The Philippine K to 12 Junior Science Program in Thematic Instruction

Darryl Roy Montebon[1]*, Antriman Orleans[2]

[1]Philippine Normal University-Manila, Philippines,
https://orcid.org/0000-0003-0953-5311
[2]Philippine Normal University-Manila, Philippines,
https://orcid.org/0000-0001-8393-4754
*Email Correspondence: montebon.drt@pnu.edu.ph

Abstract

The present study describes the attempt to achieve the competencies of the Philippine K to 12 Science Program through thematic instruction. It seeks to address the challenges encountered by science teachers with the current curriculum design. The researchers used a thematic instructional model in giving classroom instruction. Two sets of pre-service teachers, taking part as facilitators and as observers, were purposely chosen in the study. The researchers used convergent mixed methods design in analysing the pre-service teachers' experience and observations in teaching through thematic instruction. Results revealed that the thematic instruction implemented in the study has the potential to address the challenges of the current K to 12 science curriculum in terms of design, lesson content, and implementation. Consequently, the results suggest that the thematic instruction design in the study can be used to help achieve the desired outcomes of the K to 12 Science Curriculum.

Keywords: Philippine K to 12 Science Curriculum, thematic instruction, thematic instructional model, K to 12 Program in the Philippines

1.0 Introduction

To support the Science education in the Philippines, the present research investigates the possibility of teaching the K to 12 science competencies using an alternative modality called thematic instruction. Though the current curriculum design is theme-based on specific science disciplines, the reviewed studies reveal that teachers still hope it can be improved (Argote, 2016; Orbe et al., 2018). Hence, the researchers conducted the study.

Having been compared to the existing K to 12 curriculum design that grouped competencies into science disciplines, the present research has arranged the learning concepts into identified themes. Using the thematic instructional model design, the researchers have found out that the development of materials and the delivery of instruction followed the four core values of the Department of Education (DepEd) — Body, Environment, Country, and Universe. For example, the thematic unit My Body taught the following lessons: cell (biology) and elements and compounds (chemistry) as components of the human body, sound (physics) as type of energy perceived by the human body, and acids and bases (chemistry) as substances on how to take care of the human body.

While many studies show the benefits and challenges of implementing thematic instruction (Argote, 2016; Orbe et al., 2018), the present study aims to know the specific areas of teaching and learning that thematic instruction can enhance. Also, this research seeks to inform other K to 12 science educators of the benefits and the challenges of designing instruction in thematic mode.

The present study explores if the competencies in the Philippine K to 12 Science Education Curriculum has the potential to be delivered through thematic instruction. Specifically, the researchers ask the following questions:

1. What were the experiences and observations of the pre-service teachers in teaching through thematic instruction?
2. What does the implemented thematic instruction imply to the teaching of the Philippine Science K to 12 Curriculum?

Literature Review

Science in the Philippine K to 12 Program: Features and Challenges

The Philippines in 2012 embraced curriculum change to K to 12, under the Republic Act 10533 or the Enhanced Basic Education Act. Science in the K to 12 Curriculum envisions to produce learners with holistic characteristics: fully understand the science concept and know how to apply knowledge in different situations; know the processes of Science and are equipped with skills in performing scientific tasks during problem-solving situations; possess scientific attitude for their quest for answers and the right values to utilize knowledge in Science in a sound and morally upright manner (Department of Education [DepEd], 2016). According to Hernandez (2012), Bro. Armin Luistro, then Deputy Education Secretary, stressed that the K to 12 programs when implemented, will provide better access and improve the quality of education. The K to 12 curriculum views that every Filipino student will be at par with his counterparts in other countries because it proposes additional years of schooling to equip students with more relevant knowledge and skills.

The new K to 12 Science Education Program is, in many ways, different from the previous curriculum, particularly in terms of pedagogies, sequencing of competencies, and assessment. The revisions made in the science curriculum are perhaps a response to the suggestion of educators like Bernardo (1999) to improve science education by revising the curriculum design. Following the design of the general K to 12 Curriculum Framework, curriculum experts reformed the Science Education program by implementing significant changes: they decongested topics was made, shifted to an inquiry-based program, shortened instructional time, adopted a spiral approach to the arrangement of competencies, redesigned assessment procedures, and contextualized and localized lessons. Among the different changes implemented, the researcher found upon conducting a literature review that spiral progression seems to need the most improvement.

Historically, curriculum design has been a consistent problem in the Philippines. Bernardo (1999) stressed that curriculum design as one of the problematic areas in the Philippine curriculum had not been the focus of educational reforms. Though curriculum experts aim to address the problem on curriculum design, the present K to 12 programs still seemed to be under threat; for science education experts, the spiral progression of competencies impends the success of the K to 12 Program particularly in Science (Argote, 2016; de Dios, 2013; Resurreccion & Aldanza, 2015). The spiral progression of the competencies in the science subject proceeds with the themes according to the nature of the specific science

disciplines; earth and space (Earth Science), matter (Chemistry), energy (Physics), and living things (Biology).

While the present K to 12 curriculum design claims it to be in spiral progression, the implementation has been questioned by Argote (2016). First, the interconnection of science concepts is problematic for students to hardly recognize points of connection that link one theme to another; thus, the continuity of the competencies is questionable. Second, in junior high school, the ideas are scattered across quarters varying from one grade level to another, which makes it difficult for teachers and students to follow through with the lesson previously taught. Hence, a problem in the progression exists. Lastly, while the K to 12 curriculum claims the design to be seamless, the present science curriculum still features evident discipline-based boundaries among specific branches of Science (Earth and Space, Biology, Chemistry, and Physics) across curriculum levels; therefore, a problem on the integrity of the curriculum design to offer smooth interwoven scientific themes appeared to be noticeable. With all the issues listed, the researcher posits that the K to 12 Science Curriculum can still be improved.

The different observations of Argote (2016) seemed to support the claims of the critics of the K to 12 programs. Specifically, Tapang (2012) posits that more than the design of the K to 12, what is essential is to implement a program that can promote more authentic inquiry-based science programs.

The Thematic Instructional Model (TIM)

As described by C.O. Okoro and Okoro (2016), thematic instruction is the delivery of the competencies focused on a theme. This requires the integration of the different aspects of the curriculum. For C. O. Okoro and Okoro (2016), thematic instruction is a 'powerful tool' for implementing the curriculum, for it eliminates fragmentation of the whole teaching and learning process.

Different researchers promote thematic instruction because of its potential to support effectively learning in students. Rugut and Osman (2013) described that thematic pedagogies enhance cognitive abilities among students, such as creative and critical thinking. In the same vein, Kysilka (1998) posits that thematic instruction promotes meaningful learning among students because the activities provided are purposeful. Dilek (2007) supports that thematic instruction is for meaningful learning for its effectiveness in encouraging interdisciplinary thinking among students. The study of Montebon and Orleans (2019) revealed that thematic instructions appears to improve the scientific attitude of students. These reported benefits of thematic education prompted the researchers to develop a Thematic Instructional Model (TIM).

The designed TIM has two distinct phases—the unit and the lesson level. At the unit level, the identifying of the unit themes, the identification of the thematic concepts, and the matching of K to 12 science competencies happen. In effect, the output for the unit level is a thematic unit plan.

Consequently, at the lesson level, the planning for the implementation of the lessons happens. To do so, teachers should prepare a thematic lesson plan following three necessary procedures—teach, integrate, and monitor. In the TIM, the teachers would take note that teaching the lesson involve facilitating inquiry-based lessons on the K to 12 concepts for the unit. The integration of the thematic ideas with the lesson content may happen through the innate nature of the topic, as supplemental knowledge, or as an application activity for the lesson. While both 'teach' and 'integrate' stages happen, the teaching and learning processes are 'monitored' through different assessment procedures.

2.0 Methodology

Research Design

To address the different questions asked in the present study, the researchers used a mix-method convergent design. Figure 1 shows on how the said design proceeded in the study is shown.

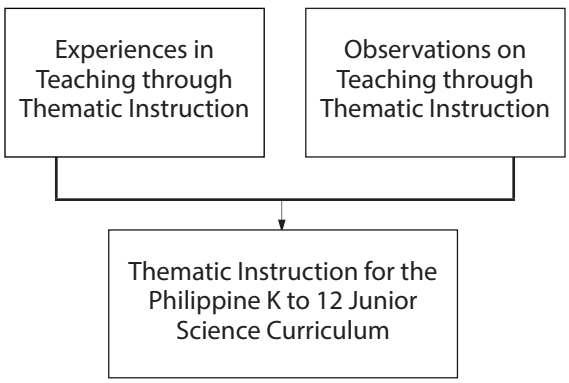

Figure 1. *Convergent Mixed Method Design for Describing the Thematic Instruction for the Philippine K to 12 Science Curriculum*

Participants and Research Locale

In the conduct of the present research, two groups of pre-service teachers were purposely involved. The first group of the pre-service teachers was composed of the twenty-four (N=24) physics pre-service teachers (PPTs) who implemented the thematic instruction in the research locale. On the other hand, twenty-two (N=22) biology pre-service teachers (BPTs) were assigned as observers in each class conducted.

The groups of pre-service teachers, PPTs and BPTs, were subjected to a lecture-workshop before the implementation of the study. For the lecture, the researchers presented to the PPTs and BPTs the nature and characteristics of thematic instruction and they gave the themes for the study. For the workshop, the PPTs were grouped and were assigned to a particular theme that they would have to work on. Each group chose the topics for the assigned theme considered as relevant. The PPTs were further grouped into pairs and were given a lesson that they would plan and implement in class. Each pair created a thematic plan, developed the modules and instructional materials, and facilitated the class lessons.

On the other hand, the researchers presented to the BPTs the classroom observation tool (COT) that they would use in their observations. For each observation period, the researchers assigned two BPTs.

Furthermore, the present study took place at a laboratory school of a teacher education institution where one of the researchers was a supervising instructor. To support different research innovation as a laboratory school, the research locale was flexible with the curriculum to be implemented. The teaching of the designed thematic instruction was about three quarters of a particular school year.

Instrumentation

To determine PPTs' experience on the development of materials for the thematic instruction and its implementation in the classroom, the PPTs answered Questionnaire A composed of open-ended questions. Specifically, they were asked about their experience in lesson planning and in module preparations, in facilitating classroom activities, and in conducting the assessment.

On the other hand, the BPTs gave quantitative ratings of their observation on the thematic instruction by using Questionnaire B. The items on the said questionnaire used the modified scale on teacher practices on thematic instruction by Min et al. (2012). The scale has a Cronbach alpha coefficient of 0.87 for internal consistency. To support their quantitative observations on thematic instruction,

they also answered open-ended questions.

To validate Questionnaires A and B, the researchers asked three professors of a state university with different academic backgrounds: science education, curriculum, and assessment. Using the Evaluator's Checklist by Duad (personal communication, February 27, 2014) the three professors gave a mean rating of 3.5 for all areas of evaluation. It means that the contents of Questionnaires A and B are highly satisfactory to outstanding. With the said rating, the researcher considered the questionnaires to have face validity.

Data Analysis Procedures

Since the research is a convergent mixed method design, the two sets of data were analysed independently. The qualitative data from PPTs descriptions of their experiences were analysed and were coded in specific themes that described the thematic instruction. On the other hand, the quantitative data from the rating scale accomplished by the BPTs were analysed through inferential statistics, particularly the mean. The two sets of data were then juxtaposed as to their similarities on specific criteria. Using the data label methodology by Fitzpatrick (2016), the researchers decided on the relationship between the two sets of data. The legend below shows the said guide for analysis.

Data Labels	Interpretation
Confirm	Positive alignment between QL and QN data
Contradict	Lack of agreement between QL and QN data
Mixed	With the alignment of QL and QN data but needs further examination
Enhance	Describe instances when QL or QN data address the same phenomena but in different ways

3.0 Results and Discussion

In this section of the paper, the researchers present the experiences and observations of the pre-service teachers in teaching through thematic instruction and describe its implications to the teaching of the Philippine Science K to 12 Curriculum.

The experiences and observations of the pre-service teachers on thematic instruction

As stated in the methodologies section, the present research investigated the experiences and observations of pre-service teachers as they were involved in the implementation of the study. This section presents the results of the questionnaires used in the study and the summary as reflected in Table 1.

Table 1 shows the juxtaposed results of the experiences (QL Data) and observations (QN Data) of the pre-service teachers. The first column shows the different curricular areas that served as the themes for data analysis. These themes were identified by the researchers as they analysed the collected data. The second column shows the perceived characteristics of the implemented thematic instruction in the identified themes. These characteristics were inferences of the researchers from the juxtaposed data. Meanwhile, the third and the fourth columns show the sample responses and the mean results taken from the questionnaire. Lastly, the fifth column shows the decision of the researchers on the relationship of the QN and QL data as inferred from the results.

Table1. *Pre-service teachers and experiences on teaching through thematic instruction*

Curricular Area	Characteristics	PPTs Experiences	BPTs Observations	Data Convergence Label
Lesson Design Arrangements and flow of lessons in themes	Teaching Science through the themes promote the logical and scientific development of ideas.	*"There is a step-by-step connection. There is an increasing level of science idea utilization. It proceeds from one level to another."* – PPT 14	Stimulate idea development *M=4.54; SD=0.58; *Strongly Agree	Confirm
	Allows student-centered activities to be implemented	*"The classroom activities help provide a good atmosphere in the classroom. Also, it engages and motivates the students well" – PPT 19*	Considers students interest, ability, and experience *M=4.08; SD=0.56 * Strongly Agree	Confirm
	Challenge student to showcase learning meaningfully through interdisciplinary connections	*"The teacher, through formative assessment, can ask interdisciplinary (integrated) questions" – PPT 11*	Promotes the creation of attractive ideas *M=4.19; SD=0.75 * Strongly Agree	Confirm
	Excites teachers to implement the teaching model in the classroom	*"Instruction through thematic units was exciting because it was something new that we have experienced" – PPT 21*	Embodies holistic, innovative, and authentic teaching model *M=4.19; SD=0.69 * Strongly Agree	Confirm

**Note: 0.1 to 1 = Strongly Disagree; 1.1 to 2.0 = Disagree; 2.1 to 3.0 Not Sure; 3.1 to 4.0 = Agree; 4.1 to 5.0 = Strongly Agree*

Table1. *Pre-service teachers and experiences on teaching through thematic instruction (cont'd.)*

Curricular Area	Characteristic	PPTs Experiences	BPTs Observations	Data Convergence Label
Lesson content Topics included in each theme/ unit.	Connections between different science disciplines were established.	*"…because the themes were appropriate and all concepts even biology, chem, and physics could be integrated into those themes" – PPT 7*	Integrates lessons across science disciplines (earth science, biology, chemistry, and physics) *M=4.46; SD=0.61; * Strongly Agree	Mixed
	Difficulty in matching topics with the themes	*"..again, maybe this is true for the other lessons, but in our case, we've had a difficulty connecting the topic of solutions and mixtures to our country" – PPT 13*		
	It promotes the cohesion of ideas.	*"the lessons in a theme share similar characteristics are making it easier for the students to understand them. And the themes are major concepts enclosing the smaller subtopics or lessons. These themes connect smaller lessons creating a concept to the students that everything is related to one another rather than the idea that they are separate/different from one another"- PPT 8*	Engage students to learn Science coherently *M=4.15; SD=0.46 * Strongly Agree	Confirm
	Needs to provide a better strategy to connect ideas	*though most of the lessons included in the theme are appropriate & suited in their respective themes, what's lacking is the "story" or progression of lessons – PPT 13*	Consistent with teaching science concepts centered around a theme *M=4.34; SD=0.63 * Strongly Agree	Mixed

**Note: 0.1 to 1 = Strongly Disagree; 1.1 to 2.0 = Disagree; 2.1 to 3.0 Not Sure; 3.1 to 4.0 = Agree; 4.1 to 5.0 = Strongly Agree*

Table1. *Pre-service teachers and experiences on teaching through thematic instruction (cont'd.)*

Curricular Area	Characteristics	PPTs Experiences	BPTs Observations	Data Convergence Label
Implementation Characteristics of the teaching and learning processes through thematic instruction	Characterizes a constructive and meaningful teaching strategy	*"The activities were meaningful for the students"- PPT 3*	Provide meaningful learning experience *M=4.42; SD=0.64; *Strongly Agree	Confirm
	Promotes interactive learning	*The activities were interactive – PPT 6*	Employ hands-on activities *M=4.52; SD=0.51; *Strongly Agree	Confirm
	Enable students to be responsible for their learning	*"..it helps the teacher & learners stay on track & be guided by the topic" – PPT 14*	Give students opportunity to be independent *M=4.10; SD=0.61; * Strongly Agree	Confirm
	Encourages critical and creative thinking	*it ends with the questions/ context for the lesson, so it leaves curiosity to the students - PPT 9*	Encourage students to think critically and creatively *M=4.42; SD=0.57; * Strongly Agree	Confirm
	Provides a variety of learning activities	*more creative & appropriate activities - PPT 18*	Include varied activities including ICT in carrying out the lesson *M=4.32; SD=0.76; * Strongly Agree	Confirm
	Promotes partnership among teacher and students in the teaching-learning process	*"… it was able to give the students and the teacher an idea on what the lessons under it are about and therefore had some initial expectation" – PPT 12*	Allows teacher and student involvement in the teaching and learning enterprise *M=4.36; SD=0.63; * Strongly Agree	Confirm
	Assists teachers with planning for instruction	*"..the lesson planning is related to the theme of the quarter; therefore the teacher will only mind the theme" – PPT 20*	Directs purposive planning for instruction in teaching and learning *M=4.12; SD=0.66; * Strongly Agree	Confirm

**Note: 0.1 to 1 = Strongly Disagree; 1.1 to 2.0 = Disagree; 2.1 to 3.0 Not Sure; 3.1 to 4.0 = Agree; 4.1 to 5.0 = Strongly Agree*

The results in Table 1 show the different experiences and observations of the pre-service teachers on the implemented thematic instruction that can be generally divided into three main themes: lesson design, lesson content, and implementation. The specific results for each theme are further discussed in the succeeding paragraphs.

On the Lesson Design

As the results in Table 1 show, the experiences and observations of the pre-service teachers on the lesson design of the implemented thematic instruction seemed to describe that the strategy followed an inductive process of teaching grade 7 science lessons. In other words, the transition of lessons seemed to show that the pre-service teachers found the arrangement of the lessons in a logical manner as it followed a certain form of development. Particularly, the pre-service teachers seemed to characterized the lesson design as organized, from simple to complex or from specific to the general approach, showing a build-up of knowledge as a theme proceeded to another. Furthermore, the response of BPT 18 below described how he perceived the flow of lessons within and across themes, "…. the consistency could be observed in the shifting of the topics on the sequence of the lesson itself", he said. Therefore, the observed logical arrangement of thematic lessons and even the themes themselves appeared to abide by the procedures suggested by Mumford (2000) and Barrentine (1999) that careful planning is essential to the success of implementing thematic instruction. With the experiences and observation of pre-service teachers on the design of the lessons, the researchers found out that the procedures for planning and applying the lessons with the themes identified resulted in a logical hierarchy and in a smooth transition of topics.

Another area that the pre-service teachers have perceived on the design of the lessons through the identified themes was the possibility of implementing learner-centered instruction. From the results in Table 1, data show that thematic instruction seemed to consider students' interests, ability, and experience. This characteristic of the thematic instruction appears to be supported by pre-service teachers as BPT 2 said that "it (thematic instruction) connects the lessons to real-world experiences/ examples," while PPT 12 said that "the students could relate it to the lesson easier." Also, pre-service teachers perceived the lessons to be localized, for they showed ideas that allowed students to relate their classroom lessons to what is happening to themselves, their environment, their country, and their universe. Similarly, several authors agree that (Contardi et al., 2000; Kysilka, 1998) thematic instruction increases students' knowledge, for it primarily considers their background and environment.

However, among the many comments on the potential of the thematic instruction to be learner-centered, BPT 14 signified a concern on how students would take the theme concerning their maturity or age. In effect, the teacher might find it hard to teach through themes if the students are not psychologically ready.

Also, the experiences and observations of the pre-service teachers seemed to agree that teaching science through the identified themes enhances student cognition by making students establish multidisciplinary connections among the different disciplines of Science. With the said result, the teaching procedures done for teaching science through thematic instruction agree

with that of In Other Words (2016) that thematic instruction promotes the interconnection of ideas. Contardi, et al. (2000) suggest also described that thematic instruction enhances cognition through the "pattern making" processes established in the conduct of teaching and learning.

The next area observed by the researcher to describe the design of the thematic instruction in the study was the way pre-service teachers find the pedagogy—novel and exciting. Though the researcher did not find any literature on teachers' attitudes towards thematic instruction, Fogarty (1991) and Jacobs (1991) described that thematic instruction challenges teachers to reflect on 'what' and 'how' to teach. Thus, planning for thematic instruction motivates teachers to prepare well for their lessons. Perhaps, the challenges experienced by the pre-service teachers drove them to deliver their lessons well, and such excites them to succeed.

On the Lesson Content

The next area that the experiences and observations of the pre-service teachers appear to describe was the lesson content of the themes. Upon the analysis of the data, the item 'content' explained how the lessons were integrated and coherent with the idea. Interestingly, among the three areas identified in analysing the experiences and observations of the pre-service teachers on thematic instruction, it is the content that appeared to have the most 'mixed' responses.

To adhere to the principles of thematic design, both groups of pre-service teachers noticed that lessons were on a certain pattern: "… the lessons proceeded according to the flow of lessons based on the theme," said BPT 2 while PPT 22 noted that "in my experience, the themes are scientific and logical having the lessons are in the appropriate theme." Such observation of BPT 2 and PPT 22 supports the view that the pre-service teachers acknowledge that the lessons were placed appropriately in themes.

Among the many concerns raised, most responses gathered were on the placement of lessons. The pre-service teachers seemed to find it hard to place some science lessons on the theme assigned. BPT 1 observed that the appropriateness of lesson placement did not go naturally in all items. PPT 15, specifically manifested her difficulty in relating the chemistry concept of mixtures and solutions to the theme My Country. Respondents BPT 2, PPT8, and PP9 agree with the said discomfort of lesson placement in themes citing reasons such as misalignment of concepts and overlapping of lessons. Also, PPT 3 described the implementation of the thematic instruction to have some lapses due to some overlapping ideas. With that, PPT6 perceived similar difficulty; he said: "…there are instances that topics are difficult to relate to another topic on the theme". With such struggle, PPT 11 said that he observed the lesson placement to be "much of a distraction."

Though most of the respondents observed a smooth transition of lessons in the identified themes, some respondents manifested difficulty. PPT 6 described that "…there are instances that topics are difficult to relate to another topic around the theme," while BPT 5 finds no stable relationship among the themes to have a good transition. Though BPT 1 claimed that for most quarters, the development of the lesson has been smooth, however, this was not the case in the 4th quarter as they have observed thus, claiming that the transition from one theme to another is inconsistent. BPT 5 also agrees based on his observations on the

2nd and 4th quarters; therefore, in his responses, he said that “It is quite logical yet to find it hard to relate on to execute scientific way of transition from a quarter to another." In terms of transition, PPT16 was looking for something binding he noted that "though most of the lessons included in the theme are appropriate & suited in their respective themes, what's lacking is the "story" or progression of lessons."

Another aspect of the content of the lessons through the identified themes observed by the pre-service teachers was the interrelatedness of experiences. Sample response by BPT 15 says, "[t]he topics or lessons are trying to relate with the most lesson as much as possible; thereby, manifesting a connection between the topics." In general, the pre-service teachers perceived the interrelationship of the lessons through the identified themes to be connected, integrated, and unified. The response “[t]he themes connect smaller lessons creating a concept to the students that everything is related to one another rather than the idea that they are separate/different from one another” - PPT 25, shows a sample response that pre-service teachers realized the cohesion of ideas taught through the identified themes.

However, some responses also indicated an issue on the cohesion of the interrelatedness of the lessons in themes. PPT 1 described that "... there's a few that is hard for the teacher to connect to the last topic," and BPT 12 agrees that "not all the lesson because some lessons are hard to relate with the theme." Other researchers like Kysilka (1998) in their study have identified the difficulty in content placement encountered by the pre-service teachers. He warned that a problem might arise from stressing too much on the process rather than the content of the lesson. It means that proceeding with thematic instruction does not put stress too much on the theme but still gives emphasis on the lesson. In the process, teachers, through the different integrative procedures, may creatively integrate the concept with the theme.

On the Implementation of Lessons

Another area observed was the development and implementation of thematic lessons. First, the experiences and observations of pre-service teachers on the development lessons through the themes identified seemed to describe the ability of the process to assist teachers with planning for instruction. Both groups of pre-service teachers observed that the lessons through the identified themes provided experiments and activities as the nature of the subject requires. The flow of the lessons has a pattern that encouraged students to learn the concept first and realize how it applies to their lives; such has been observed by BPT 4 that "the discussion started its basic concepts and connection to the environment and application in real life." BPT 1 describes the achievement of the lesson objectives through activities and strategies." Meanwhile, PPT 6 indicated that the implementation of the lesson challenged students through the identified themes, as his response shows that "it (lesson) ends with the questions/ context for the lesson, so it leaves curiosity to the students."

Also, the pre-service teachers' experiences and observations seemed to describe thematic instruction’s meaningful effect on students and teacher-student partnership in the classroom. With the varied, appropriate, and creative activities, the students, as observed by the pre-service teachers, seemed to develop meaningful learning. Such observations affirm Kysilka's (1998) view that

thematic instruction aids in meaningful learning. The significant knowledge may have resulted from making connections across thematic units, as other researchers (Contardi et al., 2000; Dilek, 2007) hypothesized that thematic instruction's driving force is having students find points of connection with the lessons discussed in thematic instruction.

As such, the meaningful learning of students through the lessons in thematic instruction seemed to affect their different cognitive skills such as creativity, critical thinking, and logical reasoning. True to the ideas of cognitivism (Piaget, 1952), learning is facilitated by finding connections in the existing schema of students. The thematic instruction seemed to develop different cognitive skills among students. In the classroom, Contardi, et al. (2000) stressed that thematic teaching proceeds successfully due to the multiple connections made by students. The thematic instruction seemed to present themes that students can easily connect with, therefore enhancing their different cognitive skills.

Lastly, the thematic instruction, as experienced and observed by the pre-service teachers, appeared to promote partnership between teachers and students in the classroom. Kysilka (1998) explains that schools that implement thematic instruction establish a system of partnership between students and teachers is maintained. In the present study, the pre-service teachers acknowledged that teaching through thematic instruction allowed students and teachers to work on the achievement of the goals for the class. Through thematic instruction, the teachers were able to design purposive instructional plans that cater to the interests and needs of the students. On the other hand, students participated well in the intended activities and shared their feedback on the process through classroom interactions. It can be deduced that the thematic instruction upholds that the teaching and learning enterprise is purposeful and collaborative.

Implications of Thematic Instruction to the Philippine K to 12 Science Curriculum

With the experiences and observations of pre-service teachers on the thematic instruction, the researchers attempt to identify how the thematic instruction can further help to the successful implementation of the K to 12 Junior High School Science program. However, the researchers posit that the discussion in this section of the paper is inferential and is limited to the results observed in the study.

As described in the related literature, different researchers pointed out several improvements for the K to 12 Junior Science Curriculum. Particularly, Argote (2016) pointed out the dissonance of competencies in spiral progression. Meanwhile, the results of the study showed that most pre-service experience and observation on thematic instruction found the method to be the opposite. As shown in Table 1, it appears that thematic instruction provides meaningful connections among the science lessons taught in class. Therefore, the researchers hypothesize that perhaps teaching the K to 12 Junior Science program in thematic instruction can promote better coherence of the competencies in the Curriculum.

Another significant research related to the study was that of Orbe, et al. (2018). In their study, they described that science teachers need to be experts on the different science disciplines to deliver the curriculum effectively. The present study supports such a call. If the K to 12 Junior Science Curriculum will be taught using the

thematic instruction in this study, teachers should have sound content of the science disciplines being covered. Since the design of the thematic instruction in the study is integrative, science teachers might need further training.

Lastly, the K to 12 Science program identifies different outcomes that the curriculum needs to deliver such as the development of students to become creative and critical thinkers, meaningful learner, and collaborative individuals. The experiences and observations of the pre-service teachers on the thematic instruction implemented appear to prove its effectiveness to help the K to 12 science program achieve successfully its described curriculum exit. With more enhancement and supporting studies, the researchers posit that the characteristic of thematic instruction is deemed helpful for science educators in their teaching of the K to 12 science lessons.

4.0 Conclusion and Recommendation

Based from the experiences and observations of pre-service teachers, the results reveal that the implemented thematic instruction allows the logical development of lesson content, facilitates student-centered activities, and enables schoolchildren to make interdisciplinary connections in their lessons. In effect, the thematic instruction in the study appears to promote meaningful learning among students and to develop their critical and creative thinking skills. The researchers conclude that the implemented thematic instruction in the study can help achieve the desired outcomes of the K to 12 Science Curriculum.

The current research acknowledges several limitations that may affect the generalizability of the results. Hence, several follow-up studies are recommended. Primarily, the researchers suggest to try the implementation of thematic instruction with in-service teachers to determine if they will also experience the same difficulty of placing competencies to the identified theme and how they can strategize to do so. While the current research involving only the K to 12 Science Curriculum, the researchers suggest to try thematic instruction across disciplines. It would be interesting to know on how thematic instruction would influence students to discover if their learning is interdisciplinary. Lastly, the researchers recommend finding out the effect of thematic instruction on other student outcomes such as their affective and psychomotor abilities.

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