https://www.learntechlib.org/p/192229

Lamar, M., Clemens, E., & Dunbar, A. S. (2019). Promoting doctoral student researcher development through positive research training environments using self-concept theory. *The Professional Counselor, 9*(4), 298–309. https://files.eric.ed.gov/fulltext/EJ1237595.pdf

Lindberg, O., Olofsson, A., & Fransson, G. (2017). Same but different? An examination of Swedish upper

secondary school teachers' and students' views and use of ICT in education. *The International Journal of Information and Learning Technology, 34*(2), 122–132. https://doi.org/10.1108/IJILT -09-2016-0043

Macabago, S. M. (2017). *Teachers' motivation, attitude, perceived capability, and difficulty to conduct action research: A basis for intervention plan for public elementary school teachers (unpublished thesis*). Malaybalay City, Bukidnon: Bukidnon State University

Mapa, D. S. (2017). *Research culture in the Philippines.* Presented during the National Academy of Science and Technology, Philippines (NAST PHIL).

Mertler, C. A. (2021). Action research as teacher inquiry: A viable strategy for resolving problems of practice. *Practical Assessment, Research, and Evaluation: 26*,(19), 1 - 12. https://scholarworks.umass.edu/pare/vol26/iss1/19

Morales, M. P., Abulon, E. L., Soriano, P. R., David, A. P., Hermosisima, M. V., & Gerundio, M. G. (2016). Examining teachers' conception of and needs on action research. *Issues in Educational Research, 26*(3), 464-489. https://doi.org/10.1080/13674589700200009

Moltudal, S., Krumsvik, R., Jones, L., Eikeland, O. J., & Johnson, B. (2019). The relationship between teachers' perceived classroom management abilities and their professional digital competence. *Designs for Learning, 11*(1), 80–98. https://doi.org/10.16993/df.128.

Murray, H., Payandeh, J., & Walker, M. (2022). Scoping review: Research training during medical school. *Medical Science Educator, 32*, 1553–1561. https://doi.org/10.1007/s40670-022-01679-7

Murillo, F. J., Perines, H., & Lomba, L. (2017). The communication of educational research. An approach to the relationship between research, its dissemination and teaching practice. *Teachers Journal of Curriculum and Teacher Training, 21*(2), 182-200

Pamatmat, F. V. (2016). Research attitudes of teaching personnel in one Philippine State University: Basis for development and sustainability towards excellence. *Research Journal of Language, Literature and Humanities, 3*(3), 12-17. https://bit.ly/3bKIYiF

Pang, N. S.-K. (2020). Teachers' reflective practices in implementing assessment for learning skills in classroom teaching. *ECNU Review of Education,* pp. 1–21. https://doi.org/10.1177/2096531120936290

Pennington, S. E. (2015). Inquiry into teaching: Using reflective teaching to improve my practice. Networks: *An Online Journal for Teacher Research, 17*(1). https://files.eric.ed.gov/fulltext/EJ1152296.pdf

Perines, H. (2021). Educational research training in teacher training programs: The views of future teachers. *International Education Studies, 14*(1), 76-85. https://doi.org/10.5539/ies.v14n1p76

Perines, H., & Murillo, F. J. (2017). Percepciones de los docentes en formación sobre la investigación educativa. *Estudios Pedagógicos (Valdivia), 43*(1), 251-268. https://doi.org/10.4067/S0718-07052017000100015

Pineda, H., Lorca, A., Cortes, S., Gador, S., Mangompit, R. M., Pacaldo, F. J., & Lorca, E. (2022). Development and evaluation of a professional development program on designing participatory action research projects for basic education teachers. *Advanced Education, 21*, 161-184. https://doi.org/10.20535/2410-8286.266663

Reisoğlu, İ. (2021). How does digital competence training affect teachers' professional development and activities? *Technology, Knowledge and Learning.* https://doi.org/10.1007/s10758-021-09501-w

Republic Act No. 9155. (2001). An act instituting a framework of governance for basic education, establishing authority and accountability, renaming the Department of Education, Culture and Sports as the

Department of Education, and for other purposes. https://www.officialgazette.gov.ph/2001/08/11/republic-act-no-9155/

Rose, R., Narayan, J., & Malkani, R. (2024). The impact of short-term training in qualitative research methods delivered to emerging researchers in disability education in India. *Asian Journal of Education and Training, 10*(2), 104–109. https://doi.org/10.20448/edu.v10i2.5619

Roxas-Soriano, P., Morales, M.P.E., & Reyes, W.S.(2020). Profiling the research culture of Philippine higher education institutions. *EDUCARE: International Journal for Educational Studies, 13*(1). https://doi.org/10.2121/edu-ijes.v13i1.1337.g1163

Russo, D. (2016). Competency measurement model. *European Conference on Quality in Official Statistics.* https://www.ine.es/q2016/docs/q2016Final00276.pdf

Samad, R. S. A., Wahab, H. A., Othman, A. J., & Ali, S. K. S. (2016). Teachers' skill and information and communication technology integration in teaching and learning process. *Advanced Science Letters, 22*(8), 2066–2069.

Sancar, R., Atal, D., & Deryakulu, D. (2021). A new framework for teachers' professional development. *Teaching and Teacher Education, 101*, 103305. https://doi.org/10.1016/j.tate.2021.103305

Stockemer, D. (2019). Quantitative methods for the social sciences: A practical introduction with examples in SPSS and Stata. Springer. https://link.springer.com/book/10.1007/978-3-319-99118-4

Stowell, F., & Kramarova, P. (2022). Virtual action research: Two examples. *Systemic Practice and Action Research*. https://doi.org/10. 1007/s11213-022-09620-0

Tirol, S., Cortes, S., Tinapay, A., & Samillano, J. (2022). A teacher training program on designing participatory educational action research proposal. *Ho Chi Minh City Open University Journal of Science - Social Sciences, 12*(1), 23-40. https://doi.org/10.46223/hcmcoujs.soci.en.12.1.2214.2022

Toquero, C. M. D. (2020). Real-world: Pre-service teachers' research competence and research difficulties in action research. *Journal of Applied Research in Higher Education, 13*(1), 126–148. https://doi.org/10.1108/jarhe-03-2019-0060

Tulung, J. M., Waney, M., Mailool, J., Rogahang, H. J., Weol, W., & Wuwung, O. (2022). Teachers' difficulties in implementing classroom action research: Experiences of elementary school teachers. *Cypriot Journal of Educational Science, 17*(6), 1957-1971.https://doi.org/10.18844/cjes.v17i6.7486

Ulla, M. B. (2018). Benefits and challenges of doing research: Experiences from Philippine public school teachers. *Issues in Educational Research, 28*(3), 797-810.

Ulla, M. B., Barrera, K. I., & Acompanado, M. B. (2017). Philippine classroom teachers as researchers: Teachers' perceptions, motivations, and challenges. *Australian Journal of Teacher Education, 42*(11), 52-64. https://doi.org/10.14221/AJTE.2017V42N11.4

Vasquez-Martinez, C. R., Flores-Cuevas,F., Gonzalez-Gonzalez, F. A., Zuñiga-Medina, L. M., Arjona-Ulloa, M., & Torres-Mat. J. (2022). Reflections on the training of researchers in the development of educational competencies. Towards the Next Epoch of Education. In BCES Conference Books, 2022, Volume 20. Sofia: Bulgarian Comparative Education Society, pp. 145-150.

Wong, S. C. (2020). Competency definitions, development, and assessment: A brief review. *International Journal of Academic Research in Progressive Education and Development 9*(3):95–114. https://doi.org/10.6007/IJARPED/v9-i3/8223

Wilcox, R. (2019). A robust nonparametric measure of effect size based on an analog of Cohen's d, plus inferences about the median of the typical difference. *Journal of Modern Applied Statistical Methods, 17*(2), eP2726. https://doi.org/10.22237/jmasm/1551905677