THE LIFE EXPERIENCES OF SCIENCE AND MATHEMATICS TEACHERS– MENTORS IN FORMULATING ACTION RESEARCH TO ENHANCE LEARNERS’ PERFORMANCE

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Abstract. This qualitative research used the life experiences of Science and Mathematics teachers and their mentors utilizing observation, interview and focused group discussion (FGD) to formulate action research. Life experience in this study is the depiction and understanding of human experiences, choices, and options and how these interests influenced one’s perception of knowledge when engage in action research. One of the common problems in Department of Education (DepEd) is that very few teachers engaged in action research even though many of them have excellent innovations to help below average learners. The reasons for these failures were lack of interest and unambiguous understanding about action research, and the lack of supports from the administration and funding. Many of them attended trainings, workshops and conferences but all had focused on concepts; no actual implementations on the process to articulate the procedure on doing action research. The results in local and national achievement tests were below national standards. Thus, teachers with great potentials in doing action research must be recognized and mentored. Also, collaborative work with SUCs faculty or other agencies is also recommended to help basic education teachers to make innovative outputs into functional products to enhance learning among below average learners.

1. Introduction

Action research is about evaluating the effectiveness of innovations and creative outputs of teachers that will help enhanced the performance of learners. Action researchers at the school level are encouraged to solve problems. Teachers in basic education department are motivated to engage in scientific study to enhance the lives of learners. Furthermore, this can enhance the lives of those professionals who work within educational systems.

In addition, action research is also an effective instrument for any school administrators to solve educational problems like student behavior, curriculum, school improvement plans, and other educational issues. Besides Action research is a process that allows school principals to address
their teaching and learning achievements [7]. According to [9], action research is defined as a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities.

DepEd is mandated to “undertake national educational research and studies” which can become part of the basis for necessary reforms and policy inputs (Chapter 1, Section 7 (5) of RA 9155). The current administration also recognizes the need for evidence-based policy development by instituting reforms that strengthen transparency and accountability among government entities [1].

But currently, very few teachers were involved in doing action based on the outputs collected from schools, division and regional offices. This is the reason why National Achievement Test (NAT) for the past several years was always below national standard specifically in Science and Mathematics. Thus, the national government should do something to help this problem. DepEd is now encouraging teachers to conduct action researches. This is based on pressing problems that hamper the delivery of effective and efficient service to our learners for sustainable development and the achievement of our national thrusts.

The phenomenon to be explored is the life experiences of Science and Mathematics teachers and mentors in formulating action research based on the innovation implemented inside the classroom. Analysis of the day-to-day experiences of teachers and mentors is intended to ascertain the personal meaning of the living of the experience as separate from the impartial components of the situation or circumstance. Lived experience is a representation and understanding of a researcher or research subject's human experiences, choices, and options and how those factors influence one's insight of information. Understanding of this experience and learning to listen to teachers' stories can enhance mentors' assessment of the needs on how to improve the interests in doing action research [6]. The main objective of this study is to determine the lived experiences science and mathematics teachers and their mentors in doing action research.

2. Method

This study used phenomenology and according to [10] this is a way of thinking about what life experiences are for people and is mainly apprehend on interpreting the meaning of these experiences. The informants of this study were Science and Mathematics teachers from Department of Education (DepEd) in Northern Iloilo and mentors from Northern Iloilo Polytechnic State College, Estancia, Iloilo, Philippines. This research was conducted last November 2017 to March 2018. The methods used in this research were observation, interview using guide questions and focus group discussion (FGD).

3. Results and Discussion

3.1 Educational Qualifications of the Science and Mathematics Teachers

The informants of this study were 8 Science and 8 Mathematics teachers. See Table 1. According to the records collected 3 of the informants were bachelor degrees, 4 are taking graduate studies in management, 2 were on thesis writing on MaED – Science, 1 finished Master in Education major in Mathematics, 2 graduated Master in Education in Educational Management, 1 completed his Doctor of Education in Management, 1 graduated Doctor of Philosophy in Science Education and two Mathematics teachers in high school who are taking units in Doctor of Education in Management.
According to one Grade III Teacher: “I am now old, I will be retiring soon. If I will go to school, it’s just a waste of time and money. I preferred to stay at home during weekend to take good care of my grandchildren.”

One Science teacher in elementary stated: “I still have children who are college students; my salary is not enough for my educational development. Thus, this sometime hinders my knowledge on doing action research.”

While according to one mentor: “Our schedule was really difficult to match; if I am free, the teachers are very busy with co-curricular activities. And if they are free, I have so many things to finish. Thus, I have little time to help them understand the lesson. But based on the interviewed, educational qualifications doesn’t guarantee of the commitment of teachers in doing action researches. If these teachers were not encouraged to value the importance of action research and support from colleagues and officials, no one will conduct studies to improve learning and teaching process. All the teachers selected in this study attempted to do action research but never materialized due to little understanding of the methods and procedures.

3.2 Workshop Attended by Science and Mathematics Teachers

Many organizations facilitated training/workshop on action research in local, national and international levels approved by the national agency. The main purpose of this activity is to help teachers develop their skills and knowledge as well as interest in action research.

The A &A Knowledge Base Research Consultancy and Training, Inc. conducted a “Seminar-Workshop on promoting Substantive Pedagogy through Action Research.”

The objectives of this project were to develop action research plans for continuous improvement; and to collect and analyze quantitative data for action research (DepEd, Division of Iloilo, 2016).

The School Division Office of Iloilo facilitated a seminar-workshop on Research Proposal Writing in relation to the Basic Education Research Fund (DO No. 43 s. 2015 and DO No. 4 s 2016) and Basic Education Research Agenda (BERA) (DO No. 39 s 2016). The objectives of the projects were to present the Research Proposal (Action Research) format; to discuss the different parts of a Research Proposal (Action Research); and to conduct a write shop proposal making (DepEd – Schools Division of Iloilo, 2016).

Last August 25 – 27, 2016 at Educational Media Center, Central Philippines University, Jaro, Iloilo City, a Regional Training-Workshop and Write shop in Action Research was organized. This was sponsored by the Biology Teachers Association (BIOTA) of the Philippines – Western Visayas in collaboration with Division of Iloilo Secondary Science Coordinator and Club Advisers Association (DISSCCAA) and Central Philippines University Life Sciences Department. They invited master teachers and/or research teachers in junior and senior high school. The purpose of the training is to equip participants with essential concepts of action research in all practitioners in education (DepEd – Schools Division of Iloilo, 2016). Also, the Iloilo National High School Research Development Center facilitated a “Reinforcing Leadership Potential among Master Teachers.” One of the aims of the said training was to review basic education research. The participants from the northern Iloilo were scheduled last April 15, 2016 (DepEd – Division of Iloilo, 2016).
There was also another international conference sponsored by Lasallian Institute for Development and Educational Research (LIDER) and Br. Andrew Gonzalez FSC College of Education (BAGCED), De La Salle University (DLSU).

Based on the experience of a Science Teacher: “Everything they discussed was very new to me. My knowledge about research is pure descriptive survey. But I love to do action research; I want to enhance the performance of my learners.” Additionally, elementary Mathematics teacher revealed: “I didn’t know that all my innovations are for action research. I thought action research is about doing something for a study”. Based on the interview conducted, many of these teacher participants attempted to start creating a title but almost all of them failed to continue. According to a Science teacher in Grade III: “I have already a title in mind after the training but because I have other duties and responsibilities to attend, I haven’t started anything”. Also, one Mathematics teacher stated: “I love to do action research because I want to improve the performance of my students but I am also a coach and club adviser. I don’t have time to do what I love most”. In addition, Science teacher revealed: “I need someone to help me to create a title because even if I don’t have enough knowledge. I am willing to pay just to have an action research output because I wanted to be promoted”. Another Mathematics teacher shared: “Doing action research is very difficult”.

3.3 In-Service Training for Teachers

One district and one national high school in the 5th District of Iloilo responded to the call to invite the researchers to speak about action research during the In-service training for teachers. Based on the output of the training/workshop almost all Science and Mathematics teachers were able to create a title for action research. See Figure I.

Figure 1. One of the mentors served as resource speaker about action research.

But when they were asked if this proposal was based on their innovations to enhance performance of the learners, one responded: “I will create an innovation without evaluating my learners just to comply with the requirements of our principal”.

Another teacher stated: “I never know that it is important to identify my methods and strategies that help the performance of my learners and make this as an action research. I thought I could just directly create any innovations for action research”. A male Science teacher said: “Doing action research entails so much time, you must be committed. Also, I have difficulty in understanding statistical tools”. All Mathematics teachers agreed that innovations are very important in teaching Mathematics. They also stated: “Creating new approaches in teaching Mathematics such as card games, technologies as well as outdoor activities will help students realized that Mathematics is not a difficult subject”.


3.4 Title of Action Research

During the INSET Training all Science and Mathematics teachers were asked to create a title based on the innovations implemented inside the classroom. See Table 2. Many of the participants were very enthusiastic and happy that they were given hands-on activity even just for a title of a research. One informant said;“I am so excited about the activity. This will give me the opportunity to help me about engaging in action research. Most of my pupils are below average, I need to do creativity in order to help these learners.”

Another informant stated:“Creating a title is so easy and simple but when doing the actual proposal; I am so scared, it’s really difficult. Aside from being a teacher, I am also the coach for basketball. I am also a club adviser. My time is so limited to engage myself in doing action research.”

Table 2

| Science                                      | Mathematics                                           |
|----------------------------------------------|-------------------------------------------------------|
| **Elementary**                               | **Mathematic Concept Kit (MCK) – Its Effect to the Grade IV Pupils on the Remedial EMS Assessment Test** |
| Diglossic Approach in Teaching Elementary Science: An Innovative Strategy | Individualized VS Group Games: A Strategies in Teaching Elementary Mathematics |
| Eco-Trail Strategy to Enhance Pupils Performance in Learning Science | |
| Using Philippine Traditional Games as Instructional Materials in Teaching Science | |
| **Secondary**                                | **Cooperative Learning: Its Effect on the Performance of Grade 7 Students in Mathematics** |
| Individual Activities VS Group Activities: Its Effect on the Academic Performance of Science Students | |
| Traditional Based Teaching VS Integrated Instruction in the Context of Science Curriculum | |
| Interactive Instructional Materials: Its Effect on the Performance of Science Students | |
| Differentiated Instruction: An Alternative Way in Teaching Science | |

Based on the experiences of the mentors, they revealed: “All the selected teachers have inadequate knowledge on making research title. During the presentation of outputs, we take almost half an hour to correct all the proposed titles.”

3.5 Creating and Formulating Research Proposal

The mentors visited the selected informants of this study and they were mentored. Close mentoring approach was utilized because many of the Science and Mathematics teachers have limited knowledge about action research. Thus, using mentor-mentee could be a good strategy to help these educators improved their skills and knowledge in action research. All the participants in the INSET who created a research title, automatically all Science and Mathematics who submitted a title became informants. The researchers visited them in their home institution for mentoring. They were trained about different parts of the action research, and how to do a proposal based on the memorandum of DepEd.
The different innovations of the informants were identified. The mentors observed the classroom of each informant. Based on the observation, the researchers have discovered various innovations such as, card games, interactive science teaching using technologies, utilizing of social media, songs, and others. But many of the informants don’t know how to implement creative outputs into action research. They spent a lot of money to help below average learners love Science and Mathematics. But very few understand that this is innovations.

Almost 8 informants formulate a proposal but only two submitted the completed research paper; one from Mathematics and one from Science; both of them were in elementary.

When they asked what motivated them to complete the proposal, they stated: “Being a teacher it is my commitment to help my students improved their performance. Thus, I am willing to conduct action research even if it will take my time. I must know how to manage my time properly I will conduct this during my class hour. I am hitting two birds with one stone.”

Also, one Science teacher revealed: “I really wanted to create a proposal but my time cannot permit me to finish what I have started. I have here my introduction, my methodology is still hanging but the mentor already explained everything to me”. In addition, one informant confirmed: “I was so busy doing other things; I need to submit documents required by my principal. Also, I am over load, and I am still coaching a sport event”. Then, another also said: “I was asked by my head teacher to be an adviser of our club. I am also the coach of basketball. My time is so limited for creating a proposal”. While, one male Mathematics teacher said: “We need money to conduct action research. But my salary is only enough for my family. I always spent much for instructional materials”.

3.6 Engage in Action Research

All of them were guided by mentors but one Science teachers was able to conduct a study entitled “Diglossic Approach in Teaching Elementary Science: An Innovative Strategy”. And according to here: “I have no choice but to conduct this study because I was required by the principal as a Master Teacher. This is one of my duties and responsibilities. But with the help of the mentors, doing action research is actually easy and fun. I am now equipped and ready to do on my own. And I can now encourage my fellow teachers to do action research”. But other shared: “I have already started doing my introduction and methodology but because of many commitments and obligations in work and family, I was not able to do it. But rest assured I will do it during my free time”.

3.7 In the World of Research Presentation

The completed output was presented to the 17th Annual Regional BIOTA Convention and Scientific Sessions last February 2017 at Sarabia Manor Hotel and Convention Center by the researcher. The teacher-researcher was not able to present the paper because she was not allowed to attend the conference due to some financial constraint. However, when she was asked about the presentation: “I am willing to present the paper in the conference. This will help boost my interest in doing action research. The suggestions of the experts in the conference will enhanced this paper”.

This showed that the informant has an idea of the importance of presenting research paper in any conferences. Thus, it must be given priority of the school heads to help their educators experience oral or poster presentations. In addition, she stated: “I will try to present this paper next but in a higher level because our teachers in graduate studies always telling us to present our research outputs. Research conferences often help us boost our interest to engage more in doing action research”.

3.8 Experiences of the Informants

This research project is a good start to understand the needs of DepEd teachers in the district. This is also the baseline to conduct more researches in the future.
We are also encouraging the informants to finish their proposal within the year. We are willing to help them enhance their action researches.

When the informants were asked, each one affirmed: “I promised that no matter how heavy my loads and duties, I will take time to complete my proposal. This is just a matter of time management. My experience as informant of this study really inspired me that action research is really easy if you love your students and your job.”

Another informant uttered: “I will really submit myself to commit what I have started. This mentoring is very important to me as well as to my other co-teacher. We have value the sharing of the mentors to us.”

3.9 Experiences of the Mentors

The mentors were all motivated to help the Science and Mathematics teachers to love action research. But because of time and commitment to work and family, they couldn’t able to complete what they have started. For instance, one Mathematic teacher has created one innovation that really improved the performance of his learners based on the results of quizzes and periodical examination. But he has no evidence that this creative output has impact to students’ performance because no research has been made.

One mentor stated: “I will never stop helping these teachers. I will commit myself that every summer I will continue my advocacy. I will also invite friends and colleagues to help me with program and project. I always believe that action research is the key to improve education system in the Philippines.”

Another mentor uttered: “It is really tiring activity because I have to travel from my station to the study area but seeing them formulating action research was fulfilling. I am hoping that this would be a continuous activity to really help them understand and appreciate research.”

4. Conclusion

All the sixteen informants of this study were trying to improve their educational qualifications. They are really interested to go for graduate studies which they believed are really relevant for being educators. But almost all of them took management degree instead of science and mathematics because they wanted to become administrators or specifically principal. There were scholarships for graduate studies in science and mathematics but very competitive; thus, very few were attracted because of family, location of the scholarship and support from school heads. Furthermore, all research outputs during their undergraduate and graduate programs were all descriptive-survey research; hence, their knowledge and skills in doing action research is insufficient. These results showed that limited outputs were submitted to the institution, division as well as regional offices because of limited number of teacher embraces the importance of conducting action research.

All trainings or workshops organized on action research were all knowledge based. All organizations who facilitated these kinds of activities should evaluate the effect to the teacher-participants. They must conduct follow up training as in allowing teachers to involve in actually formulation of action research. They must also ask the participants to submit proposal for critique even after the training. This is to check if they were able to create a action research upon returning to their station.

Thus, mentor-mentee approach is a best method to help DepEd teachers in doing action research in term of creating a title. But to formulate proposal, very few engaged because of limited time due to another designation given such as coaches, class and club advisers, and office work. Thus, only one completed action research and presented in a regional conference. They were planning to present this paper in international fora if able to complete their proposed studies.

Based on the results commitment should be a priorities. Time management is very important for science and mathematics teachers. But, all administrators must encourage their teachers to engage in research and de-loading should be implemented properly. Master teachers must be encouraged to conduct action research to help other teachers in the district or in the school.
But many of the informants really wanted to create an action research because they have already innovations implement in their respectively classroom.

5. Recommendation

The results of this study suggest that Northern Iloilo Polytechnic State College should help these teachers in doing action research because we have education programs within the 7 campuses in the northern part of Iloilo. Action Research must be an output during undergrad as well as in graduate school because most of their theses or even dissertations were descriptive survey. DepEd should support teachers who conduct action research, for example funding and de-loading. But currently they are now providing financial support in the amount of P30,000.00 to P150,000.00 which really a good start to improve number of teachers engaged in conducting action research. They must also persuade their faculty to present papers in any research fora and finance their participation in this activity. Local government units must be tap to help these teachers who are into action research by means funding taken from the Local School Board Fund. They must also provide scholarship programs but specifically on science and mathematics to enhance the interest of teachers to engage in action research.

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