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Challenges in Conducting Action Research: Experiences from Biology Teachers of a Province in Mindanao, Philippines

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Abstract: Challenges in Conducting Action Research: Experiences from Biology Teachers of a Province in Mindanao, Philippines. **Objectives:** This study aimed to explore biology teachers' experiences from a province in Mindanao regarding their challenges while engaging in action research. **Methods:** It employed a multiple case studies method that involved detailed examination and in-depth analysis of primary and secondary data collected from questionnaires, in-depth individual interviews, and other relevant artifacts from the participants. **Findings:** Teacher's major challenges in action research (AR) are reported as themes, namely: negative perceptions and attitudes, lack of conceptual knowledge and unresponsive nature to critiques, lack of time and resources, and mistrust of colleagues' research capacity. **Conclusion:** The professional development programs these teachers previously attended did not upgrade their skills in AR because of the following reasons: rolled out in a short period, episodic, had minimal scaffolding and monitoring, and lack evaluation of teachers' AR projects after the training programs.

Keywords: action research, biology teachers, challenges, professional development.

Abstrak: Tantangan Melakukan Penelitian Tindakan: Pengalaman Guru Biologi di Mindanao, Filipina. ***Tujuan:*** *Penelitian ini bertujuan untuk mengeksplorasi pengalaman guru biologi dari sebuah provinsi di Mindanao mengenai tantangan mereka saat terlibat dalam penelitian tindakan.* ***Metode:*** *Metode studi kasus berganda yang melibatkan pemeriksaan detil dan analisis mendalam dari data primer dan sekunder yang diperoleh dari kuesioner, wawancara individu yang mendalam, dan hasil karya yang relevan dari para peserta.* ***Temuan:*** *Tantangan utama guru dalam penelitian tindakan yaitu: persepsi dan sikap negatif, kurangnya pengetahuan konseptual dan sifat tidak responsif terhadap kritik, kurangnya waktu dan sumber daya, dan ketidakpercayaan terhadap kapasitas penelitian rekan kerja.* ***Kesimpulan:*** *Program pengembangan profesi yang sebelumnya diikuti oleh guru-guru ini tidak meningkatkan keterampilan mereka dalam melaksanakan penelitian tindakan karena alasan berikut: diluncurkan dalam waktu singkat, episodik, minimnya scaffolding dan pemantauan, dan kurangnya evaluasi proyek penelitian tindakan guru setelah program pelatihan.*

Kata kunci: *penelitian tindakan, guru biologi, tantangan, pengembangan profesi.*

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INTRODUCTION

Action research (AR) in education is a collective and collaborative undertaking directed towards improving practices and attaining desirable educational outcomes (O'Connor, Greene, & Anderson, 2006; Johnson, 2012), as evidenced by the following studies. First, it provides practical knowledge in developing teaching-learning innovations and research-based teaching practices (Steele, 2012). As a result, it refines or perfects teachers' pedagogical practices when carried out successfully (Chow, Chu, Tavares, & Lee, Spring 2015). Second, it explores and addresses practical issues in both classroom and the school in general, develops supportive professional culture, and provides feelings of context-specific support because of its collaborative attribute (Ado, 2013; Johnson, 2012). Third, it allows teachers to deepen their understanding of how students think, challenges their traditional perception about the learning process, develops confidence in their abilities, and eventually boosts their professional commitment to teaching (Romanowicz, 2010). Fourth, it helps teachers establish their identity as researchers, allows them to examine the dynamics of their classrooms, checks on their actions and interactions with students, and validates and challenges their existing practices (Davis, Clayton, & Broome, 2018). Fifth, it improves teaching and learning of particular disciplines, of which one is biological sciences (e.g., Udeani, Atagana, & Esiobu, 2016; Cortes, 2020). Finally, Hine and Lavery (2014) specifically stressed that AR also bridges the gap between theories and practices in science education, enables teacher empowerment, and is an effective form of professional growth and development.

Due to these significant contributions of AR in education, teacher-led research has become an evident aspect of international reforms and a growing interest in teacher education programs (Newton & Burgess, 2008). The reforms include in-service training of teachers on classroom AR (Meerah & Osman, 2013; Burns & Westmacott, 2018) and linking research to government fundings (Li, Millwater, & Hudson, 2008). AR methodology is also taught as a core subject in teacher education institutions both at the undergraduate and graduate levels (Hine, 2013). There also teacher training institutions that expose their pre-service teachers to AR during their practicum period. With the professionals' supervision, these pre-service teachers reflect on their practices, and they are given immediate and reliable feedback (Halim, Buang, & Meerah, 2010). It is argued that conducting AR while in practicum gives students engagement to an authentic assessment by linking theory to their developing classroom practice (Kennedy-Clark et al., 2018).

In the Philippines, the efforts towards AR have attuned with the global contour. The Philippine Commission on Higher Education (CHED) includes AR as a content course across all specializations, as reflected in various teacher education curricular programs. For elementary pre-service teachers who have their practicum, the AR course is designed to provide them with an avenue to engage themselves in conducting AR. It primarily aims to improve students' learning and teaching practices (CHED, 2017). On the other hand, for those who specialize in science in secondary education, teachers must do AR in the content or pedagogy in any major science area (e.g., biology, chemistry, or physics), depending on their chosen field of expertise (CHED, 2017). AR goals in different courses and specializations may vary, but the direction all head to improving educational outcomes.

Meanwhile, several efforts have also been directed in tooling and retooling in-service teachers' and administrators' capacity to conduct AR. These include providing opportunities for professional upgrading by delivering courses on AR methodology for in-service teachers (Lingam, 2012) and AR integration in the pre-service teacher curriculum (Cortes, 2019). In the same vein, Continuing Professional Development (CPD) programs introducing short courses on AR methodology are organized in the Philippines by the pool of professionals (Morales et al., 2016; Cortes, Pineda, & Geverola, 2020; Cortes et al., 2021, Pineda, & Geverola, 2021). Furthermore, the Philippine Department of Education (DepEd), which is in charge of its basic education program, establishes Research Management Guidelines (RMG) to provide supervision of research initiatives conducted at different scales (i.e., from national to school-level) and support mechanisms for research in terms of funding, partnerships, and capacity building programs. The goals are to renew the vigor in conducting research and create policies and programs informed by evidences. The Philippine Professional Standards for Teachers (PPST) has also underlined the need for teachers to undergo personal and professional reflection and learning to improve teaching and learning practices. It indicates that in-service teachers must immerse themselves in action research endeavors (Department of Education, 2017).

Despite the efforts to promote teacher-led action research, only a few public-school teachers actively involve themselves (Ulla et al., 2017). Several grounds have been pointed out restricting these teachers from conducting AR based on existing studies, which are as follows: First, an assessment of teachers' perception of their knowledge and understanding about basic concepts of AR in a public elementary school in Batangas was conducted. These perceptions pertain to writing the parts of a research report, individual inquiry, collaborative inquiry, and research scope. Results show that desirable perceptions exist among the teacher-researchers, but extensive capacity-building programs in seminar-workshops were still emphasized and recommended (Anzaldo & Cudiamat, 2019).

Second, a survey referring to the teacher-researchers' conceptions and perceptions in a Catholic Higher Educational Institution (HEI) in the northern Philippines showed that they perceived AR as a significant tool in enhancing their teaching-learning practices, increasing pedagogical, content and instructional knowledge, and improving students' learning outcomes (Tindowen, Guzman, & Macanang, 2019). However, they have also reported that although the teachers have positive perceptions, several challenges were encountered in conducting AR. These challenges were time constraints and knowledge on the research method, together with their writing anxieties. Specifically, their lack of knowledge refers to the struggle to search for literature, collect data, and present and communicate research results.

Third, a study was conducted to identify the benefits and challenges public school teachers experienced in the Philippines. The results revealed that conducting classroom-based research would yield desirable outcomes to their teaching-learning practices and professional development. Along with this, some teachers' challenges are the stress in executing AR projects. Some teachers also lack financial support from the school, lack access to professional development programs, and have relatively heavy teaching and service loads. These teachers also reported very

limited and unstable access to internet services and reference materials (Ulla, 2018).

Fourth, an assessment of teachers' perceptions of AR in Agusan del Norte in Mindanao revealed that engaging oneself with this form of research is of great importance to improving teaching-learning processes, hence offering desirable impacts to learners. Moreover, teachers strongly perceive that doing AR leads to further professional development, critical and systematic inquiry of their teaching practices, identifying and addressing their school and classroom issues, and acquiring knowledge and understanding for effective teaching-learning endeavors (Ulla, Barrera, & Acompanado, 2017). However, these teachers have also reported that engaging in AR affects their personal lives by consuming the time supposedly given to their family. They do not also account AR as one of their job functions. Thus, some teachers are poorly motivated and become uninterested in the process. They also explained that their lack of training on action research methods translates to their poor conceptual knowledge and skill in conducting action research.

Finally, a survey among science and mathematics basic education teachers in schools of Manila reported that AR improves their quality of instruction by learning novel and innovative teaching and learning techniques and strategies that would be suitable for specific learning environments. Moreover, the teachers noted that AR aids them in assessing and identifying student needs. Then, it helps them to look for potential interventions to resolve current classroom or school problems. Coupled with these perceptions are the challenges that these teachers have experienced. The study revealed that they have a moderate level of difficulty in some specific AR components, signifying professional development areas. These were searching the literature, statistics, presenting and organizing data, and writing the research report. The teachers also stated that their regular teaching loads are beyond the prescribed. As a result, they are exhausted and only give a very limited amount of time and energy to do research (Morales et al., 2016).

Altogether, Philippine teachers have varied conceptions and challenges about action research and the process of conducting action research as revealed by existing studies. Specifically, teachers disengage from conducting AR because of their limited understanding, skills, motivation, and lack of technical and financial support. This may be explained by the differences in researchers' local educational settings, and research backgrounds brought about by the different exposures and opportunities available to the teacher-researcher. Consequently, research efficiency in the country, especially in the basic education sector is scarce due to a great percentage of teachers disengaging from AR. This is despite AR being an integral part of their standard outcomes and as one of the bases of promotion to higher level in their career paths (DepEd, 2007).

In this regard, the present study aims to further previous reports regarding teachers' experiences in conducting AR to contribute to the growing body of literature in the country. However, the participants of this study are limited to five public school Biology teachers in one province in Mindanao, Philippines. The results will serve as inputs to the currently planned capacity building and professional development program to design a collaborative AR project for biology teaching.

METHODS

Research Design

This study employed a multiple case study method under qualitative research designs. Despite criticisms of its rigor and

objectivity, this research method is chosen because of its relevance in the present study, which seeks to explain teachers' challenges in conducting AR. Employing multiple case study also allowed the researchers to analyze the data gathered within and across situations experienced by the teacher-researchers as independent cases. This also allowed the researchers to identify if which among the data gathered are valuable or not. Consequently, this allowed the researchers to draw out and understand similarities and differences between the cases resulting to a stronger and more reliable, valid and convincing findings (Gustafsson, 2017). More so, quite a few studies have already used this method with similar research aim (*e.g.,* Esposito & Smith, 2006; Razfar, 2011; Zhou, 2012).

Research Participants

The participants of this study were five public school Biology teachers in one province in Mindanao, Philippines. The selection of these participants employed a purposive sampling technique focusing on teachers who have undergone prior training and have conducted an AR project within the last five years. In addition, the participants should have presented even in at least a local conference or published their action research work. With these inclusion criteria, there is a greater chance that the teacher participants may share authentic and first-hand experiences regarding their challenges in conducting AR. Table 1 shows their professional profiles with regard to engagement in AR.

It is reflected in the same table where the schools these teachers are assigned. The Philippine Department of Education categorized its schools according to the number of teachers. Schools A, B, and C are classified as *medium* schools, while Schools D and E fall into the *large* schools category. *Medium* schools have 10 – 25 teachers, while *large* schools have 26 – 100 teachers. Furthermore, Schools B and C are *rural* schools, while Schools A, D, and E are *urban* schools. Therefore, based on the professional profiles of the teacher-participants and the profile of their respective school, it can be inferred that the participants in the study are independent and represent different cases.

Data Sources

The instruments used in this study are an open-ended survey questionnaire and non-technical literature to execute data polyangulation. The open-ended questionnaire contains a single main question stated as "*Please narrate the challenges you encountered while previously or currently engaging in an action research project*." and has three guide questions. These questions aimed at specifically drawing out specific

Table 1. Professional profiles of research participants

Participants and School Assignment	Professional rank	Tenure in service (years)	No. of AR trainings attended	No. of AR completed in the last five years	No. of AR presentation	No. of AR publications
Khul – School A	Master Teacher 1	20	9	5	5	0
Mainne – School B	Teacher 3	6	5	2	1	0
Max – School C	Master Teacher 1	11	6	5	2	0
Virgie – School D	Teacher 3	15	4	2	2	0
Irene – School E	Teacher 1	2	2	1	1	0

Table 2. Professional profiles of AR experts

Expert	Academic rank	Agency	Tenure in service (years)	No. Research Publications	No. of publications specific to AR
A	Retired Professor	Commission on Higher Education	35	10	5
B	Education Program Supervisor	Department of Education	20	5	1
C	Professor	Commission on Higher Education	7	9	5

personal experiences of the teachers relative to conducting ARs at various aspects such as the following but not limited to technical aspects (*e.g.*, preparing both the proposal and final manuscript, data gathering, analyzing the data, and preparing the article manuscripts), systemic aspects (*e.g.*, trainings and programs attended and scaffolding received from superiors and colleagues relative to the conduct of AR) and personal aspects (e.g., time management, personal interest and involvement in AR). Also, the questionnaire asked the teachers regarding their professional profiles with respect to AR. Prior to its implementation, this questionnaire has undergone validation by three experts on AR whose profiles are presented in Table 2. On the other hand, the latter sources of data pertain to the participants' previous research works, AR training design developed by the division research and planning office, and division accomplishment report on AR. The significance of polyangulating data or converging information from these resources results in a broader understanding of the phenomenon of interest (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014).

Data Gathering Procedure and Analysis

The single open-ended questionnaire was given to five participants to narrate through writing their experiences or challenges in conducting AR. An in-depth individual interview (IDI) was conducted to clarify and validate their narrative accounts upon return. This is to assure that what were meant by the participants on certain themes were properly and genuinely reflected during the process of thematizing. Eventually, the data collected had undergone thematic analysis on which responses were systematically coded and thematized for interpretation. Meanwhile, non-technical literature underwent document analysis to provide supplementary information and verifies findings from the open-ended questionnaire and IDI.

Conforming with Ethical Standards

The teachers were informed that their participation in the study was voluntary. It was also made clear to the participants that if they feel any discomfort on the process, they may withdraw anytime and that it would not incur penalty or loss on their end. All of them were referred with pseudonyms to protect their identity, and reasonable efforts were made to keep their personal information private and confidential. At present, these teachers have undergone series of mentoring programs in developing an action research proposal.

■ RESULTS AND DISCUSSION

Teachers' experiences or challenges in doing AR are presented in this section. Their responses are thematized and subsequent explanations are indicated per theme.

Teachers' negative perceptions and attitudes towards action research

In recent years, the Division office had pursued several capacity-building programs relating to AR thru the division research planning and office. The programs are in line with the initiatives stipulated in the Basic Education Governance Act of 2001 and Basic Education System Reform Agenda (BESRA), and with the mandates from several DepEd Orders (*e.g.,* DepEd Order no. 16, s. 2017; no. 39, s. 2016; no. 4, s. 2016; and no. 43 s. 2015). These, in effect, require the schools to respond in the call of conducting AR with those in master teacher positions who are usually assigned to perform the task. Khul recalled that the school principal made the assignment, often from the decision of the majority, and on the basis of their duties and responsibilities stipulated in the Results-Based Performance Management System (RPMS) Manual for Teachers and School Heads.

Being designated as a *master teacher*, she is expected to provide technical assistance to other teachers in any sort and form on top of her regular teaching responsibilities. They (as *master teachers*) are also expected to conduct AR in compliance with their RPMS. With these, she is usually assigned to lead a collaborative AR project for her fellow biology teachers. Allowing her to meet the expectations of their RPMS and at the same time provide technical assistance to her co-teachers. Eventually, they look for a problem, design an intervention, write the manuscript, and present the paper in a local forum, usually a division-wide research conference. Despite their compliance, she noticed that her fellow biology teachers in school were not highly motivated to do AR. There were times that she had to perform her colleagues' assignment in the team in their previous AR projects. She usually heard from her fellow teachers who are in the beginning stage of their career paths that AR is beyond their obligation and is instead a work of academicians in the universities or them, the *master teachers*. They have also stressed that conducting an AR would mainly benefit her, being a *master teacher* and less, if not at all, to them, being at lower ranks. Even before, McDonough (2006) already found similar contention from teachers of which they do not account AR as their prime responsibility because experts or research specialists should have done it. Khul expressed that doing research requires research skills that normally master teachers and research specialists are equipped with. It also requires a master's degree at least to acquire these skills. Hence, for other teachers, they should be exempted from doing research.

Meanwhile, Maine's concern relates to the heavy teaching loads, thus, giving her pessimism whether to do AR still or not. Aside from that, she also included the plethora of assigned extended tasks (*e.g.,* school grounds landscaping and beautification, classroom structuring, and school reports) to her being an adviser and other extra-curricular activities (*e.g.,* sports coach, trainer, and club adviser) that burdens more her tasks as a public-school teacher. She said,

> "*With the handful of paper works DepEd requires us to accomplish on top of our lesson preparation, it difficult to study and acquire those research skills and what more to complete an action research project. We are also expected to perform extended tasks in school, which is another factor which inhibits me from immersing myself in action research works. Teaching and research are two separate tasks and we (they) are not paid to perform the latter.*

If I had participated in the enhancement workshops organized by the division research office, it was just because we were told to do so."

For entry-level teachers such as Max, he did research because their superior directed them, and their enthusiasm roots from their perception that it may be a good platform for promotion, a finding consistent with that of Ulla *et al.* (2017) and Ulla (2018). However, when he was asked about the relevance of action research in teaching aside from promotion, Max pointed out that research allowed him to contribute to the body of knowledge, improve practice, and be reflective. However, he was doubtful that his actions or interventions to solve the problems he investigated would be applied to other contexts. For almost two years, two of his action research projects ended as his personal consumption, although both were presented in a local congress. He thought of not conducting in the latter years and planned to give the assignment to the incoming teachers in their school. Max disclosed,

"*The conduct of action research may benefit me (him) in building up my credentials as I will be aspiring for promotion in the future. It may also give me the opportunity to contribute something new to the research body. However, I find it discouraging to continue since my action researches do not go any further but instead were only limited to the division-wide presentation, then nothing comes after."*

This statement indicates that he has not clearly perceived AR's real significance towards his professional endeavors but just merely a work-related function to be complied for the sake of personal benefit such as promotion.

Teachers' lack of conceptual knowledge on action research and unresponsive nature to critiques

Several studies point out that the lack of conceptual knowledge to define research questions, analyze and report research data, search for literatures, and write technical reports constrain teachers to do research (Morales *et* al., 2016; Han, 2017; de Borja, 2018). Unfortunately, these challenges also thrive in this province despite the yearly conduct of enhancement workshops and other allied professional development programs to enhance teachers' knowledge and skills to conduct AR. Kul felt, however, that the trainings conducted lack rigor and were episodic. She further claimed that no reinforcement, proper monitoring, and evaluation of their research projects after an AR training.

When asked which knowledge she needed the most, her response highlighted her incompetence to narrow down a problem into a researchable question, a finding consistent with the report of Burns'. Han (2017) explained that teachers' struggle to identify and systematically define the research problem or questions root in the complexity of educational problems. Further, developing an idea for a problem requires them to do series of observations, reflections, and brainstorming. "*We find it very challenging to identify what specific question/s to be investigated out of the problem that we have conceptualized during brainstorming*," Khul disclosed.

On the other hand, Virgie also explained that their poor competence in problem conceptualization affected them to implement appropriate research methods. She said,

"*I do not know what data to collect with the research questions I have had, how would I go through the collection process, and how would I analyze the*

data. I still had to look for statistician whom I paid to analyze and interpret the data. I can only manage to analyze qualitative data. The training duration was too short; thus, I still have many confusions on the appropriate statistical tool to be used."

Virgie was referring individuals who are intelligent in mathematics as statisticians. This challenge among in-service teachers reflects the previous undergraduate training/curriculum of pre-service teachers in the Philippines because statistics as a course may be offered depending on the program and specialization they were enrolled. As a result, this study and the findings of Morales et al. (2016) and de Borja (2018) emphasized knowledge on statistics, specifically on descriptive and inferential statistics, as a barrier to conducting research.

On the other hand, Max and Mainne share the same challenge on developing an appropriate and feasible intervention. The former stated "… *sometimes the expected outcomes from the intervention are not achieved*" while the latter says, "*The time to prepare and administer the intervention is insufficient*." The reason for such was Max used Strategic Intervention Material and/or Contextualized Modules as his intervention. Thus, he referred preparation time as insufficient along with its conduct. They are not trained to ICT-related skills because ICT training was selective and was only given to those skilled teachers already according to them. In effect, they struggle to design the intervention and perform literature search and write the research manuscript. An artifact from the Division Research Office about challenges faced by teachers on research implementation coincides with this response stating that "…*most of the master teachers who are presenters rely on other teachers for the encoding of the manuscript and other materials*."

When the paper is done, these teachers prefer to wait for the research congress organized by the district research committee to present their output rather than look for experts who could have refined their work. "*I am shy of my work being corrected, and it is tiresome to do revisions*," Irene disclosed. *"Sometimes I also feel less as a researcher if I found my work with a substantial number of corrections from those who critique it,"* she added. These statements indicate their nonreceptive nature to accept suggestions and constructive criticisms as they perceived doing revisions as laborious and demoralizing. Zhou (2012) explained that being critiqued and told to do revisions on their paper will add pressure and frustration during the research process.

Teachers' lack of time and resources

Time has always been a constraint to teachers amid other non-teaching responsibilities and demands (Zhou, 2012; Hairon, 2017; de Borja, 2018). Similarly, participants in this study hold the same predicament. Irene cited (a) overlapping school activities and (b) extra teaching and service loads as factors challenging her to engage in AR. Meanwhile, Max asserted, "*Since I belong to a small school, loads of work were on our shoulders, and the time for conducting an action research is being sacrificed*." Similarly, Maine expressed that because of these extended tasks, as stated in the first theme, her time to conduct research is at stake and needs to prioritize curricular works over research. "…*prioritizing my curricular works and other extended tasks in school consumes most of my time; thus, I really find it hard to immerse myself into conducting action research*".

Along with time, the lack of funds and

significant resources restrain these teachers from doing research. They have to consume their resources for the materials and charge for mobilization during its conduct. Often when there were seminars, school heads preferred to send a minimum of three (3) teachers to attend, thus, leaving some interested teachers unable to participate due to lack of school funds. If they insisted on attending, they would utilize their personal funds and resources for the fare, registration, and other expenses, if there would be any. Irene expressed,

> "*Sometimes, we need to spend on our own if we are really willing to attend the seminar-workshop on conducting action research, such as but not limited to, fare, food, and registrations because our school could not afford to shoulder such expenses for all those who wish to join.*"

In the same vein, Virgie also stated, *"We need to provide our own printing materials such as bond papers, printers, and inks during the preparation and reproduction of our manuscripts.*" On the contrary, Khul and Max expressed positive feedback on this aspect. Their principals encourage them and exhaust all financial means to support the conduct of action research in school as they take pride once research outputs were done. According to Khul,

> "*Sir (The Principal) really feels proud when he knew that some of his teachers were conducting action research. He even asked us on the money that we consumed and the materials we still need. He likes the idea that somebody will be representing our school in a research conference*."

Teachers' mistrust each other's capacity to do research

In the Research Implementation Status (RIS) artifact released by the Division Research Office, it was indicated that School Action Research Committees are not fully equipped with the skills in crafting Action Research. More so, the school heads chair the School Research Committee but are unaware of their responsibilities as specified in the Research Management Guidelines (DepEd Order No. 16, s. 2017). In line with this, Virgie raised a doubt on whom to ask for assistance. She said, "*I dout the capacity of my colleagues when doing action research because I know what they are capable of. Hence, I opted not to ask them anymore so as they are*." In addition, Khul expressed a similar dilemma,

> "*Members of my action research team use to have their inquiries answered and consultations only by me as their team head. They seldom seek the opinions and are hesitant to consider the ideas of other team members because they are aware of the research capabilities of each*."

This is a clear manifestation of mistrust existing within and among teacher-researchers. However, they are unaware of this problem that is already occurring within their group. Such scenarios actually defeat AR's purpose because it is designed for collaboration among teacher-researchers, as much as possible. AR should be a reflection of collective effort and must have been done in a collaborative manner to create a space for joint reflection and dynamic interaction while developing legitimate knowledge, promoting social change, and solving problems (Fandiño, 2007). Unfortunately, these teachers failed to see what individuals could contribute to coming up with a refined AR project. With these, they missed one of the very essences of AR in education – to be part of collaborative academic work and the opportunity to provide scaffolding to each other as they grow professionally.

CONCLUSIONS

The result of the study reveals that there are four major challenges that biology teachers encounter when conducting AR. Unfortunately, the workshops organized by the Division Planning and Research Office failed to calibrate teachers with relevant skills in conducting action research because these are rolled-out in a short period and are episodic. Further, there are very limited, if none, reinforcement, scaffolding, proper monitoring, and evaluation of the training inputs and their AR projects were made after the training. Consequently, the lack of conceptual knowledge and skills on action research methodologies remains a major challenge among teacher-researchers.

Hence, the present study suggests that capacity building and other professional development programs should align on the challenges these teacher-researchers encounter and is responsive to their needs. The professional development programs that will be developed and implemented by the Division Research Committee should also explore other professional development models because training alone does not improve teachers' knowledge and skills in AR. However, this study does not suggest a wholesale move towards implementing only transformative models, which are thought to be context-specific and teacher-centered and provide increased capacity for professional autonomy. Instead, there should be a balance between models and should have a transformative purpose. Also, conducting episodic professional development programs is strongly discouraged as this will not suffice the teachers' training needs, instead will only result to impractical use of funds, resources, and time, of both sides. Finally, there is a need to revisit institutional policies to address issues on non-academic challenges encountered by the teachers when conducting action research, such as workloads, working time, and resources. Teachers have desirable perceptions as to the significance of AR, specifically on its role in improving educational outcomes. However, these non-academic challenges would remain a challenge on their part that is beyond their control. Training may be given, but these non-academic challenges would create significant gaps in teachers' practice of what they have learned from AR training. In other words, these challenges will further cause a disconnect between theory and practice.

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