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ORIGINAL ARTICLE

# Harmonizing Educational Action Research for Teachers: Means for Developing the Action Research Culture

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**Ethical Statement**
Approval from the school head was secured. Informed consent was distributed. Confidentiality of data was strictly followed.

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No conflict of interest is present in the conduction or the reporting of this study.

**ABSTRACT**

Some public school teachers could conduct action research despite the training they have received before. In the Philippine local context, San Pedro Relocation Center National High School teachers could not conduct action research due to misguidance and low research competence. So, a school-based project HEART (Harmonizing Educational Action Research for Teachers), was conceptualized and implemented through capacity-building training, providing action research templates in English and Filipino versions, leadership support, presentation and critique of action research proposals, and mentoring and coaching sessions. This study aimed to capacitate teachers in basic education by employing Project HEART to build an action research culture. The project was conducted for ten months, employing a practical action research design. Forty teachers voluntarily participated in the said teachers' capacity-building training for four days, received technical assistance and were mentored. Then, the data were collected through a survey questionnaire, an evaluation form, and interview guide questions validated by a group of education experts. After the participation, teachers were highly competent in conducting action research regarding selecting a researchable topic, planning an action research project, integrating research ethics, analyzing and presenting data, utilizing technology, and reflecting on and communicating results. Also, the said project was evaluated as highly effective by the participants. Hence, teachers could conduct action research as a manifestation of developing an action research culture in a public school. However, the participants suggested having more training with a longer time focusing on specific school problems and a research presentation of completed action research within the training. The study suggested that an action research culture can be developed if properly harmonized through the capacity-building of teachers with constant technical assistance, persistent mentoring and coaching, and support from school administrators.

**Keywords:** Action Research, Basic Education, Research Culture, Secondary Teachers

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## INTRODUCTION

Nations across the globe strive to achieve a standard of education of superior quality and align with the demands and challenges associated with industrial-innovative progress. This endeavor involves a focused approach and substantial investment in enhancing the research capabilities of educators (Amirova et al., 2020). Multiple global studies have provided evidence suggesting that teachers lack the necessary research competency and encounter difficulties conceptualizing research (Çelebi, 2021; Toquero, 2021). However, there have been global initiatives aim at enhancing the research capabilities of educators in response to the growing demand for novel knowledge on a worldwide scale (Evardo & Abina, 2023).

Within the field of education, research has frequently been seen as a complex undertaking and challenging to execute (Bullo et al., 2021). Teacher research has been seen mainly at the college and graduate levels but not in basic education. Eventually, the research culture has been established among academicians at the university level but not in basic education (Iqbal et al., 2018; Patel, 2016). Research culture in basic education seems at the infancy level and requires various initiatives and undertakings. The research activities of teachers at the secondary education level primarily reflect upon the instructional practices implemented by teachers (Fitria et al., 2019).

On the other hand, action research is a potent and exploratory approach that enables teachers to investigate educational issues and enhance their teaching practices (Cortes et al., 2020). Action research supports teachers' professional growth, empowers them, and connects research and practice gaps. (Tirol et al., 2022). Hence, classroom-based action research is an essential tool that allows teachers to determine the best teaching practices for their learning classes to improve students' academic performance. However, teachers should work hard to find what works best for their students' learning (Tulung et al., 2022). During the action research execution, teachers identify shortcomings in their pedagogical practice, reflect, and develop plans to address the identified areas of improvement. Fortunately, action research works have yet to be conducted in K to 12 classrooms (Albalawi & Johnson, 2022).

In the context of the Philippines, Republic Act 9155 Chapter 1, Section 7(5) mandates enhancing educational research in basic education. This legislation mandates the Department of Education (DepEd) to undertake educational research and studies to provide a foundation for necessary reforms and the development of policy recommendations. DepEd Order No. 43, s. 2015, also known as the Revised Guidelines for the Basic Education Research Fund (BERF), emphasizes the importance of evidence-based policy creation. Furthermore, the DepEd initiated the provision of research financing via BERF following DepEd Order No. 24, s. 2010. Conversely, a key provision outlined in the Enhanced Basic Education Act of 2013 (Republic Act 10533) pertains to the provision of a curriculum that is pertinent, adaptable, and grounded in scholarly inquiry. This implies that educational institutions under DepEd must foster a research culture throughout all grade levels, from kindergarten to twelfth grade. However, research productivity in basic education is scarce due to less involvement of teachers in conducting action research (Cortes et al., 2021).

Reform initiatives in the Philippines to promote action research have aligned with worldwide trends (Tirol et al., 2022). Most action research programs are found in colleges and universities (Jugar & Cortes, 2022; Cortes & Reyes, 2021) but are limited to basic education. However, despite the initiatives mentioned above to promote research endeavors, DepEd needs to work on effectively motivating teachers to engage in research. Despite implementing various programs and efforts, teachers need help engaging in action research (Tirol et al., 2022). The question that remains to be answered and continues to persist is the reason behind the limited participation of a few teachers in research activities (Mapa, 2017). Their research proficiency needs to be developed (Cortes & Reyes, 2021; Wong, 2020). Also, teachers need to become

more familiar with action research (Mertler, 2021). So, conducting a study on developing the action research culture in basic education is timely, as few studies have been conducted in the past decades.

In the local context, San Pedro Relocation Center National High School is a public school with 220 teachers and 6,300 students in San Pedro City for school year 2023-2024 that offers secondary education. Yearly, it has produced little action research outputs for four decades. Despite its large population, four completed action studies are produced for the last school year, manifesting the poor research culture. The school's research culture must be well-established and requires a driving force to motivate and capacitate the teachers to pursue action research. Teachers must be more confident and capable of executing action research methods to address classroom and school problems (Morales et al., 2016). They have various views on conducting action research, which led to confusion and challenges in starting an action research proposal. So, to address the problem, Project HEART (Harmonizing Educational Action Research for Teachers) is conceptualized and implemented. Through the said project, teachers become equipped with confidence and enthusiasm to conduct action research and write the terminal report following the prescribed format of DepEd.

The study delves into building a research culture at the basic education institution through a project with a professional development training program that capacitates the participants in conducting and writing action research. Teachers' training makes the participants learn or update (Kennedy, 2014). The project highlights how the ground-level initiative ignites the passion and dedication to teaching and improving teaching practices through action research. This study filled the literature gap of developing a research culture in basic education through a project composed of training, provision of research templates, leadership support, presentation and critiquing of action research proposal, mentoring, and coaching sessions.

## Literature review

Action research allows teachers to uncover problems that directly affect the teaching-learning process. By actively doing action research, teachers can discuss the instructional techniques they employ within their classrooms to positively influence students' academic performance and enhance their professional development (Khan et al., 2019). The enhancement of teachers' practices through action research is apparent in various aspects of education like pedagogy and instruction (Cortes et al., 2020; James & Augustin, 2017; Pennington, 2015), technology integration (Kuo, 2015), and assessment (Pang, 2020).

Action research is based on critical constructivism principles that connect the research, production of knowledge, and teaching (Steinberg, 2014). Teacher researchers construct knowledge based on critical reflection on personal experiences (Khan et al., 2019). Teachers are empowered to examine their teaching practices and make necessary improvements to cater to the students' diverse learning needs. It is necessary for teachers because it will position them at the center of research-into-practice and provide them with an intentional and systematic approach to enhancing their technological, pedagogical, and content knowledge and modifying their teaching practices (Manfra, 2019).

In Philippine public schools, engaging in classroom-based research has benefited teaching practice and career development (Ulla, 2018), allowing teachers to discover new teaching techniques and strategies to deliver instruction effectively (Ulla et al., 2017). Also, conducting action research assists teachers in identifying student needs and resolving immediate difficulties in the classroom or school (Morales et al., 2016). However, Anzaldo and Cudiamat (2019) recommended substantial capacity training programs for public school teachers via seminar workshops, but Cortes et al. (2021) suggested professional development programs for teachers. So, teachers must receive capacity-building programs

to conduct action research properly and write the results following the standard academic writing style. Helping the teachers to become equipped with the research competencies needed means empowering them to become catalysts of educational reforms. However, the teachers' action research pieces of training can be more extensive and better documented (Morales et al., 2016).

Research competency describes the capacity of individuals, organizations, and systems to carry out and distribute research of superior quality effectively and efficiently (Kho & Ling, 2017; Macabago, 2017). It is often considered that teachers need more ability to conduct, utilize, and disseminate research effectively. However, teachers must receive assistance from DepEd agencies as stated in DepEd's fourth MATATAG component (Department of Education, 2023). So, the school administrators must provide technical assistance and leadership support in uplifting the teachers' research competencies.

On the other hand, teachers' competencies in doing action research are characterized by identifying the researchable topic, developing an action research project, gathering, analyzing, and presenting data, applying technological tools, integrating ethics, and reflecting and disseminating the research results (Cortes, 2019; Cortes et al., 2021; Morales et al., 2016). Cortes et al. (2021) identified the above competencies as critical areas that require teachers' professional development through training programs. The research competencies make the teacher confident to execute research activities independently, following the principles, rules, and standards.

### *Theoretical and Conceptual Framework*

The study is based on Bandura's self-efficacy theory, which highlights that a person's belief or conviction impacts how successfully they can complete a specific job or objective. Teachers' beliefs influence their perceptions and judgments, influencing their classroom behavior and instructional practices (Allinder, 2015). This suggests that when teacher-researchers have a high level of competency toward research, they are confident in carrying out and completing the research work (Pamatmat, 2016). Teachers' research qualities, abilities, and motivation are determined by their self-efficacy in conducting research. If a teacher's degree of research self-efficacy is appropriately assessed, their research strengths and areas for improvement can be better understood and addressed through training and mentoring (Basilio & Bueno, 2019). Mentoring and supportive connections can assist teachers in innovating, solving problems, and maintaining momentum in their efforts to enhance their teaching practices (Mertler, 2021).

The researcher proposed Project HEART (Harmonizing Educational Action Research for Teachers) aimed to promote the culture of action research in San Pedro Relocation Center National High School through teachers' action research capacity-building training, providing action research templates in English and Filipino versions, leadership support, presentation and critiquing of action research proposals, and mentoring and coaching sessions. The said project was approved by the schools division superintendent of the Schools Division Office (SDO) of San Pedro City. In Figure 1, the project's first phase was the teachers' school-based training on writing action research with four sessions by competent SDO San Pedro City research speakers. All interested teachers were voluntarily invited to the training to equip them with research competencies. Developing teachers' action research competencies is essential to building research practice in a school through teacher training and mentoring (Tulung et al., 2022). So, a teachers' training program was the first step in equipping them. In the teacher training program, the teachers gained knowledge and skills about the formulation and execution of action research projects to develop the status of independent researchers in their respective professional practices (Tirol et al., 2022). Below is the training matrix of the said project for teachers' capacity-building training, which

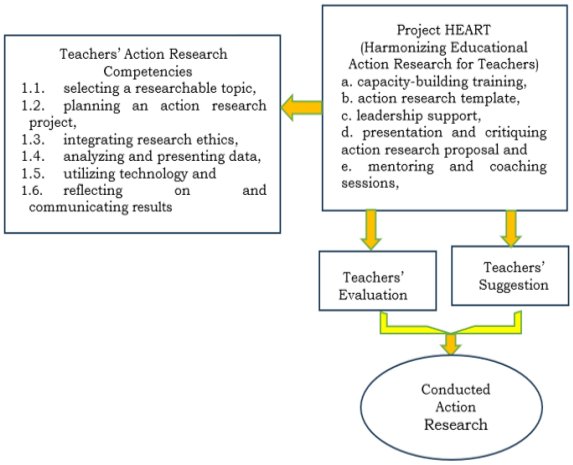
was delivered by the supervisors, a school head, and a research coordinator. The topics were taken from the needs analysis of the participants to acquire action research competencies.

**Table 1.** Training matrix for teachers' capacity-building training

| Date & Time | Objectives | Topic | Expected output |
|---|---|---|---|
| October 25, 2023<br>1:00 PM – 5:00 PM | 1. Equip teachers with essential knowledge, skills, and attitudes toward conducting action research.<br>2. Be oriented with the action research journey. | • Educational Actional Research – Definition, Legal Basis, Purpose, Characteristics, Types, & Models<br>• Educational Action Research Journey | • Gap analysis<br>• Decision-making model<br>• Research Title |
| October 26, 2023<br>1:00 PM – 5:00 PM | 1. Gain writing skills in writing an action research proposal.<br>2. Be familiar with the research tools, citation, and referencing. | • Writing Context and Rationale, Innovation, Intervention, and Strategy, and Action Research Questions<br>• Writing Action Research Methods, Proper Citation, and References | • Action research proposal |
| March 13, 2024<br>1:00 PM – 5:00 PM | 1. Utilize data analysis software.<br>2. Gain writing skills in writing an action research report. | • Quantitative Data Analysis using Jamovi with Interpretation Using ChatGPT<br>• Writing Discussion of Result and Reflection, Conclusion and Recommendation, Timetable, Cost Estimates, Action plan, and Plan of Dissemination and Advocacy | • Data analysis plan<br>• Timetable<br>• Cost Estimates<br>• Action plan<br>• Plan of Dissemination and Advocacy |
| March 14, 2024<br>1:00 PM – 5:00 PM | 1. Build a group of research practitioners capable of disseminating their research outputs.<br>2. Gain research presentation skills | • Presentation and critiquing the action research proposal | • Revised action research proposals and terminal reports |

The second phase provided coaching, mentoring, and leadership support to the participants on writing and conducting action research using the provided research template. Action research is challenging for teachers (Albalawi & Johnson, 2022). So, technical assistance was provided to the participants to ensure the proper execution of research methods and creative writing of action research reports. Tulung et al. (2022) found that teachers have experienced difficulties in conducting action research due to inadequate knowledge, so technical assistance from the experts was crucial in guiding the research journey of the teachers. Hence, project participants' evaluation and suggestions for improvement were considered in refining the project for the next implementation cycle. Also, an action plan as part of the completed action research was expected as output.

**Figure 1.** Conceptual paradigm




Research culture occurs when school community members expect, discuss, generate, and appreciate research similarly (Hanover Research, 2014; Iqbal et al., 2018). Teachers create norms and ideas that promote the constant conduct of research and the development of high-quality outputs to instruct and serve the general public. (Roxas-Soriano et al., 2020). Through Project HEART, teachers can conduct action research and discuss their research projects with other researchers. Also, resources were made available upon the researchers' requests as part of leadership support.

Teachers contribute to research culture when specific characteristics and resources are accessible (Dacles et al., 2016; Mirasol & Inovejas, 2017; Sherab & Schuelka, 2019; Olvido, 2020). However, Hanover Research (2014) enumerated the elements of a positive research culture, such as productive institutional qualities, effective leadership, training and support, research recognition, research centers and programs, and networks and cooperation. So, these various factors are considered in promoting research culture by harmonizing educational action research practices. Also, one of the manifestations of a good research culture is the number of quality research papers produced. The research papers after the teachers' training reflect the effectiveness of the training program. So, the completed action research papers by the end of the school year are used as proof of the project's effectiveness.

Existing literature on research culture development indicates that specific school characteristics contribute to school productivity (Sanchez, 2022). The formation of a research culture encompasses various stages, including planning and process phases, which necessitate incorporating essential components to foster growth and advancement (Olvido, 2020). The components encompass various factors, such as the allocation of time, active participation of teachers, a conducive group environment, favorable working conditions, effective organizational communication, a teacher research capability program, sufficient research funding, and a clearly defined school-based policy regarding research benefits and incentives (Dacles et al., 2016). Hence, a school-based Project HEART establish the research culture by harmonizing research activities, practices, policies, and resources.

### *Research Questions*

The study aimed to capacitate the teachers in basic education by employing Project HEART (Harmonizing Educational Action Research for Teachers) to build the action research culture. Specifically, it answered the following questions:

1. What are the teachers' action research competencies before and after the implementation of Project HEART in terms of selecting a researchable topic, planning an action research project, integrating research ethics, analyzing and presenting data, utilizing technology, and reflecting on and communicating results
2. Is the Project HEART effective in building the teachers' action research competencies?
3. What is the participants' evaluation of the effectiveness of Project HEART's training program?
4. What are the participants' suggestions for improving Project HEART for the next implementation cycle?
5. How does Project HEART build a research culture in basic education based on the action research that has been produced?
6. What are the titles of action research conducted by the teachers who participated in the said project?

# METHOD

## Research Design

The study's design was practical action research that aims to build a research culture by harmonizing educational action research through a school-based project addressing one school's poor action research culture. Action research quickly resolves immediate school or classroom problems (Chen & Lin, 2019; Mertler, 2016; Chevalier & Buckles, 2019; Ulla, 2018). Mainly, practical action research addresses the problem by utilizing local resources within the researcher's capacity (Stowell & Kramarova, 2022) to build a research culture in basic education. So, a practical action research design was the most suitable for this study.

## Setting and Participants

The study participants were teachers from San Pedro Relocation Center National High School for the school year 2023-2024, comprising 40 voluntarily participated research enthusiasts. Voluntary participation was 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 were aged 29 to 60, teaching high school students. Ten had a Bachelor's degree, twenty-two had Master's degree units, and eight had a Master's degree. These individuals underwent training, coaching, mentoring, and leadership support, used the proposed action research proposals, and submitted complete action research reports. Hence, the 40 participants produced a statistical power of .85 with an effect size of .50 to test the hypothesis using the Wilcoxon signed-rank test computed using G*Power version 3.1.9.7.

## Instruments

The first instrument was a survey questionnaire adapted from the work of Cortes et al. (2020) called Teacher's Competence in Action Research. Modifications were made to make the questionnaire suitable to the local context and participants. However, the 6-point scale from 0 to 5 to measure the research competency level was adopted from Russo (2016). It consists of seven demographic variables: age, sex, grade level taught, years of teaching experience, number of completed action research, and number of published research papers. Also, the six research competency levels with eight

statements each were included in the questionnaire. This will measure the participants' competency levels before and after the project.

On the other hand, the second instrument was the evaluation form adapted from the DepEd for a project or program evaluation that aims to elicit participant feedback and suggestions. It has 26 closed-ended questions using a 4-point Likert scale and three open-ended questions. However, the third instrument was an interview guide with five questions that aimed to elicit qualitative responses on how the project HEART builds the research culture in school.

The instruments underwent content validation from experts in education, such as head teachers, school heads, senior education program specialists, and education program supervisors. Content validation is the first quality that needs to be established by carefully examining each item (Ismail & Zubairi, 2022). Hence, experts' suggestions were strictly followed when revisiting the three instruments. Then, reliability indices were computed using Cronbach's alpha to guarantee the questionnaire's internal consistency.

Table 2 depicts the results of reliability testing using Cronbach's alpha. The reliability indices show the internal consistency of the items in the questionnaire. The six variables contain eight interrelated indicators showing the consistency of the responses. This means that the questionnaire was reliable and could be used to elicit data.

**Table 2.** Reliability testing results using Cronbach's alpha

| Variable | n | $\alpha$ | Interpretation |
|---|---|---|---|
| selecting a researchable topic | 8 | .920 | Excellent |
| planning an action research project | 8 | .883 | Good |
| integrating research ethics | 8 | .969 | Excellent |
| analyzing and presenting data | 8 | .919 | Excellent |
| utilizing Technology | 8 | .835 | Good |
| reflecting on and communicating results | 8 | .935 | Excellent |

## Procedure

After securing permission from the school head, a school memorandum was released to call the project participants. Then, during the project's first phase, a pre-survey was administered to measure the teachers' self-perceived competency level, and the result was kept for future comparison. The participants underwent capacity-building training, received action research templates in English and Filipino versions, received leadership support, presented and critiqued their action research proposals, and underwent mentoring and coaching sessions. By the end of the school year, a post-survey and a project evaluation were administered by the second week of May 2024. Also, completed action research reports were collected as the manifestation of research outputs. Then, the interview was conducted with the participants in the third week of May 2024 to elicit qualitative data to support the study's argument. Hence, member checking was employed to establish the credibility of responses. Member checking verifies the accuracy and completeness of qualitative data by returning it to the participants and requesting their approval (Birt et al., 2016).

For positionality, the researcher was the proponent of Project HEART and one of the speakers in the teacher's training. He was the school's research coordinator and advocate of research culture. He has conducted and published several action research articles in various international peer-reviewed journals. He bracketed his ideas and influence over the participants. He set aside his assumptions that the participants would participate totally in the project, be able to produce quality action research reports and render good responses in surveys and interviews. So, whatever the lapses in

the project will be, he wholeheartedly accepts it for improvement.

### Ethical Considerations

Any research work must adhere to the principles of research ethics (Astaneh & Masoumi, 2018; Stockemer, 2019). A formal letter was sent to the authors of the survey questionnaire asking for permission to use their work as part of the protocol. Similarly, the researcher first obtained permission from the school head to conduct the project HEART and communicated with the interested teachers to become participants through a school memorandum. The participants' participation was voluntary, with no incentives in exchange. However, they can only withdraw their participation if forced to answer the survey or interview.

The participants' identities were not disclosed in the research report, and their data were treated with confidentiality to avoid untoward incidents. Hence, data were only stored in the researcher's computer for two years. Then, all data were deleted. Furthermore, the research report was disseminated through conferences, forums, faculty meetings, and publications.

### Data Analysis

As part of descriptive statistics, the Jamovi version 2.4.14 was used to compute mean, median, standard deviation, interquartile range, data normality using the Shapiro-Wilk test, and Levene's test for variances homogeneity. For hypothesis testing, the study used the Wilcoxon signed-ranks test to identify whether there was a significant difference in research competency levels before and after (Ohyver et al., 2019) the implementation of the project HEART and rank biserial correlation to determine practical significance when the data are ordinal level (Wilcox, 2019).

Qualitative data analysis was analyzed following Braun and Clarke's method (2006) for thematic analysis. The thematic analysis utilized a descriptive approach focusing on the lived experience (Sundler et al., 2019). Nevertheless, to establish data validation, the transcript and data analysis were returned to the participants for their permission and to verify the accuracy of the data as a form of member checking. Member checking enabled the researcher to verify the accuracy of participant voices by allowing participants to confirm or refute the validity and interpretation of the data (Candela, 2019).

## RESULTS

Table 3 presents the action research competencies in selecting a researchable topic before and after Project HEART. It can be gleaned from the table that the participants were moderately competent in choosing researchable topics in school, could choose timely, relevant, and exciting topics, and created proposals based on the chosen topic, similar to the findings of Mertler (2021). However, after implementing the project HEART, they became highly competent in choosing a topic based on the school problems. They made exciting inquiries about the chosen topic. Also, they could search for literature and review research topics that were relevant, interesting, and timely in the school context.

**Table 3.** *Action research competencies before and after the project HEART in terms of selecting a researchable topic*

| Statement | Before | | | After | | |
|---|---|---|---|---|---|---|
| | $\tilde{x}$ | IQR | VI | $\tilde{x}$ | IQR | VI |
| 1. I can make sure the topic I will be researching is based on the realities of the school. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2. I can select inquiries that my counselors, administrators, and teaching colleagues might find interesting. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 3. I can discern topics that align with my interests before deciding. | 3 | 1 | Competent | 3 | 1 | Competent |
| 4. I can conduct a comprehensive literature search and review my chosen topic. | 2 | 2 | Moderately competent | 3 | 1 | Competent |
| 5. I can focus the research topic into a manageable concept. | 2 | 1 | Moderately competent | 3 | 1.50 | Competent |
| 6. I can choose a timely, relevant, objective research topic. | 2 | 1 | Moderately competent | 3 | 1 | Competent |
| 7. I can use the researchable topic in doing a literature review. | 2 | 1 | Moderately competent | 3 | 1 | Competent |
| 8. I can create a study proposal based on the chosen topic to aid my professional advancement. | 2 | 1 | Moderately competent | 3 | 1 | Competent |

Legend: $\tilde{x}$ = median IQR = Interquartile range VI = Verbal interpretation

Table 4 depicts the action research competencies in planning an action research project before and after the Project HEART implementation. The participants were moderately competent in identifying research gaps, accessing reliable literature sources, and making citations and references. This shows that teachers' proficiency in conducting action research needs to be developed. However, due to participation in Project HEART, they became highly competent in finding suitable sources for literature, engaging in research activities rigorously, and using layperson's terms for research inquiries. In addition, they were highly competent with using research instruments like test materials, questionnaires, observation notes, and interview guides as data collection tools.

**Table 4.** *Action research competencies before and after the project HEART in terms of planning an action research project*

| Statement | Before | | | After | | |
|---|---|---|---|---|---|---|
| | $\tilde{x}$ | IQR | VI | $\tilde{x}$ | IQR | VI |
| 1. I am capable of formulating research inquiries using layperson's terms. | 3 | 1 | Competent | 4 | 1 | Highly competent |
| 2. I can recognize what has been accomplished in earlier studies and the research gaps. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 3. I can assess the credibility and reliability of my sources during the literature search and review. | 2 | 1.50 | Moderately competent | 4 | 1 | Highly competent |
| 4. I can engage in research activities methodically and rigorously. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 5. I can monitor and document the literature sources employed in the literature review. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 6. I can identify suitable data sources to establish rigorous methods and triangulation. | 3 | 1 | Competent | 4 | 1 | Highly competent |
| 7. I possess knowledge of the use and constraints associated with diverse qualitative or quantitative data collection instruments. | 3 | 1 | Competent | 5 | 1 | Very highly competent |
| 8. I can make proper citations and references to give credit to the authors. | 2 | 2 | Moderately competent | 4 | 1 | Highly competent |

Legend: $\tilde{x}$ = median IQR = Interquartile range VI = Verbal interpretation

Table 5 shows the action research competencies in terms of integrating research ethics. Before, participants were moderately competent in securing parental consent and assent, permission from the school head and concerned teachers, and protecting the participants' rights and data confidentiality. However, they became very highly competent after the project HEART in conveying information to the research participants. Meanwhile, they became highly competent in following ethical standards like securing permission from the authorities and participants, abiding by ethics guidelines, facing potential ethical issues, and adequately disseminating findings. Also, the participants became careful in data analysis and practiced utmost confidentiality.

**Table 5.** *Action research competencies before and after the project HEART in terms of integrating research ethics*

| Statement | Before | | | After | | |
|---|---|---|---|---|---|---|
| | $\tilde{x}$ | IQR | VI | $\tilde{x}$ | IQR | VI |
| 1. I can secure parental consent and assent before doing action research. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2. I understand the procedures for obtaining consent from my immediate school principal and teacher researchers. | 2 | 2 | Moderately competent | 4 | 1 | Highly competent |
| 3. I can apply the basic concepts of research ethics as outlined in numerous codes and standards. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 4. I can anticipate potential ethical issues during an action research endeavor. | 3 | 1 | Competent | 4 | 1 | Highly competent |
| 5. I can effectively convey information to participants. | 3 | 1.25 | Competent | 5 | 1 | Very highly competent |
| 6. I can look for ethical lapses such as concealment and exaggeration when examining data. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 7. I can protect the participants' rights and the data's confidentiality. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 8. I can effectively deliver and share research findings following established ethical principles and norms. | 3 | 2 | Competent | 4 | 1 | Highly competent |

Legend: x̄ = median IQR = Interquartile range VI = Verbal interpretation

Table 6 displays the data competencies for analyzing and presenting before and after Project HEART. Before, the teacher participants were moderately competent, particularly in choosing the right statistical treatment for analyzing data and making data interpretations. Also, they can moderately create a visual data presentation. However, after Project HEART, they were very highly competent in selecting the appropriate statistical formula and making the cohesive narrative of research findings. Hence, they were highly competent in preparing data for analysis, doing data analysis, and interpreting them. Also, they could create graphs for data presentation and narrate the findings with implications.

**Table 6.** *Action research competencies before and after the project HEART in terms of analyzing and presenting data*

| Statement | Before | | | After | | |
|---|---|---|---|---|---|---|
| | x̄ | IQR | VI | x̄ | IQR | VI |
| 1. I can read, describe, and classify research data in preliminary and iterative processes before moving on to data analysis. | 3 | 1 | Competent | 4 | 1 | Highly competent |
| 2. I can summarize acquired data in a reliable and precise manner. | 3 | 1 | Competent | 4 | 2 | Highly competent |
| 3. I can match the correct statistical test with data to solve validity difficulties in quantitative action research projects. | 2 | 1 | Moderately competent | 5 | 1.25 | Very highly competent |
| 4. I can interpret quantitative data, irrespective of whether the test pertains to descriptive or inferential analysis. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 5. I can discern emergent themes using inductive analysis when examining qualitative data. | 3 | 1 | Competent | 4 | 1.25 | Highly competent |
| 6. I can create visual representations that facilitate the comprehension of information for the reader. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 7. I can synthesize the accumulated data into a cohesive narrative. | 3 | 1 | Competent | 5 | 1 | Very highly competent |
| 8. I can interpret the data's underlying meaning or implication. | 3 | 1 | Competent | 4 | 2 | Highly competent |

Legend: x̄ = median IQR = Interquartile range VI = Verbal interpretation

Table 7 reveals the utilizing technology competencies for action research before and after. Before, participants were moderately competent in using MS Office for research activities, computer software for data analysis, and plagiarism software. However, after joining the project, they became very highly competent in finding related literature and studies, utilizing MS Office applications, software for data analysis, reference management, and grammar-checking software. Also, they could use search engines to locate websites, use software for qualitative data analysis, and anti-plagiarism checking software.

**Table 7.** *Action research competencies before and after the project HEART in terms of utilizing technology*

| Statement | Before | | | After | | |
|---|---|---|---|---|---|---|
| | x̄ | IQR | VI | x̄ | IQR | VI |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. I can utilize search engines to look for websites as sources for reviewing relevant material. | 3 | 1.25 | Competent | 4 | 1 | Highly competent |
| 2. I can utilize the internet to research related literature and studies. | 3 | 1 | Competent | 5 | 1 | Very highly competent |
| 3. I am comfortable using a computer MS Office application for research activities. | 2 | 1 | Moderately competent | 5 | 1 | Very highly competent |
| 4. I can use computer application software to make a reference list. | 3 | 1 | Competent | 5 | 1 | Very highly competent |
| 5. I can use grammar-checking software while writing my research paper. | 3 | 1 | Competent | 5 | 2 | Very highly competent |
| 6. I can use computer application software to analyze qualitative data. | 2 | 1 | Moderately competent | 4 | 2 | Highly competent |
| 7. I can use computer application software to analyze quantitative data. | 3 | 1 | Competent | 5 | 1 | Very highly competent |
| 8. I can use anti-plagiarism checking software. | 2 | 1.25 | Moderately competent | 4 | 1 | Highly competent |

Legend: $\tilde{x}$ = median IQR = Interquartile range VI = Verbal interpretation

Table 8 exhibits the reflecting and communicating results competencies of the participants. Before, the teacher participants were moderately competent in designing action plans, reflecting on the research results, and writing a research report. Also, they were moderately capable of following academic writing style in writing a report, following academic writing guidelines and style conventions, and presenting action research findings. After joining the project, they became highly competent in reflecting on the action research results based on critical reflection, composing an action research report following academic writing styles and guidelines, and publishing a research article. Also, they became confident in presenting their research paper in a conference, forum, or meeting.

**Table 8.** Action research competencies before and after the project HEART in terms of reflecting on and communicating results

| Statement | Before | | | After | | |
|---|---|---|---|---|---|---|
| | $\tilde{x}$ | IQR | VI | $\tilde{x}$ | IQR | VI |
| 1. I can reflect on the results of my actions in research. | 3 | 1 | Competent | 4 | 2 | Highly competent |
| 2. I can design an action plan and financial report based on my research findings. | 2 | 2 | Moderately competent | 4 | 2 | Highly competent |
| 3. I can formally compose an action plan as a full report for the action research project. | 2 | 1 | Moderately competent | 4 | 1 | Highly competent |
| 4. I am familiar with the fundamental organizational structure of an action research report. | 3 | 1 | Competent | 3 | 1 | Competent |
| 5. I am familiar with academic writing guidelines and style conventions. | 2 | 1 | Moderately competent | 3 | 3 | Competent |
| 6. I can compose the action research report in an academic writing style. | 2 | 1 | Moderately competent | 4 | 2 | Highly competent |
| 7. I can present my action research paper in forums, conferences, or meetings. | 2 | 1 | Moderately competent | 3 | 3 | Competent |
| 8. I can publish action research papers in journals and at conferences. | 2 | 1 | Moderately competent | 4 | 2 | Highly competent |

Legend: $\tilde{x}$ = median IQR = Interquartile range VI = Verbal interpretation

Table 9 displays the results of significant differences using the Wilcoxon signed-rank test and effect size using Rank Biserial Correlation. It can be gleaned from the table that significant differences exist ($p<.05$) between before and after the Project HEART implementation on action research competencies of the participants. It implies that the action research skills were improved due to the participants' involvement in the project. Similarly, the substantial effect size justified the practical significance of the project in building action research skills. It connotes that Project HEART indeed developed the action teachers' research competencies. Teachers with high research competencies tend to carry out and complete research work.

**Table 9.** Significant difference and effect size of action research competencies before and after the project HEART implementation

| Variable | Wilcoxon W | p-value | Interpretation | Effect size | Interpretation |
|---|---|---|---|---|---|
| Selecting a researchable topic | 703 | .000 | Significant | 1.000 | Strong |
| Planning an action research project | 741 | .000 | Significant | 1.000 | Strong |
| Integrating research ethics | 589 | .000 | Significant | .978 | Strong |
| Analyzing and presenting data | 630 | .000 | Significant | 1.000 | Strong |
| Utilizing Technology | 630 | .000 | Significant | 1.000 | Strong |
| Reflecting on and communicating results | 378 | .000 | Significant | .862 | Strong |

Table 10 presents the evaluation results of the Training program of Project HEART. The program was appropriately managed, delivered as planned, and had a good structure, as perceived by the participants. Hence, the objectives were presented and attained correctly. On the other hand, the authoritative speakers delivered the training content following the pedagogical approaches in a logical manner appropriate to the participants. In addition, materials were distributed adequately, while the technical working group was courteous and responsive to the participants' learning needs. When it comes to the venue, it is conducive, comfortable, and spacious, with the provision of meals and comfort rooms. Overall, the participants rated the training program as highly effective in developing research skills.

**Table 10.** Participants' evaluation of the effectiveness of the training program of project HEART

| After the conduct of the training program, I believe that… | Median | IQR | Interpretation |
|---|---|---|---|
| **A. Program Management** | | | |
| 1. project HEART was delivered as planned | 4 | .25 | Highly Effective |
| 2. The project HEART program was managed efficiently | 4 | .25 | Highly Effective |
| 3. The project HEART program was well-structured | 4 | 0 | Highly Effective |
| **B. Attainment of Objectives** | | | |
| 4. project objectives were presented | 4 | 0 | Highly Effective |
| 5. project objectives were attained | 4 | .25 | Highly Effective |
| **C. Delivery of Content** | | | |
| 6. project content was appropriate to trainees' roles and responsibilities | 4 | .25 | Highly Effective |
| 7. The content delivered was based on authoritative and reliable sources | 4 | 0 | Highly Effective |
| 8. session activities were practical in generating learning | 4 | 0 | Highly Effective |
| 9. adult learning methodologies were used | 4 | 0 | Highly Effective |
| 10. the project followed a logical order/structure | 4 | .25 | Highly Effective |
| 11. contribution of all trainees was encouraged | 4 | .25 | Highly Effective |
| **D. Provision of Support Materials** | | | |
| 12. appropriate to trainees' needs | 4 | 0 | Highly Effective |
| 13. adequate | 4 | 0 | Highly Effective |
| **E. Program Management Team** | | | |
| 15. present when needed | 4 | .25 | Highly Effective |
| 16. courteous | 4 | .25 | Highly Effective |
| 17. efficient | 4 | 0 | Highly Effective |
| 18. responsive to the needs of trainees | 4 | 0 | Highly Effective |

| | | | |
|---|---|---|---|
| **F. Venue and Accommodations** | | | |
| 19. the venue was well-lighted | 4 | 0 | Highly Effective |
| 20. the venue was well-ventilated | 4 | 0 | Highly Effective |
| 21. the venue was comfortable, with sufficient space for program activities | 4 | 0 | Highly Effective |
| 22. the venue was clean and conducive to learning | 4 | 0 | Highly Effective |
| 23. the venue had accessible comfort rooms | 4 | 0 | Highly Effective |
| 24. the venue had clean, comfortable rooms | 4 | 0 | Highly Effective |
| 25. meals were of satisfactory quality | 4 | 0 | Highly Effective |
| 26. meals were of sufficient quantity | 4 | 0 | Highly Effective |

Figure 2 displays the suggestions elicited from the participants to improve the project HEART. The participants suggested having more face-to-face seminars/training with longer duration so that they have more time to digest the research concepts and content that are aligned with the findings of Anzaldo and Cudiamat (2019). Also, they requested to discuss the specific school problems that need to be addressed as the source of their research topic during the training. Hence, they sought a school-based research congress wherein all completed research was disseminated to the teachers.

**Figure 2.** Participants' suggestions to improve the project HEART

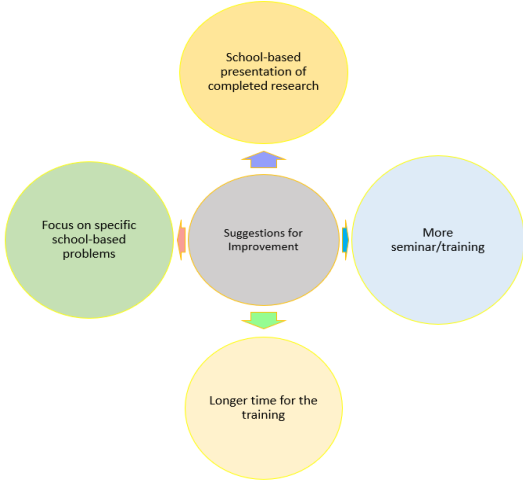



Figure 3 depicts the themes derived from the participants' answers on how the project HEART builds the research culture. Project HEART allowed all interested teachers to join the training to learn the basic concepts, principles, and action research methods. It also promoted research work by providing research templates, technical assistance, mentoring, and coaching sessions. Hence, it deals with interventions to solve problems experienced at the classroom level.

**Figure 3.** Themes on how project HEART builds the research culture in basic education

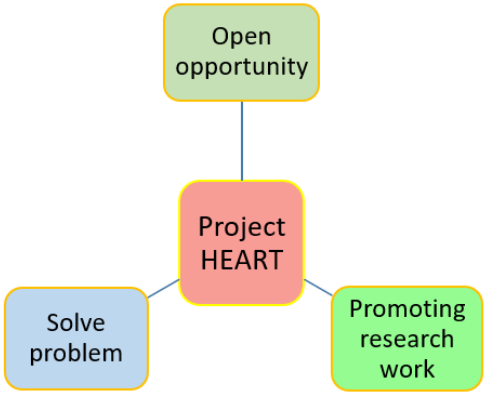



Table 11 depicts the action research conducted by the participants. Project HEART participants were required to conduct action research to manifest their acquired research competencies guided by the research coordinator. A total of ten action researches were conducted by different teachers who were first-timers in action research from different departments based on their research interests. Since they were neophytes in research, they could form a group with a maximum of three teachers to collaborate. Even though conducting action research is challenging (Albalawi & Johnson, 2022), the participants could conduct it.

**Table 11.** Conducted action research from the project HEART participants

| Title | Proponents | Department |
|---|---|---|
| STEM Pocket Lab Kit: A Learning Tool for Work Immersion | Mark Anthony C. Umali & Rowena June B. Mirondo | Science |
| Improving Grade 7 Learners' Basic Science Process Skills and Attitudes Through Remedial Activities | Rona Lynn S. Celeste, Lhaarni L. Ramos & Jillaine A. Agas | Science |
| Lesson Playlist Through Microsoft Teams-Based Flipping the Classroom (FTC) Approach: An Intervention in Improving Grade 8 Learners' Learning Outcomes | Irene L. Gonzales, Rona Lynn S. Celeste, & Marietta L. Orit | Science |
| Enhancing Competency through Institutional Assessment Tool for Home Economics Learner Progress and Skill Recognition | Domielyn A. Marmeto, Alenie B. Dualan, & Sherwin P. Medrano | Technical-Vocational Education |
| Enhanced Learning Package for ICT School-Based Work Immersion: Maximizing the Learning Outcomes | Alenie B. Dualan, Sherwin P. Medrano, & Kristina Amor M. Allosa | Technical-Vocational Education |

| | | |
|---|---|---|
| Teacher-Made Video Lessons: Intervention Materials for Improving the Competencies of Grade 10 Cookery Learners | Julieta F. Etang, Eunice Miel F. Cariño, & Jacqueline M. Anave | Technical-Vocational Education |
| Summary with Reflection: A Reflective Assessment of Student Learning in Personal Development | Clarissa A. Benigno, Janeth M. Baal, & Kayeden M. Cubacob | Araling Panlipunan |
| Development of Bridge Activities Using Gamification Techniques to Address the Learning Gaps in Musical Notes and Rest Values | Mervin Z. Mosqueda | Music, Arts, Physical Education & Health |
| Proyektong BUKLAT (Basa, Unawa, at Kalinga Landas ng Ating Tagumpay: Interbensyon sa Pagbasa ng mga Mag-aaral sa Baitang 7 | Myra M. Alarcon | Filipino |

## DISCUSSION

The study aimed to capacitate the teachers in basic education by employing Project HEART to build an action research culture. Forty teachers voluntarily participated in the said project and developed action research competencies, guided by the research template, and were able to conduct classroom-based action research. Project HEART allows teachers to gain research competencies as critical areas to develop (Cortes et al., 2021), solve school problems, and promote a passion for research work. The capacity-building training equips the participants with action research competencies similar to the findings of Tirol et al. (2022). Teachers' training improves their research skills (Kennedy, 2014), while leadership support motivates them to continue a research journey. On the other hand, research templates guide the participants in writing a research proposal. Also, the research presentation and critiquing highlight the areas of improvement of the action research proposal, while the mentoring and coaching sessions enlighten the teachers in the research process. Overall, project HEART is a capacity-building that developed an action research culture in the beginning stage and must be sustained to nurture the teachers in their action research journey parallel to Cortes and Reyes's (2021) and Wong's (2020) findings. Moreover, harmonizing research activities, practices, policies, and resources formulates the research culture (Dacles et al., 2016).

Through the lens of self-efficacy theory, teachers' self-assessment of action research competencies reflects their proficiency in conducting action research. Highly competent teachers conduct action research independently because they are motivated and empowered. They need less assistance and guidance to complete research work (Pamatmat, 2016) since they have the qualities and motivation to conduct research. So, assessing teachers' research self-efficacy helps school administrators identify teachers' areas of improvement and give necessary training and mentoring sessions (Basilio & Bueno, 2019). Through training and mentoring, teachers become innovative in solving problems, enhancing teaching practices (Manfra, 2019), and addressing school problems. Mentoring and coaching assist teachers in maintaining momentum in their efforts to enhance their teaching practices (Mertler, 2021) based on research-based reflections supporting the findings of Khan et al. (2019).

The study believes that Project HEART is an excellent means of enabling teachers to develop action research competencies that lead to a culture. Developing an action research culture involves a series of training, coaching,

mentoring, leadership support, and provision of technical assistance. Also, providing a research template does not guarantee that the teachers can produce action research papers. However, the mentor and school administrators support them while technical assistance from the experts is needed to guide teachers on their research journey (Tulung et al., 2022). So, school administrators must find ways to ignite teachers' passion for improving research skills and assist the teachers (Department of Education, 2023) who conduct action research in school.

The project HEART could have been better. It has lapses such as capacity-building training was done for four days only; research templates were not fully discussed with the participants due to time constraints; mentoring and coaching sessions were given only if the participants asked for them, and not all participants were able to conduct action research within ten months. So, all lapses will be addressed for the next implementation cycle, and participants' suggestions will be considered in refining the project. Hence, constant monitoring of action research progress will be done to ensure that all participants will conduct action research.

## CONCLUSIONS AND RECOMMENDATIONS

Before joining Project HEART, participants have moderate competence in selecting a researchable topic, planning an action research project, integrating research ethics, and reflecting on and communicating results. However, they are competent in analyzing and presenting data and utilizing technology. After joining, participants are competent in selecting researchable topics but highly competent in planning action research projects, integrating research ethics, analyzing and presenting data, using technology, and reflecting on and communicating results. Hence, participants can conduct action research to showcase their acquired competencies, which shows the effectiveness of Project HEART in building the teachers' action research competencies. In addition, the training is practical, as the participants evaluated it.

Participants suggest having more training over a longer time frame and focusing on school problems. They also request a research presentation of completed action research on the next implementation cycle. Project HEART promotes opportunities for teachers to be trained, guided, and mentored in their action research journey. It also promotes research work through mentoring and coaching sessions with support from the school administrators. As a result, participants can conduct classroom-based action research within their specialization supported by the school administrators.

Teachers need to develop action research competencies gradually and continuously. So, capacity-building training and leadership support must be continuous and heartfelt based on teachers' learning needs. Hence, school administrators must constantly nurture the teachers' action research competencies and provide technical assistance regularly. Similarly, the project HEART may be improved based on the participants' suggestions, and its lapses may be corrected during the subsequent implementation cycle.

The study is limited to one public school for ten months. So, future researchers may conduct similar studies in the broader scope for a more extended implementation period considering both elementary and secondary schools. They may modify the project HEART and benchmark it to other schools to verify its effectiveness in building an action research culture. In addition, the study does not include the participants' experiences and challenges. So, future researchers may use phenomenological design to investigate teachers' challenges in developing action research competencies.

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