JUNIOR HIGH SCHOOL TEACHERS' ADAPTATION ON THE K-12 SCIENCE SPIRAL PROGRESSION CURRICULUM

A Thesis
Presented to
The Faculty of the College of Graduate Studies
Samar State University
Catbalogan City, Samar

In Partial Fulfilment
of the Requirements for the Degree
Master of Arts in Teaching (M.A.T.)
Major in Physics

JANICE R. COLEBRA

April 2019

APPROVAL SHEET

In partial fulfilment of the requirements for the degree, **MASTER OF ARTS IN TEACHING**, this thesis entitled **"JUNIOR HIGH SCHOOL TEACHERS ADAPTATION ON THE K-12 SCIENCE SPIRAL PROGRESSION CURRICULUM"**, has been prepared and submitted by **JANICE R. COLEBRA** who, having passed the comprehensive examination and pre-oral defense, is hereby recommended for final oral examination.

April 25, 2019
Date

REZY V. MENDAÑO, M.Ed.
Instructor, SSU
Adviser

Approved by the Committee on Oral Examination on April 25, 2019 with a rating of **PASSED**.

ESTEBAN A. MALINDOG, JR., Ph.D.
Dean, College of Graduate Studies, SSU
Chairman

RONALD L. ORALE, Ph.D.
Vice President for Research, Development and Extension Services, SSU
Member

FLORABELLE B. PATOSA, Ph.D.
Dean, College of Arts and Sciences, SSU
Member

NICOLAS O. BOCO, JR., M.A.T.
CGS Focal Person, Quality Assurance
Member

Accepted and approved in partial fulfilment of the requirements for the degree, **Master of Arts in Teaching**, major in **Physics**.

July 29, 2019
Date

ESTEBAN A. MALINDOG, JR., Ph.D.
Dean, College of Graduate Studies, SSU

ACKNOWLEDGMENTS

The researcher considers the valuable support of the following persons for without them, the completion of this study would not have been possible.

The researcher is particularly thankful to her thesis adviser, **Mrs. Rezy V. Mendaño**, for the review, corrections, suggestions, and recommendations; to **Dr. Esteban A. Malindog, Jr.**, Dean, College of Graduate Studies, for motivating the researcher to pursue and finish this study; to **Mr. Nicolas O. Boco, Jr.** and **Mrs. Abigail M. Cabaguing**, for guiding the researcher in choosing the appropriate research design to be used in this study; to **Dr. Ronald L. Orale** and **Dr. Vivian L. Moya**, for guiding the researcher in the making of the research instrument and for giving suggestions for the necessary inputs to be written in Chapter 3; to **Mrs. Ma. Rosebelle R. Nacional**, for assisting the researcher in the making of interview questions relevant to science teachers; **Mr. Frank Angelo A. Pacala**, for guiding the researcher in formulating themes and meanings based on the information gathered; and to **Mrs. Ruth D. Cabanganan**, Principal IV, Samar National School, **Mrs. Brigida C. Singzon,** Science Department Head, Samar National School, for allowing the researcher to conduct the study in their school.

The researcher gratefully acknowledges also the cooperation of the participants for providing the necessary information that are important for the completion of this study.

Finally, to our Almighty God, who is always faithful in providing for the good health and well-being, knowledge, strength, courage, peace of mind, and comfort that are necessary for the completion of this study.

The Researcher

DEDICATION

The researcher humbly dedicates this work to Almighty God for His blessings and guidance in every step of the way.

The researcher would also like to express her warm and heartfelt gratitude to her parents for their full support and inspiration; to other relatives, friends, and teachers who gave their moral support and comfort; to the participants who graciously accepted the invitation to participate and share their experiences; for without them, the accomplishment of this study would not have been possible.

Janice R. Colebra

ABSTRACT

The study aimed to explore the experiences of Junior High School Science Teachers in adapting the spiral progression in teaching science. This study used a qualitative method using phenomenological approach to investigate the experiences of junior high school science teachers in adapting the spiral progression in teaching science. Teachers observed that spiral progression approach was appropriate for the learners' development. The concepts were discussed from basic or simple to complex. However, the study found out that teacher-respondents perceived the spiral progression approach more disadvantageous than advantageous. Teachers highlighted that they were having a hard time adjusting to the new curriculum because of numerous reasons; too many activities to be conducted in a short span of time; lack of mastery both by the teachers and the students; lack of quality learning materials; promoting and receiving not well-equipped learners; and teaching areas which are not their specialization. However, they also believed that using constructivist learning approaches, creating own learning materials and activities, studying new science concepts and attending seminars are ways to adapt with the change of the new science curriculum. Conduct further professional trainings and seminars for teachers in longer term that would help them adapt with the new science curriculum and be able to effectively transmit their knowledge to the learners.

TABLE OF CONTENTS

		Page
TITLE PAGE ……		i
APPROVAL SHEET ……..		ii
ACKNOWLEDGMENT ……		iii
DEDICATION ……		v
ABSTRACT …….		vi
TABLE OF CONTENTS ……...		vii
Chapter		
1	**THE PROBLEM AND ITS SETTING ……**	**1**
	Introduction …….	1
	Statement of the Problem …….	4
	Theoretical Framework ..……	4
	Significance of the Study ……	7
	Scope and Delimitation …….	8
	Definition of Terms …….	8
2	**REVIEW OF RELATED LITERATURE AND STUDIES …….**	**10**
	Related Literature ……	10
	Related Studies ……	15
	Synthesis of the Reviewed Literature and Studies ……	25
3	**METHODOLOGY ……**	**27**
	Research Design ……..	27
	Research Environment ……..	27

Sampling Procedure ……. 28

Instrumentation ……. 29

Validation of Instrument …… 29

Data Gathering Procedure ……. 30

4 PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA ……. 34

Challenges and Experiences Encountered by the Junior High School Science Teachers in Teaching Under Spiral Progression Curriculum ……..… 34

Adaptation Strategies Employed by the Junior High School Science Teachers in Teaching Under Spiral Progression Curriculum ……. 49

5 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION ……. 58

Conclusions …….. 58

Recommendations …… 59

REFERENCES ……. 61

APPENDICES …….. 70

CURRICULUM VITAE ……. 108

LIST OF FIGURES …….. 110

Chapter 1

THE PROBLEM AND ITS SETTING

Introduction

Human beings encounter a lot of changes in the environment which require them to cope and adapt in order to fit with the present environment. Adaptation is the ability to adjust to new information and experiences, thus, Piaget (1952) regarded intellectual growth as a process of adaptation or adjustment to the world (McLeod, 2018).

The concept of adaptation happens anywhere with the purpose of improving one's function. One example of scenario where adaptation happens is emphasized in a study entitled "Sociocultural Adjustment of Foreign Students in the Philippines" (San Diego, 2017). In this study it was stated that a lot of foreign students choose to study in the Philippines because courses are more affordable and Philippines is filled with proficient English teachers; however, they are faced with the dilemma of adjusting to new culture and environment. They are also faced by the pressure of living independently which makes them feel lonely. Thus, getting along with others and feeling a sense of belongingness from the peers and professors is one way that they are able to adapt to the new environment. Because of the hospitality of Filipinos, they are also able to survive their academic stay in the country.

Adaptation is experienced not only by students, but also by many teachers and educators, nowadays. This is mainly because educational system has been undertaking series of changes with the existence of globalization (Lacorte, 2013). In 2012, Philippines implemented the K-12 curriculum (The Official Gazette, 2013), thus, indicating the need for educators to adjust and adapt with the new changes in education. According to Kardena (2015), resistances of changing a curriculum always occur from many educators because the changes of curriculum give impacts not only on the aims of education, but also on the process of its implementation.

In the implementation of the K to 12 curriculum, a new approach was given emphasis which, according to Adanza and Resurreccion (2015), resulted to teachers having tough time adjusting or adapting with the new curriculum. As Kardena (2015) emphasized, teachers' understanding on the new curriculum (including its new concept and approach) is essential because it directly influences their performance in the classroom. Thus, emphasizing that if teachers are not well-aware of the current curriculum, they will surely be having difficulties at work.

The enactment of the new curriculum resulted to the use of spiral progression approach which brought series of changes in the manner of teaching. One subject that felt major modifications is the Science subject (Montebon, 2014). Since in the previous curriculum, Biology, General Science, Physics and Chemistry, were divided to each year level in high school, making students and

teachers focused only on one discipline and ensures retention of the subject matter (Dinglas, 2017). However, in the new curriculum, science concepts are presented in a spiral approach (SEAMEO INNOTECH, 2012), wherein according to Ferido (2013), the content and the arrangement in this approach are developed in order that the topics and skills are revisited every grade level with increasing complexity. Therefore, teachers are now faced with the dilemma of juggling multiple branches of science in one school year.

As mentioned by De Dios (2013), with the implementation of spiral curriculum, teachers are required to have sufficient familiarity in all science areas. With that, teachers will be having a hard time discussing topics which are new to them. As emphasized by Dinglas (2017), since teachers are trained to teach one specific branch of science, no matter how relative the four sciences, there will still be a noticeable difference in the manner of instruction or in the completeness of ideas and principles. Additionally, according to Snider (2004), all concepts are given equal amount of period whether they are easy or difficult topics to master in the spiral design. Thus, there are some days that there will not be adequate time to introduce new concept making it difficult for the teachers to teach more complex science topics.

The implementation of the K to 12 Science Spiral Progression Curriculum brought modifications to the teaching field specifically to the teaching approaches and strategies. With that, the researcher was encouraged to conduct the study to investigate the experiences of junior high school science teachers in adapting the

spiral progression in teaching science. This study is conducted in a secondary school from a Province in Eastern Visayas, Philippines. It consists of approximately 200 teachers and 25 of those belong to Science Department.

Statement of the Problem

The study aimed to explore the experiences of Junior High School Science Teachers in adapting the spiral progression in teaching science. In examining the teachers' experiences, the subsequent research questions were utilized:

1. What are the junior high school teachers' experiences and challenges encountered in adapting the spiral progression in teaching science?
2. How do the junior high school science teachers adapt themselves in teaching science under the K to 12 Science Spiral Progression Curriculum?

Theoretical Framework

The study was anchored on several theories that served as guide to the researcher.

Change happens all the time, thus, the process of adaptation cannot be evaded. This study's main point is on the concept of adaptation; consequently, the researcher has looked into several models and theories which provided ideas and knowledge to truly understand the concept in several areas. In Biology, adaptation means the adjustment of organism to their environment in order to survive. The well-known theory on adaptation in science is called the Adaptation Theory or Adaptive Theory of Charles Darwin which deals with the idea of an

organism's ability to adapt to changes in its environment and adjust accordingly over time (King, 2018). Therefore, it focuses on the idea that humans or animals try to adapt with their new environment or to the changes they experience with their present environment so that they could "fit" and "survive".

Moreover, another theory that supports the current study can be found in Psychology which is the famous Cognitive Development Theory by Piaget (1936). According to Piaget's theory, adaptation is one of the most important processes in cognitive development. Adaptation involves the person's changing to meet situational demands. Furthermore, the adaptation process can occur in two ways: assimilation and accommodation (Cherry, 2019). Assimilation is the application of previous concepts to new concepts, while accommodation is the altering of previous concepts in the face of new information. Assimilation is using an existing schema to deal with new object or situation. Accommodation happens when the existing schema (knowledge) does not work, and needs to be changed to deal with a new object or situation. Consequently, equilibrium occurs when a child's schema can deal with most new information (McLeod, 2018).

In addition, Adaptation Level Theory, also known as AL Theory, also served as a guide to the researcher. This theory is a psychosocial concept which explains that the basis of an individual's evaluation pertaining to a particular result depends on the collective experiences garnered by the same individual while facing similar situations in the past (Bhasin, 2018). It means that the person's actions depend on his/her past experiences facing same situation or his/ her

recollection of how he/she perceives similar situations in the past. Thus, this emphasizes that adaptation levels may vary from person to person and in different situations.

Also, Roy's (1970) Adaptation Model gives inputs and ideas that were important in the conduct of this study. This theory emphasizes that humans are in constant interaction with their environment or surroundings. Thus, humans use a system of adaptation, both innate and acquired, to respond to the environmental stimuli they experience. Moreover, according to this model, adaptation happens when a person responds positively to changes in environment, and is the process of individuals using self-reflection, conscious awareness, and personal choice. Thus, adaptive responses may vary in every individual and may take a longer time compared to others (Gonzalo, 2014).

This study focused on the experiences of teachers in adapting the spiral progression in teaching science, thus, key philosophies of Spiral Progression approach were also significant in this study such as the Discovery Learning, Progressivism and Constructivism. The proponent for constructivism and spiral curriculum is Jerome Bruner (Comparativ, 2013). Spiral Progression Curriculum is based on Bruner's Spiral Curriculum Model which emphasizes that education should always be geared up to advancing cognitive development. The main theme in the theory of Bruner is that learning is an active and dynamic process wherein students construct new ideas and concepts based upon their current or past knowledge. The idea of spiral curriculum is that a curriculum should go back to

basic ideas, building on them until the student has grasped the full concept. Spiral curriculum is also associated with Bruner's Theory of Discovery Learning, which suggests that students learn best by building on their present knowledge. Discovery Learning encourages students to build on past experiences and knowledge, use their intuition, imagination and creativity, and search for new data to discover facts (Pappas, 2014).

Significance of the Study

This study aimed to explore the experiences of junior high school science teachers in adapting the spiral progression in teaching science. The result of this study will be useful to the science teachers, students, school administrators, and future researchers.

Science Teachers. The result of the study will serve as their basis on how they would manage their situation as to teaching science subject in Spiral Progression Curriculum. This study will help them evaluate their perception regarding K to 12 Spiral Progression Curriculum and also assess their level of readiness in teaching science in the Spiral Progression Approach. This study will serve as their guide in choosing and selecting teaching strategies for effective teaching in a Spiral Progression Curriculum.

Students. The result of this study will provide awareness to program implementers to solve challenges faced by them for the advantage of the students who are the ultimate beneficiaries of this change in the curriculum.

School Administrators. The result of the study will provide valuable inputs and information to school administrators in evaluating their teachers' adaptation of the K-12 Science Spiral Progression Curriculum. Thus, it will serve as their guide in giving and conducting trainings and seminars to the teachers for effective teaching.

Future Researchers. This study will aid as a guide to future researchers in providing more insightful research related to this topic and to give them the background of the study they want to focus on.

Scope and Delimitation

The primary focus of this study was to explore the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

The participants of this study were junior high school teachers teaching science subject in a selected institution located in a province of Eastern Visayas, Philippines.

This study was limited to the Junior High School Science Teachers from a selected institution and was conducted during the school year 2018-2019.

Definition of Terms

To provide a common frame of reference to readers, the succeeding terms are herein defined conceptually and operationally.

Adaptation. This term means the ability to adjust to new surroundings or a new situation to fit for existence. An organism's fitness may depend on the ability

to adjust behavior (Lourenco & Casey, 2013). As used in this study, the term implies the competencies of the teachers to adapt and cope with the needs and demands of the K to 12 Spiral Progression Curriculum.

K to 12 Program. As defined by Cruz (2010), it pertains to the recently implemented education curriculum signed into a law by President Benigno Aquino III through Republic Act 10533 (Cabansag, 2014). The Filipino students are required to undergo one year in kindergarten, six years in primary school, four years in junior high school, and two years in senior high school. In this study, the term applies only to the implementation of the said program in the selected school, Samar National School.

Spiral Curriculum. A spiral curriculum is an approach to education that introduces key concepts to students at a young age and covers these concepts repeatedly, with increasing degrees of complexity (Oxman et.al., 2018). In the study, the term refers to the new curriculum that is applied in K-12 implementation.

Theme. A theme is the central topic a text treat. Themes can be divided into two classes: a work's thematic concept which is what reader's "think the work is about", and is the thematic statement being "what the work says about the subject" (Obstfeld, 2002). In the study, the term refers to the organized formulated meanings of experiences that the researcher sees to be in connection with the study.

Chapter 2

REVIEW OF RELATED LITERATURE AND STUDIES

Related Literature

Velasco (2012) stated that there is a crucial need to improve the basic education quality since as cited by Mangaluz (2018), that previously, Philippines was the only country in Asia which still adopted the basic 10-year curriculum. Thus, the implementation of the new curriculum is considered a major improvement in the educational system (SEAMEO INNOTECH, 2012).

The Republic Act 10533, referred to as the Basic Education Act of 2013, or also known as the K to 12 Program, was approved into law by President Aquino. The implementation of this brought additional years of education, specifically three years in the basic education of the country with the purpose of making a globally competitive Filipino youth (Cabansag, 2014). This program commands that all pupils should have compulsory undertaken kindergarten and students will have senior high school or the additional two years in the secondary level.

According to Abulencia (2015), the Department of Education emphasize that K-12 Program has the following features: (1) creating a curriculum that will be appropriate and related to the learners, or applying the contextualization; (2) building proficiency through the practice of mother tongue based multilingual education; (3) having an interconnected and continuous learning, or commonly

known as spiral progression; and (4) the additional two years in high school which is referred to as the senior high school.

In an article written by Burgonio (2013) entitled, "K-to-12 Education Now a Law", it was stated that according to President Aquino, K to 12 is not just simply the addition of years in learning, but more of making sure that the subsequent generations are empowered to reinforce and help the society and the economy of the country. Truly, the enactment of K to 12 was meant to advance the Philippine education to global standards (Mangaluz, 2018).

In the Philippine Online Chronicles (2011), it was mentioned that K to 12 program has encountered criticism from young people and learners, from the teachers and parents, and also from the academic community emphasizing that education problems at present should be addressed and resolved than adding years of schooling. However, the Department of Education or DepEd claims that K to 12 is the answer to education despairs and to the failing quality of learning in the country.

Cruz (2010) stated in the article entitled, "Pros & Cons in the K+12 Basic Education Debate", that the advantage of implementing K+12 Curriculum is the aim of enhancing the basic learning quality in the country since poor quality of education is manifested in the low performance of Filipino students in the different tests undertaken and consistently lagging way behind in the international test results. The congestion of the old curriculum partly elucidates the current state of education because 12 years of education were crammed into

10 years wherein most high school graduates have difficulty of applying for a job since they are too young to be employed in a certain job. Thus, short basic education curriculum affects the development of the Filipino youth. On the contrary, the enactment of K to 12 means parents have to disburse more money for their children's education. Critics argued that Department of Education should fix the present (now previous) topics instead of accumulating new subjects since the content is the real problem and not the length of learning or education.

Navarro (2014) states that the enactment of the new program, the K-12, is the vital key to the development of the country. The improvement of the quality of education is very crucial and serious, that is why, even if there are trials that may be encountered in the enactment of the K to 12, it is still important that this program be implemented.

The Department of Education Order No. 31, series of 2012, describes the new curriculum (K to 12) as the overall design of the Grades 1 to 10 curriculum that follows the spiral approach across subjects by building on the same concepts developed in increasing complexity. According to Cruz (2012), teachers are expected to use the spiral approach in educating the learners. As mentioned by Ferido (2013), in spiral approach, progression is not only increasing complexity, but also a broader range of applications.

In spiral approach, students construct new ideas based upon their previously learned knowledge. Regular mastery of the anticipated competencies

is attained through revisiting essential ideas in several passes and relating new knowledge or skills with the previous. It focuses on understanding for mastery and it secures smooth transition between grade levels and a continuum of competencies through spiral progression (SEAMEO INNOTECH, 2012). It follows a progressive type of curriculum. As explicated by John Dewey, progressive curriculum is the total learning of experiences of an individual (Lucas, 2011). Also, Martin (2008) defined progression as pupils' journey through education and their way of acquiring, applying and developing their skills and knowledge, and also understanding increasingly challenging conditions; while continuity is focused on the processes in which the educational system provides adequate challenge and progress for learners in an identifiable curricular landscape.

In spiral curriculum, after the students master the beginning concept, the students "spiral upwards" as new knowledge or idea is presented in the following lesson, helping the students to reinforce what they have learned already. Thus, a rich breadth and depth of information is attained. In this process, the beforehand learned concept is revisited, thus, improving students' retention. Also, the topic may be increasingly expounded when it is reestablished which leads to a widened understanding. Therefore, Spiral Progression Curriculum will allow the teachers to make lessons and activities that focus on the improvement of thinking skills of the youth (Martin, 2008).

Furthermore, as mentioned by Comparativ (2013), that K-12 Science Progression Curriculum is student-centered and inquiry-based which emphasizes the use of evidence in constructing explanations. Inquiry-based learning is based on John Dewey's philosophy that education begins with the curiosity of the learner (Papong, 2014).

In an article written by Abarra (2018) entitled "Spiral progression approach in teaching science", it was stated that Spiral Progression Approach helps the learners be exposed into a broad variety of concepts and disciplines. Then, the learners will master those concepts by restudying, but with different deepening of difficulty.

Moreover, SEAMEO INNOTECH (2012) revealed that the subjects and skills in different science areas are discussed in increasing difficulty, thus, there is a deeper understanding of the varied science concepts. According to Ferido (2013), new concepts are built on pupils' previous knowledge allowing regular mastery from one grade to the following grade level. Therefore, learning is lengthened, strengthened, and widened each time a topic is revisited.

Before the enactment of K to 12, science subject was taught by discipline and by grade level. Now, Grade 7 will be focusing only on Earth Science, Grade 8 will be on Biology, Grade 9 is on Chemistry, and Grade 10 will be focused on Physics. However, as revealed by Piamonte (2012), things are not anymore, the same since, now, the new curriculum utilizes the spiral progression approach in which the concept of the major sciences is being tackled all at equal time. As

stated by Sanchez (2014), each year, learners are exposed to the varied science concepts since all of those are taught per grading period.

De Dios (2013) claimed that Science learning area is diverge into distinct disciplines in secondary education and, therefore, requires teachers with sufficient familiarity in all those science areas, thus, making it tough for the teachers to discuss topics which are new to them.

Additionally, according to Snider (2004), all concepts are given equal amount of period whether they are easy or difficult topics to master in the spiral design. Units have about the same length, and each concept in a unit is a one day's lesson. Thus, there are some days that there will not be adequate time to introduce new concept. As stated by Abarra (2018), the idea that an entire class period must be focused to a single concept makes it hard to sequence instruction in ensuring that learners acquire necessary pre-skills before introducing complex skill and knowledge.

Related Studies

Previous studies related to the present problem have been reviewed by the researcher and were taken as guide in the procedure and conduct of the present study.

San Diego (2017) stated in his study entitled "Sociocultural Adjustment of Foreign Students in the Philippines" that foreign students experience slight

difficulty in coping up with behavior and cognitive adjustments brought by a new culture and environment.

The previous study is different from the current study since it aimed to determine the sociocultural adjustments of international students throughout their academic stay, while the current study focused on investigating the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

A study entitled "International Students Challenges and Academic Adjustment in Higher Education in Malaysia" (Freeman et.al.,2017) revealed that self-efficacy and social support are the most important factors influencing academic adjustment.

The previous study is different from the current study since it aimed to determine the academic adjustments of international students in higher education, while the current study focused on investigating the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

A study entitled "The Effects of Academic Adjustment, Social Adjustment and Personal-Emotional Adjustment of Students on their Academic Performance in Universities of Northern Cyprus" emphasized that student's academic adjustment has been found positively and significantly correlated with their academic performance (Kaljahi, 2016).

The previous study is different from the current study since it focused on determining academic adjustment with student-respondents, while the current study focused on teachers as the respondents.

Clinciu (2013) revealed in his study entitled "Adaptation and Stress for the First Year University Students" that high correlation (negative) between stress and adjustment to university life was pointed out on the emotional-affective component.

The previous study is different from the current study since the respondents in the former were students while the latter focused on teacher-respondents.

The study entitled "Adaptation to College for Students With and Without Disabilities: Group Differences and Predictors" stated that transition to college could be difficult for many students as they faced the challenges of adapting to their new environments (Adams, 2010).

The previous study is different from the current study since it focused on the concept of adaptation to college students, while the current study focused on the adaptation of the new curriculum of junior high school science teachers.

The study entitled "A Study of First-Year Students' Adaptation Difficulties as the Basis to Promote their Personal Development in University Education" revealed that there are significant connections between students' adaptability to the educational process and to their study group (Orlov et.al., 2018).

The previous study is different from the current study since it focused on adaptation of first-year students while the current study focused on the adaptation of junior high school science teachers.

A study entitled "Change of Curriculum and its Implication on Teachers' Performance in EFL Classroom" stated that changes of curriculum commonly face such resistances by educational practitioners. The resistances usually appear because the changing curriculum gives effects not only on the goals of education, but also on the procedure of its enactment. Change of curriculum is always done by considering many features that influence its success, such as the people, programs and also the process. During the process of the implementation of the new curriculum, many features are influenced, such as the syllabi, the instructional materials, teaching method, and so on that shortly deal with teachers' performance. Thus, teachers are demanded to acclimatize with any changes on the new curriculum. Therefore, teachers' understanding about the new curriculum is so essential because it directly influences their performance in the classroom (Kardena, 2015).

The previous study is similar with the current study since both aimed to determine the implications on teachers of providing new curriculum. However, the current study gave emphasis on K to 12 spiral progression curriculum, while the previous study was pertaining to a general change of curriculum without mentioning what specific change of curriculum would be made.

Suyanto (2017) revealed in his study entitled "The Implementation of The New Curriculum of 2013: A Reflection from Research on the School Readiness" that teachers and students still need training and practicing to be ready in implementing new curriculum.

The previous study is different from the current study since it aimed to determine the school readiness on implementing new curriculum, while the current study focused on determining the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

The study entitled "Impact Statements on the K-12 Science Program in the Enhanced Basic Education Curriculum in Provincial Schools" revealed that K-12 science program is regarded as a way of preparing students toward better employment chances in the country or in other countries. However, it also suggested the necessity for close monitoring of the K to 12 program implementation and providing constant professional trainings for teachers in order to clear areas of misconceptions such as on the grading system, on the development of the skills for employment, and on the conduct of learning activities to accomplish target competencies and achievement of mastery (Cabansag, 2014).

The previous study is different with the current study since it focused on describing the knowledge, observations, benefits, expectations or potentials and sources of misinterpretations in the K-12 science program on its first implementation in selected provincial high schools in the Philippines, while the

present study focused on investigating the experiences of junior high school science teachers in adapting the spiral progression in teaching science. Also, it differs on the selection of the respondents since the previous study focused on teachers, students, and parent-respondents, while the present study focused only on teachers as the source of information in answering the problem.

The study entitled "Adapting the Curriculum: How K-12 Teachers Perceive the Role of Open Educational Resources" highlighted how teachers adapt Open Educational Resources, suggesting a strong connection between OER use and personalized learning, and argued that mainstreaming OER in K-12 education is not only a matter of raising awareness but of changing teacher's habits (De los Arcos, et.al., 2016).

The previous study is similar with the current study since both deal on the concept of adaptation to the new curriculum (K-12 curriculum). However, the previous study deal on the role of open-educational resources, while the present study focused on the use of spiral progression approach.

Samala (2018) cited in the study entitled "Spiral Progression Approach in Teaching Science: A Case Study" that vertical articulation of spiral progression provides deep understanding of science concepts through a thorough review conducted by the teachers. Moreover, the use of instructional materials that fit the interests of the learners and the teachers' mastery of the subject matter helped in the retention of science concepts.

The previous study is similar with the current study since both delved on the Spiral Progression Approach in Teaching Science. However, they differ on the selection of the respondents since the previous study focused on teachers and students, while the current study focused only on teachers as the source of information in answering the problem.

Moreover, a study conducted by Resurreccion, Taala and Adanza (2015) entitled "Spiral Progression Approach in Teaching Science in Selected Private and Public Schools in Cavite" revealed that Spiral Approach had significantly influenced science curriculum predominantly the content and transitions of the four science areas, the secondary education, the students, and especially the teachers teaching science. Based on this study, science teachers are having tough time adjusting to the new approach, mainly those who had specializations and had been teaching for so many years. This might be due to shallow understanding of the concepts on some discipline, where teachers oftentimes did not explain thoroughly or deepen the concepts – worse, they resorted to skipping difficult ones.

The previous study is similar with the current study since both focused on the Spiral Progression Approach in Teaching Science. However, they differ on the research locale since the previous study focused on selected private and public schools in Cavite, while the current study focused only on one public school located at one of the provinces in Eastern Visayas.

A study conducted by Orbe, Espinosa, and Datukan (2018) entitled "Teaching Chemistry in a Spiral Progression Approach: Lessons from Science Teachers in the Philippines" mentioned that there is a mismatch in teacher's preparation in science as the Philippines moves toward realizing the K-12 curriculum. The current teacher education curriculum prepares science teachers to specialize in a specific field (e.g. integrated science, biology, chemistry, and physics), but in the K-12 curriculum, they are required to teach all the science subjects in a spiral progression approach. Conclusions suggest that the teacher's content, pedagogy, and assessment in chemistry are challenging; definitely, challenges like instruction-related factors, teacher competence, in-service training sufficiency, job satisfaction, support from upper management, laboratory adequacy, school resources, assessment tools, and others influence teacher success in teaching chemistry. These recognized challenges significantly affect the main beneficiaries of education, which is the learner.

The previous study is different from the current study since it only delved on teaching chemistry in a spiral progression approach while the current study delved on the experiences of junior high school teachers in teaching different science subjects per quarter in accordance with the spiral progression curriculum.

Furthermore, a study conducted by Orale and Uy (2018) entitled "When the Spiral is Broken: Problem Analysis in the Implementation of Spiral Progression Approach in Teaching Mathematics" revealed that with the current

promotion and retention practices of teachers, the projected advantage of the spiral progression approach could never be achieved.

The study of Orale and Uy (2018) concluded that the spiral progression approach does more harm than good when the necessary pre-requisites are not available such as resources, the appropriate teachers' competencies and favorable policies. Also, the mass promotion which is indirectly executed by the authorities is one reason that the spiral is broken and promoting students without taking remedial classes to catch-up and master the topic is a deathblow to the promise of SPA.

The previous study is different from the current study since it focused on the implementation of Spiral Progression Approach in teaching mathematics, while the current study focused on the experiences of junior high school teachers on teaching science subject in a Spiral Progression Curriculum.

The study of Casil et al. (2018) entitled "Assessment on the Spiral Progression of the K-12 Curriculum" states that the department needs to do something to subdue the transformations like the conduct of seminars and trainings that will empower teachers and make them much ready and armored in the battleground of education.

The previous study is different from the current study since it focused on the assessment of the spiral progression in the K-12 curriculum, while the current study focused on the teachers' adaptation on the K-12 Science Spiral Progression Curriculum.

In the implementation of K to 12 Science Spiral Progression Curriculum, students' performances are also being evaluated. In a study entitled "Performance of Senior High School Students in Spiral Progression Approach of the K to 12 Science Curriculum", Gal (2018) noted that student have difficulty in the transition of topics as they move to a higher grade level since some of the topics are not being covered in their lower grades because of the limited time allocated for each topic.

The previous study is different from the current study since it focused on the performance of senior high school students in spiral progression approach of the K to 12 science curriculum, while the current study focused on the teachers' adaptation of the k-12 science spiral progression curriculum.

Montebon (2014) cited in the study entitled "K12 Science Program in the Philippines: Student Perception on its Implementation" that upon the examination of the data, students usually perceive that the implementation of the new science curriculum positively affects the way they learn science concepts, acquire scientific skills, and develop scientific attitudes and values.

The previous study is different from the current study since it focused on student perception on K-12 science program implementation, while the current study focused on the teachers' adaptation of the K-12 Science Spiral Progression Curriculum.

Coelho (2015) established in the study entitled "Student Perceptions of a Spiral Curriculum" that those students who were most confused by the spiral

curriculum were the ones who were least likely to appreciate its benefits. This study revealed that the spiral curriculum provides an opportunity to revisit and consolidate learning to the apparent benefit of the student.

The previous study is different from the current study since it focused on the students' perception on a spiral curriculum, while the current study focused on the teachers' adaptation of the K-12 Science Spiral Progression Curriculum.

Synthesis of the Reviewed Literature and Studies

As a whole, the previous literature and studies gathered by the researcher were supportive of the present study.

On the concepts related to the factors associated with the need of implementation of K-12 program, the following sources could be accounted: Velasco (2012), Mangaluz (2018), Burgonio (2018), Cabansag (2014), and Navarro (2014).

On the perceptions related to description and features of the K-12 program and Science Progression Curriculum, the following sources could be accounted: Cabansag (2014) and Abulencia (2015), Cruz (2012), Ferido (2013), and SEAMEO INNOTECH (2012)

On the perceptions related to general adaptation and academic adjustment, the following sources could be accounted: San Diego (2017), Freeman, Nga & Mathews (2017), Kaljahi (2016), Clinciu (2013) Adams (2010), Orlov, et.al. (2018), and De los Arcos, et.al. (2016).

On the description of Spiral Progression Approach, the citations of Abarra (2018) and Martin (2008) were included.

Meanwhile, the concepts related to new curriculum adjustment and alteration were found in the citations of Kardena (2015), Suyanto (2017), Piamonte (2012), and Sanchez (2014).

On the issues and concerns in the implementation of the K-12 Science Progression Curriculum, the citations of Cruz (2010), The Philippine Online Chronicles (2011), De Dios (2013), Snider (2004), Orbe, Espinosa and Datukan (2018), Resurreccion, Taala, and Adanza (2015) and Orale and Uy (2018) were directly associated.

Furthermore, those related to the recommendations to be able to cope and adapt with the new curriculum, the following sources could be accounted: Samala (2018), Casil, et.al. (2018), and Cabansag (2014).

On the students' perception with regard to the K-12 Spiral Progression Curriculum, the citations of Gal (2018), Montebon (2014), and Coelho (2015) were directly related.

Hence, the current study was strengthened through the presentation of the literatures and studies from both foreign and local sources which were earlier presented.

Chapter 3

METHODOLOGY

This chapter outlines the research methods and procedures employed in the study. Mainly, this chapter provided the detailed discussion of the research design, research environment, research sampling, research instrument, validation of the instrument and the data gathering procedure.

Research Design

This study used a qualitative method using phenomenological approach to investigate the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

A phenomenology is an approach to qualitative research that defines the meaning of a lived experience of a phenomenon for several persons which, in this instance, is the experience of junior high school teachers in adapting the Spiral Progression Approach in teaching science. This research used in-depth interview as the strategy for the phenomenological approach.

Moreover, the analysis of data was facilitated using the Microsoft Word.

Research Environment

The conduct of this study was done in one secondary school located in a province of Eastern Visayas, Philippines. The school consisted of approximately

200 teachers and 25 of them were junior high school teachers who belong to the Science Department.

Sampling Procedure

Participants or respondents for this study were selected by purposive sampling and consisted of Junior High School Science Teachers in a secondary school from a province in Eastern Visayas. Purposive sampling is the main technique used in a qualitative method of research and was the sampling technique used in this study to select for the participants. According to Englander (2012), it is the researcher's accountability to select participants or respondents who show specific experience of the phenomenon.

According to Guest, Bunce, and Johnson (2006), data saturation can occur within the first 12 interviews. In this study, 15 participants reached the saturation point. Saturation happens when the addition of more participants to the study does not result in additional perceptions and information. It is the point at which the data collection process no longer offers any new or relevant data.

The researcher also made a checklist of the selection criteria for the participants of this study: a) respondents or participants were required to be a junior high school teacher; b) they belong to one school; and c) are willing to be interviewed in connection with the study.

Instrumentation

This study used a semi-structured interview guide comprising the semi-structured open-ended questions. This was the main research instrument in obtaining all the necessary information.

It consisted of the research and interview questions which were patterned from a sample interview guide in a study made by Gal (2018) in her study entitled "Performance of Senior High School Students in Spiral Progression Approach of the K to 12 Science Curriculum", in the study of Samala (2018) entitled "Spiral Progression Approach in Teaching Science: A Case Study", and in the study of Adanza and Resurreccion (2015) entitled "Spiral Progression Approach in Teaching Science in Selected Private and Public Schools in Cavite".

Validation of Instrument

The semi-structured interview guide was the main instrument in gathering the data and was first validated through the following procedures: Initially, a draft of the semi-structured interview guide was submitted to the research adviser for content validation where the latter indicated the corrections, suggestions and recommendations for the refinement of content. Upon incorporation of all the adviser's corrections, suggestions and recommendations, the semi-structured interview guide was submitted to the members of the panel and to two science teachers. The validators were chosen for their expertise in research and science

field. All comments and suggestions of the members of the expert validation of the research instrument were considered and incorporated.

Data Gathering Procedure

Ethics. All participants received written and oral information about the objective of the study and the possibility of withdrawing their participation at any time without the need to give reasons for doing so. During the conduct of the in-depth interview, the participants were informed of recording their responses. Also, the recording was kept safely until they were properly translated word for word. After which, the recording was deleted. The transcribed notes of the in-depth interview did not contain any information that would allow individual to be linked to any statement. In the questionnaire, the respondents were also given the choice of writing their names or not as the word "optional" for names was emphasized in the questionnaire. The participants were assured that the discussion would be confidential.

Data Collection. The researcher wrote a letter of approval to the principal asking permission to conduct an in-depth interview to the target respondents. The letter of approval was presented to other authorities involved in this study. After the approval of the letter, the researcher conducted an in-depth interview to the junior high school science teachers. All the participants were informed about the aim of this study and informed consents were solicited for their involvement. The

researcher also asked permission from the teacher-respondents in recording their responses during the interview.

In the conduct of the in-depth interview, a semi-structured interview guide was used. In the interview guide, expected responses of the participants were written in order to serve as a guide of the researcher to formulate follow-up questions.

The researcher coordinated with the head teacher of the science department in the making of schedule for the interview. There were 14 female participants and one male participant, a total of 15 participants for the interview. The in-depth interview was personally facilitated and conducted by the researcher herself. It was conducted for 20- 30 minutes in order to get the comprehensive information needed for this research. The participants were allowed to speak in English, Filipino and Waray-Waray languages during the conduct of the interview. However, throughout the conduct of this study, the English language was used by the participants. The interview and gathering of data were conducted during the vacant time of the teacher-participants.

Data Analysis. The analysis of data in this study were patterned on Colaizzi's phenomenological descriptive method (Alzayani, 2015):

The researcher listened to all the recorded interview data in the smartphone many times before the transcription. This was done directly after the in-depth interview with the participants.

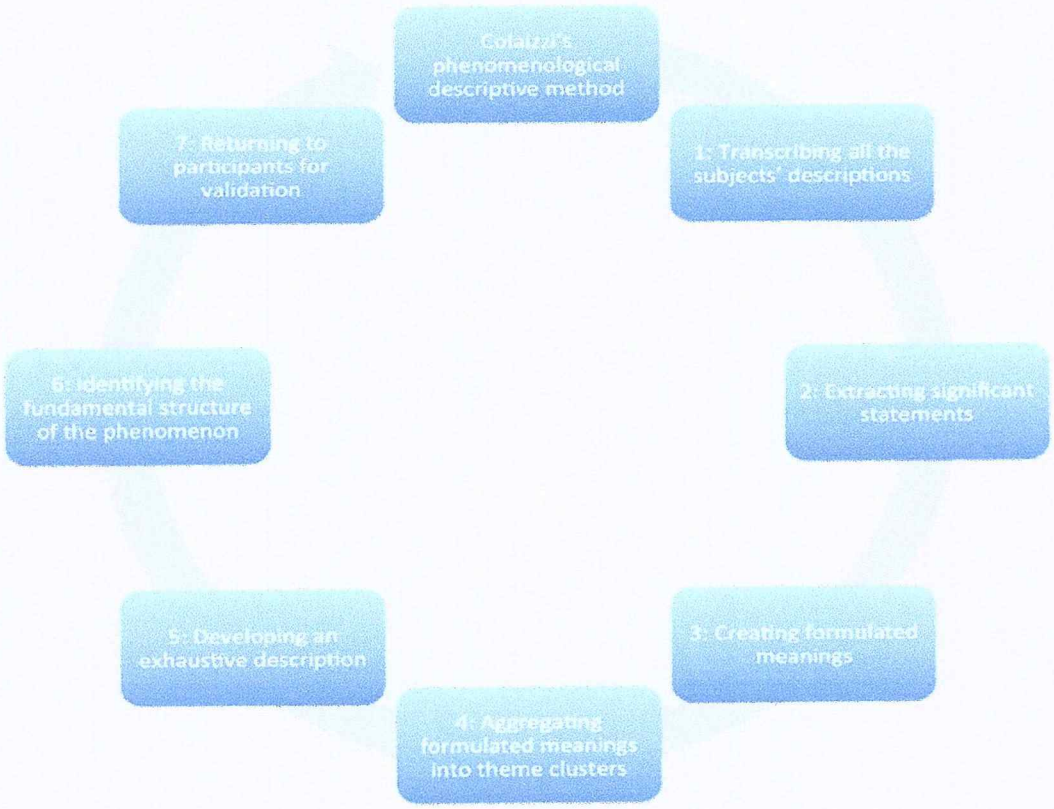

Figure 1. Colaizzi's Process

The use of Colaizzi's process for phenomenological data analysis in the study were the following: (1) each transcript was read and re-read to acquire a general idea about the content; (2) significant statements were extracted in each transcript and recorded in a separate paper; (3) meanings were created from the formulated significant statements; (4) formulated meanings were sorted into categories, clusters of themes and themes; (5) the findings were integrated into a comprehensive description of the phenomenon under study; (6) then, the researcher identified essential structure of the phenomenon; and lastly (7) results were validated through returning to participants and showing the results to them in order to compare the researcher's descriptive results with their experiences.

Chapter 4

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The results of the study were presented as follows: findings of the experiences and challenges encountered by the junior high school science teachers in teaching under spiral progression curriculum and the adaptation strategies employed by the junior high school teachers which were presented in theoretical Themes or categories.

Four major themes emerged in this study that would best describe the experiences of junior high school science teachers in adapting the spiral progression in teaching science these are: (1) Spiral progression is increasing in depth and complexity of learning; (2) Mile-wide-inch-deep teaching results to teachers' mismanagement in classroom discussion; (3) Teachers face varied challenges in using spiral progression approach in teaching science; and (4) Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum.

Challenges and Experiences Encountered by the Junior High School Science Teachers in Teaching Under Spiral Progression Curriculum

Theme 1. Spiral progression. The following utterances proved/supported Theme 1: Spiral progression is increasing in depth and complexity of learning:

T5: *"I observed, that, there is increasing depth of science concepts at each grade level."*

T6: *"The science competencies are from simple to complex (G7 to G10). The topics are interrelated. Grade 7 lessons are prerequisite to Grade 8 competencies and G8 competencies are pre-requisite to G9 competencies and so on. One advantage is that the lessons per grade level is suited to the age of the learner (age-appropriate). More complex lessons are tackled in higher levels."*

T7: *"Topics which are easy are taught in first/ Grade 7 students in subjects Gen. Sci., Biology, Chemistry and Physics. Increasing in difficulty up to grade 10. The topics are appropriate to the age of learners. Simpler topics are discussed in the lower grade levels."*

T8: *"Basic concepts and skills are being used in lower grade level and becomes higher as the grade level progresses. Content is from simple to complex."*

T9: *"Every grade level from Grade 7 to 12, the topics of every subject is becoming harder. From basic to difficult topic. The learners can adjust easily for the topics/ lessons starts with the easy to difficult topics."*

T10: *"I discussed topics from simple to complex."*

T12: *"Based on our experiences, so when we say spiral progression, it is the deepening of the topics, from simple to complex."*

T14: *"Hmm …As for me, since I'm teaching Grade 7 the advantage is that the topic that I am handling are easier since the topics are appropriate to their ages thus, compared to the other levels, in my part it is easier for me to teach."*

T15: *"All the subjects that are taken up in first year to fourth year is being taken up now in first year but the easier topics are being discuss in the first year and then progressing to fourth year. The advantage is the subject is easier because the topics are in Grade 7, I am teaching Grade 7."*

Teachers observed that the topics they were discussing were increasing in complexity and depth as they went to higher grade level. According to Tan (2012), spiral progression is defined as developing the same topics from one grade level to the next in increasing difficulty.

Furthermore, as mentioned by Gatdula (2016) in an article entitled "Embracing the Spiral Progression Approach of the K to 12 Program", spiral progression implies that basic concepts are discussed in the first grade and are revisited in the next grades in more intricate forms. This is done by teachers through starting with the most basic or simple concepts. These same concepts are developed from one grade level to the next, in increasing level of complexity. Thus, the teachers believed that spiral progression approach was suitable and appropriate to the level of the learners.

As cited by Buan (2018) in an article entitled "K-12 Progression", one advantage of spiral progression is that it is embedded with the appropriateness of

the development of the child. It is because learning process is suitable to their development capacity. Students are learning from simple or basics and before spiraling up, it should make sure that learners have mastery already. In other words, students become well-prepared before they reach the next level of difficulty.

Moreover, science teachers in Grade 7 revealed that it is easier for them to teach science subject in the new curriculum since they only discussed the basic concepts which were appropriate to the age of the students. As mentioned by Sañosa (2013) in the study entitled "Implementation of K to 12 Curriculum Program among Grade 7 Science Teachers in Eastern Visayas", that topics in the new curriculum are appropriate with students' level of learning, thus, Grade 7 teachers discuss only the simple or basic concepts appropriate to their students' level; therefore, students can easily learn from them. Consequently, as according to Quijano et.al (2012), the use of spiral progression allows learners to obtain knowledge and skills appropriate to their development and cognitive stages.

The researcher only recommends that teaching basic concepts should be emphasized and be given importance since complex topics cannot be understood by the learners when there is no strong foundation of the basic knowledge and concepts.

Theme 2. Mile-wide-inch-deep teaching. The following utterances proved/supported Theme 2: Mile-wide-inch-deep teaching result to teachers' mismanagement in classroom discussion:

T1: *"I find it difficult since some of the topics … we are not able to discuss since easy and difficult topics have the same time allotted."*

T2*: "But there are uncovered competencies due to lack of time."*

T12*: "But the problem is that during our discussion, sometimes because we are following the budget of lesson, there are …there is really many cases that we really cannot cover whole topic in one grading period."*

T12*: "We have to stop that discussion since science is a learning by doing wherein they will learn by manipulating the materials, by doing the activity, but what we do is we change our technique because we are following the budget of lesson… some topics are really left behind… we have to move to other topic since there is a short time allotted for every topic."*

T13: *"There are so many activities that the budget time are too short for all of those activities to be conducted."*

T14*: "There are topics that we could not discuss. Example quarter 1,2,3 and 4. So, Quarter 1 is Chemistry, 2 Biology, 3 Physics, then General Science. Due to the constraint of time and different activities, we could not finish all the competencies. Thus, if they go to the higher level, they don't have any idea on that topic…so that's it."*

Teachers had difficulty in managing the topics because of its enormity and insufficiency of time. They emphasized that some competencies could not be truly attained because of too many activities, but with limited time to teach everything mandated to them. This is in accordance with the statement of Ledingham (2009)

that in a mile-wide-inch-deep approach, students are exposed to many activities, however, short time is given to conduct and finish all those activities; thus, teachers find it hard discussing all those topics and giving varied activities that, sometimes, they resort to skipping some concepts.

Thus, according to Christenson (2017), "mile wide and inch deep" approach does not provide much substance since if a teacher will introduce everything assigned, he/she will have to teach in a speedy manner. Buan (2018) highlighted that the time frame allotted to each competency might result to a risk especially to those topics that required higher level of understanding and analysis. As asserted by Snider (2004), in spiral design, all concepts are allotted the same amount of time whether they are easy or difficult to master. Thus, as emphasized by Holmquist (2016) in the article entitled "Education Today: An Inch Deep and a Mile Wide?", education at present too often highlights quantity over quality.

The researcher suggests that the concerned authority should review the time frame allotted for science subject especially that this subject requires laboratory experiments that are really time-consuming.

Theme 3: Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.1: Lack of Mastery of the Students). The following utterances proved/ support Theme 3: Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.1: Lack of Mastery of the Students):

T2: *"A lot of disadvantages are encountered from this curriculum like the concept retention. There is no mastery of the concepts on the part of the students…."*

T3: *"For me more disadvantages than advantages especially on the part of the students. There is no mastery on the part of the student. There is no continuity and mastery of the topics on the part of the students."*

T5: *"It comes confusion so there is no mastery…"*

T6: *"The disadvantage is when a particular topic is not mastered by the students/ learners in a particular grade level. In this manner, he/ she may not also master the higher-level competencies for lack of knowledge/ mastery of the previous competencies. Lack of continuity of learning since learners forget the previous grade level lessons. For example, when a grade 8 student is not able to master Grade 7 physics lessons, he/she will also have difficulty in mastering/ learning physics lesson in Grade 8."*

T8: *"The students lack mastery in every discipline since the continuation/ progression of the concepts is not within the grade level."*

T10: *"There is lack of continuity. Also, lack of mastery both on the students and teachers."*

T12: *"So the problem is that when they go to grade 10, and we have not tackled about work, power and energy for example, then in grade 10 it will be mentioned that "class you discuss about blab bla bla during grade*

9" then they are blind about that topic. That is the problem… There is really a gap… if they go to higher grade level ...that's it."

T12*: "Maybe the retention is in accordance with the span of time since if we would only think, we could remember what are discussed now but if it will be recalled for the next year, I don't think they could still remember what have been discussed. Although it is progression but if we could only realize that even what have been discussed now cannot be remembered by the students on the next day. Especially now that there are many influences that could distract their learning." And it is always the introductory part that, "you have learned in grade …bla bla bla… ", "in previous years you have learned…" "so class have you discussed about…? "ma'am no."*

T13*: "For me, K to 12, when we compare that to old curriculum, I am for the old curriculum. The RBEC… because in this K to 12... so I have … 3 years or 4 years teaching experience under K to 12… so I have observed that the students if they are asked even those basic questions, basic knowledge about a particular science concept, they do not even know the answer. If I am asking them …they cannot answer but during the old curriculum if I ask the students, they can actually answer… I am in favor of the old curriculum wherein in grade 9, the discussion is pure chemistry. Because now they do not even know the scientific notation…in old*

curriculum… we discuss that scientific notation. the significant figures…now the students have no idea about that concept.

T13*: "There is no mastery of the concepts from the students. Whereas the old curriculum, since you are focused on that particular major, for example in chemistry, in grade 9, chemistry only, so there is retention from the students." Some basic knowledge is not tackled. Because if they are already in Grade 9, I would ask them "have you discuss this when you were in Grade 8 and Grade 7?", "no ma'am", hala Diyos ko! problema.""In the book it was stated that you have learned this in your grade 7 and grade 8." … "ma'am no."*

T14*: "I think there are a lot of disadvantages on the spiral progression, one is that there is no continuity within each subject area. Thus, the students are left hanging on each of the topic." I think basically, the problem is the student they don't have retention."*

T15*: "There is no continuity within each subject area. The students… they are noisy and don't have retention."*

Teachers faced a lot of challenges and trials in adapting spiral progression in teaching science, and those challenges encountered by them could greatly affect their way of teaching. As Gatdula (2016) stressed out, Spiral Progression Approach is a real challenge for many educators. This is true especially that teachers observed that their students had difficulty in the mastery of the subject matter. According to Samala (2018), students had a hard time remembering previously

learned lessons because of lack of full discussion in difficult science concepts and did not have sufficient time allotment for each lesson since not all lessons in science per area could be truly covered.

Thus, the researcher suggests to review the time allotment for science subject in order for the teachers to discuss every important detail that is necessary for the next lessons.

Theme 3, Subtheme 3.2. Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.2: Teachers Lack of Mastery). The following utterances proved/supported Theme 3: Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.2: Lack of Mastery of the Teachers):

T2: *There is no mastery of the concepts …. for the teachers as well."*

T9: *"As teacher, I can say that because all four branches of science are covered yearly, we have no deeper knowledge of a certain topic."*

T10*: "lack of mastery both on the students and teachers."*

T13: *Lack of mastery… also on the part of the teacher… both on the students and the teacher's side."*

T14: *"…the teachers are left hanging also in their teaching."*

Teachers had difficulty in mastery of the subject matter in complex science concepts. As emphasized by Orale and Uy (2018) in the study entitled "When the Spiral is Broken: Problem Analysis in the Implementation of Spiral Approach in Teaching Mathematics", teachers are expected to have expertise on all topics. So,

if teachers are not competent, students will not be able to learn (Orbe, Espinosa & Datukan, 2018).

Thus, the researcher recommends to provide teachers trainings, seminars and workshops for them to fully understand the science concepts especially the complex one.

Theme 3, Subtheme 3.3. Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.3: Lack of quality learning resources or materials, and facilities). The following utterances proved/supported Theme 3: Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.3: Lack of quality learning resources or materials, and facilities):

T1: *"And the learner's material is not realistic and there are many errors."*

T2: *"Numerous activities in the book to be conducted every quarter."*

T3: *"Lack of quality learners' material and teachers' guide from DepEd."*

T10: *"I remember… I think one main reason that's why there are many complains about the learner's materials and about the teaching guide …it's because the reality is our resource materials; I think there is no evaluation yet …before publication of the books there must be editing and evaluation of the books but what I have known is that if the pages of the*

books are colored brown, that is still for editing ...for evaluation before printing...But we have use those books that are still for editing... that's why... I think that is one main reason why there are a lot of errors in the learner's material and the teaching guide."

T11: *"Lack of Materials. The books we use now for Grade 7 are colored already but before we use the old one which has brown pages... but still there are a lot of errors."*

T13: *"There is redundancy of the activities in the book... that's why sometimes we just leave those activities behind...The learning resources, learning materials they are not prepared although there is a budget."*

Teachers had difficulty in conducting lesson because of the lack of quality learning materials. Teachers had no control on the purchase of quality learning materials or instructional materials, but they were directly affected with whatever materials given to them, may it be good or bad. With this, the teacher feels that it made their situation more frustrating whenever they were given materials that lacked quality. Participants pointed out that the learning materials given to them had a lot of errors and were not authentic making their work more difficult.

Thus, the researcher recommends that the concerned authority should monitor the learning materials being produced for teachers' use so that the teachers will be provided with materials that are free from errors thus, making their work a lot easier.

Theme 3, Subtheme 3.4. Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.4: Not well-equipped learners). The following utterances proved/supported Theme 3: Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.4: Not well-equipped learners):

T11: *"We passed our students even if they did not master the topics we have discussed. Haha"*

T12: *"But still the students are passed …"*

T13: *"All students are being passed. Hahahaha. They are being promoted even those who do not know how to read. There are Grade 9 students who do not know how to read." And that is a big problem.*

Some of the problems or challenges encountered by the teachers were promoting students who had not mastered the topics covered and receiving students who had not mastered the previous topics. As mentioned by Orale and Uy (2018), promoting students without learning has several long-term effects to the student and impact to the country as a whole. Thus, the researcher recommend that the concerned authority will examine the current practices of education in the country, specifically the so called "mass promotion" in order to lessen the problems encountered by teachers as to promoting and receiving not well-equipped learners.

Theme 3, Subtheme 3.5. Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.5: Academic challenges for out-of-field science teacher). The following utterances proved/supported Theme 3 Teachers face varied challenges in using spiral progression approach in teaching science (Subtheme 3.5: Academic challenges for out-of-field science teacher):

T2: *"Mastery of the concepts from non-major subjects is too hard."*

T4: *"Teacher failed to teach the subject that he/she is not knowledgeable. Physics is difficult to teach and higher lessons in chemistry."*

T5: *"Teacher is pressured and failed to teach subject he/she is not that knowledgeable in. Physics is difficult to teach. I am a Biology Teacher. Lessons in physics are difficult…"*

T7: *"The teacher finds it hard to teach other branch of science which are not his/her major. Since I'm a biology major, I find it quite hard to teach other science fields especially chemistry."*

T8: *"Teaching areas/ disciplines of science which are not the areas of specialization of the teacher is one problem."*

T9: *"Since all the four branch in science are covered, I think I am not competent enough to discuss/ impart knowledge, for I am a Physics major teacher."*

T11: *"Non-major you are teaching subject that you don't know. Hahaha…For example in my part, I am chemistry major then I am teaching biology… there is no problem already before... and now…"*

T11: *"For me there is no advantage. For example, the topic is this one … then what happened is that some topics are not discuss or jump into because of difficulty."*

T12: *"For example, I am a chemistry teacher, we have those technique, for example on the electronic distribution… we know techniques for those… even at first glance … but in other science concept, we are having difficulty."*

T13: *"More disadvantages for me. Especially that I am not a Physics teacher, fourth grading the topic is Physics. Diyos ko! What will I give to my students? That is the number 1 difficult subject for me. That is negative on my part. I already master chemistry but now with that I am really having difficulty. Then we still have classroom observation, if my topic is about physics, I told ma'am I'm sorry ma'am that's all I can give….*

Teachers teaching areas in science, which were not their specialization, found it difficult to handle the learning area. According to Plessis (2017), out-of-field teaching wherein teachers are placed in teaching positions in which they have to teach subjects outside their filed of expertise, are evident in public schools as well as independent schools. Science teachers who graduated with specialized training in teaching General Science, Biology, Chemistry, and Physics are now

assigned to teach all the sciences in one-year level. Moreover, a teacher who has an education degree specializing in chemistry, with or without curriculum, would know what to teach first. With that, teachers find it hard to easily adapt to the new curriculum, particularly those who have specializations and have been teaching for so many years (Adanza & Resurreccion, 2015). Moreover, according to Samala (2018), teachers found it hard to teach areas of science which were not their field of specialization. This means that teachers might teach based only on their level of understanding.

Thus, the researcher recommends that the government or the concerned authority should provide trainings and seminars for the teachers, especially, to those new science concepts or the science areas in which they do not have expertise in order to understand the concept fully and be able to impart the learnings to the students effectively.

Adaptation Strategies Employed by the Junior High School Science Teachers in Teaching Under Spiral Progression Curriculum

Theme 1, Subtheme 1.1. Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.1: Constructivism in science classroom). The following utterances proved/ support Theme 1: Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression

approach in the new curriculum (Subtheme 1.1: Constructivism in science classroom):

T1*: "Discovery Approach"*

T2*: "Discovery Approach ... Learning by doing – where students are able to learn based on their activity."*

T3*: "Group activity, Peer teaching/ mentoring, Integration of ICT like video presentation"*

T4*: "The same approaches such as laboratory activities and discussions"*

T5*: "The same approaches such as laboratory activities, discussions, use technology"*

T6*: "Guided inquiry-based approach. In which the teacher scaffold or guide the learner through instruction in answering or solving science problems."*

T8*: "Inquiry-based approach…"*

T10*: "Group Activities also."*

T11*: "Activity… More on activity …"*

T12*: "Learning by doing activities"*

T13*: "HesusMaryusep! That discovery approach? It is not applicable. We always use group activities.*

T14*: "I usually conduct it through groups or by pair. It is hard for them to do it individually."*

As emphasized by Resurreccion and Adanza (2015), teachers need to change or improve their way of teaching and learning to adapt with Spiral Progression Approach. Adaptability is the ability to adapt with new changes, and according to Collie and Martin (2016), this is a central capacity for teachers. This includes the capacity to respond to and manage new, changing, and uncertain situations or events that arise. Being able to adjust and adapt with new role and responsibilities, new materials and technique, new concepts or topic, and in general term with the new curriculum, is important in order to provide the students the best learning they could possibly get. Thus, teachers employ different adaptation strategies in science teaching in order to adjust or cope with the spiral progression approach in the new curriculum. Teachers emphasize the use of constructivist teaching approaches (e.g. discovery approach, guided-learning) in teaching science. As highlighted by Molina (2019), in a constructivist learning, teachers give minimal supervision and maximum opportunity for the students to learn and apply their new knowledge. The participants have agreed that using discovery approach and other constructivist teaching approaches have helped them cope with the new science curriculum.

Thus, the researcher suggests to provide teachers with the guidelines and procedures on the use of constructivist teaching approaches so that the teacher can effectively employ the different approaches in teaching.

Theme 1, Subtheme 1.2. Theme 1: Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.2: Develop additional learning materials and activities). The following statements proved/supported Theme 1: Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.2: Develop additional learning materials and activities):

T1: *"And make instructional materials for difficult topics since what is written in the book is difficult."*

T8: *"Develop instructional materials especially for difficult topics."*

T9: *"Develop different games to get their attention and interest in our lesson."*

T14: *"Me, since I'm handling higher sections, I supply, I conduct supplementary activity. I don't usually follow the activity written on the book. I do my own."*

Teachers made their own learning materials and activities for students especially on difficult concepts in adapting with the new curriculum. This scenario could be affirmed by Mileszyk (2015) who stated that teachers are ready and willing to create educational materials. This is mainly because learning materials are vital for the success of students, thus these can support student learning and increase student achievement. In spiral progression curriculum, teachers are willing to make their own learning materials just so their students will be able to

learn concepts especially the complex one. Moreover, making instructional materials that fit the interests of the students help in the retention of science concepts (Samala, 2018). Participants made their own activities and materials that would best suit their learners' capabilities and did not just rely on what was written in the book. Thus, the researcher recommends that the teachers should be provided enough budget and resources to supply the needed materials for students' learning. Also, the researcher suggests that the government should provide materials that would help the teachers in capturing the interest of their learners.

Theme 1, Subtheme 1.3. Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.3: Studying new science concepts/topics). The following responses proved/supported Theme 1: Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.3: Studying new science concepts/topics):

T5: "*Study the different science concepts.*"

T7: *"Advance study topics which are not my major."*

T10: *"For me, for professional development, although it's really difficult and hard for me to study another science concepts and topics especially that we're getting old, hahaha…so our memory decreases, deteriorating. But at the same time, I feel joyful learning new science*

concept, I appreciate that only that it is really challenging to study again …but when I learn those topics, it is a great feeling …once you know it is very enjoyable and interesting. The only problem is the beginning wherein it is not automatic that we will learn immediately."

T11*: "We have no choice but to study. Because it is a shame on our part standing in front of your students then they will give questions and you don't know the answer."*

T12*: "self-study…"*

T13*: "You have no choice but to study…I am actually honest with my students, I told them I am not a physics teacher. This is only my 4 …or 3rd year in teaching physics. In my high school, my waterloo is math and physics, so do not expect me to be very good in this subject."*

According to Esperanca (2018), the best thing about teaching is learning. That is why, teachers do not stop acquiring learning or knowledge especially in adapting with the new curriculum. As the teachers emphasized, they had no choice but to study new concepts for them to cope with the present curriculum. They believed that studying on their own was a big help for them in adapting the use of spiral progression approach in teaching.

Buan (2018) highlighted that the movers of the curriculum, the teachers, must be competent enough to help the students. Thus, the teachers need to understand the subject matter deeply so that they can impart learning effectively. The researcher also suggests that teachers, aside from studying on their own,

should enroll for post-graduate studies in order to upgrade their learning in the different science concepts.

Theme 1, Subtheme 1.4. Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.4: Attend trainings/seminars/workshops). The following utterances proved/supported Theme 1: Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum (Subtheme 1.4: Attend trainings/seminars/workshops):

T1: *"There must be trainings to equipped the teachers."*

T 2: *"Conduct of seminars for the teachers."*

T4: *"Provide more trainings for the teachers."*

T6: *"Science teacher should be given trainings, seminars or workshops in order to master other science subjects."*

T8: *"Seminars should be provided to all teachers by the government."*

T9: *"As of now, since it has been 3-4 years that K-12 has been in our country, maybe the teachers are still adjusting for us to impart better knowledge to the learner. I recommend to give more trainings for the teachers to be effective in delivering lessons."*

T11: *"We Attended seminars…"*

T12: *"Firstly, teachers should be fully-equipped since we are the front liners"*

T12: *One way to improve our professional development, is that the government should spend money, scholarship, for one summer for example, I am a major of chemistry, in grade 9 we are also teaching biology, I think it is in the 1st quarter, respiratory maybe, the human system, so I think the government should spend scholarship, conduct trainings and seminars for teachers. Not only one week. Aside from our own studying, it is much better if you have a professor whom you can ask questions with and correcting your error. So, the government should spend money. Because we are the manpower, we are the front liners. How can we give something that we don't have? Actually, education has the highest percentage of budget. Where does it go? And that is the big question."*

T13: *"We should have 1-month training…"*

T14: *"In my part, I attended…I think that was last year. I attended a seminar for Science 7… for special class. Basically, I was able to handle the previous curriculum and this new curriculum. And as I compare it, I always go for the old curriculum since it's easier for me to teach, I have mastery specifically for the content, and the students are well-equipped in every topic that we are handling. So, I suggest that the government should provide more seminars for the teachers in teaching science in the K to 12 spiral progression curriculum."*

T15: *"Ayyy also I have attended seminar."*

Teachers found it important to attend trainings and seminars for knowledge updating and to be able to become effective teachers. As pointed out by Samala (2018), teachers must have mastery of the subject matter in order to be equipped in teaching science, and that is by allowing them to attend workshops and trainings so that their knowledge and skills in different science areas will be improved.

Thus, the researcher suggests that concerned authority should conduct further professional trainings and seminars for teachers to become more effective in imparting learnings to the students.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the findings of the study, the implementation of K to 12 Science Spiral Progression Curriculum resulted to a number of disadvantages and challenges. Therefore, there is a crucial need to address the issues and challenges encountered by the educators.

The following were the conclusion formulated based on the findings of the study:

1. Teachers observed that spiral progression approach was appropriate for the learners' development. The concepts were discussed from basic or simple to complex.

2. However, the study found out that teacher-respondents perceived the spiral progression approach more disadvantageous than advantageous.

3. Teachers highlighted that they were having a hard time adjusting to the new curriculum because of numerous reasons; too many activities to be conducted in a short span of time; lack of mastery both by the teachers and the students; lack of quality learning materials; promoting and receiving not well-equipped learners; and teaching areas which are not their specialization.

4. However, they also believed that using constructivist learning approaches, creating own learning materials and activities, studying new science

concepts and attending seminars are ways to adapt with the change of the new science curriculum.

Recommendations

The researcher humbly recommend that several issues and challenges encountered by the junior high school science teachers in adapting spiral progression in teaching science must be addressed by the concerned authority.

The following are the recommendations based on the findings and conclusions:

1. Conduct further professional trainings and seminars for teachers in longer term that would help them adapt with the new science curriculum and be able to effectively transmit their knowledge to the learners;

2. Provide learners' materials that are free from errors which will help the teachers get the interest and attention of every learner;

3. Provide excellent Teacher's Guide (TG) or materials that will help the teachers upgrade themselves in terms of the proper technique and strategy to be used during the conduct of the lesson; and

4. Build strong foundation of basic knowledge to the learners since complex concepts cannot be truly understood by the learners when they lack mastery of the basic concepts.

5. Review the time frame allotted for science subject because it is important to discuss every detail since lessons per day are prerequisite of the succeeding lessons;

6. Examine the practice of "mass promotion" at present educational system since it suggests a major problem to the teachers of promoting and receiving not well-equipped learners;

7. Provide teachers with the guidelines and procedures on the use of constructivist teaching approaches so that the teacher can effectively employ the different approaches in teaching;

8. The teachers may keep themselves up-to-date with the current educational dispositions through further studying or enrolling post-graduate studies for the advancement of their learning especially for complex science concepts; and

9. Further studies and research regarding the adaptation strategies of teachers are recommended, but in different setting and with bigger samples.

REFERENCES

Abarra, M. B. (2018). Spiral progression approach in teaching science. Retrieved from https://www.pressreader.com/philippines/panaynews/20180708

Abulencia, A. S. (2015). *The unraveling of K-12 Program as an Education reform in the Philippines.*

Adams, K. S. (2010). Adaptation to college for students with and without disabilities: Group differences and predictors.

Adanza, J. & Resurreccion, J.A. (2015). Spiral progression approach in teaching Science in selected private and public schools in Cavite. *Journal of Education Research.*

Alzayani, S. (2015). Procedure of Colaizzi's phenomenological descriptive method. Retrieved from https://google/com/amp/s/www/researchgate.net/figure/Procedures-of-Colaizzis-phenomenological-descriptive-method-Colaizzi-1978_fig1_274382296/amp on March 18, 2019.

Bhasin, H. (2018). K-12 Spiral Progression. Retrieved from https://www.pressreader.com on April 12, 2019

Burgonio, T.J. (2013). *K-to-12 Education now a law.* Philippine Daily Inquirer. Retrieved from http://newsinfo.inquirer.net/409755/aquino-signs-education-reforma-law.

Bruner, J. (1960/1977). *The process of education.* Cambridge, MA: Harvard University Press.

Cabansag, M.G. (2014). Impact statements on the K-12 Science program in the Enhanced Basic Education Curriculum in provincial schools. *Researchers World: Journal of Arts, Science & Commerce,* Vol. 5, No. 2.

Cabansag, M.G. (2013). Career motivational beliefs and teacher's pattern of behavior toward Science teaching. *Researchers World: Journal of Arts, Science & Commerce.*

Casil, C.D., Chavez, D. P., Gumotud, K.O., Japon. M.T., & Ramos, A.M. (2018) *Assessment on the spiral progression of the K-12 curriculum.*

Cherry, K. (2019). *Adaptation for coping with change.* Retrieved from https://www.Verywellmind.com/what-is-adaptation-2794815 on May 24, 2019.

Clark, S. (2010*). Jerome Bruner: Teaching, learning and the spiral curriculum, Community and thought in Education.*

Clinciu, A. (2013). *Adaptation and stress for the first year university students.*

Coelho, C. S. et al. (2015). Student perceptions of a spiral curriculum. *European Journal of Dental Education.* ISSN 1396-5883.

Collie, R.J. & Martin, A.J. (2016). The significance of teacher' adaptability. *The Association of Independent Schools of New South Wales Limited.*

Comparativ, Ed. (2013). *The role of Jerome Bruner's spiral approach in the reformation of the Philippine educational system.*

Cruz, I. (2010). *Pros & cons in the K+12 basic education debate.* Retrieved from https://mlephil.wordpress.com/2010/10/14/pros-cons-of-the-k12-debate/

Cruz, I. (2012). *The new curriculum*. Retrieved from https://www.pphilstar.com/campus/2012/05/10/805199/new-curriculum

Cuban, L. (2012). *Some thoughts on science education reforms in the past century.* Retrieved from http://eric.ed.gov/?id=ED538282

De Dios, A. (2013). *Spiral Curriculum: When and How? Redundant versus Progressive?* Retrieved from: http://www.philippinesbasiceducation.us/2013/05/spiral-curriculum-when-andhow.html#ixzz48IUWrBDt

De los Arcos, B., Farrow, R., Pitt, R., Weller, M., & Mcandrew, P. (2016). *Adapting the curriculum: How K-12 teachers perceive the role of open educational resources.*

Dinglas, P. G. (2017). *Teaching Science in the spiral curriculum.*

Esperanca, L. (2018). *Five things you only learn when you start teaching*. Retrieved from www.cambridge.org/elt/blog/2018/04/25/learn-start-teaching/

Ferido, M. (2013). *The Spiral Progression Approach in Science.*

Gal, M.B. (2018). *Performance of Senior High School Students in Spiral Progression Approach of the K to 12 Science Curriculum.*

Galdula, I. (2016). *Embracing the Spiral Progression Approach of the K-12 Program.* Retrieved from https://www.pressreader.com

Gonzalo, A. (2014). Sister Callista Roy's adaptation model of nursing. Retrieved from

https://nurselabs.com/sister-callista-roys-adapation-model/ on June 14, 2019.

Hernandez, B. (2011). *K to 12 will define our youth.* Retrieved from https://opinion.inquirer.net/19287/k-to-12-will-define-our-youth on April 12, 2019.

Holmquist, A. (2016). *Education today: An inch deep and a mile wide?* Retrieved from https://www.intellectualtakeout.org/blog/education-today-inch-deep-and-mile-wide

Kaljahi, N.E. (2016). *The effects of academic adjustment, social adjustment and personal-emotional adjustment of students on their academic performance in universities of Northern Cyprus.*

Kardena, A. (2015). *Change of curriculum and its implication on teachers' performance in EFL classroom.*

King, S. (2018). *What is adaptation theory?* Retrieved from https://sciencing.com/adaptation-theory-5105998.html on June 08, 2019.

Lacorte, E.A. (2013). *Extent of implementation of K to 12 program in selected private and public schools in Lucban, Quezon.*

Laureano, R.A., Espinosa, A.A., & Avilla, R.A. (2015). Effects of Grades 9 Science Learner's Material on students' self-regulation and achievement in chemistry. *Electronic Journal of Science Education,* 19(8), 28-58.

Ledingham, D. (2009). *A mile wide and an inch deep.* Retrieved from https://www.edubuzz.org/donsblog/2009/07/06/a-mile-wide-and-an-inch-deep/

Loutenco, F. & Casey, B. (2013). A*djusting behavior to changing environmental demands with development.* doi: 10.1016/j.neubiorev.2013.03.003

Mangaluz, J. (2018). *K-12 and the work immersion program.* Retrieved from https://www.pressreader.com/philippines/philippine-daily-inquirer/20180402/282222306315589

Maramag, S. K. (2011). *Is the K-12 model good for the Philippine education system?* Retrieved from https://blogwatch.tv/2011/05/proposed-k-12-basic-education-system-in-the-philippines/

Martin, B. (2008). *Progression and continuity in learning Science.*

McLeod, S. (2018). *Jean Piaget's theory of cognitive development.* Retrieved from https://www.simplypsychology.org/piaget.html on June 5, 2019.

Mileszyk, N. (2015). *Teachers as creators and sharers: A natural connection to the open educational resources movement.* Retrieved from https://medium.com/copyright-untangled/teachers-as-creators-and-sharers-connection-to-the-open-educational-resources-movement-dab8bd981ebf

Molina, K.O. (2019). *Strategies for constructivist teaching.* Retrieved from https://www.brighthubeducation.com/teaching-methods-tips/85138-student-centred-learning-with-constructivist-teaching-strategies/

Montebon, D.T. (2014). *K12 Science program in the Philippines: Student perception on its implementation.* Vol. 2 No. 12.

Navarro jr., Rodil T. (2014). *The K-12 education system: Benefits for the Filipinos.* Retrieved from https://ourhappyschool.com/education/k-12-education-system-benefits-filipinos

Obstfeld. (2002). *Theme (narrative).* Retrieved on April 08, 2019 at https://www.revolvy.com/page/Theme-%28narrative%29

Orale, R. L., Uy, Ma. E.A. (2018). When the spiral is broken: Problem analysis in the implementation of spiral progression approach in teaching Mathematics. *Journal of Academic Research* 03:3, pp. 14-24.

Orbe, J. R., Espinosa, A. A., & Datukan, J. T. (2018). Teaching Chemistry in a spiral progression approach: Lessons from Science teachers in the Philippines. *Australian Journal of Teacher Education,* 43(4).

Osan, R. B. (2016). *Readiness, difficulties and coping mechanisms of senior high school teachers in the implementation of K To 12 program at Panitan District, Panitan, Capiz.*

Oxman, A. et al. (2018). *Spiral curriculum.* doi: 10.12688/f1000research.16771.2

Papong, E. (2012). *The influence of John Dewey's educational thoughts on Philippine education.*

Pappas, C. (2014). *Instructional design models and theories: The discovery learning model.* Retrieved from https://elearningindustry.com/discovery-learning-model on April 04, 2019.

Plessis, A.E. (2017). *Out-of-field teaching practices.* Sense Publishers.

Pritchard, A. & Woolard, J. (2010). P*sychology for the classroom: Constructivism and social learning.*

Samala, H. (2018). *Spiral progression approach in teaching Science: A case study.*

San Diego, M. (2017). Sociocultural Adjustment of Foreign Students in the Philippines. *International Journal of Emerging Multidisciplinary Research.*

Sanosa, M.E. (2013). Implementation of K to 12 curriculum program among Grade 7 science teachers in Eastern Visayas. *Journal of Society & Technology.*

Steffe, L. & Gale, J. (1995). *Constructivism in education.*

SEAMEO INNOTECH. (2012). *K to 12 toolkit: Reference guide for teacher educators, school administrators and teachers.* Quezon City: Philippines. Retrieved from https://www.seameo-innotech.org/eNews/Kto12Toolkit_ao17july2012.pdf.

Snider, V. (2004). A comparison of spiral versus strand curriculum. *Journal of Direct Instruction,* 4(1): 29-39.

Southeast Asian Minister of Education, Organization, Innovation and Technology (SEAMEO INNOTECH). (2012). *K TO 12 Toolkit: Resource guide for teacher educators, school administrators and teachers.* Philippines: SEAMEO INNOTECH.

Suyanto, S. (2017). *The implementation of the new curriculum of 2013: A reflection from research on the school readiness.*

Tan, M.C. (2012). *Spiral progression approach to teaching and learning.*

Turner, D. (20170. *Problem vs challenge: The real meaning behind your words.*

Velasco, P. (2012). *A primer on the new K-12 Philippine education curriculum.*

_____(2014). The Role of Jerome Brunner's spiral approach in the reformation of the Philippine educational system. Retrieved from https://www.informedhealthchoices.org/spiral-curriculum/

APPENDICES

APPENDIX A

Letter Requesting to Conduct the Study

Samar State University
COLLEGE OF GRADUATE STUDIES
Catbalogan City, Samar

MARCH 2019

RUTH D. CABANGANAN
Principal IV
Samar National School
Catbalogan City, Samar

Madam:

The undersigned researcher is Master of Arts in Teaching Physics student, presently conducting a study entitled ""Junior High School Teachers Adaptation on the K-12 Science Spiral Progression Curriculum". This research aims to investigate the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

The researcher would like to ask your permission to conduct the study in Samar National School- Science Department. We assure you that all the information gathered will be kept in private.

We hope for your kind approval pertaining to this request.

Very truly yours,

JANICE R. COLEBRA
Researcher

Under the supervision of:

REZY MENDAÑO
Adviser

Recommending Approval:

BRIGIDA C. SINGZON
Science Department Head

Approved by:

RUTH D. CABANGANAN
Principal IV

APPENDIX B

Cover Letter of the Research Instrument

Samar State University
COLLEGE OF GRADUATE STUDIES
Catbalogan City, Samar

Dear Respondents,

The undersigned researcher is Master of Arts in Teaching Physics student, presently conducting a study entitled "Junior High School Teachers Adaptation on the K-12 Science Spiral Progression Curriculum". This research aims to investigate the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

Please feel free to provide the necessary information with the assurance that your answers will be used solely for research purposes.

Thank you for your patience and time in answering the questionnaire.

Very truly yours,

JANICE R. COLEBRA
Researcher

Under the supervision of:

REZY MENDAÑO
Adviser

APPENDIX C

DEMOGRAPHIC INFORMATION

PART A: TEACHER - RESPONDENT'S PROFILE

Direction: Please indicate your responses to each of the following items by checking [/] or writing the needed information that corresponds to your answer on the space provided.

1. Name (Optional): _____
2. Age: _____
3. Sex:

   [ ]Male
   [ ]Female
4. Civil Status:

   [ ] Single
   [ ] Married
   [ ] Separated
   [ ] Widow/er
5. Highest Educational Attainment:

   [ ] BS Degree Holder
   [ ] BS Degree with Masters' Degree Units
   [ ] Master's Degree Holder
   [ ] Master's Degree Holder with Doctoral units
   [ ] Doctorate Degree
   Others: _____
6. Field of Specialization

   [ ] Physical Science
   [ ] Biology
   [ ] Chemistry
   [ ] Physics
   [ ] Others, pls. specify _____
7. Number of Years of Teaching

   [ ] 1-5 years [ ] 16- 20 years
   [ ] 6-10 years [ ] 21- 25 years
   [ ] 11- 15 years [ ] 26- 30 years
8. Designation/Rank

   [ ] SST I [ ] Master Teacher ___
   [ ] SST II
   [ ] SST III

PART B: **INTERVIEW GUIDE**

Title of Research: Junior High School Teachers Adaptation in K To 12 Science Spiral Progression Curriculum

Introduction:

- Good Morning! Thank you for agreeing to participate. I am very interested to hear your ideas and experiences on teaching science under spiral progression approach in the K to 12 curriculum.
- The purpose of this study is to investigate the experiences of Junior High School Science Teachers in adapting the spiral progression in teaching science.
- I would like to ask your permission on recording our discussion but I assure you that all information you will give will be kept in private. Also, I will not associate your name and the institution with anything you say in the discussion.
- I am Janice R. Colebra, a Master of Arts in Teaching Physics student of Samar State University. I am here to conduct an in-depth interview and administer a questionnaire to the junior high school science teachers of this school.
- If you have any questions after the conduct of this discussion, you can always contact me.
- Have you participated in any in-depth interview before?
- I am appealing for your cooperation with this in-depth interview to arrive with the needed information in the study.
- (Turn on recorder.)

Research Questions	Interview Questions	Expected Responses	Actual Responses
1. What are your experiences and challenges encountered in adapting the spiral	Let's start the discussion by talking about the K to 12 Science Spiral Progression Curriculum. *What are your ideas about K to 12 Science Spiral Progression Curriculum?*	Spiral Progression is an approach where in basic principles are introduced in the first grade and are rediscovered in succeeding grades in more complex form.	

Research Questions	Interview Questions	Expected Responses	Actual Responses
progression in teaching science?		The integration of the four areas in science, Earth Science, Biology, Chemistry and Physics.	
	How is Spiral Progression applied in Science in the K to 12?	Spiral Progression is applied in science where every topic for every grade level is being introduced with complexity as they move on to a higher level.	
	What do you think are the advantages of Spiral Progression Curriculum in teaching Science?	• Avoids disjunction between stages of schooling. • Allows learners to learn topics and skills appropriate to their development/ cognitive stages. • Allows learners to learn topics and skills as they are revisited and consolidated. • It strengthens retention and mastery of topics and skills as they revisited and consolidated. • It allows learners to gain valid experiences.	

Research Questions	Interview Questions	Expected Responses	Actual Responses
	How about the disadvantages? Is there any disadvantage of science spiral progression curriculum?	• Does not promote sufficient review once units are completed. • The rate of introducing new concept is often either too fast or too slow. • All concepts are allotted the same amount of time whether they are easy or difficult to master. • It is difficult to sequence instruction to ensure that students acquire necessary pre-skills before introducing difficult skills. • Many students fail to master important concepts	
	Do you have any problems/ challenges encountered relative to teaching under the Science Spiral Progression?	• Teaching areas in science which are not my specialization	

Research Questions	Interview Questions	Expected Responses	Actual Responses
		• Short time for review part in the lesson • Lack of laboratory equipment and facilities • Lack of learning resources and material • Students have difficulty in retention and mastery of the subject matter in complex science concepts. • Promoting students who have not mastered the topics covered • Receiving students who have not mastered the previous topics.	
2. How do you adapt in teaching Science under the K to 12 Science Spiral Progression Curriculum?	*What are the teaching approaches/innovations you apply in order to adapt with the Spiral Progression Curriculum?*	• Enroll for further studies for knowledge updating through graduate studies science courses • Attend seminars, trainings and short courses on the different science content	

Research Questions	Interview Questions	Expected Responses	Actual Responses
		knowledge, and differentiated instructional strategies to enhance teaching skills • Practicing time management in preparing in teaching the different areas of science. • Utilization of inquiry-based teaching and learning strategies in teaching the subject • Developing additional learning materials for students especially on difficult concepts. • Requesting School Head the procurement of additional laboratory apparatus and equipment that will aid effective teaching.	

- Thank you so much for coming and sharing your thoughts and opinions with me. If you have additional information that you did not get to say in the interview, please feel free to write it on a piece of paper.

APPENDIX D

Informed Consent Form to Participate in the Study

Part I. Information Sheet

I, JANICE R. COLEBRA a MAT-Physics student of Samar State University. Doing a research study entitled "JUNIOR HIGH SCHOOL TEACHERS ADAPTATION IN K TO 12 SCIENCE SPIRAL PROGRESSION CURRICULUM" with the purpose of investigating the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

Should there be queries on some words or terms along the contents hereof, please feel free to ask the undersigned researcher for clarifications.

JANICE R. COLEBRA

Researcher

Part II. Consent Certification

I have read the preceding data and it has been informed to me by the researcher, and had the chance to ask questions that were responded to my contentment. I also give my permission on recording my responses. I voluntarily give my permission to participate in this foregoing research study.

Printed Name of Participant: _____

Signature of Participant: _____

Date: _____

APPENDIX E

Samar State University

COLLEGE OF GRADUATE STUDIES

Catbalogan City, Samar

APRIL, 2019

RESEARCH INSTRUMENT APPROVAL SHEET

TO THE PANEL OF EVALUATORS:

The undersigned researcher is Master of Arts in Teaching Physics student, presently conducting a study entitled ""Junior High School Teachers Adaptation on the K-12 Science Spiral Progression Curriculum". This research aims to investigate the experiences of junior high school science teachers in adapting the spiral progression in teaching science.

Attached herewith is the interview guide to be used in the gathering of the data from the teacher- respondents.

We hope you would signify your approval on the said interview guide so the researcher can proceed with the gathering of the necessary data for this study.

Very truly yours,

JANICE R. COLEBRA

Researcher

Recommending Approval:

REZY V. MENDAÑO

Thesis Adviser

We, the members of the Panel of Evaluators hereby approve on the use of the attached interview guide for the above-mentioned study.

MA. ROSEBELLE R. NACIONAL, MT I — *Member*

FRANK ANGELO A. PACALA — *Member*

RONALD L. ORALE, Ph.D. — *Member*

VIVIAN L. MOYA, Ph. D. — *Member*

NICOLAS O. BOCO — *Member*

ESTEBAN A. MALINDOG, Ph.D.

Dean, College of Graduate Studies

Chair, Panel of Evaluators

APPENDIX F
CODING-INTERVIEW RESULTS
"JUNIOR HIGH SCHOOL TEACHERS ADAPTATION ON THE K-12 SCIENCE SPIRAL PROGRESSION CURRICULUM"

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
Challenges and Experiences	Code 1	*Teacher 5:* "I observed, that, there is increasing depth of science concepts at each grade level." *(transcript 1, page 1, line 23)* *Teacher 6:* "The science competencies are from simple to complex (G7 to G10). The topics are interrelated. Grade 7 lessons are prerequisite to Grade 8 competencies and G8 competencies are pre-requisite to g9 competencies and so on. One advantage is that the lessons per grade level is suited to the age of the learner (age-appropriate). More complex lessons are tackled in higher levels." *(transcript 1, page 1, line 27-31)* *Teacher 7:* "Topics which are easy are taught in first/ grade 7 students in subjects Gen. Sci., Biology, Chemistry and Physics. Increasing in difficulty up to grade 10. The topics are appropriate to the age of learners. Simpler topics are discussed in the lower grade levels." *(transcript 1, page 1, line 38-41)* *Teacher 8:* "Basic concepts and skills are being used in lower grade level and	*Teachers observed that the topics they are discussing are increasing in complexity and depth as they go to higher grade level.*		Spiral progression is increasing in depth and complexity of learning

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		becomes higher as the grade level progresses. Content is from simple to complex." *(transcript 2, page 2, line 4-6)* ***Teacher 9:*** "Every grade level from grade 7 to 12, the topics of every subject is becoming harder. From basic to difficult topic. The learners can adjust easily for the topics/ lessons starts with the easy to difficult topics." *(transcript 2, page 2, line 9-12)* ***Teacher 10:*** "I discussed topics from simple to complex." *(transcript 2, page 2, line 16)* ***Teacher 12:*** "Based on our experiences, so when we say spiral progression, it is the deepening of the topics, from simple to complex." *(transcript 2, page 2, line 34-35)* ***Teacher 14:*** "Hmm …As for me, since I'm teaching Grade 7 the advantage is that the topic that I am handling are easier since the topics are appropriate to their ages thus, compared to the other levels, in my part it is easier for me to teach." *(transcript 4, page 4, line 8-10)* ***Teacher 15:*** "All the subjects that are taken up in first year to fourth year is being taken			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		up now in first year but the easier topics are being discuss in the first year and then progressing to fourth year. The advantage is the subject is easier because the topics are in Grade 7, I am teaching Grade 7." *(transcript 4, page 4, line 19-24)*			
	Code 2	***Teacher 1:*** "I find it difficult since some of the topics … we are not able to discuss since easy and difficult topics have the same time allotted." *(transcript 1, page 1, line 2-3)* ***Teacher 2:*** "But there are uncovered competencies due to lack of time." *(transcript 1, page 1, line 6)* ***Teacher 12:*** "But the problem is that during our discussion, sometimes because we are following the budget of lesson, there are …there is really many cases that we really cannot cover whole topic in one grading period." *(transcript 2, page 2, line 37-39)* "We have to stop that discussion since science is a learning by doing wherein they will learn by manipulating the materials, by doing the activity, but what we do is we change our technique because we are following the budget of lesson… some topics are	*Teachers have difficulty in managing the topics because of its enormity and there is no sufficient time.*		Mile-wide-inch-deep teaching result to teachers' mismanagement in classroom discussion

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		really left behind… we have to move to other topic since there is a short time allotted for every topic." *(transcript 3, page 3, line 1-7)* ***Teacher 13:*** "There are so many activities that the budget time are too short for all of those activities to be conducted." *(transcript 3, page 3, line 27-28)* ***Teacher 14:*** "There are topics that we could not discuss. Example quarter 1,2,3 and 4. So, Quarter 1 is Chemistry, 2 Biology, 3 Physics, then General Science. Due to the constraint of time and different activities, we could not finish all the competencies. Thus, if they go to the higher level, they don't have any idea on that topic…so that's it." *(transcript 4, page 4, line 13-17)*			
	Code 3	***Teacher 2:*** "A lot of disadvantages are encountered from this curriculum like the concept retention. There is no mastery of the concepts on the part of the students…." *(transcript 1, page 1, line 7,9)* ***Teacher 3:*** "For me more disadvantages than	*Students and have difficulty in mastery of the subject matter*	Lack of Mastery	Teachers face varied challenges in using spiral progression approach in teaching science

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		advantages especially on the part of the students. There is no mastery on the part of the student. There is no continuity and mastery of the topics on the part of the students." *(transcript 1, page 1, line 16-19)* ***Teacher 5:*** "It comes confusion so there is no mastery…" *(transcript 1, page 1, line 26)* ***Teacher 6:*** "The disadvantage is when a particular topic is not mastered by the students/ learners in a particular grade level. In this manner, he/ she may not also master the higher-level competencies for lack of knowledge/ mastery of the previous competencies. Lack of continuity of learning since learners forget the previous grade level lessons. For example, when a grade 8 student is not able to master Grade 7 physics lessons, he/she will also have difficulty in mastering/ learning physics lesson in Grade 8." *(transcript 1, page 1, line 31-36)* ***Teacher 8:*** "The students lack mastery in every discipline since the continuation/ progression of the concepts is not within the grade level."			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		(transcript 2, page 2, line 6-7) ***Teacher 10:*** "There is lack of continuity. Also, lack of mastery both on the students and teachers." *(transcript 2, page 2, line 25)* ***Teacher 12:*** "So the problem is that when they go to grade 10, and we have not tackled about work, power and energy for example, then in grade 10 it will be mentioned that "class you discuss about blab bla bla during grade 9" then they are blind about that topic. That is the problem… There is really a gap… if they go to higher grade level ...that's it." *(transcript 2, page 2, line 39-42)* "Maybe the retention is in accordance with the span of time since if we would only think, we could remember what are discussed now but if it will be recalled for the next year, I don't think they could still remember what have been discussed. Although it is progression but if we could only realize that even what have been discussed now cannot be remembered by the students on the next day. Especially now that there are many influences that could distract their learning." And it is always the introductory			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		part that, "you have learned in grade …bla bla bla… ", "in previous years you have learned…" "so class have you discussed about…? "ma'am no." *(transcript 3, page 3, line 8-14)* ***Teacher 13:*** "For me, K to 12, when we compare that to old curriculum, I am for the old curriculum. The RBEC… because in this K to 12... so I have … 3 years or 4 years teaching experience under K to 12… so I have observed that the students if they are asked even those basic questions, basic knowledge about a particular science concept, they do not even know the answer. If I am asking them …they cannot answer but during the old curriculum if I ask the students, they can actually answer… I am in favor of the old curriculum wherein in grade 9, the discussion is pure chemistry. Because now they do not even know the scientific notation…in old curriculum… we discuss that scientific notation. the significant figures…now the students have no idea about that concept. *(transcript 3, page 3, line 15-26)* "There is no mastery of the concepts from the students.			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Whereas the old curriculum, since you are focused on that particular major, for example in chemistry, in grade 9, chemistry only, so there is retention from the students. *(transcript 3, page 3, line 39-41)* Some basic knowledge is not tackled. Because if they are already in grade 9, I would ask them "have you discuss this when you were in grade 8 and grade 7?", "no ma'am", hala Diyos ko! problema." "In the book it was stated that you have learned this in your grade 7 and grade 8." … "ma'am no." *(transcript 4, page 4, line 3-5)* ***Teacher 14:*** "I think there are a lot of disadvantages on the spiral progression, one is that there is no continuity within each subject area. Thus, the students are left hanging on each of the topic." *(transcript 4, page 4, line 10-12)* I think basically, the problem is the student they don't have retention." *(transcript 4, page 4, line 17-18)* ***Teacher 15:*** "There is no continuity within each subject area. The students… they are			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		noisy and don't have retention." *(transcript 4, page 4, line 24-25)*			
		Teacher 2: There is no mastery of the concepts …. for the teachers as well." *(transcript 1, page 1, line 9)* ***Teacher 9:*** "As teacher, I can say that because all four (4) branches of science are covered yearly, we have no deeper knowledge of a certain topic." *(transcript 2, page 2, line 12-13)* Teacher 10: "lack of mastery both on the students and teachers." *(transcript 2, page 2, line 25)* Teacher 13: Lack of mastery… also on the part of the teacher… both on the students and the teacher's side." *(transcript 3, page 3, line 31-32)* ***Teacher 14:*** "…the teachers are left hanging also in their teaching." *(transcript 4, page 4, line 12-13)*	*Teachers have difficulty in mastery of the subject matter in complex science concepts.*	Lack of Mastery	Teachers face varied challenges in using spiral progression approach in teaching science
		Teacher 1: "And the learner's material is not realistic and there are many errors." *(transcript 1, page 1, line 3-4)*	*Teachers have difficulty in conducting lesson because of the lack of quality learning materials*	Lack of quality learning resources or materials,	Teachers face varied challenges in using spiral progression

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Teacher 2: "Numerous activities in the book to be conducted every quarter." *(transcript 1, page 1, line 9-10)* *Teacher 3:* "Lack of quality learners' material and teachers' guide from DepEd." *(transcript 1, page 1, line 17-18)* *Teacher 10:* "I remember… I think one main reason that's why there are many complains about the learner's materials and about the teaching guide …it's because the reality is our resource materials; I think there is no evaluation yet …before publication of the books there must be editing and evaluation of the books but what I have known is that if the pages of the books are colored brown, that is still for editing …for evaluation before printing…But we have use those books that are still for editing… that's why… I think that is one main reason why there are a lot of errors in the learner's material and the teaching guide." *(transcript 2, page 2, line 18-25)* *Teacher 11:* "Lack of Materials. The books we use now for Grade 7 are colored already but before we use the old one which has brown		and facilities	approach in teaching science

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		pages… but still there are a lot of errors." *(transcript 2, page 2, line 29-30)* ***Teacher 13:*** "There is redundancy of the activities in the book... that's why sometimes we just leave those activities behind…The learning resources, learning materials they are not prepared although there is a budget." *(transcript 3, page 3, line 28-30)*			
		Teacher 11: "We passed our students even if they did not master the topics we have discussed. Haha" *(transcript 2, page 2, line 30)* ***Teacher 12:*** "But still the students are passed …" *(transcript 3, page 3, line 7)* ***Teacher 13:*** "All students are being passed. Hahahaha. They are being promoted even those who do not know how to read. There are grade 9 students who do not know how to read." And that is a big problem. *(transcript 3, page 3, line 33-34)*	*Promoting students who have not mastered the topics covered and receiving students who have not mastered the previous topics pose a problem/ challenge to teachers.*	Not well-equipped learners	Teachers face varied challenges in using spiral progression approach in teaching science
		Teacher 2: "Mastery of the concepts from non-major subjects is too hard." *(transcript 1, page 1, line 8)*	*Teachers teaching areas in science which are not their specialization find it difficult*	Academic challenges for out-of-field science teacher	Teachers face varied challenges in using spiral progression

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Teacher 4: "Teacher failed to teach the subject that he/she is not knowledgeable. Physics is difficult to teach and higher lessons in chemistry." *(transcript 1, page 1, line 20-22)* ***Teacher 5:*** "Teacher is pressured and failed to teach subject he/she is not that knowledgeable in. Physics is difficult to teach. I am a Biology Teacher. Lessons in physics are difficult... " *(transcript 1, page 1, line 24-26)* ***Teacher 7:*** "The teacher finds it hard to teach other branch of science which are not his/ her major. Since I'm a biology major, I find it quite hard to teach other science fields especially chemistry." *(transcript 2, page 2, line 1-2)* ***Teacher 8:*** "Teaching areas/ disciplines of science which are not the areas of specialization of the teacher is one problem." *(transcript 2, page 2, line 7-8)* ***Teacher 9:*** "Since all the four (4) branch in science are covered, I think I am not competent enough to discuss/ impart knowledge, for I am a Physics major teacher." *(transcript 2, page 2, line 13-15)*	*to handle the learning area*		approach in teaching science

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Teacher 11: "Non-major you are teaching subject that you don't know. Hahaha…For example in my part, I am chemistry major then I am teaching biology… there is no problem already before... and now…" *(transcript 2, page 2, line 31-33)* "For me there is no advantage. For example, the topic is this one … then what happened is that some topics are not discuss or jump into because of difficulty." *(transcript 2, page 2, line 27-28)* *Teacher 12:* "For example I am a chemistry teacher, we have those technique, for example on the electronic distribution… we know techniques for those… even at first glance … but in other science concept, we are having difficulty." *(transcript 5, page 5, line 30-32)* *Teacher 13:* "More disadvantages for me. Especially that I am not a Physics teacher, fourth grading the topic is Physics. Diyos ko! What will I give to my students? That is the number 1 difficult subject for me. That is negative on my part. I already master chemistry but now with that I am really having difficulty.			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Then we still have classroom observation, if my topic is about physics, I told ma'am I'm sorry ma'am that's all I can give.... *(transcript 3, page 3, line 35-38)*			
Adaptation Strategies	Code 1	***Teacher 1:*** "Discovery Approach" *(transcript 4, page 4, line 26)* ***Teacher 2:*** "Discovery Approach ... Learning by doing – where students are able to learned based on their activity." *(transcript 4, page 4, line 29-30)* ***Teacher 3:*** "Group activity, Peer teaching/ mentoring, Integration of ICT like video presentation" *(transcript 4, page 4, line 31-32)* ***Teacher 4:*** "The same approaches such as laboratory activities and discussions" *(transcript 4, page 4, line 33)* ***Teacher 5:*** "The same approaches such as laboratory activities, discussions, use technology" *(transcript 4, page 4, line 35)* ***Teacher 6:*** "Guided inquiry-based approach. In which the teacher scaffold or guide the learner through instruction in	*Teachers are using constructivist teaching approaches (e.g. discovery approach, guided-learning) in teaching science.*	Constructivism in science classroom	Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		answering or solving science problems." *(transcript 4, page 4, line 37-38)* ***Teacher 8:*** "Inquiry-based approach…" *(transcript 5, page 5, line 1)* ***Teacher 10:*** "Group Activities also." *(transcript 5, page 5, line 7)* ***Teacher 11:*** "Activity… More on activity …" *(transcript 5, page 5, line 15)* ***Teacher 12:*** "Learning by doing activities" *(transcript 5, page 5, line 18)* ***Teacher 13:*** "HesusMaryusep! That discovery approach? It is not applicable. We always use group activities. *(transcript 5, page 5, line 39-40)* ***Teacher 14:*** "I usually conduct it through groups or by pair. It is hard for them to do it individually." *(transcript 6, page 6, line 4-5)*			
		Teacher 1: "And make instructional materials for difficult topics since what is written in the book is difficult." *(transcript 4, page 4, line 26-27)*	*Teachers making their own learning materials and activities for students especially on difficult concepts is a*	Develop additional learning materials and activities	Adaptation strategies in science teaching are being employed by teachers to cope with the spiral

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Teacher 8: "Develop instructional materials especially for difficult topics." *(transcript 5, page 5, line 1-2)* ***Teacher 9:*** "Develop different games to get their attention and interest in our lesson." *(transcript 5, page 5, line 3-4)* ***Teacher 14:*** "Me, since I'm handling higher sections, I supply, I conduct supplementary activity. I don't usually follow the activity written on the book. I do my own." *(transcript 6, page 6, line 3-4)*	*way of them to adapt with the new curriculum.*		progression approach in the new curriculum
		Teacher 5: "Study the different science concepts." *(transcript 4, page 4, line 36)* ***Teacher 7:*** "Advance study topics which are not my major." *(transcript 4, page 4, line 41)* ***Teacher 10:*** "For me, for professional development, although it's really difficult and hard for me to study another science concepts and topics especially that we're getting old, hahaha…so our memory decreases, deteriorating. But at the same time, I feel joyful learning new science concept, I appreciate that only that it is really challenging to study again …but when I learn	*Teachers have no choice but to study concepts which are new to them in order to adapt with the present curriculum.*	Studying new science concepts/ topics	Adaptation strategies in science teaching are being employed by teachers to cope with the spiral progression approach in the new curriculum

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		those topics, it is a great feeling …once you know it is very enjoyable and interesting. The only problem is the beginning wherein it is not automatic that we will learn immediately." *(transcript 5, page 5, line 7-13)* ***Teacher 11:*** "We have no choice but to study. Because it is a shame on our part standing in front of your students then they will give questions and you don't know the answer." *(transcript 5, page 5, line 15-17)* ***Teacher 12:*** "self-study…" *(transcript 5, page 5, line 24)* ***Teacher 13:*** "You have no choice but to study…I am actually honest with my students, I told them I am not a physics teacher. This is only my 4 …or 3rd year in teaching physics. In my high school, my waterloo is math and physics, so do not expect me to be very good in this subject." *(transcript 5, page 5, line 41-44)*			
		Teacher 1: "There must be trainings to equipped the teachers." *(transcript 4, page 4, line 27)* ***Teacher 2:*** "Conduct of seminars for the teachers." *(transcript 4, page 4, line 30)*	*Teachers find it important to attend trainings and seminars for knowledge updating and to be able to become effective teachers*	Attend trainings/ seminars/ workshops	Adaptation strategies in science teaching are being employed by teachers to cope with

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		Teacher 4: "Provide more trainings for the teachers." *(transcript 4, page 4, line 34)* *Teacher 6:* "Science teacher should be given trainings, seminars or workshops in order to master other science subjects." *(transcript 4, page 4, line 38-39)* *Teacher 8:* "Seminars should be provided to all teachers by the government." *(transcript 5, page 5, line 2)* *Teacher 9:* "As of now, since it has been 3-4 years that K-12 has been in our country, maybe the teachers are still adjusting for us to impart better knowledge to the learner. I recommend to give more trainings for the teachers to be effective in delivering lessons." *(transcript 5, page 5, line 4-6)* *Teacher 11:* "We Attended seminars…" *(transcript 5, page 5, line 15)* *Teacher 12:* "Firstly, teachers should be fully-equipped since we are the front liners, *(transcript 5, page 5, line 34-35)* One way to improve our professional development, is that the government should spend money, scholarship,			the spiral progression approach in the new curriculum

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		for one summer for example, I am a major of chemistry, in grade 9 we are also teaching biology, I think it is in the 1st quarter, respiratory maybe, the human system, so I think the government should spend scholarship, conduct trainings and seminars for teachers. Not only one week. Aside from our own studying, it is much better if you have a professor whom you can ask questions with and correcting your error. So, the government should spend money. Because we are the manpower, we are the front liners. How can we give something that we don't have? Actually, education has the highest percentage of budget. Where does it go? And that is the big question." *(transcript 5, page 5, line 19-29)* ***Teacher 13:*** "We should have 1-month training…" *(transcript 6, page 6, line 1)* ***Teacher 14:*** "In my part, I attended…I think that was last year. I attended a seminar for Science 7… for special class. Basically, I was able to handle the previous curriculum and this new curriculum. And as I compare it, I always go for the old curriculum since it's easier for me to teach, I have mastery			

Category	Codes	Significant Statement	Formulated Meanings	Subthemes	Themes
		specifically for the content, and the students are well-equipped in every topic that we are handling. So, I suggest that the government should provide more seminars for the teachers in teaching science in the K to 12 spiral progression curriculum." *(transcript 6, page 6, line 6-12)* ***Teacher 15:*** "Ayyy also I have attended seminar." *(transcript 6, page 6, line 14)*			

APPENDIX G

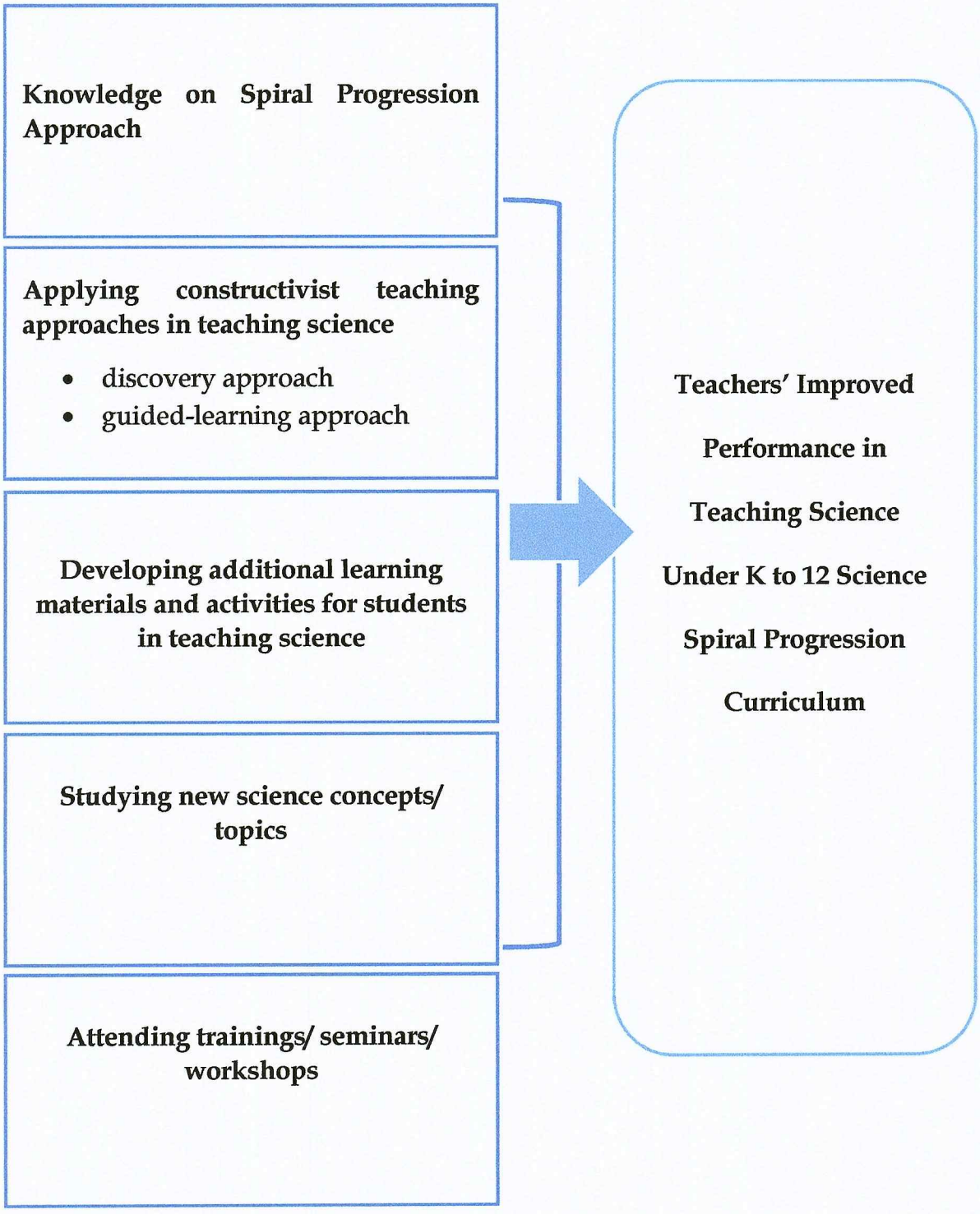

Figure 1. Conceptual Framework on Junior High School Teachers Adaptation in teaching Science under K to 12 Spiral Progression Curriculum

APPENDIX H

Table 1: Demographic Information of Teacher-Respondents

Participant	Age (yrs)	Sex	Civil Status	Highest Educational Attainment	Field of Specialization	No. of Years in Teaching	Designation/ Rank
Teacher 1	43	F	Widow	BS Degree Holder with Master's Degree Units	General Science	18	SST III
Teacher 2	32	F	Married	BS Degree Holder	Biology	2	SST I
Teacher 3	27	F	Married	BS Degree Holder with Master's Degree Units	Physics	3	SST III
Teacher 4	58	F	Married	BS Degree Holder	Biology	30	SST II
Teacher 5	33	F	Separated	Master's Degree Holder	Biology	8	SST III
Teacher 6	36	F	Married	BS Degree Holder with Master's Degree Units	Biology	4	SST III
Teacher 7	43	F	Married	BS Degree Holder with Master's Degree Units	Biology	25	Master Teacher I
Teacher 8	47	F	Widow	BS Degree Holder with Master's Degree Units	Chemistry	23	SST III
Teacher 9	28	F	Married	Master's Degree Holder	Physics	5	SST II
Teacher 10	46	F	Married	BS Degree Holder with Master's Degree Units	Physics	14	SST II
Teacher 11	40	F	Married	BS Degree Holder	Chemistry	11	SST III
Teacher 12	43	F	Married	Master's Degree Holder	Chemistry	19	SST III
Teacher 13	50	F	Married	BS Degree Holder	Chemistry	15	SST III
Teacher 14	27	F	Single	Master's Degree Holder	Physics	6	SST III
Teacher 15	31	M	Single	BS Degree Holder	Biology	2	SST I

Participant	Age (yrs)	Sex	Civil Status	Highest Educational Attainment	Field of Specialization	No. of Years in Teaching	Designation/ Rank
Teacher 16	47	F	Married	Doctorate Degree	Educational Management	24	Master Teacher II
Teacher 17	63	F	Married	BS Degree Holder	General Science	30	SST III
Teacher 18	45	F	Married	Master's Degree Holder	General Science	19	Master Teacher II
Teacher 19	48	F	Widow	BS Degree Holder with Master's Degree Units	General Science	22	Master Teacher I
Teacher 20	49	F	Married	BS Degree Holder with Master's Degree Units	Chemistry	23	SST III
Teacher 21	53	F	Married	BS Degree Holder with Master's Degree Units	General Science	26	Master Teacher I
Teacher 22	45	F	Married	BS Degree Holder with Master's Degree Units	General Science	10	SST II
Teacher 23	55	F	Married	BS Degree Holder with Master's Degree Units	Biology	20	SST III
Teacher 24	60	F	Married	BS Degree Holder	Chemistry	28	SST III
Teacher 25	60	F	Married	BS Degree Holder with Master's Degree Units	Biology	27	SST II

As shown in Table 1, the total participants consisted of twenty-five junior high school science teachers. There are twenty-four females and one male. The participants' ages ranged from 27 to 63. Seven are BS Degree Holder, twelve are BS Degree Holder with Master's Degree Units, five are Master's Degree Holder and one doctorate degree holder. All of them are teaching science subject and are major of science subjects. 8 are

Biology major, 7 are Chemistry major, 4 Physics major and 6 General Science major. The participants' number of teaching experience ranged from 2 to 30 years. 5 of the participants are already Master Teacher, 13 are Secondary School Teacher III (SST III), 5 are Secondary School Teacher II (SST II), and 2 are Secondary School Teacher I (SST I).

Table 2

Variables	Frequency	Percentage
Age		
18- 34 years old	5	20.00
35 - 49 years old	13	52.00
50 years old and above	7	28.00
Total	**25**	**100.00**
Sex		
Male	1	4.00
Female	24	96.00
Total	**25**	**100.00**
Civil Status		
Single	3	12.00
Married	18	72.00
Separated	1	4.00
Widow/er	3	12.00
Total	**25**	**100.00**
Highest Educational Attainment		
BS Degree Holder	7	28.00
BS Degree w/ Masters' Degree Units	12	48.00
Master's Degree Holder	5	20.00
Master's Degree Holder w/ Doctoral units	0	0.00
Doctorate Degree	1	4.00
Total	**25**	**100**
Field of Specialization		
Physical Science	0	0.00
Biology	8	32.00
Chemistry	7	28.00
Physics	4	16.00
General science	6	24.00
Total	**25**	**100**

Variables	Frequency	Percentage
Number of Years in Teaching		
1 - 5 years	5	20.00
6 - 10 years	3	12.00
11 - 15 years	3	12.00
16 - 20 years	4	16.00
2 1- 25 years	5	20.00
26 - 30 years	5	20.00
Total	**25**	**100**
Designation/ Rank		
SST I	2	8.00
SST II	5	20.00
SST III	13	52.00
Master Teacher	5	20.00
Total	**25**	**100.00**

Table 2 shows that majority of the teacher-respondents are between the ages 35 to 49 years old (52%), are females (96%) and were married (72%). It also suggests that majority of them were BS Degree Holder w/ Masters' Degree Units (48%). Moreover, it shows that majority of the teacher-respondents were Biology major (32%). The table above also suggests that majority of the teacher-respondents have teaching experience between 1-5 years, 21-25 years and 26-30 years (20%). Furthermore, it suggests that majority of teacher-respondents have rank/ designation as Secondary School Teacher III (52%).

CURRICULUM VITAE

CURRICULUM VITAE

NAME	:	COLEBRA, JANICE R.
ADDRESS	:	BRGY. 3 PIER 2 CATBALOGAN CITY
PLACE OF BIRTH	:	CATBALOGAN CITY
DATE OF BIRTH	:	NOVEMBER 13, 1994
AGE	:	24
SCHOOL	:	SAMAR NATIONAL SCHOOL
DESIGNATION	:	SECONDARY SCHOOL TEACHER I
YEARS IN SERVICE:		2 YEARS AND 10 MONTHS
FIELD OF TEACHING:		FILIPINO

BACCALAUREATE DEGREE: BACHELOR OF SECONDARY EDUCATION
MAJOR IN PHYSICS

EDUCATIONAL BACKGROUND

ELEMENTARY	:	SALUG ELEMENTARY SCHOOL CATBALOGAN CITY
SECONDARY SCHOOL	:	EASTERN VISAYAS REGIONAL SCIENCE HIGH CATBALOGAN CITY
TERTIARY	:	SAMAR STATE UNIVERSITY CATBALOGAN CITY

LIST OF FIGURES

LIST OF FIGURE

Figure Page

1 Colaizzi's Process 32