

Reflective and Pragmatic Learning Modes in Enhancing Grade 7 Students' Engagement and Thinking Skills

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Abstract

The study aimed to determine the effects of reflective and pragmatic learning in the new normal in enhancing the student's engagement and thinking skills of Grade 7 students through the use of Self-Learning Module based on their learning style. This study attempted to determine if there a significant difference in the learning engagement of the two groups of students as to the pre-assessment-post-assessment.

Using an experimental design of research, 127 students out of 179 students responded to the LSQ, 35 of which were found to be reflective learners and 35 were found to be pragmatic learners. Pretest and posttest assessment were employed to measure the students' engagement and thinking skills which were validated by the panel of examiners and group of teachers.

The results revealed that pragmatic and reflective learning modes are effective strategy to improved learners as to their engagement in learning and to their thinking skills. Thus, the null hypothesis of the pre and post assessment of the two groups as to their student engagement and thinking skills was sustained. However, the hypothesis on the pre and post assessment of each group as to their students' engagement and thinking skills, the null hypothesis was not sustained.

Keywords: pragmatic learning; students' engagement; thinking skills

Introduction

Science education aims to develop scientific literacy in learners, preparing them to be educated and engaged citizens and able to make decisions on scientific knowledge uses that may have social, health, or environmental consequences. This intends to give way for students to improve their capacity to think from a higher level. This is also in line with the 21st-century abilities that our students must adopt and develop in order to be prepared for the global economy.

Science curriculum acknowledges the importance of science and technology in everyday life. Science and technology are integrated with social, economic, personal, and ethical elements of existence. The scientific curriculum encourages a strong connection between science and technology, especially indigenous technology, in order to preserve our country's cultural legacy (K to 12 Curriculum Guide, 2016).

The science curriculum from kindergarten to grade 12 will give students with a set of skills that are useful in the workplace and in a knowledge-based society. It aspires to produce scientifically, technologically, and ecologically literate and productive members of society who are critical problem solvers, responsible stewards of nature, imaginative and creative citizens, educated decision makers, and effective communicators. This curriculum is organized around three areas of science learning: comprehending and applying scientific information in a local as well as global context wherever possible, executing scientific processes and activities, and developing and expressing scientific attitudes and values. The following methodologies are used to help students understand various domains: multi/interdisciplinary, science-technology-society, contextual learning, problem/issue-based learning, and inquiry-based learning. Constructivism, the social cognition learning model, learning style theory, and brain-based learning are among the methods that are founded on effective educational pedagogy (K to 12

Curriculum Guide, 2016).

One of the objectives of the K to 12 Enhanced Basic Education Program, as mandated by Republic Act 10533 or the K to 12 Act of 2013, is to promote the achievement of science-oriented learners. With this, the K–12 Science education curriculum aims to be learner-centered, inquiry-based, reflective, collaborative and integrative (Deped, 2013).

In order to meet the objectives of science education in K to 12 curriculum, teachers must develop learning tasks that suits to the learning styles of the learners, The preferred way a person uses to process new information in order to learn effectively is referred to as learning style. Instead of what students learn, the focus should be on how they learn. (İlçin, 2018).

Continuous collaborative learning or problem solving within a common topic of professional interest, self-directed learning, reflective practice leading to action and self-evaluation, and collective competency are key components of the learning action cell (LAC) process. This policy's aims are as follows: to enhance the teaching-learning process, resulting in better student learning; to develop effective teachers; and to enable teachers to help one another in continually improving their content and pedagogical knowledge, practice, skills, and attitudes (Deped, 2016).

There is no best way to learn. Everyone learns differently, and because of this, the best way to learn is the way they learn. A learning style is a certain way that the mind receives and processes new information. There are many different approaches to learning; the two of these approaches are the reflective and pragmatic learning. Reflective learning allows learners to take a step back from their learning experience, allowing them to build critical thinking skills and enhance future performance by analyzing what they have learned and how far they have developed. Learning-by-thinking allows students to connect previous learning experiences. By processing this information, learners will be able to better understand where certain actions have improved their specific skills or helped them better to understand a subject (Webb, 2018).

Pragmatists generally believe that all knowledge is derived through experience. When new facts or situations arise, they are always willing to change their opinions. Taking action and obtaining results are the most important things to them. They'll attempt something new if what they've tried doesn't work out. They're continually trying new things and changing their views! As a result, there is a saying that "truth is formed by its results" (Adeleye, 2017).

A science teacher instructs and guides students in the 21st century to investigate and grasp fundamental concepts in science, such as problem solving and how to obtain evidence to support ideas or judgments. Science provides solutions to everyday problems and helps in the investigation of the universe's biggest mysteries. It serves a specific purpose as well as a number of functions for the benefit of our society, including the generation of new information, the development of education, and the improvement of our quality of life.

Objectives of the Study

This study sought to determine the effects of reflective and pragmatic learning in the new normal in enhancing the student's engagement and thinking skills of Grade 7 students through the use of activity based on their learning style at Castañas National High School for the School Year 2021 – 2022. This specifically to determine the respondents preferred learning style be described as to: activists, reflectors, theorist and pragmatists. Then, it aims to determine to what extent is the learning engagement of the students as to their: cognitive, behavioral and emotional. Moreover, it aims to determine pre-assessment and post-assessment performance of the students as to their thinking skills in terms of analyze information, establish connections, make decisions and generate new ideas. Also, to identify if there is a significant difference in the learning engagement of the two groups of students as to the pre-assessment and post- assessment in terms of: cognitive engagement, behavioral engagement and emotional engagement. And to determine if there is a significant difference on the performance of the students as to their thinking skills in terms of pre-assessment – pre-assessment, pre-assessment – post-assessment and post-assessment – post-assessment.

Literature Review

Reflective Learning

Nuraini (2020), defines reflective thinking is a process that connects previously acquired and currently being studied in assessing issues, evaluating, concluding, and deciding on the best solution to a particular situation. Self-reflection helps a person to connect new information to prior experiences and knowledge. So that it can assess the success of reaching learning objectives. Elementary school students must be able to use reflective thinking to solve an issue by following the established processes. Half of the problem-solving process is accounted for by the ability to think reflectively. Aside from that, the teacher's reflective thinking abilities throughout the lecture will influence students' thinking skills.

Reflection, as the foundation of educational transformation of experience for learning in elementary, secondary, and higher institutions, is dependent on the conditions provided. Individual experiences, thoughts, emotions, and actions become essential elements embedded in the ability to recognize the social and political contexts in which the individual lives and the values they want to keep to be inclusive, democratic, sustainable, and social conditions are created by developing the learner's competence to reflect (Colomer, 2020).

DepEd Order No. 21, s. 2019, defines reflective learning allows students to think about what they need to learn, why they need to learn it, and how they will learn it. Differentiation needs to consider the learners' different learning styles, which are important aspects of their individual differences not just as learners but also as individuals.

Reflective learning considers students to be active learners who use cognitive, emotional, and psychomotor domains. Thinking with the goal of honing logical abilities is a subset of cognitive thinking. This aspect is also an object of this study, which is to know how to identify the potency of the conceptual thinking skill characterized by having the ability to re-explain a problem, to apply the concepts that are characterized by having the ability to show and play a positive role in the class, such as organizing classes and participating in discussions according to the guidance given, even when the educators are not present (Pudlowski, 2017).

Demir (2015), Critical and reflective thinking abilities are two forms of advanced thinking abilities that complement and strengthen one another. As a result, developing these two skills is critical for gaining the ability to see, think, research, question, and resolve events in a scientific way – or a "scientific outlook." Science teachers must successfully acquire this scientific perspective in order to effectively reflect and share it with students.

The ability to think reflective includes the ability to think critically and think creatively as well as other thinking skills will have the opportunity to be raised and developed when students are in an intense process of problem-solving (Sabandar, 2013).

Gurol (2011), explained that reflective thinking is also needed to help students. Students will acquire insight into the learning process, assess the progress of learning, and create new goals for future learning to promote student activities. It may be utilized as a stepping stone to bridge the gap between objectives and achievements in order to better in the future through reflective thinking. So that it can assess the success of reaching learning objectives. Reflective thinking plays a crucial part in encouraging the thinker during problem-solving because it allows the thinker to take a step back and consider the best approach for achieving a goal. Students will be taught to solve issues in a number of situations in each subject.

Pragmatic Learning

According to Rai (2020), the term Pragmatism derives its origin from a Greek word Pragma meaning Activity or Practice or Action. Pragmatism is also known as Expenditure since it believes in practicability or utility based on the truth, reality, goodness, or badness, all of which are relative concepts that are not fixed or absolute. Pragmatism holds that the

truth/fact of yesterday must be fully experienced today and tomorrow. It idealizes the action based on its long-term consequences. In short, it conceptualizes an inference based on the generalized or changing demands, situations, and locations. Pragmatists believe that no truth is absolute or permanent since it changes from time to time, place to place and circumstance to circumstance. As a result, their primary starting point is change. What was true yesterday may not be true now. Pragmatist philosophy is determined to those concepts and ideas that result in benefit to mankind in a certain time, location, or condition rather than any predefined of life.

Pragmatists are always willing to change their minds when new information or circumstances come about. The thing they care most about is taking action and achieving results. If they try something out and it doesn't work, they'll try something new. They're always experimenting and changing their minds about things! This has led to the pragmatic saying: truth is formed by its results.

In education, pragmatism is an approach to learning and teaching that emphasizes practicality. Pragmatic teachers utilize active project-based learning strategies in the classroom and focus on issues that are relevant to students' lives (Drew, 2019).

Projects and hands-on experiences have definite advantages over lectures. This style, according to pragmatists, focuses on giving students a lot of autonomy as well as alternatives to their existing learning situations. The classroom becomes a methodical laboratory where thoughts are tested to see if they can be verified (Sharma, 2018).

The words practical and practice are derived from pragmatism, which meaning action. The idealist creates a transcendental ideal that is beyond human comprehension. The pragmatist establishes reasonable expectations. Pragmatists are those who are interested in the practical side of things. They are confronted with problems and attempt to resolve them in a practical manner. They do not live in the world of ideals like idealists do. Idealists see life as it should be, but pragmatists see it as it is. Pragmatism revolves around action. The pragmatists believe that students should acquire knowledge that will assist them in tackling current challenges. They should only acquire skills that will help them in their daily lives. The elementary school curriculum should contain disciplines such as live reading, writing, arithmetic, nature studies, handwork, and drawing in order to achieve this goal. All education, according to pragmatism, is learning by doing. As a result, it must be based on the child's experiences, jobs, and activities. Aside from school academics, the curriculum should include free, purposeful, and socialized activities. The pragmatists oppose cultural activities being included in the curriculum because they believe they have no practical relevance. However, this viewpoint is limited and skewed. Pragmatists think that all knowledge and skill are one. They prefer to impart comprehensive knowledge about a certain life issue. They oppose dividing instruction topics into tight groups. The subject of training is life itself. Its varied difficulties, when viewed holistically, are appropriate teaching topics (Shawal, 2017).

Pragmatists generally believe that all knowledge is derived through experience. Similarly, they define education in terms of experience. Education is the consequence of experience; it is a lesson learned through trial and error. However, not all experiences are educational. The educational experience is the sort that opens the door to more opportunities in the future. The experience must be productive and not limiting. A limiting experience is one that prevents other possible experiences from happening. Knowledge is acquired through the processing of experience by intelligence through the problem-solving technique; the goal of education is to develop the learner's ability to deal with future problems. Education is the process of developing the habit of problem-solving, and there is no limit to how far this capacity may be developed. The more varied and challenging the tasks that a student solves, the bigger his intellect become (Adeleye, 2017).

Students' Engagement

Nkomo (2021), Student engagement is conceptualized along three dimensions: behavioural, cognitive and emotional. The term behavioural engagement refers to participation, effort, and determination in extracurricular, social, and academic

activities. It is mostly focused on participating in class activities, completing assigned tasks, and maintaining regular attendance. Cognitive engagement refers to the psychological investment made in learning activities by the learner. This dimension is demonstrated when learners recognize the importance of what they are studying, comprehend a subject, and have a willingness to acquire and develop abilities. The cognitive style of engagement is associated with self-regulated learning, authentic intellectual capability inquiries, task attention, and goal planning. Emotional engagement relates to emotional reactions (good or negative) shown in learning, such as exhibiting interest, boredom, or anxiety towards their learning environments and feeling like they belong in school.

Student engagement is one of the most significant factors for understanding how students respond to the teaching-learning process. Understanding student conduct at academic institutions will give you a better idea of how the university's instructions and academic procedures work. As a result, teachers and academic administrators could use it as a valuable tool to build effective pedagogical strategies to maximize students' learning experiences. Student engagement data provides the advantage of revealing what students are doing in the real world. The information is also useful for managing institutions, students, and academic programs. Institutions can make judgments based on more objective data rather than assumptions or partly anecdotal evidence regarding student activity. Information regarding student activities would be useful for promotion and recruitment purposes, as well as helping schools become more responsive to student learning needs (Delfino, 2019).

Coffelt (2018), cited the study of Rost, the amount of participation in the classroom frequently reflects the overall success of a lesson. Depending on the amount of student involvement with the topic, the student learning outcome of each specific activity may only be satisfied to a limited extent. There are passive learners who find it difficult to dive into the content and active learners who are completely and actively involved in the knowledge, making practice with the material interesting. Rost stressed the need for educators to discover what motivates their students in order to improve student engagement. In reality, we must continually endeavor to understand the learners' life passions. The objective is to use that data to make our lectures more relevant to our students, boosting their engagement, motivation, and dedication to understanding and internalizing the subject. When this happens, the classroom can experience coherence, in which both the students and the teacher function as a single whole. It is also crucial to note that self-reflection on what worked and what did not work in every given class is essential when determining how to improve student engagement and motivation.

Student engagement is defined as active participation in the learning environment. It's best described as a collaboration between the student and the school, as well as the teachers, peers, teachers, and curriculum (Martin, 2016).

In education, student engagement refers to the level of attention, curiosity, enthusiasm, optimism, and passion that students have when learning or being taught, which extends to the level of motivation they have to study and succeed in their education. In general, the idea of "student engagement" is based on the belief that learning increases when students are curious, interested, or inspired, and that learning suffers when students are bored, disinterested, disillusioned, or otherwise "disengaged." (The Glossary of Education Reform, 2016)

Students' engagement in instructional activities that motivate them to learn is one of the most effective strategies to boost learning. When children are able to interact and participate in activities outside of the classroom, it flows over into and helps other aspects of student life such as academic competence, successes, socializing, welfare, life satisfaction, and effective learning (Selim 2014).

Thinking Skills

A thinking skills approach to teaching and learning thus specifies not only what is to be taught, but also how it is to be taught: lesson content and teaching methods are both fundamental parts of thinking skills approach to teaching and learning (Baumfield, 2021).

Zhao (2017), when the investigation started, several thinking skills interventions (Mind Mapping and a few CoRT1

tools) had been taught in the school in bits and pieces. This could be one explanation why students in certain grades performed significantly better than students in other schools in the same grades.

Thinking is inevitable in language learning. The relationship between thinking and language development is symbiotic. Critical and creative thinking skills, often known as higher order thinking skills, are included in thinking. Only through higher order thinking skills can meaningful learning take place. The lack of critical and creative thinking skills leads to rote learning and memorization. Problem solving, planning, and decision making are examples of cognitive activities that can be improved through problem solving, planning, and decision making. It is difficult to think without a language acquisition process, and vice versa. Learning develops cognitively in a social setting, and learning is triggered by the learners' cognitive behavior (Kadel, 2014).

The K to 12 Philippine Basic Education curriculum framework aims to foster a holistically developed Filipino with 21st century skills so that Filipino graduates will be prepared for higher education, middle-level skills, employment, and entrepreneurship. The learning goals of the new curriculum are: Information, Media and Technology Skills; Learning and Innovation Skills; Communication Skills; and Life Career Skills (Education for All, 2015).

Nilson (2013), few teachers encourage learners to establish specific goals for their academic work or provide explicit study strategies. Furthermore, students are seldom asked to self-evaluate their performance or assess their ability to perform new activities. Teachers rarely analyze their students' learning beliefs, such as self-efficacy views or causal attributions, in order to discover cognitive or motivational challenges before they become problematic."

The term thinking skills refers to the specific mental and cognitive processes that a person utilizes in order to effectively think. Thinking skills are what we use in our heads to solve problems, reason, infer, and hypothesize (Elliot 2013).

Thinking skills are mental activities that enable you to analyze information, establish connections, make decisions, and generate new ideas. Everyone has thinking skills, but not everyone uses them well. Effective thinking skills are developed throughout time. When others see difficulties or obstacles, good thinkers see opportunities. Good thinkers are able to combine and connect different components. They can also come up with innovative and new solutions to problems (Kelly, 2011).

Methodology

The researcher used an experimental research design using the pre-test and post-test assessment. Two groups of Grade 7 students served as the respondents of the study which were selected through Learning Style Questionnaire of Peter Honey and Alan Mumford. The two most dominant learning styles of the Grade 7 students were the reflectors and the pragmatists. There were thirty-five (35) in each group. The first group of students was exposed to self-learning module which aligned to reflective learning. The second group of students was exposed to self-learning module which aligned to pragmatic learning. Three (3) sets of self-learning module and 48-item pre-test and post-test assessment tool for each group used in the study were validated by the research adviser, subject specialist, technical editor, statistician and group of teachers. Frequency count and percentage were used to determine the learning styles and also the thinking skills of the respondents. Mean and standard deviation were used to determine the level of the students' engagement. Comparison between the pre-assessment and post-assessment, post-assessment and post-assessment of the two groups respondents in their thinking skills and the pre-assessment and post-assessment on students' engagement obtained through an independent *t* – test. And a paired *t* – test was used to determine if there is a significant difference between the pre-assessment and post-assessment of the two groups.

Results and Discussion

Learning Style of the Respondents

Table 1. Learning Style of the Respondents

Learning Style	Frequency	Percent
Activists	30	23.6
Pragmatists	35	27.6
Reflectors	35	27.6
Theorists	27	21.3
Total	127	100.0

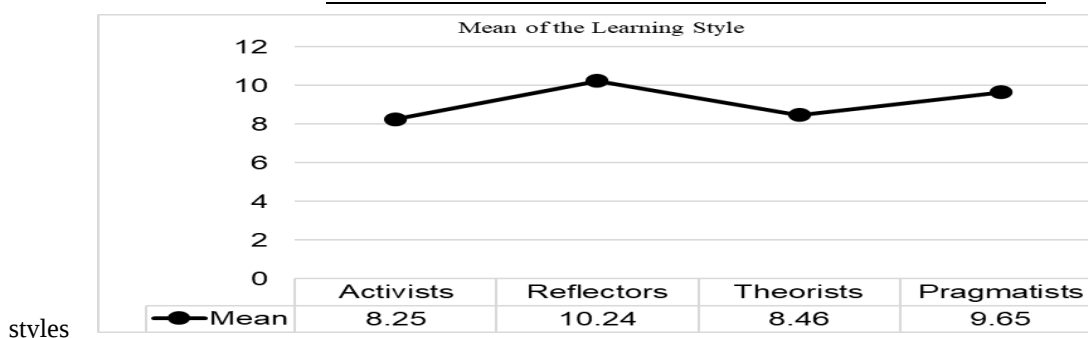


Figure 3. Mean of Learning Style of the Students

The table shows the learning of the respondents in Castañas National High School from the Learning Styles Questionnaire (LSQ) of Peter Honey and Alan Mumford. There were one hundred twenty-seven (127) students who answered the questionnaire. And the figure shows the mean of each learning style. It reveals that the most of the students were reflectors and pragmatists.

As the teacher observed the behavior of the grade 7 students in the previous the self-learning module, The students were interested in answering the learning tasks if the tasks were related to their experience. The teacher noticed it because in the previous self-learning module, most of the students in grade 7 were answered all the learning tasks which it relates to their experience. As shown in Appendix Q on page 138, the learning tasks of the students in the previous self-learning module with answers. This type of learning style was reflectors.

Also, learning activities that approaches learning by doing were one of the students' favorite activities because the students wanted to move their body and they liked experimenting. These activities were most likely used in the real-life situations. As shown in Appendix P on page 137, the learning tasks the shows learning by doing. This type of learning style was pragmatists.

Most of the students in Sariaya Institute, Sariaya, Quezon are reflector. As stated in her study, it is because those high school students are in their transition between childhood and adulthood wherein, they experience major changes in intellectual, emotional, social, and physical development. They begin to shape their own thought processes and are at an ideal time to begin developing thinking, learning, and metacognitive strategies. Therefore, reflector thinking provides high school students with the skills to mentally process learning experiences, identify what they learned, modify their understanding based on new information and experiences, and transfer their learning to other situations (Nollen, 2013).

Table 2. Pre - Assessment - Post - Assessment of Cognitive Engagement of the two Groups of Students in Learning Grade 7 Science

Indicators	Reflective Learning				Pragmatic Learning			
	Pre		Post		Pre		Post	
	Mean	VI	Mean	VI	Mean	VI	Mean	VI
1. I am confident that I can do the Science work at home	2.66	ME	3.34	ME	2.86	ME	3.03	ME
2. I can do most of the science works by myself.	2.77	ME	3.23	ME	2.60	ME	3.17	ME
3. When I choose a science task, I like to pick one that challenges me most.	2.74	ME	2.89	ME	2.60	ME	3.14	ME
4. It is easy learning science at home.	2.63	ME	2.94	ME	2.17	SE	2.83	ME
5. When I choose a science task, I like to pick one that is easy to do.	3.00	ME	3.51	HE	2.71	ME	3.14	ME
6. Understanding science subject is important to me.	3.06	ME	3.69	HE	3.40	ME	3.49	ME
7. I am sure that I can do an excellent job on the problems and tasks assigned to me	2.60	ME	3.29	ME	2.37	SE	2.89	ME
8. I prefer learning activity that is challenging so I can learn new things	2.63	ME	3.31	ME	2.89	ME	3.23	ME
Overall	2.76	ME	3.28	ME	2.70	ME	3.11	ME

Legend: 3.50-4.00 Highly Engaged, 2.50-3.49 Moderately Engaged,
 1.50-2.49, Slightly Engaged, 1.00-1.49 Not Engaged

The table shows the pre – assessment - post – assessment of the cognitive engagement of the two groups of students in learning. It showed that that most students were Moderately Engaged in the learning as to their cognitive.

In the group of reflective learning, there were two indicators in the post assessment that fall under Highly Engaged. The two statements are When I choose a science task, I like to pick one that is easy to do and Understanding science subject is important to me. This implied that when the students answer the self-learning module, they chose first the easy activity to complicated activity so that when they were in the complicated activity, they have the idea on how to answer it. The researcher noticed in the topic of sounds, most of the students answered the Learning Task 1 entitled Name it. In this activity the students will write only the name of the given instrument. While in the Learning Task 4 entitled Properties and Characteristics of Sound, some of the students didn't answer it. Because the students need to find a guitar and then play it so that they can answer the questions in the learning tasks.

In the group of pragmatic learning, there were two indicators in the pre assessment that fall under Slightly Engaged. The two statements are It is easy learning science at home and I am sure that I can do an excellent job on the problems and tasks assigned to me. This reveals that was not easy to learn at home especially when there was no assistance from your parents or guardian. Because some guardian or parents of the students didn't finish schooling. And some did not know the topic in the SLM. However, in the post assessment these two statements that fall under Moderately Engagement. Because these SLM were designed for their learning style so that their interest in the topic was increased.

Table 3. Pretest - Posttest Assessment of Behavioral Engagement of the two Groups of Students in learning Grade 7 Science

Indicators	Reflective Learning				Pragmatic Learning			
	Pre		Post		Pre		Post	
	Mean	VI	Mean	VI	Mean	VI	Mean	VI
1. Learning science at home is fun	3.00	ME	3.20	ME	3.14	ME	3.14	ME
2. The science I learn at home is interesting	2.83	ME	3.40	ME	2.89	ME	3.11	ME
3. Learning science at home is boring	2.97	ME	3.26	ME	2.83	ME	3.29	ME
4. I am happy when doing science work at home	2.34	SE	3.06	ME	2.54	ME	3.14	ME
5. When I have a choice, I usually choose to do a science task rather than another subject	1.91	SE	2.66	ME	2.06	SE	2.97	ME
6. I like what I am learning science at home through learning module	2.97	ME	3.66	HE	3.49	ME	3.71	HE
Overall	2.67	ME	3.20	ME	2.82	ME	3.23	ME

Legend: 3.50-4.00 Highly Engaged, 2.50-3.49 Moderately Engaged,

1.50-2.49, Slightly Engaged, 1.00-1.49 Not Engaged

The table shows the pre – assessment - post – assessment of the cognitive engagement of the two groups of students in learning. It showed that that most students were Moderately Engaged in the learning as to their behavior.

In the group of reflective learning, there were two indicators that fall under Slightly Engaged. The two statements are I am happy when doing science work at home and When I have a choice, I usually choose to do a science task rather than another subject. In the first indicator, the students were happy in doing within their classroom of their learning tasks because they used to it. And when they are in the classroom, they help each other to answer the learning tasks. In the second statement, some of the students were not interested in science subject because they say it was a hard subject that they need to solve and memorize. Science is more than a body of information and a method of gathering and validating it. Science refers to both the content of knowledge and the processes involved in acquiring it. Science as an inquiry process and as a community organization are both included in understanding the nature of science (Chokkalingam, 2015).

However, in the post-assessment, the two indicators in the Slightly Engaged turn into Moderately Engaged. It seems that when the students exposed to an activity that was aligned to their learning style, the students answered the activities assigned to them even if at their home as shown in Appendix V on page 143.

In the group of pragmatic learning, the lowest engagement of the students in the pre assessment was indicator number five (5), it was the same with group of reflective learning. And also in the post-assessment, there was increased in their engagement.

Table 4. Pretest - Posttest Assessment of Emotional Engagement of the two Groups of Students in learning Grade 7 Science

Indicators	Reflective Learning				Pragmatic Learning			
	Pre		Post		Pre		Post	
	Mean	VI	Mean	VI	Mean	VI	Mean	VI
1. Someone at home helps me with my science work when I am stuck	2.54	ME	3.40	ME	2.43	SE	3.37	ME
2. I do all the science work my teacher wants me to do	2.54	ME	3.34	ME	2.54	ME	3.29	ME
3. My teacher lets me know how well I am doing the science activities at home	2.51	ME	3.17	ME	2.66	ME	3.29	ME
4. Asked questions to teacher using online platforms	2.60	ME	3.51	HE	2.66	ME	3.29	ME
5. Helping my friends in answering science learning tasks using online platforms.	2.37	SE	3.09	ME	2.49	SE	2.97	ME
6. I miss doing science with my friends at school.	2.46	SE	3.51	HE	2.43	SE	3.29	ME
Overall	2.50	ME	3.34	ME	2.53	ME	3.25	ME

Legend: 3.50-4.00 Highly Engaged, 2.50-3.49 Moderately Engaged,

1.50-2.49, Slightly Engaged, 1.00-1.49 Not Engaged

The table shows the pre – assessment - post – assessment of the cognitive engagement of the two groups of students in learning. It showed that that most students were Moderately Engaged in the learning as to their emotional.

In the pre-assessment of the two groups of students, there were two indicators that fall under Slightly Engaged with the statements of Helping my friends in answering science learning tasks using online platforms and I miss doing science with my friends at school. Since the students were a grade 7 students and they came from different schools, they didn't know each other, so that it become slightly engaged in helping other classmates. In the second statement, since the students were used to do activities within their classroom together with their friends and other classmates.

However, in the post-assessment of the two lowest engagements of the two groups they turned into Moderately Engaged because in the SLM, some of the activities are complicated, so that they need to asked some help to their classmates to understand it clearly.

Table 5. Pretest Scores of the Two Groups of Students as to their Thinking Skills

Score	Analyze		Establish		Make Decision		Generate	New	Interpretation
	Information		Connection				Idea		
	A	B	A	B	A	B	A	B	
10-12	-	-	-	-	1	-	-	-	Advanced
7-9	5	12	7	5	7	9	26	30	Proficient
4-6	19	14	21	19	13	18	8	3	Developing
0-3	11	9	7	11	14	8	1	2	Beginning
Total	35	35	35	35	35	35	35	35	

Legend: A – Reflectors

B - Pragmatists

The table shows the distribution of pre-test scores of the two groups of students as to their thinking skills in terms of analyze information, establish connection, make decision and generate new idea.

It reveals that most of the student from the two groups obtained scores from the pre-test as to analyze information, establish connection and make decision which fall under the Developing stage. However, as to generate new ideas, the pre-test scores which fall under the Proficient Stage.

In the analyze information, most of the students from the two groups obtained scores from pre – test which fall under Developing stage. At the Developing stage, students exhibit unawareness or limited understanding of the different concepts and ideas about the topic and they are mostly incapable of identifying significant relationships among the information cited thus arriving at an incorrect analysis and conclusion. Because the curriculum of science is a spiral curriculum, all of the topics in the first grading period were fall under chemistry, in the second grading were fall under biology and the third grading were fall under physics. So that the students can't use their previous knowledge in the topics in the third quarter.

In the establish connection, most of the students from the two groups obtained scores from pre – test which fall under Developing stage. At the Developing stage, Students struggle to understand the connections between terminology, sentences, and pieces of information. Because some of the topics in the SLM in the third quarter were not tackled in their previous quarter. So that the students can't make connection between the terms and pieces of information that are related.

In the make decision, most of the students from the two groups obtained scores from pre – test which fall under Developing stage. At the Developing stage, students struggle to know which option is more appropriate. Because they have a limited understanding of the different concepts and ideas about the topic.

In the generate new ideas, most of the students from the two groups obtained scores from pre – test which fall under Proficient stage. At the Proficient stage, the students have a skill that create new idea, products, information and perspectives. Based on the observation the teacher, most of the students used the topic Heat transfer to make an activity or experiment. The teacher noticed that even the students have limited understanding about the concepts and ideas about the topic, they used their experience in the heat transfer in order to do the performance test in the pretest assessment. So that they create an activity/experiment about heat transfer.

As shown in Appendix R on page 139, the pre-test of the students that they have limited prior knowledge about the topic of heat, light and sounds. Because in science curriculum, the spiral approach was implemented. The first and second quarter topics was not related to the topics in the third quarter.

The study findings showed that the treatment group taught English-language literature using topics that already required some prior knowledge and instructional goals outperformed the control group while teaching literature in English without previous preparation understanding of the teaching objectives for the topics to be covered (Mbah, 2015).

Table 6. Posttest Scores of the Two Groups of Students as to their Thinking Skills

Score	Analyze		Establish		Make Decision		Generate	New	
	Information		Connection				Idea	Interpretation	
	A	B	A	B	A	B	A	B	
10-12	10	4	5	3	15	10	15	34	Advanced
7-9	20	26	16	25	17	18	17	1	Proficient
4-6	5	5	12	7	3	7	3	-	Developing

0-3	-	-	2	-	-	-	-	-	Beginning
Total	35	35	35	35	35	35	35	35	

Legend: A - Reflectors

B - Pragmatists

The table shows the distribution of post-test scores of the two groups of students as to their thinking skills in terms of analyze information, establish connection, make decision and generate new idea.

As shown in Appendix S page 140, the posttest of the students, it reveals that most of the student from the two groups obtained scores from the post-test as to analyze information, establish connection and make decision which fall under the Proficient stage and as to generate new idea which fall under the Advanced stage.

In the analyze information, most of the students from the two groups obtained scores from post – test which fall under Proficient stage. In the Proficient stage, the students demonstrate that they are more capable of examining ideas, detecting arguments, and analyzing the content. This was supported by the topic of Heat in the Learning Task #2 entitled High to Low. Two groups of students have to analyze the given statements, and then they need to determine which object gives heat and which object receives heat and also the direction of the heat transfer.

In the establish connection, most of the students from the two groups obtained scores from post – test which fall under Proficient stage. In the Proficient stage, the students developed their capability of making actual connections or relations between the concepts or statements that are related. This was supported by the topic of Light in the Learning Task #2 entitled Compare Me. Two groups of students have to determine the relationship between the color of light and intensity of light by answering the similarities and differences of it.

In the make decision, most of the students from the two groups obtained scores from post – test which fall under Proficient stage. In the Proficient stage, the students developed a skill that have capacity to choose a good option from two or more possibilities. This was supported by the topic of Sounds in the Learning Task #4 entitled Properties and Characteristics of Sound. Two groups of students have to choose one from the two options between High and Low based on the activity that they have done.

In the generate new idea, most of the students from the two groups obtained scores from post – test which fall under Advanced stage. In the Advanced stage, the students develop a skill that create new idea, products, information and perspectives and give some feedbacks about the activity. This was supported by the topic of Heat in the Learning Task # 4 entitled Let's Fry for the reflective learning. Because in this learning task, the students generate new idea in writing an essay about the topic. And the pragmatic learning, the topic of Sounds in the Learning Tasks # 3. In this learning task, they were free to choose of what materials they to use in order to make the products.

Table 7. Pre-assessment - Post-assessment of the Two Groups as to their Students' Engagement

Students' Engagement	Reflective Learning								Pragmatic Learning							
	Pre				Post				Pre				Post			
	Mean	SD	Mean	SD	t	df	Sig.		Mean	SD	Mean	SD	t	df	Sig.	
Cognitive	2.76	0.33	3.28	0.32	7.61	34	.00		2.7	0.38	3.11	0.43	5.62	34	.00	
Behavioral	2.67	0.58	3.2	0.45	4.93	34	.00		2.82	0.42	3.23	0.41	4.29	34	.00	
Emotional	2.5	0.45	3.34	0.37	9.73	34	.00		2.53	0.42	3.25	0.46	10.22	34	.00	

The table shows the pre-assessment - post-assessment of the two groups of students as to their students' engagement.

The table reveals that there was a significant difference between the pre-assessment – post-assessment of the two groups as to their engagement in learning in terms of cognitive engagement, behavioral engagement and emotional engagement.

As shown in Table 3, both means of the two groups of students in cognitive engagement were increased. This implied that the used of self-learning module (SLM) were designed to relate the preferred learning style increase the cognitive engagement in answering the science activities. The students recognized the importance of answering the activities in Science in the SLM and they were willing to acquire and develop abilities. This was supported by the observation of the teacher in the behavior of the students in answering the SLM, most of the learning tasks and questions in the SLM were answered as shown in Appendix T, U, V and W on pages 141 - 144.

As shown in Table 4, both means of the two groups of students in behavioral engagement were increased. This implied that in using SLM that aligned to the preferred learning style increased the behavioral engagement of the students. The students were actively participating and determined in answering the learning tasks in science. The teacher noticed in the implementation of the SLM, when the students were interested on the activities or learning tasks, the students wanted to answer the activities even if the activity is complicated. The students used an online platform to ask questions about the learning tasks.

As shown in Table 5, overall means of the two groups students in emotional engagement were increased. This means that the SLM used increased the emotional engagement of the students. The students show interests in the topic in science by answering the SLM at home and also, they gave time and effort in asking questions about the learning tasks in the SLM to the teacher and also to their classmates.

The use of differentiated instruction is an excellent way to maintain students engaged in the topic they are learning in a deep and meaningful way. Differentiation entails modifying the educational activities in the class by choosing particular types of activities for each individual student, based on his or her individual learning abilities and preferred learning style (Bender, 2020).

Table 8. Post-Assessment Comparison between Two groups as to their Students' Engagement

Engagement	Reflective Learning		Pragmatic Learning		t	df	Sig.
	Mean	SD	Mean	SD			
Cognitive	3.28	0.32	3.11	0.43	1.601	34	.119
Behavioral	3.20	0.45	3.23	0.41	-0.208	34	.837
Emotional	3.34	0.37	3.25	0.46	0.869	34	.391

The table shows the post-assessment comparison between two groups of students as to their students' engagement. The table reveals that there was no significant difference between the post-assessment comparison between two groups as to their engagement in learning in terms of cognitive engagement, behavioral engagement and emotional engagement. As shown in the Table 8, the means of the three dimensions of the students in both groups of students were increased. This means that two groups of students increased the engagement in learning through the use of designed Self-Learning Module (SLM) aligned to their learning styles.

In the two groups of learners, most of the students show interest in the topics in science by answering the learning tasks and also by participating in asking questions to their teacher. Because in the SLM of the reflective learning, most of their activities were essays that needs their past experience in order for them to answer the learning tasks (see Appendix V on page 143). While in the SLM of the pragmatic learning, most the learning tasks in this groups were learning by doing. The students love to do the learning tasks if they used their body and also if they use it to the real situation (see Appendix W on page 144).

Table 9. Pretest Assessment and Posttest Assessment of the Two Groups as to their Thinking Skills

Thinking Skills	Pretest Assessment							Posttest Assessment						
	Reflectors		Pragmatist		t	df	Sig.	Reflectors		Pragmatist		t	df	Sig.
	Mean	SD	Mean	SD				Mean	SD	Mean	SD			
Analyze Information	4.54	1.96	5.14	2.1	-1.21	34	0.236	8.54	1.82	7.97	1.48	1.53	34	0.136
Establish Connections	4.89	2.07	4.23	1.78	1.56	34	0.129	7.17	2.19	7.66	1.55	-1.03	34	0.312
Make Decisions	4.4	2.39	4.86	2.05	-0.86	34	0.395	8.63	1.68	8.17	1.92	1.10	34	0.28
Generate New Ideas	6.94	1.45	7.03	1.9	-0.20	34	0.841	10.74	0.98	10.83	0.82	-0.34	34	0.734

The table shows the pretest assessment and posttest assessment of the two groups as to their thinking skills in terms of analyze information, establish connections, make decision and generate new idea. This reveals that there was no significant difference between the pretest assessment and the posttest assessment of the two groups of students as to their thinking skills.

In the pretest assessment of the two groups of students, as shown in Table 5, the pretest scores of the two groups of students. The students in both groups got scores which fall under Developing stage in terms of analyze information, establish connection and make decision. The students exhibit limited ideas about the topics in the third quarter period because most of the topics in the quarter were not related to the topics in the first and second quarter. So that students were hardly to analyze the topics in the SLM, they can't connect the terms into other terms and they can't decide on what they need to do. And in terms of generate new ideas, the students got scores which fall under Proficient stage. The researcher used the rubrics to measure the test. The students read the criteria so that they know on what they need to answer the questions.

In the posttest assessment of the two groups of students, as shown in Table 7, the posttest scores of the two groups of students. Both groups of the students increased the test scores after the implementation of the SLM. In the SLM, the designed learning tasks were aligned to their preferred learning styles. Because of that, the engagement of the students in learning were increases so that it affects the academic performance of the students.

The pretest assessment and posttest assessment of the two groups were no significant difference because they both increased their test scores after the implementation of the SLM.

Table 10. Pretest Assessment - Posttest Assessment of the Two Groups as to their Thinking Skills

Thinking Skills	Reflective Learning							Pragmatic Learning						
	Pre		Post		t	df	Sig.	Pre		Post		t	df	Sig.
	Mean	SD	Mean	SD				Mean	SD	Mean	SD			
Analyze Information	4.54	1.96	8.54	1.82	8.53	34	.000	5.14	2.1	7.97	1.48	6.51	34	.000
Establish Connections	4.89	2.07	7.17	2.19	4.69	34	.000	4.23	1.78	7.66	1.55	9.39	34	.000
Make Decisions	4.4	2.39	8.63	1.68	8.28	34	.000	4.86	2.05	8.17	1.92	7.58	34	.000
Generate New Ideas	6.94	1.45	10.74	0.98	11.70	34	.000	7.03	1.9	10.83	0.82	9.95	34	.000

The table shows the pretest assessment - posttest assessment of the two groups as to their thinking skills in terms of analyze information, establish connections, make decision and generate new ideas. This reveals that there was a significant difference between pretest assessment - posttest assessment of the two groups as to their thinking skills in terms of analyze information, establish connections, make decision and generate new ideas.

As shown in Table 6, most of the pretest scores of the students which fall under Developing stage, after the implementation of the SLM were designed to their preferred learning style increased their posttest scores as shown in the Table 7 which fall under Proficient stage. The students show interests to the topic after they realized that the learning tasks in the SLM were they like to do. So that they exert efforts to answer all the learning tasks. And also, some of the learning tasks in the SLM were developed their skills in analyzing information, establishing connection between two more terms that are relates, decision making and generating new ideas. These were some answered learning tasks that the students like to do (see in Appendix T, U, V and W on pages 141 - 144).

This means that Self-Learning Modules were designed was effective in increasing the thinking skills of the students in terms of analyze information, establish connections, make decision and generate new idea.

Conclusion

Based on the result of the study, pragmatic and reflective learning modes are effective strategy to improved learners as to their engagement in learning and to their thinking skills. Thus, the null hypothesis of the pre and post assessment of the two groups as to their student engagement and thinking skills is sustained. However, the hypothesis on the pre and post assessment of each group as to their students' engagement and thinking skills, the null hypothesis is not sustained.

Recommendations

Based on the findings and conclusions the following are offered:

1. Since the study reveals that when the pragmatic and reflective learning modes improved their learning engagement and their thinking skills. Teachers may apply reflective learning and pragmatic learning in SLM for to promotes enhancement of students' engagement and thinking skills.
2. Teachers may explore the use of reflective learning and pragmatic learning to other subjects or fields of discipline to determine its effectiveness in other areas.
3. Future researchers may conduct parallel study in other learning style such as theorists and activists to determine if there is an improvement on their students' engagement and thinking skills.
4. Future researchers may explore a similar study in reflective learning and pragmatic learning instead of using SLM, the teacher may use it in the classroom set – up such as face to face classes or blended to determine its effectiveness.

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