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Empowering Teachers as Classroom Problem-Solvers through Action Research and Reflective Teaching Training (ARRTT)

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ABSTRACT: This study investigates how teachers' problem-solving abilities in the classroom were enhanced by a professional development program, Action Research and Reflective Teaching Training (ARRTT). Using an action research methodology, data collected from in-person interviews and open-ended questionnaires were used and subjected to thematic analysis. Teachers acknowledged the pressing need to address the issues they encountered in the classroom but were unsure of how to proceed, thus tending to respond differently to varied challenges they faced in the classroom. After ARRTT, participants' narratives showed improvement in their classroom problem-solving skills, from not knowing what to do to finally figuring out how to solve the problems. Some followed the systematic and cyclical process of action research; others applied reflective teaching; and others combined reflective teaching and action research. Application of their gained knowledge and skills improved their students' performance, changed their students' behavior, and improved their teaching practices.

Keywords - action research, reflective teaching, professional development program, classroom problem-solving skills

I. INTRODUCTION

Teachers' resilience and adaptation to change were tested before and during the pandemic, when they successfully implemented modifications to the system. These include the revisions to prescribed learning competencies to be covered, the grading system, the strategies, and the learning modes to be used. With face-to-face instruction at its full comeback, teachers were once again relied on to effect change, as the disruption to the education system has disproportionately impacted the most disadvantaged students.

Teachers worry about the continuity of learning when learners transition between the many structural sectors of education. To close these learning gaps and provide seamless, uninterrupted educational routes for all students (UNESCO, 2017), immediate action is needed (OECD, 2021). As bottom-up change agents, classroom teachers are expected to take on the personal and professional commitment to advocate for transformation based on the students' needs (Brown, White, & Kelly, 2023) of quality learning. This is dependent on their role as the person with the most direct and sustained contact with students as well as significant control over the concept taught and learning climate (Washington, 2019).

In the Philippines, the Basic Education Development Plan 2030 (DepEd, 2022) revealed that teachers lack pedagogical expertise in addressing 21st-century skills because the mandate for them to incorporate problem-solving, information literacy, and critical thinking in all curriculum subjects was implemented without providing teachers with the necessary professional development. As a result, the strategies employed by teachers in solving their classroom problems are solely the product of their judgment and what is commonly done in the field. A teacher's response is brought about by their initial reaction to the situation when their temper and authority are being challenged by students' behavior. None of these was the product of teachers' in-depth analysis of the situation.

Similarly, in the locale of this study, when teachers were asked about the type of classroom problem they frequently met, students' low performance, students' unfavorable behavior in class, and teachers' perceived difficulty in handling the class were the most evident (Caballera & Digo, 2023). Students were observed to be

hesitant to participate in class discussions, and knowledge expected to be grasped in a preceding grade level is not yet acquired by the students. Thus, teachers tend to consume the entire class hour teaching the competency from the student's previous grade level, resulting in learning competencies for the quarter not being taken up on time. These increase learning gaps in addition to the unfavorable classroom behavior of students, such as messiness and disrespect towards authority.

Teachers as change agents are expected to catalyze the successful implementation of innovations in the classroom (Brown et al., 2023). However, teachers often cannot solve their classroom problems because they lack experience, training, skills, and knowledge in handling and managing diverse types of learners (Caballera & Digo, 2023). Additionally, secondary school teachers do not work collaboratively, as shown by the 12-percentage point difference between how primary and secondary teachers exchange teaching materials and attend team conferences (OECD, 2021). However, if teachers were empowered to become reflective teachers and action research practitioners and were included in the planning and designing of professional development programs, then the situation could be reversed.

With the abovementioned arguments, the researchers initiated an inquiry to empower teachers by improving their classroom problem-solving skills through a professional development program. This is based on the idea that instructors would be empowered to address their issues right away if they were prepared after acquiring knowledge from a professional development program that they selected, created, and identified.

Objectives of the Study

Although professional learning communities and their impact on school development have been extensively studied, little is known about how these communities are formed and how teachers collaborate to learn (Johannesson, 2022). Thus, this study delved into the development of professional development programs and evaluated their impact on teachers' practice through collaborative learning. This action research aims to empower teachers in a technical vocational school in the rural municipality of Sorsogon, Philippines, by improving their classroom problem-solving skills through the Action Research and Reflective Teacher Training (ARRTT). Specifically, this study aims to (1) determine development programs attended by the teachers and their professional development needs, (2) describe the proposed and implemented development program to improve their classroom problem-solving skills, and (3) evaluate how science teachers become empowered in terms of solving their classroom problems after attending the ARRTT.

II. LITERATURE REVIEW

Several relevant works on teacher empowerment initiatives have been reviewed. The subject matter includes teacher autonomy, collaborative learning, the conduct of action research, and reflective teaching. They were presented and are herein discussed.

Teacher Autonomy

Transforming classrooms and putting more emphasis on student learning can be carried out by teachers (Black & Harrison, 2004) by allowing them to make independent decisions, particularly on choices that impact instruction (OECD, 2021). This promotes the idea that success in education depends on empowered teachers who are capable of providing personalized instruction for each student. In letting them do so, a teacher's belief in oneself could grow, which would certainly positively affect student results.

To empower teachers is to involve them in selecting, planning, and designing professional development programs. Participants must agree on which type of professional development is collectively needed by the group and will be beneficial for everyone in improving their practice and their classroom during teaching and learning sessions. At the school level, for example, teachers can be given more autonomy in making decisions, particularly when those decisions have an impact on instruction (OECD, 2021). Acknowledging their ideas can increase their confidence as teachers, which is more likely to create positive learning environments for their students (OECD, 2021; Caballera & Digo, 2023) and can motivate them to produce improbable results. Teachers are empowered when they are given the freedom to identify localized, workable solutions necessary for effective change to occur (Hine & Lavery, 2014), especially when their initiatives are particularly designed to meet the needs of their students and the goal of their school.

Collaborative Learning

To empower teachers, they must be involved in a collaborative professional development program that can give them a chance to reflect on their practice and improve their skills and competency (O'Sullivan, 2015). By being part of a collaborative learning community (Osborne & Dillon, 2010; Caballera & Digo, 2023), teachers may be able to make informed decisions on what and how to teach. By observing, analyzing, and discussing one another's practice to develop a shared understanding of 'good teaching' (Patfield et al., 2021), as a collaborative strategy for reflective teaching (Murray, 2010), sharing our experiences can make teacher

learning a social activity that entails reflecting and mentorship (Osborne & Dillon, 2010). This strengthens the teacher's inner drive and personal motivation to become the learners themselves (Simon & Campbell, 2012), which equips them with needed skills so that they may be able to efficiently teach and solve their classroom problems.

Action Research

Teachers can be empowered by developing their skills as classroom action researchers (Caballera & Digo, 2023) as they engage in the daily practice of teaching and conducting an independent study through action research (Desimone, 2011; Hine & Lavery, 2014; Johannesson, 2022). This allows the teachers to be effective change agents in their classrooms (Hine & Lavery, 2014). This is because teachers are the most capable of identifying issues in the classroom and finding and providing localized, workable solutions to the most pressing ones (Khan et al., 2019; Hine & Lavery, 2014).

Reflective Teaching

To empower teachers is to develop their skills as reflective teachers (Caballera & Digo, 2023). Individually, a teacher can keep notes focused on the goal they want to achieve in every lesson and write down queries to reflect on after the lesson (Murray, 2010). Through reflection and feedback, teachers can learn from one another, achieving a deeper level of reflection and mutual learning that increases awareness of one's teaching as well as that of one's colleagues (Bergmark, 2022). This generates ideas about what might be going wrong in the classroom, allowing them to reflect on their practice by understanding why a particular lesson was successful or unsuccessful and why students' unfavorable classroom behavior continues to flourish.

Alignment of Teacher Learning and Classroom Practices

Teachers can be empowered by extending the implementation and evaluation of PDP in their classrooms. (Caballera & Digo, 2023). There is a need to specifically elucidate the process of learning and how to integrate learned practices into everyday teaching practices. This is the only way that educators and educational researchers can help schools support teacher learning communities to meet their objectives, and not just using an action research approach by merely "checking the box," signifying that they are conducting the scientific study (Johannesson, 2022), but rather promoting teacher learning and accomplishing its intended goal of improving teacher knowledge and instruction in ways that result in higher student achievement (Desimone, 2011).

Theoretical Framework

To narrow the scope of data relevant to this study by focusing on variables that define the specific viewpoint of this action research, a theoretical framework is used. Theories and ideas on professional development and empowerment that were proven to be effective in guiding teachers and even communities were used in this study.

Mizell (2010, p. 22) presented questions in designing professional development that could be used as a guide in implementing the learning intervention. These were (1) What does an analysis of student achievement data reveal about students' major learning problems? (2) Which student learning issues are most educators unaware of how to properly address? (3) What knowledge and abilities must educators acquire to better address the highlighted issues with students' learning? (4) What kind of professional development is necessary for teachers to acquire the information and abilities they will employ to better manage the academic difficulties of their students, and how long should it last?

These questions can guide researchers and teachers who aim to improve students' learning situation and achievement. For the first step, one can identify what the data and observation tell about the situation of learning in schools. Giving proper interpretation and meaning to every data point can identify the main problem. Second, there is a need to explicitly solicit the difficulties of teachers in teaching, especially those areas that they do not know about, address, or implement, and what identified problems need urgent solutions. Thirdly, the teachers' need for development must be known. These may be on pedagogy, content, strategy implementation, and classroom management. Lastly, professional development can now be properly planned based on the answers to the questions. These can be used to direct the researcher along with the participants to plan, design, and implement their chosen type of professional development program.

The Ladder of Citizen Participation from manipulation to citizen control by Sherry Arnstein (1969) was used as a model in creating the Ladder of Teacher Participation to gauge the level of participants' participation in the study. However, non-participation rungs of Arnstein's ladder of participation were excluded, and the informing level was used as the lowest level instead. To be applicable in this study, the description of each rung was modified, but some of the original name of each level was retained. The first and lowest rung is the *informing level*, which is achieved by informing the teachers on the conduct of the professional development

activity. The second rung is the *consulting level*, which was achieved through the conduct of the teacher's needs assessment. Along with this, participants' views and opinions on the nature of the PDP were solicited. The third rung is the *including level*, involving participants as participants, co-facilitators, and presenters during the implementation of the professional development program. The fourth rung is the *collaborating level*, wherein participants actively worked with their colleagues in all the activities conducted in the professional development program. The fifth rung is the *authorizing level*, wherein the participants devise a plan and arrive at a decision on how to solve their classroom problem. The last and highest rung is the *empowering level*, which is achieved as participants make independent decisions and implement their plans in their classrooms. In the ladder of empowerment, teachers who exhibit the highest level of participation manifest the highest level of empowerment. This is attained by persons who can identify their problems, make plans, and implement interventions.

The empowerment theory by Zimmerman (2000) considers both methods and results. If the process is empowering, it will develop people's skills and enable them to make independent decisions and solve problems. This theory steered the flow of the professional development program conducted with the teachers. The researchers presented objectives of the professional development right from the start so that they know what will happen next, they can track their progress, and they can identify the tasks that will need their effort and attention to achieve the objectives, ensuring success. The teachers' chosen professional development design and their sustained empowering level of participation are embedded in the professional development program conducted. When these factors are present in a professional development program that the participants have selected for themselves, their knowledge and abilities to be empowered teachers who successfully manage the behavioral and academic problems of their students will improve.

In summary, teachers who engage in the professional development program they select and subject themselves to, will naturally maintain an empowering level of participation all throughout its duration. Moreover, an empowered teacher can be described as the one who can identify the most urgent problem in their classroom, can select and decide the best intervention to it, and is not afraid to reflect on the outcome of the solution and make necessary adjustments until the problem is solved.

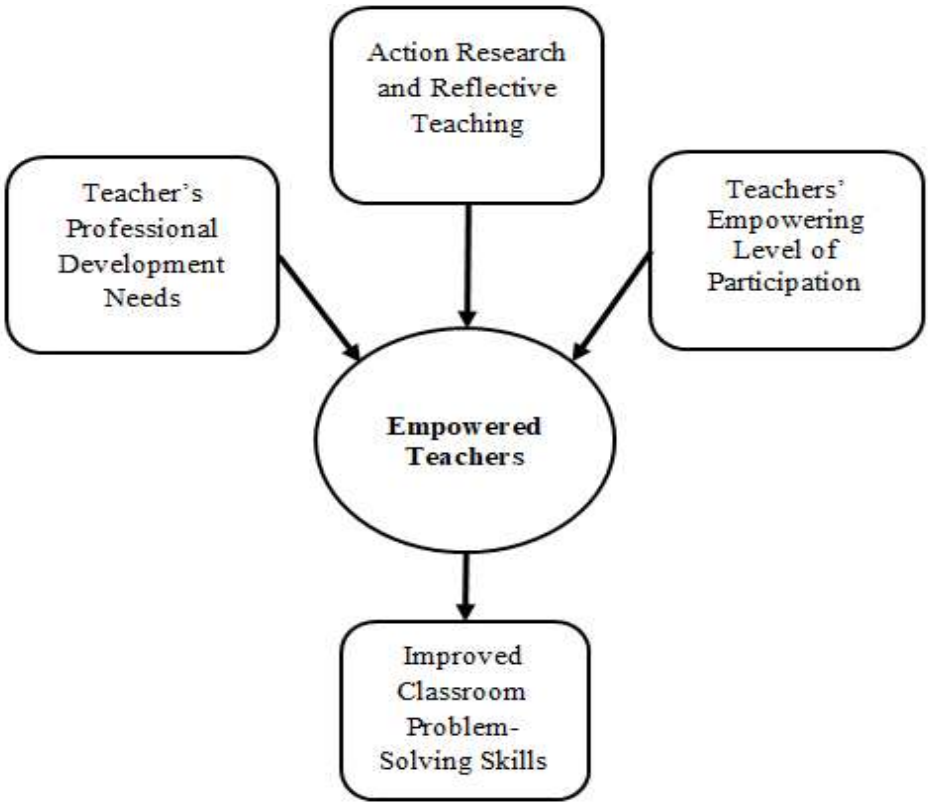

Figure 1. Theoretical Framework of the Study

III. RESEARCH METHODOLOGY

Research Design

Anchored on Lewin's (1946) action research process of change experiment, this action research followed steps that involved planning, acting, observing, and reflecting. In the planning phase, an overall plan emerged. This was followed by a decision on how to implement the overall plan. The acting phase was the ARRTT implementation. In this phase, the teachers were involved in actively sharing their own experiences and giving constructive comments and suggestions to others' experiences. In the reflecting and observing phase, the effectiveness of the ARRTT as the intervention was evaluated as to how it empowered teachers and improved their classroom problem-solving skills based on their shared practices and experiences.

Participants

Eleven science teachers were purposefully chosen as participants of this action research from a secondary technical vocational school in the rural municipality of Sorsogon, Philippines. They were chosen based on their identification and description of their classroom problems as well as their acknowledgement that they needed professional development to address these issues in the researchers' previous inquiry. They were comprised of two males and nine females, had one to ten years' experience in teaching, and had teaching positions of Teachers I to III. Before the conduct of the study, the school principal's approval and the consent of each informant were requested. The identity of the participants was kept private in all phases of the investigation.

Research Instruments

Interview protocols, artifacts, and interview questionnaires were used as instruments in this study. For the planning phase, the interview protocol guide was used to identify the type of professional development program they attended for the last three years and the professional development training they needed to improve classroom problem-solving skills. The collected data served as a guide in designing the professional development program. During the acting phase, action research concept notes were collected. In the observing and reflecting phase, which was done a week after ARRTT, the interview questionnaire was answered by the participants.

Data Collection Procedures

To find out what professional development programs the participants had attended and what they needed to improve so they could solve problems in the classroom, an interview methodology was employed. Follow-up questions were asked throughout the entire process to fully comprehend the ideas and opinions of the participants. When ARRTT was being conceptualized, their answers were utilized in group planning to create the type of professional development program that was conducted. Artifacts like concept notes for action research were collected during ARTT. After the program, participants went back into their classroom, and a follow-up interview was held to enable participants to provide specific and detailed descriptions of their experiences after the ARRTT.

Data Analysis Procedures

A qualitative analysis was performed on the information obtained from the artifacts and interviews. This was done in order to achieve significant outcomes that provided context for the investigation. The artifacts gathered from the participants during the ARRTT were examined through document analysis. These were action research concept notes and reflection notes completed as part of the program. Grouping the common statements from the documents allowed for a qualitative analysis of the data. After ARRTT, the participants' answers to the empowerment questions underwent the same procedure. Three categories were used to classify responses that demonstrated the empowerment of participants following the ARRTT: empowerment brought about by action research, reflective teaching, or both.

IV. RESULTS AND DISCUSSION

1. Development program attended by teachers for the last three years and their identified professional development needs.

Table 1 shows the type of development program teachers usually attend versus the type of development program they want to attend. As shown in the table, the teachers, as participants of this study, have attended professional development programs that dealt with teaching pedagogy and strategies during mid-year In-Service Training (INSET) and monthly Learning Action Cell (LAC) sessions, but none of them attended professional development programs on action research. This implies that teachers are not equipped with the skill and knowledge of systematic processes on how to apply teaching strategies to solve classroom problems that they could get from action research training.

This result supports the study of Caballera and Digo (2023), who found that teachers' acceptance of their difficulty in handling and managing diverse types of learners was due to their lack of expertise on how to deal with classroom problems. Centrally administered training, like those attended by the participants of this study, may provide the illusion of efficacy by altering teacher knowledge (World Bank Group, 2017) but may

not impact the prevalence of expected practice due to the limited access of teachers to opportunities for the specific kind of professional development (OECD, 2021).

Action Research Training was the most chosen topic, as shown in Table 1. This implies that the teachers have been informed of the significance of action research in education. This somehow motivates them to learn how to do it. These participants' choices could be attributed to the popularity of action research in the teaching community, which has been consistently encouraged in DepEd since 2017. This implication agrees with those of Khan et al. (2019), who state that teachers are getting more interested in addressing the issues of teaching and learning and starting to see the importance of research in school settings. Similarly, teachers believe that research is a crucial tool in both their personal and professional lives since it should serve as the foundation for all of their actions to increase effectiveness and efficiency, produce knowledge, and solve classroom problems (Fajardo & Digo, 2023).

Table 1. Professional Development Programs Attended by Participants

Professional Development Program Attended		**Professional Development Needs**	
Type of Professional Development Program	**No. of times coded**	**Type of Professional Development Program**	**No. of times coded**
Teaching pedagogy	11	Action Research	8
Teaching strategies	10	New Teaching Pedagogy	7
Content enhancement	9	New Teaching Strategies	5
Action research	0	Dealing with Unfavorable Behavior	4
Dealing with Unfavorable Behavior	0	Content Enhancement	2

Centrally managed professional development attended by teachers does not meet their professional development needs. Action research, which is grounded in an evidence-based viewpoint, is vital for teachers in creating a research-based education, as teachers learn from one another in part through reflection and feedback (Bergmark, 2021) while developing action research competencies of participants (Digo, 2021). Thus, to improve teachers' classroom problem-solving skills, which are not offered by the professional development program they usually attend, ARRTT was designed and implemented.

2. The Professional Development Program: Action Research and Reflective Teaching Training (ARRTT)

The ARRTT was composed of three phases, namely, planning, acting, and observing and reflecting. In all three phases, the participation and involvement of teachers were made sure to be significant, which makes the program unique.

Planning Phase

Aside from doing a needs assessment to determine the teachers' desired professional development and to make sure that the teachers' eagerness to make effective change will not be put to waste if their needs for professional development are not addressed, the teachers were given the freedom to select their much-needed topic for the professional development program. Workshops for conceptualizing AR problems and simulation activities for individual and collaborative strategies of reflective teaching were included, in which evidence of learning was measured in their actual application and experiences in their classrooms. These become the unique features of ARRTT.

Collaborative planning was done during this phase. As a new teaching methodology to be learned, the group decided to give priority to the reflective teaching technique. Together, with the researcher, the group chose to concentrate on the action research process that uses interventions to address students' negative behavior and enhance their performance.

Teachers cannot handle classroom difficulties if they lack the necessary experience, just as they cannot fulfill curricular requirements if they lack first-hand knowledge and expertise on the subject (Fajardo & Digo, 2023). Thus, action research must be introduced as the best approach to classroom problem-solving (Caballera & Digo, 2023).

Table 2: The ARRTT for Teachers

Phase	**Activities**	**Expected Output**
Planning	Needs Assessment and Collaborative Action Planning	Group Action Plan Training Design

Acting	Lecture Workshop on: • Reflective Teaching Techniques • Action Research Process • Intervention Strategies	Reflection Notes and Journals
Observing and reflecting	• Interview on how the participants applied their learnings in ARRTT in solving their classroom problems. • Presentation of AR concept notes	Teacher experiences on improved students' performance and behavior.

Acting Phase

During the workshops, action researches on addressing issues in the classroom, such as unfavorable behavior and poor student performance, were presented to the group. Likewise, examples are provided on how reflective teaching can solve similar classroom problems. The participants practiced and simulated the individual and collaborative strategy of reflective teaching. As an output, the participants were made to accomplish a sample reflective teaching journal used in the practice and simulation and an action research concept note. Their conceptualized action research based on the classroom situation described the nature of their problem, their constructed statement of the problem with action research questions, and a short description of their selected strategy/technique/innovation as intervention.

The workshop and simulations conducted strengthened teachers' knowledge on how to do the process of AR and techniques of reflective teaching. In the process, the change for improvement emerges as an interactive process of influence, and the teacher's group transforms into a professional learning community that participates in collective intelligence and sense-making and comes together to accomplish organizational goals (Brown et al., (2023). Change in teachers' practice cannot be seen without training or workshops (Lewin, 1946); thus, workshops incorporated in ARRTT allow teachers to master the processes. This proves Lewin's (1946) belief that action, research, and training should be present altogether in professional development. After all, they are the three sides of a triangle that should be kept together because each would benefit from the other.

Observing and Reflecting Phase

The observing and reflecting phase covers the participants' presentation of their conceptualized AR (Table 3). In this activity, the participants learned how to identify classroom problems, select appropriate interventions, describe their selected interventions, and give their AR an appropriate title. A week later, the application of their gained knowledge from the ARRTT was sought. The interview questionnaire dealt exclusively with how they were able to solve their identified classroom problem, what process they have used and followed, and how it affected their students' performance or behavior and even their teaching and classroom management practice.

This aligns with Caballera and Digo's (2023) policy recommendation that any lessons learned from professional development programs should be applied and assessed in the classroom, where the desired outcome is anticipated to be seen. The process could also help in identifying room for improvement for future professional development activities. This type of evaluation process may provide a framework for methodically evaluating implementation results and determining what more professional development efficacy is required (Patfield et al., 2021).

3. Science teachers improved classroom problem-solving skills after attending the ARRTT.

In the observing and reflecting phase of the research, teachers started using their gained knowledge and skills to enhance their students' conduct and performance. Teachers' views, thoughts, and experiences have changed as evidence of empowerment and improved classroom problem-solving skills. Others used the action research process to address their problem; others combined the two methods not just to solve their classroom but also to improve their practice, and everyone has come up with a conceptualized action research problem.

Informant 9 followed the steps of action research and improved the performance of her class by minimizing unfavorable behavior, such as using gadgets in class, through a set of classroom rules that was comprehensively presented and agreed upon with the students. Informant 9 said:

> "My students seemed to be not interested in the topics I presented. So, to solve this problem, I immediately prepared a list of rules that they have to follow on inappropriate usage of gadgets. After giving the set of rules and explaining them, I have observed that there is already a transformation in their behavior, and this leads to an increase in their performance level."

The immersion of informant 9 in action research activities improved her understanding of their teaching environment and students' behavior toward learning. This makes the AR process effective in changing situations and bringing about promising results in solving classroom problems (Tursini, 2019). Teachers become "more intentional about self-reflection," which is important to action research (Rayala, 2022). This brings about a favorable change in learners (Cambareri, 2021). Because the students were informed of what was expected from them, increased participation and performance of students were observed, and unfavorable behavior lessened. This implies that the AR process empowers the teachers as the teacher gains knowledge on how to identify the problem, find a solution to it, and improve the overall learning environment and their practice as a teacher.

One participant shared how reflective teaching helped him understand why his students behave in certain ways and perform poorly in his class. Informant 7 said:

> "...through reflective teaching, I found out that my students can't proceed because I am expecting too much from them. After I figured this out, I shifted course and slowed down [on the pace of teaching] a lot. I also posted several learning resources on our Science Rocket FB page. I also adjusted the number of test items and their level of difficulty.

Reflective teaching helped the teacher in improving his practice as well as the student's performance in science. Changes and enrichments made by the teacher in his way of teaching demonstrated how teachers may be upskilled to become reflective teachers. This demonstrates the culture of reflection-in-action and reflection-on-action, which could eventually result in substantial student learning and development (Morales et al., 2021). Writing journals and notes helped the teachers understand themselves and determine what is wrong with their way of teaching, as well as how the students learn and the possible causes of students' poor performance. Thus, directing the teacher to plan, select, and apply applicable strategies and measures.

Another informant shared their experience in applying reflective teaching and used a strategy shared during collaboration with the group. She took advantage of the best practices shared by other participants and decided to adopt one. Informant 11 said:

> "I remember when a colleague shared how she improved her students' performance in taking multiple-choice types of tests. I had the same problem, and I applied her strategy. After the assessment, I have figured out that most of my students had already mastered 75% of a 55-item multiple-choice test."

The aforementioned statement demonstrated how cooperation and experience sharing aid in the development of solutions to problems that arise in the classroom. It also establishes how the ARRTT served as a learning environment where everyone benefits from one another's knowledge and success. This implies that collaboration as part of the strategy for reflective teaching and professional practice enables teachers to be more open to new ideas and begin to reconsider their existing approaches to instruction. Further, a support system, like a peer or mentor, is essential to achieving goals, as technical skills and assistance are provided to anyone who becomes expressive of their thoughts and wants to change their practice.

Teachers who work collaboratively are in a good position to figure out how to modify their teaching methods for difficult circumstances (OECD, 2021). A community of practice that places a strong emphasis on empowerment may end up being the ideal environment for growth and innovation (Rayala, 2022). This happens when a participant in a learning group serves as a source of knowledge that challenges other participants' thoughts, specifically between teachers who have a huge difference in years in teaching (Johanesson, 2022), allowing participants to learn from one another (Munson, 2021) by sharing of experiences and the results of what they have done in their classrooms. The environment of impartiality and the informant's willingness to share their mistakes openly invite appreciation and a mood of relaxed objectivity (Lewin, 1946).

Informant 1 has solved her classroom problem by following the steps of reflective teaching and action research to minimize the unfavorable behavior of her students by applying merit and demerit system strategies. Informant 1 said:

> "Low performance and behavioral problems of students make it difficult for me to achieve my expected goals. Some students who engage in the activity get higher scores than those who are easily influenced by the disruption created by the students who behave negatively. I used the merit and demerit system to create a positive learning environment by giving rewards to those students who demonstrate positive behavior and providing consequences to those who demonstrate negative behavior. To assess students' progress, their behavior was tracked and documented."

In this case, the teacher used the action research method and reflective teaching to solve her difficulty. Through her prepared journal as part of the reflective teaching technique, the teacher was able to diagnose the issue, choose a specific intervention, observe its effect on the learners, and evaluate the outcome using her notes in a journal. After a week, Informant 1 was once again questioned regarding her intervention and its impact on her students' behavior. She stated, "Before, every time I entered the room, they were in a mess and not prepared

for class, but now, they are already seated properly per group, and the class can easily be managed. Class disruption is also minimal."

Applying a combination of reflective teaching and action research was also used by Informant 3. She said:

> "When my students got low performance (after my lesson on particles of atoms), I listed the things that happened in my class as what I had learned in the session on reflective teaching. I found out that they have difficulty determining the number of subatomic particles of atoms, most especially of neutrons. The next day, using a printed model of the atom, I made them count the particles manually. However, this does not apply to atoms with bigger atomic numbers, so I presented the topic again using tables. They finally get how to determine the number of protons and electrons but not the neutrons. As I went on, I found out that they had difficulty subtracting bigger numbers. So, more exercises were given on determining the number of neutrons."
>
> "Following the cyclic steps of action research, I applied several strategies when the first one did not work. In doing so, I finally identified the cause of their low performance and low participation in class discussions. The main problem is that they haven't mastered the skill of subtracting large numbers. To address this, I also did some review on subtracting numbers with them. Their performance increased significantly after."

Both participants 1 and 3 reflected on their classroom situation and used action research steps in solving their classroom problem. Informant 1 changed the unfavorable behaviors of students to favorable ones, thus solving classroom problems in teaching and classroom management. Participants in the study conducted by Reid et al. (2022) shared the same experience on how they tracked the number of students who left their group to do something productive or unproductive while doing an activity. This shows that unfavorable behavior can be reduced if the teacher can select the most appropriate strategy.

Informant 3, on the other hand, identified the cause of her learners' poor performance as constantly reflecting on her everyday practice and applying the cyclical steps of action research, not stopping until she solved the problem. Teacher C, in the action research conducted by Tursini (2019), shared that students demonstrated their increasing participation in the lessons after adding a role-playing game and made the decision to modify her teaching style and make her lessons more enjoyable to encourage all pupils to participate in the teaching and learning process. These show changes in students' attitudes, involvement behaviors, and learning as a result of specific measures they implemented during the conduct of research.

Table 3: Participants' Focus for Conceptualized Action Research

Classroom Problem Addressed	Focus of Conceptualized AR	Informant
Poor performance of students in science	Improving problem-solving skills of Grade 8 students in Motion	2
	Improving the performance of Grade 8 students on Force and Motion	3
	Enhancing the performance of Grade 7 students on reading Motion Graphs	5
	Improving the performance of Grade 8 students in Particle Nature of Matter	6
	Improving the performance of Grade 7 students in Speed and Velocity	7
	Improving analyzing skills of Grade 9 students on percentage composition problems.	9
	Improving the performance of grade 10 students in Protein Synthesis	10
	Improving the analytical skills of Grade 10 students on situational problems in the Endocrine System	11
Unfavorable behavior of students in class	Creating a positive learning environment for Grade 8 students.	1
	Reducing unfavorable behavior of grade 7 students	4
	Improving academic engagement of grade 7 students	8

Using both reflective teaching and action research processes therefore empowers teachers to see change in their students' achievement as well as improve their practice as a result of solved problems. Individual and collaborative reflective teaching techniques enable the teacher to look back on what went wrong in her teaching, while the action research process gives teachers the empowerment to experiment with different teaching methods, strategies, and resources until she finally identifies the appropriate intervention to improve students' learning while improving her teaching practice.

The participants were able to accomplish an AR conceptualization template on the third day of ARRTT. The AR template consists of the following sections: the title of the action research, a statement of the problem and research questions, and the intervention. Participants 2, 3, 5, 6, 7, 9, 10, and 11 aimed to address the problem of students' poor performance, while participants 1, 4, and 8 focused on solving the unfavorable behavior of students in class.

This shows that empowerment happened to all the participants, as they are already aware of what goal to set from studying one's classroom situation. AR workshops conducted improved their skills (Tursini, 2019), thus, making the task a bit easier as they came up with a certain solution to problems or concerns; participants gained new learnings about the nature of social science and research in education (Digo, 2021; Digo & Labor, 2022); teachers became more innovative and evaluative of their practices in the classrooms which is essential in equipping them to solve daily life problems (Fajardo & Digo, 2023); participants realized their gained knowledge on grasping action research process and applying it into practice by collaborating on the purpose of improving their work (Johannesson, 2022); and that action research takes a huge part in promoting a research-based education and develops teacher's value for evidence-based instruction (Bergmark, 2022). Hence, the knowledge-in-action research process empowers teachers to be aware of the challenges in their classrooms and motivates them to plan and act on them.

Following the ladder of teacher participation developed from Arnstein's ladder of citizen participation, ARRTT participants exhibited the highest level, which is empowering, as they showed skills in taking charge of their classroom problems using the knowledge gained. They took the responsibility of solving the classroom problems rather than giving it as the sole responsibility of the school administration. In this context, the participants have gained a sense of empowerment, which comprises their proactive actions and improved skills (Zimmerman, 2000). Action research and reflective teaching techniques enable them to gather crucial information about their teaching practice and students' learning. Their ability to select an applicable intervention to address the identified problem is a big leap and concrete evidence of teacher empowerment.

V. CONCLUSION

Teacher empowerment is linked to the type of professional development the teachers engage in. This action research paved the way for the discovery that the professional development attended by the teachers does not focus on providing them with concrete processes for addressing their classroom problems. However, their eagerness to learn how to solve classroom problems was manifested in their identified and selected professional development needs. This implies their belief that learning more about action research and new teaching pedagogy can improve their ability to determine what method and process to employ in solving their classroom problems.

The Action Research and Reflective Teaching Training (ARRTT), which is focused on the action research process and reflective teaching techniques as methods of solving classroom problems, was successful in providing them with knowledge and skills in classroom problem-solving. Reflective teaching enabled them to study and improve their teaching practice, while the action research process gave them a systematic approach to address their students' poor performance and unfavorable behavior. Similarly, the individual and collaborative reflective teaching techniques enabled them, regardless of their teaching experience, to reflect on their teaching practice, improve it, and adjust it depending on the level and ability of the learners. The teacher's knowledge and skill in these two methods provided them with the necessary tools to be empowered in solving their classroom problems. The experiences shared by teachers after ARRTT showed improvement in their classroom problem-solving skills. This improvement indicates empowerment possessed by the teachers when they identify their urgent problem, select the best strategy and intervention, and evaluate outcomes of their changed practice.

The researchers recommend that ARRTT, as an intervention of this action research, may be validated by conducting a similar study. Other professional development programs may be conducted to further equip teachers to address varied classroom problems. It is strongly recommended that designing a professional development program be based on the needs of the teachers and should encourage the highest level of participation (empowering), for they are the main actors in the academic change and progress that we are trying to achieve. Lastly, ARRTT may be improved by sustaining its implementation and evaluation phases through mentoring and coaching sessions with the teachers.

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