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EXAMINING PERCEPTION ON ACTION RESEARCH OF BASIC EDUCATION TEACHERS

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ABSTRACT

This study aimed to examine the initial perceptions of 16 junior and senior high school English, Mathematics, and Science teachers on AR (Action Research) as the basis for the planned professional development program. The evaluation of their initial perception was done by administering an instrument called Teacher's Perception on Action Research (TPAR). This is a research-made instrument containing scenarios which either represent an AR scenario or not but can elicit teachers' perceptions about AR specifically on its nature of purpose and process. An in-depth individual (IDI) semi-structured interview was also conducted to obtain in-depth data on each participant's perception about AR. Results revealed that their initial perceptions on the nature of purpose can be thematized into AR as a reactive approach for addressing problems in a positivist or scientific research method and as a mechanism for seeking transformative change. Meanwhile, their alternate perception on the AR process rests on the research method being reversible, reflective, and collaborative. However, these initial perceptions about AR were not discussed in-depth by the participants suggesting the need for a professional development program among these teachers teaching core subjects in the basic education program.

Keywords: *Action Research Perception, Basic Education Teachers, Professional Development Program*

INTRODUCTION

There is no universal consensus on what is meant by quality in education (The Commonwealth, 2017) and its definition is evolving (UNESCO, 2003). For UNICEF (2000), quality is defined in the light of quality learners, learning environment, content or relevant curricula, processes, and outcomes. Meanwhile, UNESCO (2005) defined quality in the context of inputs, process, and outputs, or relevance,

effectiveness, and efficiency of education. In 2015, a unified definition surfaced when UNESCO together with UNICEF, the World Bank, and other international agencies adopted the Incheon Declaration for Education 2030 which sets a new vision for education for the next 15 years (UNESCO, 2016). These international agencies consequently direct the professional standards for and define the roles of teachers to ensure that quality education is delivered. Accordingly, quality education promotes creativity and knowledge and ensures the acquisition of fundamental (e.g. literacy and numeracy) and higher-level (e.g. cognitive and social) skills, attitudes, and values. These international agencies consequently direct the professional standards for and define the roles of teachers to ensure that quality education is delivered.

In the Philippines, quality assurance in education is directed, and the roles of the teachers are defined by the Philippine Qualifications Framework (PQF). Through its National Coordinating Council (NCC), the PQF harmonizes qualification levels across basic, technical-vocational, and higher education. PQF, in effect, does not only promote seamless education and training but also establishes quality assurance in education (PQF, 2012). In this regard, the trifocalized education and training consisting of the Department of Education (DepEd), Technical Education and Skills Development Authority (TESDA), and Commission on Higher Education (CHED) aim to materialize the PQF visions and eventually build a quality nation capable of transcending issues which constrain national progress (Morales et al., 2016). In particular, the PQF tasked the Commission on Higher Education (CHED) to lay out policies and standards for higher education academic programs. The universities and colleges which CHED governs are also tasked to help the education system by providing more appropriate processes, training, and development programs, especially for the teachers.

One of these programs is training teachers to reflect on their practices through action research. Action research in education is a collaborative process of studying school situations to understand and eventually help in improving the quality of education (Johnson, 2012; O'Connor, Greene, & Anderson, 2006). It explores and resolves practical issues in the classroom and school (Johnson, 2012) and provides practical knowledge in improving the teaching practices alongside action and reflection (Steele, 2012). Moreover, action research bridges the gap between theory and practice, facilitates teacher empowerment, and is an effective form of professional growth and development as identified by Hine and Lavery (2014). Even the DepEd recognizes this importance of AR. With this, the Philippine Professional Standards for Teachers (PPST) was adopted and implemented. One of the expectations it sets is personal and professional reflection and learning to improve teachers' practices (DepEd, 2017). This expectation, however, will not be met if teachers do not undergo professional development (PD) programs on action research.

In response to the mandate of DepEd, basic education teachers including their administrators expressed their need for AR training. They professed that their knowledge and know-how of and on AR are quite limited. Hence, this project is embarked on. In this regard, there is a need to survey on the perception of in-service teachers about AR as an initial phase of the planned professional development program. Understanding their perception on the nature of purpose and process of AR allows hitting core challenges that these teachers have perceived leading to the provision of appropriate capacity building and PD programs. In addition, perceptual change is one of componential structures of researcher development (Evans, 2012). Hence, professional needs assessment on this is significant. The teachers whose initial perception to be surveyed about AR are those teaching core subjects of the K to 12 curriculum.

Studies of Perception on AR in the Philippines

The present study aimed at contributing to the limited literature about teachers' perception of AR in the Philippines since most studies focused on surveying the competency needs of teachers in AR (e.g. Cortes, 2019). Among the documented studies which surfaced and reported perception of teachers regarding AR up to date are as follows: First, an assessment of teachers' perception on their knowledge and understanding about basic concepts of AR in a public elementary school in Batangas was conducted. These perceptions refer to writing the parts of a research report, individual inquiry, collaborative inquiry,

and research scope. Results of their perceptions were desirable but a recommendation for extensive capacity building programs by way of seminar workshops was still emphasized (Anzaldo & Cudiamat, 2019).

Second, a survey pertaining to the teachers' conceptions and perceptions in a Catholic Higher Educational Institution (HEI) in the northern Philippines revealed that they perceived AR as a valuable tool for improving their teaching practices and learning outcomes, increasing pedagogical and instructional knowledge, and positively improving students' learning (Tindowen, Guzman, & Macanang, 2019).

Third, a study was conducted in order to identify the benefits and challenges that Philippine public school teachers experienced. The results showed that doing classroom-based research would yield positive outcomes to their teaching practice and career development (Ulla, 2018).

Fourth, a study of perceptions on AR among teachers in the province of Agusan del Norte, Mindanao revealed that engaging with this form of research is valuable to the teaching-learning process and provides a positive impact both on teachers and students. More so, teachers perceived that doing AR leads to their professional development, critical and systematic inquiry of their practice, identifying and resolving their school and classroom problems, and acquiring knowledge for effective teaching (Ulla, Barrera, & Acompanado, 2017). Finally, a survey among science and mathematics basic education teachers in schools of Manila reported that AR improves their instruction by discovering novel techniques and strategies towards instructional delivery. In addition, the teachers revealed that AR helps them identify student needs and find solutions to resolve immediate problems in the classroom or school (Morales et al., 2016).

As presented in the aforementioned literature, teachers have varied conceptions about action research. This may be explained by the differences of instruments used to obtain teachers' perception in AR. In the present study, a new mode of obtaining these AR perceptions in the country is introduced. It employed itemized research scenarios which allowed teachers to decide whether each scenario is AR or not. In this regard, responses of the participating teachers in the study were not limited to those stated in scales. In other words, their perceptions did not rely on those pre-determined in the scale because they were given chances to expound their perceptions on each scenario. More so, the scenarios do not explicitly describe the characteristics of AR; with, chances of eliciting personal perception are greater. Eventually, data of teachers' initial perception on AR may lead to a customized design capacitating teachers in AR.

METHODOLOGY

Participants

The participants in this study were seven Science teachers, five English teachers, and four Mathematics teachers. They are all teaching in secondary education both in junior and senior high school in one public secondary school governed by the Philippine Department of Education in the Province of Cebu. Their teaching experiences range from less than a year to 32 years. With respect to their professional demographics on AR, eight of these teachers do not have training while the rest are trained for at least once. Two of the science teachers designed two action research but only one completed all two studies. Meanwhile, one English teacher designed three but only one AR was completed. None of these completed studies were published or even considered for submission to professional journals.

Research Design and Data Collection Techniques

A mixed methods research employing sequential explanatory design (quan→ QUAL) was used to assess the perception of in-service teachers about AR. The term perception, as defined by the instrument called Teacher's Perception on Action Research (TPAR), refers to the nature of purpose and process of AR. In this regard, a teacher has to evaluate a certain scenario which may or may not represent a characteristic

of AR by classifying it as "definitely not AR", "probably not AR", "probably AR", or "definitely AR" based on his/her perception or understanding about AR. With this approach, quantitative data were collected through TPAR. The validity of this instrument was established through face, content, and construct validation, and reliability by calculating Cronbach's alpha. The percentage of variance explained by this instrument after Factor Analysis is 65.720 while Cronbach's alpha is .701.

However, these quantitative data from TPAR suffer from the lack of depth of responses which is why qualitative data were perceived to be relevant to support the quantitative results. For this reason, in-depth individual (IDI), semi-structured interviews were conducted which lasted 25 minutes on an average so that each teacher can justify his/her evaluation of each scenario. Their justification includes, but is not limited to, defining action research, identifying the nature, aims, process and purpose of AR, and creating a model which reflects the process of conducting AR. Eventually, the polyangulation of data was executed as a feature of mixed-methods research.

Data Analysis

Teachers' evaluation on each scenario gave a certain frequency to all four options indicated above. In other words, this frequency indicates the number of teachers who were in common perception that a certain scenario belongs to that option or evaluation (e.g. definitely AR). The frequency per option was eventually calculated into percentage to determine how a particular scenario is perceived as AR or not AR by the teachers. Meanwhile, the transcripts from IDIs were transcribed, coded, and thematized which were eventually reported as initial perceptions on AR.

Conformance with Ethical Standards

The teachers were informed that their participation in the professional needs-assessment was voluntary and withdrawal from surveys and interviews would not incur penalty or loss. There were no identifying marks obtained on the onset of the data collection process and reasonable efforts were made to keep their personal information private and confidential.

RESULTS AND DISCUSSION

The teachers' perceptions on the purpose and process of AR were elicited by means of evaluating scenarios whether an action research or not. Eventually, they were asked to justify their answers which formed the basis for identifying their perception about AR. These perceptions are organized into themes.

Table 1
Distribution of Teachers' Perception on Three Scenarios Involving the Nature of Purpose of Action Research

Scenario Number	N	Definitely not AR (%)	Probably not AR (%)	Probably AR (%)	Definitely AR (%)
1	16	12.50	18.75	56.25	12.50
2	16	25.00	6.25	56.25	12.59
3	16	25.00	6.25	43.75	25.00

Table 1 shows the distribution of teachers' perception on the three scenarios involving the nature of purpose of AR. In scenario one, 68.75 percent of the teachers perceived the scenario as AR. This scenario manifests a proactive AR in which a teacher conducts systematic inquiry ahead to prevent potentially recurring problems. Contrary to the known purpose of action research which is being reactive or seeking solution to an existing problem, this scenario presents a reverse situation. In the interview with Teacher E1, she explained:

Interviewer : Why do you evaluate scenario one as probably an AR?
Teacher E1 : We can also conduct an action research out of that problem.
Interviewer : If that so, what for you is the purpose of AR?
Teacher E1 : Action research is used for us to know the root or the cause of that problem and make recommendations or solutions to the problem so that it would not recur in the next batch of students.

It can be inferred from Teacher E1's explanation that AR can be proactive. However, this does not hold true among other teachers although they evaluated the scenario as "Probably AR". For instance, Teacher S1's explanation on the scenario still rests on AR as only a reactive approach for solving classroom issues. The transcripts from the interview are shown below:

Interviewer : (The teacher reads the whole scenario.) Why do you perceive the scenario as probably AR?
Teacher S1 : Uhmm because the teacher in the scenario realized that the teaching strategy she used the past years was not effective so she attempted to use new one to his/her new group of students. Then, she used questionnaire which is why I evaluated the scenario as probably AR.
Interviewer : What is the purpose of AR why you evaluated the scenario as probably AR?
Teacher S1 : Action Research is used to solve immediately a certain problem by providing solutions, Sir. These problems are within our scope.

This explanation is the same with another teacher's perception on the purpose of AR. Her answer is reflected below:

Interviewer : What is the purpose of AR?
Teacher M1 : Uhmm… to solve current school problems.

While there is a great percentage of teachers perceiving the first scenario as an AR, their perception on the purpose of AR as revealed in this scenario rests on the research method as a reactive approach to solve school problems. Even previous study in the country pointed out that AR is reactive in nature (e.g. Ulla et al., 2017) which may indicate that teachers have less orientation with regard to other purposes of AR. Such perception can be attributed to how Kurt Lewin originally used AR as a means of solving social problems or conflicts through dialectic approach. Particularly, his concerns were on raising self-esteem of minority groups, helping them to seek freedom from forces of exploitation and colonization, and attaining equality through action research. In effect, the teachers have minimal concepts or misconceptions about the purpose of the research method. This creates a cognitive constraint among teachers, thereby, confining themselves on the reactive purpose of AR.

In scenario two, 68.84 percent of the teachers perceived the scenarios as AR. This scenario, however, does not represent the purpose of an AR because both problems do not resolve any practical issue. Scenario two is an empirical or positivist form of educational research which can be a topic for a research thesis. It does not reflect a reflective practice, but a mere demonstration of research skills and the results are not reflected and acted upon. These scenarios are important attributes of AR setting its demarcation with other research methods. However, one reason for the scenario being evaluated as AR is shown below.

Interviewer : Question number two is about teacher comparing the effectiveness of two teaching strategies on science process skills of the students. Your answer is probably AR. Why is that so?
Teacher M2 : He/she followed a research process, and he/she assigned an experimental group in conducting research.
Interviewer : Therefore, what is the purpose of AR based on this situation?
Teacher M2 : To come up with solution in school problems in a scientific approach

These statements from the teacher explain why one of the definitions of a group of teachers define AR "as something done to solve a specific problem to come up with recommendations and suggestions following strict guidelines or scientific process." This definition translates into a model of AR which is shown in Figure 1. The model is read by one group of teachers as "We initially have the problems which *(sic)* we do action research of a certain population, test, gather data, evaluate and analyse, come up with results and findings. Finally, we give conclusion *(sic)* and recommendations." Unfortunately, even one classification of AR is positivist or scientific, the model does not reflect a positivist AR.

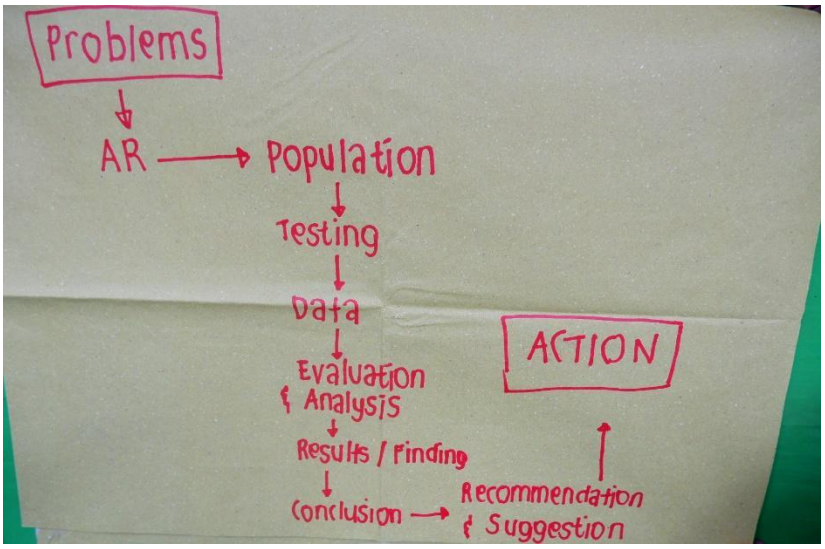

Figure 1. Action research model of one group of teachers reflecting a positivist method.

The third scenario, likewise, does not reflect an AR scenario but 68.75 percent of the teachers perceived it as an AR. This is a descriptive research method which does not investigate a problem, hence, offered no action. Further, the scenario does reflect any of the following purposes of AR: corrective action (i.e. critical AR), improving condition (i.e. empirical AR), and enhancing or generating knowledge (i.e. practical AR). Only a small percentage of teachers identified the scenario as not AR and they gave significant points on the purpose of AR. For example, Teacher M3 perceived the purpose of AR to be transformative. The interview transcripts are reflected below.

Interviewer : Why do you say so that the third scenario is not AR?
Teacher M3 : Action research seeks transformative change.
Interviewer : What does it mean by transformative change in the context of AR?
Teacher M3 : It means lasting and significant change Sir. That happens when the intervention is appropriate for the problem being investigated.

In the same manner, Teacher E1 identified the scenario as not an AR but cannot explain her decision. Her explanation limits the scenario by mentioning a problem to be resolved. The majority perceived the third scenario as AR. This is alarming considering that teachers may associate AR as basic surveys and findings of these will not be acted on.

Table 2
Distribution of Teachers' Perception on Two Scenarios Involving the Nature of Process Of Action Research

Scenario Number	N	Definitely not AR (%)	Probably not AR (%)	Probably AR (%)	Definitely AR (%)
4	16	12.50	0.00	37.50	50.00
5	16	12.59	18.75	31.25	37.50

Table 2 shows the distribution of teachers' perception on the two scenarios involving the nature of the process of AR. In the fourth scenario, 87.50 percent of teachers agreed that the scenario is an AR. Teacher M4 explains that the AR process is complete as reflected below.

Interviewer : Your answer in scenario four is definitely AR. Does the scenario reflect of an AR process?
Teacher M4 : The research process that the teachers did was complete. They started investigating why some students lack interest, then they provided intervention. Finally, they provided reflections and feedback.
Interviewer : Do you have some other reflections on the scenario?
Teacher M4 : Scenario number four states that there are five teachers collaborating or helping to conduct AR while scenario number had only teacher conducting AR.
Interviewer : How does it relate to the process of AR?
Teacher M4 : The nature of AR process Ma'am IS collaborative. Cooperation of the teachers is preferable Ma'am rather than conducting AR individually or by pair.
Interviewer : What do you think is the advantage of having an AR by group?
Teacher M4 : Uhmm... If AR is done individually, I think it will be hard to do the professional reflection. There is a tendency that the reflection will become bias.
Interviewer : What do you mean by bias in professional reflection?
Teacher M4 : Uhmm… You can tell that this can be considered already an AR. I will Submit this. I will just indicate here that the problem being studied is already resolved.
Interviewer : Ma'am, what do you mean?
Teacher M4 : Even the intervention is not really effective, we will just declare in the AR results that it is effective.

This perception of the AR process being collaborative is desirable. Kemmis and McTaggart (cited in Burns, 1999) suggest that "the approach is only action research when it is collaborative, though it is important to realize that the action research of the group is achieved through the critically examined action of individual group members" (p. 5). Involving teachers in a collaborative AR leads to better opportunities for professional development. AR results will be fed back by a group of professionals while they are reflecting upon the AR process. This eventually gives each teacher a more active role as a researcher and a member of the collaborating team (Garcés & Granada, 2016). In addition, collaborative AR benefits the beginning teachers who are confronted with various issues as these begin their teaching careers. These issues include but are not limited to classroom management, individual differences, learners' behaviour problems, and dealing with parents (Mitchell, Logue, & Reilly, 2009).

The fifth scenario has 68.75 percent of the teachers who perceive it as an AR. Teacher S2 contends that the scenario reflects an iterative and continuous research method which is a nature of an AR. In this regard, Teacher S2 with his group comes up with a model reflecting the process of an AR. The model is read as:

> "Our model shows us being science teachers because we used reversible symbols just as the case of chemical reaction. So why is it reversible? According to my colleagues, if we can identify the problem to be studied, we can start collecting data. Throughout the data collection process, there is a possibility that we have to look back with the problem being studied, hence, reversible. There is reactant and product (laugh). Next, if we already have the data on the problem, we will proceed on taking appropriate action or intervention to the problem. Like in identifying the problem and collecting data, we will also reflect in this stage of the AR process. Finally, we have implications. Here we identify what is the root cause of the problem we are studying."

This is shown in Figure 2. While these teachers recognize the process being iterative, the model shows lack of depth on the understanding of the AR process. The term iterative does not necessarily indicate going back and forth according to a group of Science teachers within the stages of one complete AR process.

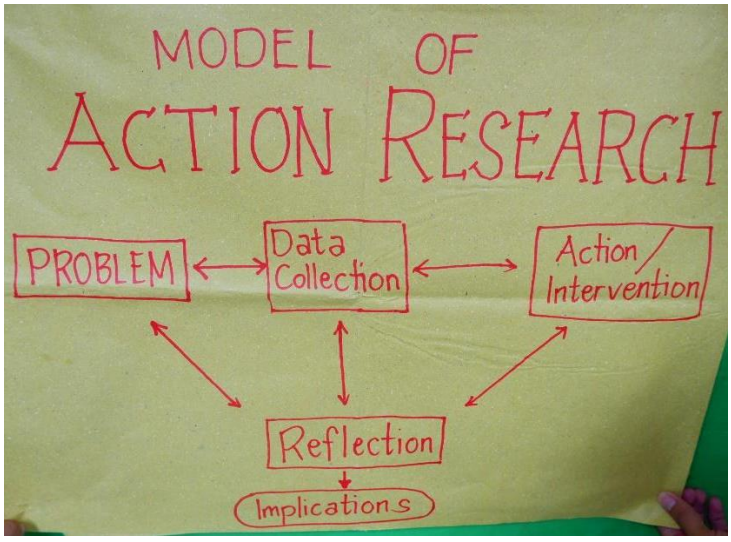

Figure 2. Model Reflecting the Action Research Process

Rather, iteration happens while a teacher moves from one action research cycle to another. He/she reflects or evaluates what happened from the previous as the basis for modifying an action in the following AR cycle. This also explains why recent models of AR are continuous (e.g. Kemmis & McTaggart, 1988; McNiff & Whitehead, 2011) as compared to Lewin's (1952) original AR cycle.

CONCLUSIONS

To deliver quality education, teachers should reflect on their practices or conduct action research. However, results of the study reveal that teachers handling core subjects in basic education programs have varying conceptions about AR as influenced by their exposure to the research method, educational background, and field of specialization. One of the perceptions being referred to is AR being a reactive approach for addressing problems because the research method can also be proactive. In addition, positivist or scientific research method is only one classification of AR which most teachers are familiar with, but the teachers failed to recognize other classifications such as critical theoretic and practical AR. Although they perceived the AR process as collaborative, iterative, and continuous, they lack in-depth understanding of these terms that relate to AR.

In this regard, there is a need to offer professional development programs on AR to reorient their misconceptions about AR and put their correct perceptions into practice such as its process being collaborative and iterative. Eventually, practical issues within teachers' locus of control will be resolved while they are growing professionally and delivering quality education.

REFERENCES

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

Burns, A. (1999). *Collaborative action research for English language teachers*. Cambridge University Press.

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.

Department of Education. (2017). *National adoption and implementation of the Philippine professional standards for teacher*s. www.deped.gov.ph.

Evans, L. (2012). Leadership for researcher development: What research leaders need to know and understand. *Educational Management Administration & Leadership*, *40*(4), 423-425. https://doi.org/10.1177/1741143212438218

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

Hine, G., & Lavery, S. D. (2014). The importance of action research in teacher education programs: Three testimonies. *Teaching and Learning Forum 2014: Transformative, Innovative and Engaging*, 30-31 January 2014. The University of Western Australia. http://ctl.curtin.edu.au/professional_development/conferences/tlf/tlf2014/refereed/hine.pdf

Johnson, A. P. (2012). *A short guide to action research* (4th ed.). Pearson Education.

Kemmis, S., & McTaggart, R. (1988). *The action research planner* (3rd ed.). Deakin University Press.

McNiff, J., & Whitehead, J. (2011). *All you need to know about action research* (2nd ed.). SAGE Publications.

Mitchell, S. N., Logue, M. E., & Reilly, R. C. (2009). Benefits of collaborative action research for the beginning teacher. *Teaching and Teacher Education, 25*(2), 344-349. https://doi.org/10.1016/j.tate.2008.06.008

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://doi.org/10.1080/13674589700200009

O'Connor, K., Greene, H., & Anderson, P. (2006). Action research: A tool for improving teacher quality and classroom practice. A paper discussion session, American Educational Research Association, San Francisco, CA. https://files.eric.edu.gov.>eD494955.pdf

Philippine Qualification Framework (PQF). (2012). https://www.ceap.org.ph/upload/download/20138/2723637531_1.pdf

Steele, A. (2012). Looking backwards, looking forwards: A consideration of the foibles of action research within teacher work. *Canadian Journal of Action Research, 13*(2), 17-23. https://doi.org/10.33524/cjar.v13i2.36

The Commonwealth. (2017). *Universal standards for quality in education* https://www.thecommonwealth-educationhub.net/wpcontent/uploads/2016/05/Quality_ Standards _ Education_2017_07.pdf

UNESCO. (2003). *Promoting quality education: Education for peace, human rights and democracy; education for sustainable development; curricula, educational tools and teacher training*. https://unesdoc.unesco.org/ark:/48223/pf0000129748

UNESCO. (2005). Quality education for all young people – Reflections and contributions emerging from the 47th International Conference on Education of UNESCO, Geneva, 8-11 September 2004. http://www.ibe.unesco.org/fileadmin/user_upload/archive/Publications/free_publications/educ_qualite_angl.pdf

UNESCO. (2016). *Education 2030: Incheon declaration and framework for action towards inclusive and equitable quality education and lifelong learning for all*. UNESCO Institute for Information Technologies in Education. https://iite.unesco.org/publications/education-2030-incheon-declaration-framework-action-towards-inclusive-equitable-quality-education-lifelong-learning/

UNICEF. (2000). *Defining quality in education*. https://www.right-to-education.org/sites/right-to-education.org/files/resource-attachments/UNICEF_Defining_Quality_Education_2000.PDF

Tindowen, D. J., Guzman, J., & Macanang, D. (2019). Teachers' conception and difficulties in doing action research. *Universal Journal of Educational Research*, *7*(8), 1787-1794. https://doi.org/10.13189/ujer.2019.070817.

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

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

APPENDIX

Directions: The purpose of this test is to elicit your views on the kinds of activities which can be called AR. There are no right or wrong answers. Read each description below and choose one answer to say to what extent you feel the activity described is an example of action research.

1. For the past years, a science teacher had negative feelings about the strategy she used in teaching a certain concept in biology. To understand the nature of her problem, she collected information from her previous batch of students by giving them questionnaires and conducting interviews. She found that the strategy she used did not fit the needs of her students and the strategies were distracting them instead. To avoid the same problem from prevailing, she searched for a strategy which is based on the literature, is effective to these types of students. She used this strategy to her new batch of students.

   a. Definitely not AR b. Probably not AR c. Probably AR d. Definitely AR

2. A teacher compared science process skills of two groups of students taught in different strategies. He assigns the first group of students as an experimental group, where all classroom tasks were conducted through a laboratory method for three months. Meanwhile, an equal number of students assigned as a control group was taught using a lecture method for the same period. The results showed that the students assigned to the laboratory method have improved their science process skills over those assigned in the lecture method.

   a. Definitely not AR b. Probably not AR c. Probably AR d. Definitely AR

3. A teacher was interested in using social media platforms as a learning resource management system where he uploads his course materials, instructions for assignments and projects, and even individual reports of student's progress in science classes. He gave a questionnaire to 200 students about their perceptions on the use of social media platforms in the subject. Eventually, he hired a statistician to analyse the data and found out that a large percentage of the students have positive perceptions if social media are used as a learning resource management system in science classes. The teacher then wrote an article about his findings and submitted it to a research journal.

   a. Definitely not AR b. Probably not AR c. Probably AR d. Definitely AR

4. A group of five science teachers collaborated in investigating the lack of interest among students in their subjects because this has translated to poor grades and performance during national achievement examinations. First, the teachers identified an area of focus for investigation such as their pedagogy, assessment, instructional materials, and among others. Then, they described their previous practices in their respective classes and took students' perceptions and perceived needs. Eventually, they modified and designed a holistic program on the basis of what they have found out from their investigation. The program refers to enhancement or modification of their previous practices. Finally, they supported each other by providing reflections, suggestions, and feedback on the new program they implemented.

a. Definitely not AR b. Probably not AR c. Probably AR d. Definitely AR

5. A considerable amount of research articles indicate that an inquiry-based learning is appropriate and effective in science classes. In this regard, the teachers opted to use a pedagogy in order to adapt with what is trending and what the educational community claimed as effective by the educational community. Initially, the teachers initially conducted a pre-test in the respective science topics where they wanted to use the pedagogy before implementing such. Regular monitoring on students' progress and recording? of their feedback were done on the onset of implementing the pedagogy. To identify the effectiveness of their study, a post-test was done.

   a. Definitely not AR b. Probably not AR c. Probably AR d. Definitely AR