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DEVELOPMENT AND EVALUATION OF A PROFESSIONAL DEVELOPMENT PROGRAM ON DESIGNING PARTICIPATORY ACTION RESEARCH PROJECTS FOR BASIC EDUCATION TEACHERS

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Abstract. *Anchored on Evans' professional development (PD) model, this study aimed to develop, implement, and evaluate a professional development program on designing participatory action research (PAR) projects for basic education teachers. The teachers are from Junior and Senior High School teaching English, Mathematics, and Science. The PD program consisted of ten in-person training sessions and virtual consultations which happened in between training on AR problem conceptualization and methodology for a 14-week period. Using the mixed-methods sequential explanatory (QUAN → qual) design, the study started with a professional needs assessment participated by 18 teachers from a secondary school as a basis for the planned PD program. The teachers underwent training sessions to develop a group or participatory AR proposal as evidence of their professional growth and program outcome. At the end of the program, the English, Mathematics, and Science teachers, respectively, developed and presented their AR proposals on the (a) design and evaluation of a gamified-based instruction towards improving vocabulary skill, (b) video-based instruction in teaching basic concepts of probability, and (c) investigating the effect of contextualized learning materials in developing students' conceptual understanding of atoms. The post-assessment results, supported by interviews, revealed that the teachers displayed behavioural, attitudinal, and intellectual developments in AR. Based on the Department of Education's criteria for evaluating PAR proposals, all three proposals were rated acceptable for implementation by a panel of evaluators. In conclusion, the PD design and evaluation framework were important factors that enabled the participating teachers to transform their AR competencies toward developing PAR proposals for improving teaching and research in their schools.*

Keywords: *action research; faculty development; professional development; researchers; teacher training*

1. INTRODUCTION

In the Philippines, professional development (PD) programs for teachers are keystones of educational reforms. As evidence, when the Enhanced Basic Education Act of 2013, which essentially transformed Philippine basic education from K-10 to K-12, was adopted, the country's educational sectors have to exert a great amount of effort to support the success of this reform. For instance, the Philippine Commission on Higher Education (CHED) (2012) as an educational sector was mandated to partner with the Department of Education (DepEd) and other educational institutions to organize a series of capacity-building or training programs aimed at developing teachers' content knowledge and pedagogical practices across disciplines because these are required in teaching the revitalized basic education curriculum effectively. However, the design of these PD programs adopted mass training of teachers (Mirasol et al., 2021). Oracion et al. (2020) earlier argued that this PD model deserves rethinking. It may be efficient in terms of achieving the target number of trainees within a reasonable amount of time in support of systemic reforms, but the quality of the training programs could decrease when

these are cascaded by the pioneering set of trainees to the ground. In addition, this model treats teachers homogenously, meaning skills trained may be disconnected from the actual individual needs. These characteristics may put the quality or effectiveness of the PD programs to a bare minimum.

Gravani (2012) reviewed the literature and argued that effective teacher development programs recognize teachers as adult learners. Hence, she recommended that their education should be informed by andragogical principles. In particular, it should consider voluntary participation because when adults willingly engage in learning, they become more committed to the whole process. Also, self-direction is central to adult learning which refers to control over goal-setting and personally meaningful evaluation criteria. Action, collaboration, and reflection are key considerations as well when designing high-quality PD programs. These considerations suggest that adults are given time to think about, receive input, engage in the continual process of reflecting on the activity, collaborate, and eventually make changes to their practice when necessary. These will support them to progress toward the expert visions of practice thoughtfully. Finally, learning should be situated within a supportive atmosphere characterized by the presence of care, acceptance, and respect. In the same manner, Darling-Hammond, Hyler, and Gardner (2017) reviewed 35 studies of successful PD models with student learning gains as primary evidence. They identified seven shared elements, of which some are also common to the recommendations of Gravani (2012). These include the following: (a) content-focused, (b) use active learning approaches, (c) engage teachers in collaboration, (d) employ models and/or modelling of effective practice, (e) provide coaching and expert support, (f) give time for feedback and reflection, and (g) sustained duration.

Unless PD programs are designed according to these principles, the adoption of different educational reforms would otherwise result in deforms bringing impoverishment and misery to the teachers and the educational community in general (Arnove, 2005). One PD model that characterizes most if not all of the elements or principles of high-quality professional learning is participatory action research (PAR). According to Gaffney (2008), it has been described similarly as action research (AR) with little to differentiate the two. It has also been used as an acronym to recall the research process effortlessly: (1) planning a change, (2) acting and observing the process and consequence of change, (3) reflecting on these processes and consequences, and (4) then replanning, acting and observing, reflecting, and so on (Kemmis & McTaggart, 2000). The entire process speaks that this research method is truly responsive and committed to providing practical solutions to problems (Canlas & Karpudewan, 2020). In this regard, action research has been used to facilitate the implementation of many educational reforms. It is understood that these educational reforms are undoubtedly subjects of many controversies upon implementation because these do not yield eventually the substantial results expected from them. For instance, Bongco and David (2020) revealed that the adoption of K-12 curriculum in the Philippines has challenged teachers, particularly in implementing curriculum policy at the classroom level. With this, teachers need to actively engage in fixing these controversies through a more critical,

reflective, and systematic way since they play an important role in the collective goal of improving educational outcomes. In other words, teachers need to engage in AR because it will situate them at the centre of research-into-practice and consequently offers them a systematic and intentional approach to improving their pedagogical and content knowledge and changing their teaching (Manfra, 2019).

2. LITERATURE REVIEW

2.1. Professional Development Programs on Action Research for Teachers

As other professions carefully examine their practices through AR, teachers do the same because the consequences of such bring substantial promises and opportunities. For one, it is a powerful or exploratory tool that helps teacher candidates to inquire about educational problems and improve their knowledge about teaching practice (Hong & Lawrence, 2011; Cortes, Pineda & Geverola, 2020). In addition, it facilitates the professional development of teachers, empowers teachers, and bridges the gap between research and practice (Hine, 2013; Tirol et al., 2022). Recognizing these advantages, AR has become one of the growing interests in the teaching profession, as evidenced by several PD programs on action research for teachers reported in the literature. Some of these PD programs are implemented as in-service teacher training, while others are embedded within graduate teacher education programs. Four are briefly discussed below highlighting the design and evaluation features of the PD program, and the evaluation of the trainers and trainees.

First, Cullen, Akerson, and Hanson (2010) designed a PD program to help teachers design and implement AR designed to track students' understanding of the nature of science (NOS). This two-year PD program was characterized to be straightforward with extensive scaffolding. The first year taught teachers about NOS and how to teach NOS, while the second year trained them to design, implement AR projects, and write the results. The overall framework of evaluation the program was Kirkpatrick's (1994) levels of evaluation: reaction, learning, behaviour, and results. The completed manuscript of teachers' AR projects served as the professional expectation or the results of the program. Second, Hine (2013) reported the teaching of AR methodology as a core unit in teacher preparation degree programs. As an academic, he taught AR to educators in two higher education institutions (HEIs) of which one was in Australia and the other in the United States of America. Educators were given a chance to complete one full cycle of AR. First, they were tasked to identify a problem that they intended to act upon. Then, they implemented a plan to address this problem. Following the observations of their implemented plan, teachers wrote reports on their work. Among the documented difficulties by the academic in teaching the course include (a) absence of clarity of focus for the AR project, (b) managing time constraints, and (c) preempting solution to the problem. Third, Hathorn and Dillon (2018) organized facilitated training sessions before teachers worked on their respective AR. The topics that teachers worked on involved reading strategies, character education, and behaviour management. The PD was implemented for two years but to two cohorts of teachers, with each cohort finishing the PD in one year. Teachers in

this study indicated that completing the AR project was challenging and somewhat difficult at times. Specifically, they disclosed three main areas that they found difficult: defining the research question, developing the method, and analyzing the data. Finally, Paredes-Chi and Castillo-Burguete (2018) trained 18 in-service teachers in Normal schools in Mexico to conduct and supervise PAR projects. They tooled or retooled teachers' knowledge on PAR methodology, identify their training needs, assist them in implementing projects, look for alternatives that developed their research, engage them in PD, and encourage structural modifications necessary to develop research at their schools. The teachers' evaluations of the program are summarized into three general types: learning a different way of doing research; an authentic problem must arise from people; and, it is possible to do collaborative research, identify, analyze, study and propose actions for the collective well-being. The authors contend that their training increased teachers' knowledge of PAR and identified teachers' research training needs, promoted collaborative work, motivated teachers to conduct PAR by guiding them in planning a research project, and facilitated teachers' participation in conferences.

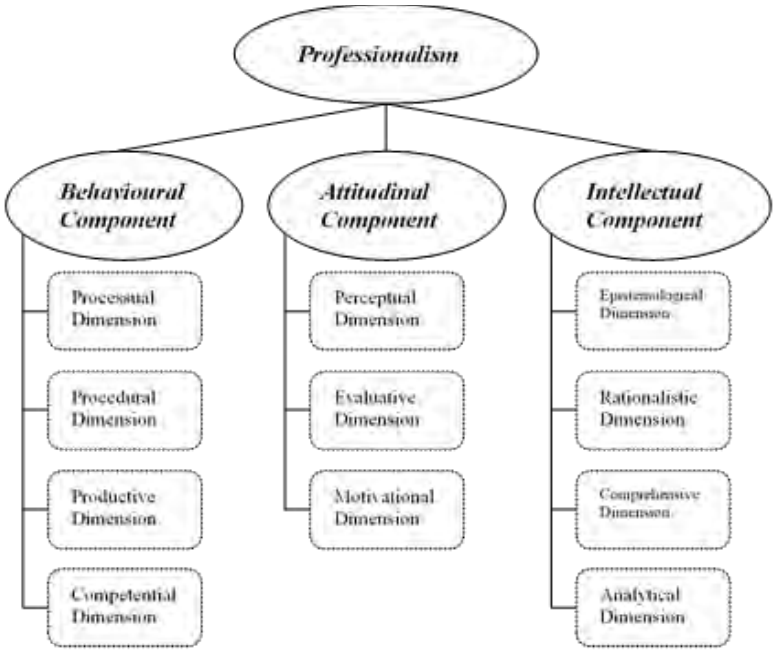
Examining the shared limitations of these PD programs on AR for teachers within the lens of Arthur Jr. et al. (2003) design and evaluation features of effective training, several findings may be revealed. First, most training programs did not take into account the conduct of training needs assessment as a preliminary step of professional development except that of Paredes-Chi et al. (2018). Then, the PD programs associate effectiveness with knowledge gains or behavioural development in AR only. This may be explained by the lack of evaluation frameworks that guided the evaluation of PD programs except that of Cullen et al., (2010) which adopted Kirkpatrick's (1994) levels of evaluation. Lastly, the professional expectations of the trainings (*i.e.*, AR projects) are not evaluated which supposedly is the best evidence of the PD program quality as teachers' learnings may translate into their finished AR projects.

In the Philippines, the initiatives toward promoting PD programs on AR are attuned to the global contour. Recently, CHED issued Memoranda Nos. 74 and 75 series of 2017 which specify the policies, standards, and guidelines for Bachelor of Secondary Education and Bachelor of Elementary Education, respectively. These revised curricula indicate that AR in the content or pedagogy of the chosen discipline (e.g., Mathematics, Science, or English language) will be taught as a major or content course (Jugar & Cortes, 2022). In addition, faculty from HEIs are providing timely and relevant PD programs that include AR. However, the number of these training is relatively few and poorly documented, although a number of needs-assessment surveys have surfaced (Cortes & Reyes Jr., 2021; Cortes, Pineda, & Geverola, 2021b; Cortes et al., 2021; Cortes, 2019; Morales et al., 2016). In this regard, the present study aims to pioneer systematic documentation of the development and evaluation of a professional development program of AR in the country. Evans' (2014) concept of professionalism and professional development serve as the lens for evaluating teachers' professional AR needs and development.

2.2. Evaluating PD Programs on Action Research through Evans' (2014) Professional Development Model

Evans (2008, p. 29) defined professionalism as *"a work practice that is consistent with commonly-held consensual delineations of a specific profession or occupation and that both contributes to and reflects perceptions of the profession's or occupation's purpose and status and the specific nature, range, and levels of service provided by, and expertise prevalent within, the profession or occupation, as well as the general ethical code underpinning this practice." T*his definition essentially reveals professionalism's three major components, namely: behavioural, attitudinal, and intellectual (see Figure 1). Each component is composed further of dimensions that capture professionalism's ontological composition and quiddity. The behavioural component has four dimensions (*i.e*., processual, procedural, productive, and competential) which relate to what professionals physically do at work. The attitudinal component comprises three dimensions (*i.e*., perceptual, evaluative, and motivational) which recount attitudes held by professionals. Lastly, the intellectual component has four dimensions (*i.e*., epistemological, rationalistic, comprehensive, and analytical) which describe practitioners' knowledge and understanding and their knowledge structures.

Figure 1. The Componential Structure of Professionalism (Evans, 2014)



These components and dimensions of professionalism also resemble Evans' (2014) componential structure of professional development. The difference rests in the terms used to label the elements: "component" and "dimension" are substituted respectively by "development" and "change". Evans' (2014, p. 188) defines behavioural, attitudinal, and intellectual development as: "*the process to which people's professional performance, work-related attitudes, and professional-related knowledge, understanding, or reflective or*

comprehensive capacity or competence, respectively, are modified and enhanced with a degree of permanence exceeding the transitoriness." In other words, effective or high-quality PD develops the components of professionalism and this effectiveness translates to changes in its dimensions. It is unlikely, however, that a single episode of the PD program will develop or change all 11 dimensions, but it is probable to feature multiple dimensions from the three major components.

Anchored on this tenet, the present study opted to investigate the changes of three dimensions with one from behavioural, attitudinal, and intellectual components. These changes are: (1) competential change which refers to the increase or enhancement of skills and competences; (2) perceptual change which refers to change in relation to people's perceptions, viewpoints, beliefs, and mindsets– including those relating to themselves; and, (3) epistemological change which refers to change in relation to the bases of what people know or understand and to their knowledge structures. The basis for selecting these is to represent all the dimensions. PD is multidimensional in nature, indicating that it should not be restricted to enhancing one component of professionalism only. Hence, the present study expands the focus by examining the development of three teachers' professionalism components. These are considered adequate given that change in one dimension leads to chain-reaction episodes, thus, making a cycle of successive chains leading to teacher's entire professional development. Further, the teachers are expected to design a proposal as a professional expectation at the end of the PD program. Their competence, perception, and knowledge structure on AR may be best reflected in the quality of their proposed AR projects.

RESEARCH QUESTIONS

This study aimed to develop, implement, and evaluate a professional development program on designing participatory action research projects for Junior High School (JHS) and Senior High School (SHS) teachers anchored on Evans' professional development model. Specifically, it sought to answer the following questions:

1. What behavioural, attitudinal, and intellectual changes among teachers on designing participatory AR projects were observed before and after the PD program?
2. What are the qualities of AR projects developed by the teachers as outputs of the PD program?

3. METHODOLOGY

3.1. Preparatory Stage of the PD Program

This professional development program on designing PAR projects for JHS and SHS teachers is a community extension project of the faculty of the College of Arts and Sciences of a state university in Cebu City to a secondary school in Mandaue City, Philippines. The school principal expressed interest to the faculty concerning their need to be trained in designing and implementing AR projects. In this regard, he formally sent a letter of intent to the university. It stated the need for scaffolding of teachers in exploring and addressing the unsatisfactory conditions that their school has experienced in the area of instruction through

reflective and systematic inquiry (*i.e*., action research). Eventually, there were 18 prospective teacher-participants who underwent professional needs assessments. Table 1 shows the distribution of these teacher-participants when grouped according to the different demographic and professional profiles of which the following can be observed: (a) majority are females; (b) two-thirds have ages below 35 years; (c) two-thirds have been teaching 10 years and below; (d) majority have still earned the minimum educational qualification to teach (*i.e*., baccalaureate); (e) two have double specializations (*i.e*., science and mathematics) but both are assigned to teach science; (f) only three have previous trainings in AR; and, (g) only three have proposed an AR project but none is published nor completed.

Table 1. Distribution of teacher-participants when grouped according to the different demographic and professional profiles

Grouping Variables	Categories	Frequency	Percentage
Sex	Female	15	83.33
	Male	3	16.67
Age (years)	41 and above	4	22.22
	36 to 40	2	11.11
	31 to 35	5	27.78
	30 and below	7	38.89
Tenure in Service (years)	16 and above	4	22.22
	11 to 15	2	11.11
	6 to 10	5	27.78
	5 and below	7	38.89
Highest Educational	Doctorate	0	0
Degree Obtained	Master	4	22.22
	Baccalaureate	14	77.78
Specialization	Science and Mathematics	2	11.11
	Mathematics	6	33.33
	Science	4	22.22
	English	6	33.33
AR Training Attended	2	2	11.11
	1	1	5.56
	0	15	83.33
AR Project Proposed	1	3	16.67
	0	15	83.33

The pre-assessments focused on investigating teachers' initial competence, perception, and knowledge structure about AR. These represent respectively the behavioural, attitudinal, and intellectual needs in AR of which different scales were adopted. First, the Teacher's Competence in Action Research (TCAR) scale was adopted from Cortes, Pineda, and Geverola (2021a) to evaluate the initial competence in AR. This is a 54-item scale

evaluating six competences, namely: selecting a topic for professional growth (4 items), planning an AR project (11 items), analyzing and presenting AR data (13 items), integrating ethics (8 items), integrating technology in writing literature and analyzing data (5 items), and reflecting on and communicating results (13 items). Each item was rated on a five-point Likert scale with the following interpretation: 5 – expert, 4 – advanced, 3 – proficient, 2 – basic, and 1 – limited. The teacher who obtained an overall proficient rating or below is considered for admission in the PD program. Second, the Teacher's Perception in Action Research (TPAR) instrument was adopted from Cortes et al. (2021) to evaluate the initial perceptions of AR. The instrument contains five scenarios to represent the different characteristics unique to AR. If a scenario is marked with asterisk (see Table 3), this indicates that it still portrays characteristic/s of AR but portrayed negatively. Then, the teachers evaluated each as "definitely not AR," "probably not AR," "probably AR," or "definitely AR." The justifications of their evaluation in each scenario followed through an interview to clarify their response. This process aimed to obtain a deeper understanding of what teachers believe as AR and not. Third, Teachers' Epistemology on Action Research (TEAR) instrument was made by the researchers to evaluate the initial knowledge of AR. This is a 44-item true or false test that evaluates teachers' knowledge of the nature of AR (11 items), planning an AR project and writing a report (26 items), and writing an action plan (7 items). The teacher who obtained a proficient level and below based on a criterion reference basis were considered for admission to the PD program. Finally, interview guides containing open-ended questions were prepared to elaborate and clarify teachers' responses in TCAR, TEAR, and TPAR. The results from these initial assessments and interviews informed the design of the PD program.

3.2. Design and Implementation of the PD Program

After the initial assessments and interviews, the Junior and SHS teacher-participants were grouped according to discipline as they are expected to finish a discipline-based PAR project proposal towards the end of the PD program. In the same manner, the faculty trainers were grouped according to their expertise or discipline as they were assigned to mentor the teacher participants in developing the PAR proposal. The English, mathematics, and science faculty from the University respectively mentored the English, mathematics, and science group of teachers. Also, the grouping of faculty trainers according to their discipline served as the basis for their assignment in facilitating the training.

Next, the pool of faculty trainers analyzed the data generated from the pre-tests and interviews. They created a technical report concerning the expressed needs of the prospective teacher participants. The report was presented before them as a means of verification and encouraging their participation in designing the program, particularly on the approach and topics that need to be included or given extra attention. Table 2 shows the PD program design which reflects the program of activities or topics trained, their allotted number of session/s, the facilitating faculty, and expected output/s as agreed by both faculty-trainers and teacher-participants.

Table 2. Professional development program design

Topic/s Introduced	Number of Session/s	Facilitator/Trainor	Expected Output/s
(1) The development, types, models, and application in the education of PAR	1	Science Faculty	None
(2) Ethical issues in PAR	1	University Research Ethics Committee	Informed Consent and Assent Forms
(3) Selecting an action research topic	1	Science, English and Mathematics Faculty	Working research title
(4) Reviewing, synthesizing, and referencing related literature	1	English Faculty	None
(5) Writing the introductory part of the PAR proposal	3	English Faculty	Rationale, review of related literature, and research questions
(6) Selecting the guiding PAR model	1	Science Faculty	Justification of the PAR model used
(7) Proposing an action plan or intervention to the problem investigated	1	Science, English and Mathematics Faculty	Proposed Action Plan
(8) Writing the research methodology	3	Science, English and Mathematics Faculty	Description of the research design, data gathering methods, research instruments, and data analysis techniques
(9) Finalizing the bibliography section	1	English Faculty	Finalized bibliographic entries following the American Psychological Association (APA) Format
(10) Preparing the timeline of activities and budgetary requirements	1	Science, English and Mathematics Faculty	GANNT Chart of research activities and proposed budgetary requirements
(11) Presentation and critiquing of proposed PAR projects	1	Science, English and Mathematics Faculty	Final PAR proposal

As seen in the PD program design, ten topics were introduced in different sessions excluding the culminating activity which was the presentation and critiquing of AR proposals. The first topic of the PD program gave the teacher-participants background about PAR while the second topic introduced them to ethical issues or considerations in PAR. The rationale for introducing ethics ahead of other topics was to ensure that all parts of their PAR proposal complied with research ethics guidelines. A member of the University Research Ethics Committee (UREC) was invited to conduct a training workshop on this topic. Eventually, the English Faculty trained the teacher participants in selecting the research topic and laying the foundations of the PAR proposal. The role of the Mathematics and English Faculty during this period was mentoring the teachers participants assigned to them as they started to write a proposal specific to their discipline. Next, the science faculty trainers facilitated the introduction of different PAR models and developed the action plan for the problem under investigation. Then, the training on PAR methodologies followed. The topics under it were assigned to English and mathematics faculty trainers. This part of the PD program trained the teachers on designing a sound research methodology, particularly in choosing the research design, collecting, analyzing, and presenting data. The quantitative and qualitative research methodologies were respectively assigned to mathematics and English faculty-trainers. Likewise, arranging the literature cited and preparing the timeline of activities and budgetary requirements were assigned to them. Finally, the 11th session was intended for the presentation and critiquing of the PAR proposal. This was facilitated by all faculty trainers. There were three external experts invited by the trainers to critique the proposals of English, mathematics, and science teachers during this session.

Each topic in the PD program (except for topics 1 and 4) had corresponding expected accomplishment/s and the number of session/s depending on its breadth or coverage with one session done between four to five hours per day. Each topic was also trained by the assigned faculty trainers depending on their expertise to deliver it. Overall, there were 10 topics trained to teacher participants. These were trained to them in a span of 14 weeks, with one session per week. However, the contact periods between the faculty trainers and teacher participants were not necessarily limited to these sessions as informal consultations through virtual mentoring were also done. This means that the faculty trainers arranged virtual mentoring for the group assigned to them, particularly on discipline-specific concerns of their proposal. For instance, assistance regarding the development and validation of concept inventory test on atoms was extended by the science faculty trainers to the teacher-participants assigned to them. This topic on instrument development and validation was not part of the PD program design. Likewise, English and mathematics faculty trainers respectively arranged virtual and face-to-face sessions in game development and video production. These are the proposed interventions of English and mathematics teachers, respectively, on the problem they investigated.

3.3. Evaluation of the PD Program

Although the program ended with designing PAR proposal only, meaning there are still PAR skills yet untrained to the teacher-participants, the evaluation of competence, perception, and knowledge structure about AR was still done to respectively document behavioural, attitudinal, and intellectual changes or development of teachers at the end of the phase of the PD program. The same scales in the pre-test were used, namely: TCAR (Cortes et al., 2021a), TPAR (Cortes et al., 2021a), and the researchers-made TEAR. Interview guides containing open-ended questions were also prepared to elaborate and clarify teachers' responses to the aforementioned quantitative scales.

In addition, the quality of three PAR proposals developed by the three groups of teacher-participants was evaluated by three invited experts to further assess the training effectiveness. The criteria and scoring template for the AR proposal released by the Philippine Department of Education (DepEd, 2016) served as a reference for evaluation. This scoring template takes into account the following criteria: (1) rationale with sub-criteria on (1a) context (15 points) and (1b) proposed action plan (15 points) (2) research question/s (30 points), (3) research methods with sub-criteria on (3a) the description of participants, data sources (10 points), (3b) data gathering procedure (10 points), and (3c) data analysis (10 points), (4) work plan and timelines (5 points), and (5) budgetary requirements (5 points). Each criterion has a different score allocation, and the PAR proposal should get a minimum average score of 70 points from all three invited experts to be considered acceptable and approved.

4. RESULTS AND DISCUSSION

Using Evans' (2014) concept of professional development, the behavioural, attitudinal, and intellectual needs and developments of teachers were respectively assessed before and after the PD program as one of the bases for evaluating the training program's effectiveness. The following subsections are the results of the assessments.

4.1. Behavioral Developments of Teacher Trainees in Action Research

The behavioural component selected from Evans' (2014) model of professional development as the basis for evaluating training effectiveness is competential change. In this section, the behavioural needs and development of teachers in AR respectively before and after the training program are presented and discussed. In particular, Table 3 shows the distribution of teachers when grouped according to their self-perceived competence in six AR skills before and after the program. On the far-right side of the table reflects the number of teachers who progressed from lower to higher skill levels. Ideally, a negative value should be reflected in the limited or the next lower skill levels and a positive value in the higher category of skills to indicate progress in the different AR skills set. Narrative accounts concerning teachers' experiences when participating in the program are also supported to explain the changes in the distribution before and after the training program.

In terms of selecting an AR topic, 55.55% (n=10) of the teacher trainees perceived themselves at a limited level before the training program. This indicates that more than half of them did not perceive themselves to have acquired the essential skills in topic selection, particularly on topics that are relevant to their professional or teaching practice. But, at the end of the training program, only 5.55% (n=1) remained at the limited level. The table may not reflect which level the teachers particularly progressed, but three, five, and one are added respectively to basic, proficient, and advanced levels. No teacher progressed to the expert level. As to planning an AR project which collectively assessed teacher's competence to write an AR proposal (*i.e.*, stating research questions, performing a literature search, and planning for data gathering procedure and analysis), 22.22% (n=4) of the teacher-trainees moved from limited to higher category of skills based on their perceptions during post-assessment. Originally, 38.88% (n=7) perceived themselves at this level, indicating that three teachers remained at the same level. An addition of teacher/s in basic, proficient, and advanced levels are reflected in the table. These are teachers who considered themselves to have improved their skills. However, still, no teachers claimed to have moved to the expert level at the end of the training program.

Table 3. Teacher's perceived competence in AR before and after the professional development program (n=18)

AR Competence or Skills	Pre-Assessment Level of Competence					Post-Assessment Level of Competence					Difference/Addition				
	Limited	Basic	Proficient	Advanced	Expert	Limited	Basic	Proficient	Advanced	Expert	Limited	Basic	Proficient	Advanced	Expert
(1) Selecting AR topic	10	4	4	0	0	1	**7**	**9**	**1**	0	-9	**+3**	**+5**	**+1**	0
(2) Planning an AR Project	7	5	6	0	0	3	**6**	**8**	**1**	0	-4	**+1**	**+2**	**+1**	0
(3) Analyzing and Presenting AR Data	5	12	1	0	0	2	12	**4**	0	0	-3	0	**+3**	0	0
(4) Integrating Ethics in AR	8	8	2	0	0	1	**10**	**6**	**1**	0	-7	**+2**	**+4**	**+1**	0
(5) Integrating Technology in AR	9	5	4	0	0	6	5	**7**	0	0	-3	0	**+3**	0	0
(6) Reflecting and Communicating Results	5	12	1	0	0	1	11	**5**	**1**	0	-4	-1	**+4**	**+1**	0

With respect to competence in analyzing and presenting AR data or the capacity to evaluate appropriate data analysis techniques, interpret and present results, only 16.66% (n=3) of the teacher trainees advanced to proficient level at the end of the training program. The majority of them (n=14) remained in the basic and limited levels even after the program while the sole teacher who identified herself in the proficient level at the start of the training program did not improve to higher levels. In terms of skills in integrating ethics in AR or the capacity to identify and practice the ethics involved when conducting AR, it can be observed that additional teacher-trainees positioned themselves in the basic (n=2), proficient (n=4), and advanced (n=1) levels after the training program. This means that 38.88% (n=7) of teachers developed their skills in integrating ethics in research to higher levels of skill.

With regards to the skills in integrating technology in AR or the capacity to use technology in searching and referencing literature and analyzing data, 16.66% (n=3) of the teachers from the limited group before the training program progressed to between basic and proficient levels only. None of them reached advanced and expert levels during post-assessment. Finally, as to the skills in reflecting and communicating results or the capacity to reflect on AR results by developing action plans, writing results and communicating results in journals or conferences, 94.44% (n=17) of the total teacher trainees placed themselves in the limited (n=5) and basic (n=12) levels prior to their participation in the training program. Eventually, five were transferred and added to proficient (n=4) and advanced (n=1) levels at the end of the program. None of them reached the expert level.

In summary, the results of the pre- and post-assessment of teachers' competence in AR may be understood that the training program is most effective at developing their skills in selecting an action research topic and integrating ethics. The teachers explained that the "discipline-based scaffolding" helped them better develop practical and ethically sound AR topic in their respective disciplines. One teacher described their experiences as a group regarding the scaffolding they received from the trainers as follows:

> "*There were so many areas that we wanted to do research before and we cannot decide which topic to work on. We really recognized that this is the hardest part of action research. But I believe that the scaffolding we received in the group from trainers helped us a lot in selecting a practical action research topic that is responsive to the problem we teachers commonly encounter. The scaffolding was characterized by close monitoring, constant mentoring, and constructive feedback. These helped us improve our competence in this aspect of AR."*

In this interview, the role of scaffolding in tasks requiring contextual support for teachers such as choosing a topic for research was highlighted and proven important, although previous studies (e.g., Ghaith & Awada, 2022; Engin, 2014; Rahman et al., 2015) already revealed the same. This means that teacher-trainees need scaffolding from trainers who are experts or can relate to their situation. Hence, this professional development program strategically assigned them to expert faculty-trainers who share their respective disciplines

because they have the best knowledge regarding the topics for AR in their discipline that need to be researched. It should be noted that successful scaffolding is characterized by guided intervention by an expert with an overall aim of developing their autonomy or handing them over to independence (Meyer & Turner, 2002; Smit, Van Eerde, & Bakker, 2013).

However, this does not mean that scaffolding was only limited to selecting AR topic as the results of the post-assessment in other AR competences do not reflect consistency. The teachers opined that scaffolding still helped them acquire the other essential skills in AR and provided them with unique learning opportunities. However, they argued that this strategy may not be very efficient at maximizing individual learning on certain skills, particularly in a group setting. A teacher expressed:

> *To recall, we started with different levels of skill in a group, let's say in analyzing and presenting data and integrating technology. Yet, we received the scaffolding as a group whereby the trainers treated us homogenously as if we had equal skill levels and pacing of learning. As a result, we became selective about which skill to master rather than learning everything. This, I think, is one reason why there are competencies which recorded only a small number of teachers progressing from lower to higher skill level*.

This interview excerpt made sense, as group scaffolding is rare because the zone of proximal development of individual members differ (Smit et al., 2013). Other reasons provided by the teachers regarding the small number of teachers progressing in their level of skills in other AR skills include the use of hypothetical data for data analysis and presentation and communicating hypothetical results. The teachers argued that they did not have authentic experiences of these activities yet as the professional development program culminated only in designing the PAR proposal.

4.2. Attitudinal Developments of Teacher Trainees in Action Research

From Evans' (2014) model of professional development, the attitudinal component selected as the basis for evaluating training effectiveness is perceptual change. Hence, this section presents and discusses the perceptual needs and development of teachers in AR respectively before and after the training. In particular, Table 4 shows the distribution of teachers when grouped according to correct and incorrect perception regarding the purposes and processes of AR before and after their participation in the program. The far-right side of the table shows the difference between correct and incorrect responses during pre- and post-assessment. Ideally, the number of correct responses should be positive to indicate positive changes. Explanations are also supported to explain differences in the distribution before and after the training program.

In terms of teachers' perceptions about the purposes of AR, it can be observed in the table particularly in *Scenario 1* that one teacher is added to have recognized that AR can also be proactive after her participation in the training program.

Table 4. Teacher's perception of AR before and after the professional development program

Scenario	Pre-Assessment		Post-Assessment		Difference	
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect
Purposes of Action Research						
Scenario [1] The proactive purpose of action research	14	4	**15**	3	**+1**	-1
Scenario [2] Action research as a tool for resolving practical and idiosyncratic problems in a given context*	7	11	**10**	8	**+3**	-3
Scenario [3] Action research for addressing problems, improving conditions, and enhancing or generating knowledge*	17	1	**18**	0	**+1**	-1
Processes of Action Research						
Scenario [4] Action research as a collaborative inquiry	2	16	2	16	0	0
Scenario [5] Action research as an iterative and continuous process	10	8	10	8	0	0

This left three more teachers to recognize that other than being the reactive nature of AR or its characteristic of seeking solution to an existing problem, it can be proactive too. A proactive AR is characterized by conducting systematic inquiry ahead to potentially prevent recurrence of problems (Craig, 2009). The three teachers who identified the scenario as not an AR have the following narratives:

> *The teacher presumed in the hypothetical scenario presumed that the problem may repeat. What if it will not happen again? The role of AR is to solve an existing problem.*

> *This is not solving the current problem.*

These explanations prove that some teachers still have a limited understanding of the purposes of AR, meaning some do not recognize its proactive attribute but only its reactive purpose. Even previous studies documented that many teachers are constrained in this belief (Cortes et al., 2021b; Ulla, 2018). This limited understanding in some of them may be attributed to the original purpose of which AR is known, *i.e*., to *react* to problems faced by minority groups from issues of exploitation and colonization (Cortes et al., 2021b; Craig, 2009).

In *Scenario 2*, this represents the opposite purpose of AR which is resolving practical and idiosyncratic problems, hence, an asterisk is placed after the statement. The scenario portrays a mere empirical form of educational research and a demonstration of research skills which can be a good research thesis but does not reflect a reflective practice or a contextual problem that needs to be acted on. Although only three teachers are added to have correct responses in this scenario, this result may still be considered good progress. This addition led to a total of 55.55% (n=10) of teachers having a correct perception of AR being a tool for resolving practical and idiosyncratic problems. Some explanations given by the teachers who identified the scenario as AR are as follows:

> *I think this scenario represents an AR because it follows the rigours of the scientific method.*
>
> *This might be action research because of the presence of an intervention to improve the science process skills of students. The problem should be science process skills.*

While their statements do not speak fixed judgment of the scenario as AR, which is apparently not AR, this may indicate that they do not evaluate the scenario on the basis of the purpose portrayed but on the paradigm which informs the research process. Interestingly, this may mean that some teachers associate AR with the empirical or traditional form of research that is characterized by the following: (a) drawing conclusion, (b) hypothesis or research questions derived from theoretical propositions, (c) rigorous statistical analysis, and (d) representation of control and treatment groups (McMillan & Schumacher, 2010). At present, empirical research may be one of the categories of AR per Tripp (2005) and Whitehead and McNiff (2011) perspective but the (a) research questions are still drawn from a problem in the context, (b) focus is the improvement of educational practice and not to generalize results, and (c) participants are selected purposively according to those who need intervention. These reasons were not emphasized in the teachers' explanations of classifying the scenario as AR.

Finally, *Scenario 3* presents descriptive research that does not investigate a problem, thus, offered no intervention. The scenario does reflect as well any of the following purposes of AR: addressing problems, improving conditions, and enhancing or generating knowledge. Interestingly, only one teacher-participant identified this scenario as AR before the training program but later corrected her judgement of the situation at the end of the training. She explained that the research does not aim at providing transformative change but a mere

inventory of perception towards the use of social media platforms as an alternative learning management system.

As to teachers' perceptions regarding the processes of AR, it can be noted in the same Table that still a big percentage of teachers after the training program does not recognize AR as a collaborative inquiry in spite of the fact that they were grouped by discipline to come up with a participatory AR proposal. To be precise, 88.88% or 16 of them gave an incorrect response in *Scenario 4*. One interesting narrative provided by a teacher during the interview is as follows:

> *Although working as a group is beneficial, we do not have control over the behaviour of everyone. Some select only the task that they wanted to do. In effect, some do not have a little knowledge of everything about action research except to topics they focused to learn. Somehow, this is still beneficial because we obviously finished the project, but I think it is a lesson to move forward that we should take collaboration more than this. As much as possible, we need to contribute by knowledge or by effort in all parts of the project. That is the essence of collaboration in action research.*

This teacher only realized during the interview that the scenario should have been evaluated as an AR because of the collaborative attribute of the research method. AR is designed as collaborative activity in order to avoid the monologic discourse of teacher-student interactions and to make AR a more cooperative, deliberative and investigative endeavour whereby a teacher-researcher engages other teachers-researchers within the same discipline or interest in analyzing their own discourse practices (Piliouras et al., 2015). As evidence, a number of professional development programs for designing AR projects were done collaboratively (Paredes-Chi et al., 2018; Garcés & Granada, 2016; Jaipal & Figg, 2011; Moran, 2007).

In the same manner, still, almost 50.00% of teacher-trainees do not recognize AR as an iterative and continuous process. The different models reflecting the AR process prove these characteristics of AR (McNiff & Whitehead, 2011; Kemmis & McTaggart, 1988; Lewin, 1946). As seen in the results of *Scenario 5*, the number of teachers with correct (n=10) and incorrect (n=8) responses remain the same before and after the training program. A teacher expressed her opinion regarding the lack of perceptual change among teachers on these processes of AR. She said: "*I think a lot of them cannot recognize yet that AR is cyclical because we are not yet done with the entire AR process. The trainers may have discussed that this is cyclical or continuous but we have not yet put this theory into practice and the fact that we still end up with the PAR proposal*."

4.3. Intellectual Developments of Teacher Trainees in Action Research

The changes in teachers' knowledge structure or epistemological changes about AR are the intellectual component selected from Evans' (2014) model. This serves as another

basis for evaluating the effectiveness of the implemented teacher professional development program in designing AR projects. Thus, this section reports the intellectual needs and development of teachers in AR respectively before and after the training program. Table 5 shows their frequency distribution before and after the program when they are grouped according to the level of their knowledge in five AR dimensions. The far-right side of the table also reflects the number of teachers who progressed from lower to higher knowledge levels. Ideally, a negative value should also be reflected in the lower knowledge levels and a positive value in higher knowledge levels to indicate progress in the different AR dimensions. Description concerning teachers' experiences when participating in the program are also supported to explain the changes in the distribution before and after the training program.

Table 5. Teacher's knowledge structure of AR before and after the professional development program

AR Knowledge Dimension	Pre-Assessment Level of Competence					Post-Assessment Level of Competence					Difference/Addition				
	Limited	Basic	Proficient	Advanced	Expert	Limited	Basic	Proficient	Advanced	Expert	Limited	Basic	Proficient	Advanced	Expert
(a) Nature of AR	2	1	4	6	5	0	0	**6**	**7**	5	-2	-1	**+2**	**+1**	0
(b) Planning AR	1	0	5	9	3	0	**1**	0	**11**	**6**	-1	**+1**	-5	**+2**	**+3**
(c) Collecting and Analyzing AR Data	1	0	10	6	1	0	1	8	7	**2**	-1	+1	-2	+1	**+1**
(d) Developing Action Plan	1	0	1	3	13	0	0	2	2	**14**	-1	0	+1	-1	**+1**
(e) Writing and Presenting AR Report	1	1	8	4	4	0	1	8	4	5	-1	0	0	0	**+1**

It can be observed that most of the teachers already achieved proficient to expert knowledge levels across all five AR knowledge dimensions prior to their participation in the training program, meaning only a few were categorized in knowledge levels between limited to basic. Hence, the post-assessment should reflect the movement of the remaining few teachers from a lower category to higher knowledge levels to indicate training effectiveness. Results reveal that there is a positive progression of teachers from lower knowledge levels. For instance, in terms of knowledge on the nature of AR, the three teachers whose scores obtained in pre-assessment were categorized in the limited and basic levels reached the higher knowledge levels, either proficient or advanced. Similarly, the lone teacher with a limited knowledge level in the four AR knowledge dimensions (*i.e.*, planning of AR, collecting

and analyzing AR data, developing action plan, and writing and presenting AR report) moved to higher knowledge levels. This left no teachers at the lowest knowledge level.

These results indicate that the professional development program adopted a model that fits the transfer of essential knowledge from faculty trainers to teacher participants. When Kennedy (2014a) identified nine models of PD program and categorized them into purpose, the categorization indicates three according to increasing teacher autonomy: transmissive, transitional, and transformative. The categorization does not mean a wholesale move towards the transformative category, which is thought to be teacher-centred and context-specific models of CPD; rather, it indicates a better balance between models (Hoban, 2002). This aligns with the suggestion that not all CPD experiences should be transformative in nature, but rather have a transformative purpose. Some skills may be best learned or refreshed through more transmissive approaches to learning (Kennedy, 2014b). One of the approaches or PD model within the transmissive category is training (Kennedy, 2014a). In this regard, one reason this professional development program adopted the training model is to transmit AR skills or knowledge. Apparently, this model worked for the teacher participants as evidenced by the progression of their knowledge levels across all AR dimensions. Some teachers also described their experiences with training as the PD model in relation to developing their AR knowledge as “intensive”, “responsive to needs”, and “facilitative.”

4.4. Qualities of Proposed PAR Projects

The mean scores of each proposal in all criteria as a basis for evaluating the quality of teachers’ proposed action research project are shown in Table 6.

Table 6. Quality of Teachers’ Proposed Action Research Project

Criteria		**English Group**	**Math Group**	**Science Group**
Rationale (30 pts)	Content (15 pts)	11	14	11
	Proposed Intervention, Innovation, Strategy (15 pts)	12	14	9
Action Research Questions (30pts)		22	24	21
Research Methods 40pts	Participants and/or other Sources of Data and Information (10 pts)	7	8	7
	Data Gathering Method and Research Instruments (20 pts)	17	19	17
	Data Analysis Plan (10 pts)	6	9	6
Action Research Work Plan and Timelines (5 pts)		5	5	5
Cost Estimates (5pts)		5	5	5
Total		**85**	**98**	**81**

There were three invited experts who gave their individual rating per criterion. Their ratings were eventually consolidated and presented as mean per criterion to obtain the overall rating per proposal. The intent is not to determine which proposal got the highest score per criterion but to provide a reference as to which criteria or skills set need to be improved among teachers doing AR. Each group of teachers finished one proposal. The titles of the PAR proposals for English, Mathematics, and Science teachers are the following: (a) design and evaluation of a gamified-based instruction towards improving vocabulary skill, (b) video-based instruction in teaching basic concepts of probability, and (c) investigating the effect of contextualized learning materials in developing students' conceptual understanding of atoms. It is apparent that each proposal is graded with an overall mean above the 70-point passing score, meaning all proposals are evaluated as acceptable and approved for application for funding and implementation. This further indicates that teachers' competences in writing the AR rationale until proposing the budgetary requirements are beyond acceptable, as evidenced by the scores given by the reviewers. The reviewers may have posed several suggestions, but those were doable and does not entail major revisions. The suggestions common to all include the following: (a) addition of literature cited, (b) comprehensive discussion of the proposed action plan or intervention to the problem that researchers intend to resolve, and (c) explicit discussion of the data analysis plan.

5. CONCLUSIONS

The findings revealed that teachers' varied behavioural, attitudinal, and intellectual development needs in AR were addressed by the professional development program through teacher training. The teachers' level of AR competence and knowledge improved and their perceptions towards AR as to its purposes were also clarified. There is still a need to improve their perceptions of AR as to its process. The culminating outcome for the teachers to develop PAR proposals collaboratively was also achieved. However, to achieve these intended improvements and outcomes, the PD program should be designed taking account of the following: (a) providing constant scaffolding to teacher-participants from expert mentors, and (b) giving teachers ample time to develop their PAR proposals which are grounded in the realities of their schools. In conclusion, the PD design and evaluation framework were important factors that enabled the teacher-participants to transform their AR competencies toward developing PAR proposals in improving their teaching and research in their schools.

REFERENCES

Arnove, R. F. (2005). To what ends: educational reform around the world. *Indiana Journal of Global Legal Studies, 12*(1). https://doi.org/10.2979/gls.2005.12.1.79

Arthur Jr., W., Bennett Jr., W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: a meta-analysis of design and evaluation features. *Journal of Applied Psychology, 88*(2), 234–245. https://doi.org/10.1037/0021-9010.88.2.234

Pineda, H. et al. (2022). Development and evaluation of a professional development program on designing participatory action research projects for basic education teachers. Advanced Education, 21, 161-184. DOI: 10.20535/2410-8286.266663

Bongco, R. T., & David, A. P. (2020). Filipino teachers' experiences as curriculum policy implementers in the evolving K to 12 landscape. *Issues in Educational Research, 30*(1), 19-34. https://doi.org/10.3316/informit.085730319385430

Canlas, I. P., & Karpudewan, M. (2020). Blending the principles of participatory action research approach and elements of grounded theory in a disaster risk reduction education case study. *International Journal of Qualitative Methods, 19*, 1-13. https://doi.org/10.1177/1609406920958964

Commission on Higher Education. (2012). *CHED Memorandum Order No. 46: Policies-Standard to Enhance Quality Assurance (QA) in Philippine Higher Education through an Outcomes-based and Typology-based QA and Guidelines for Graduate Programs.* Commission on Higher Education.

Commission on Higher Education. (2017). *CHED Memorandum Order No. 74: Policies, Standards and Guidelines for Bachelor of Elementary Education (BEEd).* Commission on Higher Education.

Commission on Higher Education. (2017). CHED Memorandum Order No. 75: Policies, Standards and *Guidelines for Bachelor of Secondary Education (BSEd).* Commission on Higher Education.

Cortes, S. (2019). Needs assessment on action research competencies of teacher-researchers in Surigao del Sur, Philippines. *Journal of Education Naresuan University, 21*(4), 1-19. https://so06.tci-thaijo.org/index.php/edujournal_nu/article/view/192512

Cortes, S. (2020). Flexible learning as an instructional modality in environmental science course during COVID-19. *Aquademia, 4*(2). https://doi.org/10.29333/aquademia/8444

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

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. T., Pineda, H. A., & Geverola, I. J. (2021a). A Confirmatory Factor Analysis of Teacher's Competence in Action Research (TCAR) Questionnaire. *Advanced Education, 19*, 103-113. https://doi.org/10.20535/2410-8286.241148

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

Cortes, S., Pineda, H., & Geverola, I. J. (2021b). Examining competence in action research of basic education teachers in Cebu City, Philippines. *Journal Of Nusantara Studies (JONUS), 6*(2), 202-230. https://doi.org/10.24200/jonus.vol6iss2pp202-230

Craig, D. V. (2009). *Action Research Essentials* (1st ed.). San Francisco, California: Jossey-Bass.

Cullen, T. A., Akerson, V. L., & Hanson, D. L. (2010). Using action research to engage K-6 teachers in nature of science inquiry as professional development. *Journal of Science Teacher Education, 21*(8), 971-992. https://doi.org/10.1007/s10972-010-9218-8

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development.* Palo Alto, CA: Learning Policy Institute.

Department of Education (2016). *DepEd Order No. 4: Revised Guidelines for the Basic Education Research Fund*. Pasig City: www.deped.gov.ph. Retrieved from https://www.deped.gov.ph/wp-content/uploads/2016/01/DO_s2016_04.pdf

Engin, M. (2014). Macro-Scaffolding: Contextual Support for Teacher Learning. *Australian Journal of Teacher Education, 39*(5), 26-40. https://doi.org/10.14221/ajte.2014v39n5.6

Evans, L. (2008). Professionalism, professionality and the development of education professionals. *British Journal of Educational Studies, 56*(1), 20-38. https://doi.org/10.1111/j.1467-8527.2007.00392.x

Evans, L. (2014). Leadership for professional development and learning: enhancing our understanding of how teachers develop. *Cambridge Journal of Education, 44*(2), 179–198. https://doi.org/10.1080/0305764X.2013.860083

Gaffney, M. (2008). Participatory action research: an overview. *Kairaranga, 9*, 9-15.

Garcés, A. Y., & 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://doi.org/10.15446/profile.v18n1.49148

Ghaith, G. M., & Awada, G. M. (2022). Scaffolding Understanding of Scholarly Educational Research Through Teacher/Student Conferencing and Differentiated Instruction. *Teaching and Learning Inquiry, 10*. https://doi.org/10.20343/teachlearninqu.10.8

Gravani, M. N. (2012). Adult learning principles in designing learning activities for teacher development. *International Journal of Lifelong Education, 31*(4), 419–432. https://doi.org/10.1080/02601370.2012.663804

Hathorn, C., & Dillon, A. M. (2018). Action research as professional development: Its role in education reform in the United Arab Emirates. *Issues in Educational Research, 28*(1), 99-119.

Hine, G. S. (2013). The importance of action research in teacher education programs. *Issues in Educational Research, 23*(2), 151-163. https://www.iier.org.au/iier23/hine.html

Hoban, G. F. (2002). *Teacher Learning for Educational Change: A Systems Thinking Approach*. Buckingham: Open University Press.

Hong, C. E., & Lawrence, S. A. (2011). Action research in teacher education: classroom inquiry, reflection, and data-driven decision making. *Journal of Inquiry & Action in Education, 4*(2), 1-17.

Jaipal, K., & Figg, C. (2011). Collaborative action research approaches promoting professional development for elementary school teachers. *Educational Action Research, 19*(11), 59-72. https://doi.org/10.1080/09650792.2011.547688

Jugar, R., & Cortes, S. (2022). Embedding action research in Philippine teacher education. In M. S. Khine, & Y. Liu, *Handbook of Research on Teacher Education* (pp. 703–719). Singapore: Springer. https://doi.org/10.1007/978-981-16-9785-2_35

Kennedy, A. (2014a). Models of Continuing Professional Development: a framework for analysis. *Professional Development in Education, 40*(3), 336-351. https://doi.org/10.1080/19415257.2014.929293

Kennedy, A. (2014b). Understanding continuing professional development: the need for theory to impact on policy and practice. *Professional Development in Education, 40*(5), 688-697. https://doi.org/10.1080/19415257.2014.955122

Kemmis, S., & McTaggart, R. (1988). *The Action Research Planner* (3rd ed.). Deakin University, Australia: Deakin University Press.

Kemmis, S., & McTaggart, R. (2000). Participatory action research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 567-607). Thousand Oaks, CA: Sage.

Kirkpatrick, D. (1994). *Evaluating training programs.* San Francisco: Berrett-Koehler Publishers, Inc.

Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues*, *2*(4), 34-46. https://doi.org/10.1111/j.1540-4560.1946.tb02295.x

McMillan, J. H., & Schumacher, S. (2010). *Understanding and Evaluating Educational Research* (4th ed.). Boston: Pearson.

Manfra, M. M. (2019). Action research and systematic, intentional change in teaching practice. *Review of Research in Education, 43*, 163–196. https://doi.org/10.3102/0091732X18821132

Meyer, D. K., & Turner, J. C. (2002). Using Instructional Discourse Analysis to Study the Scaffolding of Student Self-Regulation. *Educational Psychologist, 37*(1), 17-25. https://doi.org/10.1207/S15326985EP3701_3

Pineda, H. et al. (2022). Development and evaluation of a professional development program on designing participatory action research projects for basic education teachers. Advanced Education, 21, 161-184. DOI: 10.20535/2410-8286.266663

Mirasol, J. M., Necosia, J. V., Bicar, B. B., & Garcia, H. P. (2021). Statutory policy analysis on access to Philippine quality basic education. *International Journal of Educational Research Open, 2*. https://doi.org/10.1016/j.ijedro.2021.100093

Moran, M. J. (2007). Collaborative action research and project work: Promising practices for developing collaborative inquiry among early childhood preservice teachers. *Teaching and Teacher Education, 23*, Teaching and Teacher Education. https://doi.org/10.1016/j.tate.2006.12.008

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://eric.ed.gov/?id=EJ1112304

Oracion, C., Naidu, V. L., Ng, J., & Reyes Jr., V. (2020). *Advancing the K-12 Reform from the ground: A case study in the Philippines.* Mandaluyong City, Metro Manila, Philippines: Asian Development Bank and The HEAD Foundation. https://doi.org/10.22617/WPS200105

Paredes-Chi, A. A., & Castillo-Burguete, M. T. (2018). Is Participatory Action Research an innovative pedagogical alternative for training teachers as researchers? The training plan and evaluation for normal schools. *Evaluation and Program Planning*, 176-184. https://doi.org/10.1016/j.evalprogplan.2018.03.007

Piliouras, P., Lathouris, D., Plakitsi, K., & Stylianou, L. (2015). Collaborative action research in the context of Developmental Work Research: A methodological approach for science teachers' professional development. *World Journal of Education, 5*(6), 74-80. https://doi.org/10.5430/wje.v5n6p74

Rahman, B., Abdurrahman, A., Kadaryanto, B., & Rusminto, N. E. (2015). Teacher-Based Scaffolding as a Teacher Professional Development Program in Indonesia. *Australian Journal of Teacher Education, 40*(11), 67-78. https://doi.org/10.14221/ajte.2015v40n11.4

Smit, J., Van Eerde, H. A., & Bakker, A. (2013). A conceptualisation of whole-class scaffolding. *British Educational Research Journal, 39*(5), 817–834. https://doi.org/10.1002/berj.3007

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

Tripp, D. (2005). Action research: a methodological introduction. *Educação e Pesquisa, 31*(3). https://doi.org/10.1590/S1517-97022005000300009

Ulla, M. B. (2018). Benefits and challenges of doing research: Experiences from Philippine public-school teachers. *Issues in Educational Research, 28*(3), 797-810. http://www.iier.org.au/iier28/ulla.pdf

Whitehead, J., & McNiff, J. (2011). *All You Need to Know about Action Research* (2nd ed.). London: SAGE.

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