THINKING HABITS IN THE 21ST CENTURY: A K TO 12 APPROACH INSTRUCTIONAL MODULE IN ENHANCING GRADE 10 STE STUDENTS' THINKING AND 21ST CENTURY SKILLS

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Thinking Habits in the 21st Century: A K to 12 Approach Instructional Module in Enhancing Grade 10 STE Students' Thinking and 21st Century Skills

An Action Research

Presented to the Regional Research Committee (RRC) of the

Department of Education – Cagayan de Oro

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APPROVAL SHEET

In fulfillment of the requirements for the Basic Education Research Fund, this study entitled **"THINKING HABITS IN THE 21st CENTURY: A K-12 APPROACH INSTRUCTIONAL MODULE IN ENHANCING GRADE 10 STE STUDENTS' THINKING AND 21st CENTURY SKILLS"** is hereby recommended for acceptance and approval.

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ABSTRACT

This study determined the thinking habits and 21st century skills of of Grade 10 Science, Technology and Engineering students of Cagayan de Oro National High School – Junior High, and to help achieve and establish the Thinking Habits in the 21st Century: A K to 12 Approach Instructional Module will enhance their skills in learning and to fully promote creative and critical thinking amongst them. The 21st century skills are a set of abilities that students need to develop in order to succeed in the information age. The 21st Century Skills considered in this study are of the following: Critical and Creative Thinking and Problem Solving. In relation to this, the thinking patterns of every learner are magnified as a tool to effective learning. This pattern includes, among others: Applying past knowledge to new situations, Questioning and posing problems, Thinking and communicating with clarity and precision and Thinking about thinking (metacognition). The study used the descriptive research design. This study employed a purposive sampling in the choosing of the participants. According to Palys (2008), purposive sampling is a non-probability sample that is selected based on the characteristics of a population and the objective of the study. The respondents were the Grade 10 students of the Science, Technology and Engineering Program of Cagayan de Oro National High School – Junior High. The data were analyzed using descriptive and inferential statistics. 10-week intervention was planned for the identified students and incentives were attached for them for coming on time. After the weeks of intervention the thinking habits and 21st Century Skills of the Grade 10 students in the STE program was determined. The data included observations in two phases; pre-intervention observation and a post intervention observation by reviewing the attendance register. The results revealed an increase in both the thinking habits and 21st Century Skills in the post intervention. These findings highlight the importance of a relationship the Thinking Habits module, as innovation applied in English and Math classes, have a significant difference in the performance of the student-participants.

In its entirety, since thinking is an individual's state of action and considering the result gathered from the study, learners should be engaged in activities that target critical as well as creative thinking. Involvement in learning is the key to the learner's progress paired with advance learning curriculum o be provided by the teacher that targets the improvement of the thinking skill of the learner.

Keywords: *thinking pattern, habits of mind, 21st century skill, critical thinking, creative thinking*

TABLE OF CONTENTS

		Page
Title Page		i
Approval Sheet		ii
Abstract		iii
List of Tables		
List of Figures		
I.	Context and Rationale	4
II.	Innovation	8
IV.	Research Questions	11
V.	Scope and Limitation	12
VI.	Research Methods	12
	VIa. Sampling	13
	VIb. Data Collection	13
	VIc. Ethical Issues	14
	VId. Data Analysis	14
VII.	Results and Discussion	17
VIII.	Summary of Findings	25
IX.	Conclusion	27
X.	Recommendations	28
XI.	Reflection	31
XII.	Action Plan	32
XIII.	References	30

Annexes

I. Thinking Habits Questionnaire
II. Plagiarism Result

I. CONTEXT AND RATIONALE

Education is the country's most effective instrument in social, political, economic, biological and even spiritual transcendence.

The present system of education around the world is a constant advancement in coping up with the technological evolution of information. Truth be told, the Philippine education system, while it acknowledges such change, seems to be left behind in comparison to various countries that have kept upbeat with such change. Nowadays, while we continue to teach forms of knowledge that trace back to decades of history, this is not in line with the current world that deals with computers and sorts. An effective education system should coincide with the world we have now to produce effective learners that can be fully equipped for employment. While the education system aspires to continue its goal in producing learners geared with ancient knowledge, it also should aim to produce learners that can function effectively in any form of professional setting whether local or internationally.

In line with the Philippines' education system that has not yet fully addressed various difficulties as evidenced by survey results of standardized tests and rate of employment, the Department of Philippine Education found it convenient to address such problems with a solution such as the K to 12 program. The said program as identified by the Department of Education seeks to enhance the education curriculum of the country. The K to 12 program, as defined by its proponents, targets as a disadvantage the short duration of the Philippine basic education system which it deems insufficient to allow a graduate to seek employment for failure to be armed with the practical necessities of employment.

The K to 12 program, while it aims to improve the educational system and aims to produce more productive and responsible citizens for both life-long learning and employment, it is viewed as a general solution to an existing minor fault as experts claim. Therefore, in relation and as a mechanic to effective pursuance of the goals of the K to 12 program, the 21st century skills are deemed appropriate. The 21st century skills have been categorized by philosophers and scholars as an educational reform but in truth, it has long been existing in the educational arena. It is only today that it is given focus and identification as it is seen to be appropriate and adequate to the current learning society to keep in pace with what is current and thereafter evolving too. The 21st century skills emphasize the manner of problem-solving, critical thinking and creative thinking; all of which are gears to fully exist in a competitive employment environment. Consequently, the K to 12 program focuses on learners that can make employees or even bosses out of the learners, the 21st century skills, on the same note, is motivated in making effective individuals out of the learners even beyond the four walls of the classroom. Hence and specifically, the 21st century skills serve as one of the many modes to fully implement the K to 12 program.

The 21st century skills are a pool of skills that scholars believe will allow the educational system to produce highly effective individuals not only in school but most especially in workplaces. This educational reform highlights practicability without compensating the high regard for knowledge. Consistently, the education society continues to prove that experience is the best teacher as opposed to bombarding learners with memorization and spoon-feeding of terms and theories. Lack of personal application negates immediate retention to the learner.

Recently, the NETRC released the National Achievement Test results for 2013 showing that the results for Cagayan de Oro do not come near to 75% as the top is 73.67%

followed by a 12% margin of 61.07%. According to De Dios (2013), the goal of 75% seems elusive at the current setting without any regard yet to the shift of the education system to k-12.

Standardized tests such as the National Achievement Test measure something even if it has no regard for passing or failing. The results are there for a reason. The results, further show that consistently, while the 75% mark is not a strict requirement, it shadows that the idea of its consistency shows that there underlies a deficiency in the education system.

Besides, the thinking habits of the students are considered – if they are observed in tackling problems or activities that they are confronted with in their classes which include English and Mathematics subjects. Thinking habits are introduced by Costa and Kallick (2007) in which they rely on the theory which they support their claim of the importance of thinking habit in the phrase: "A Habit of Mind knows how to behave intelligently when you don't know the answer." This highlights the very importance of the power of the mind as a thinking tool and amplifies its infinite potential. Accordingly, habit is something we do regularly without consciously thinking much about it. It is an automatic mental and behavioral activity. Habits make it possible for us to do things without spending excessive mental effort. Hence, while the previous education curriculum bombards the student with a multitude of notes and terms to memorize and fossilize through time, the very nature of the human race is put into action as education's most effective tool, the thinking individual. The human mind, no matter how limited information is put into, it will always form an idea or opinion about something.

Teaching using thinking habits as a tool, we are interested also in how students behave when they don't know an answer. The Habits of Mind are performed in response to questions and problems, the answers to which are not immediately known. It is every educator's interest to seek what a student knows despite being very limited in knowledge or not knowing the answer at all. It is a form of encouragement that helps students gain self-confidence and thereafter triggering enthusiasm for learning.

Callick and Costa identified 16 of the attributes that human beings display when they behave intelligently. These are the characteristics of what intelligent people do when they are confronted with problems, the resolutions to which are not immediately apparent. But in this study, four habits of mind or thinking habits are considered as the researchers deemed to be important in reading and solving Mathematics problems. The thinking habits considered in this study are: applying past knowledge to new situations, questioning and posing problems, thinking and communicating with clarity and precision and thinking about thinking (metacognition). These thinking habits are in the same way Guinn and Williamson (2014) would say are critical thinking skills that successful executives use every day --- to sift through incomplete and complex information, ask the right questions, recognize strong versus weak arguments, and to assimilate the information they need to make logical business decisions.

Moreover, as learners and later on as practitioners in their crafts who are constantly developing in their thinking habits skills, they must reflect on how they respond to different situations so that they can tackle problems through thoughtful and considered actions.

With this, the researchers, with the existence of personal and universal knowledge surrounding the thinking habits with the application of reading and solving mathematical

problems came up with this study especially being in the mentoring field. Being the central wheel that will determine the greatness of knowledge a learner can gain while within the boundaries of the classroom, no teacher is to forsake or take for granted the many elements of effective learning and that for one involves, effective and absolute thinking and reading in application. Further, the purpose of this study was to derive and establish the thinking habits and 21st century skills of the participants and how students behave when the solution to a problem is not immediately known.

INNOVATION

The Grade 10 STE student-participants are given pretest on the level of their thinking skills and 21st century skills. When the student-participants' scores have been identified, the student-participants with low scores in thinking skills will undergo the innovation in increasing their thinking skills. The innovation will utilize the research-made module, Thinking Habits in the 21st Century: A K to 12 Approach.

- Identify the Grade 10 STE students' level of thinking skills and 21st Century skills.

- The implementation started with the Grade 10 STE English teacher (Research team leader), together with the Research team, met the Grade 10 STE students with low thinking skills and 21st Century skills and their parents to discuss with them how these students were assisted and how would their thinking habits be enhanced and established.
- The THINKING Program sessions were scheduled twice a week (WF) from 3 PM – 4 PM. The session ran from November 2019 to February 2020.
- With each reading and solving Math problem session, the provided module was utilized and reading and problem-solving activities in the module were implemented.

SCIENCE, TECHNOLOGY & ENGINEERING (STE) CURRICULUM

PROJECT THINK (Thinking Inspires New Knowledge) INNOVATION

Goal: To strengthen and establish thinking habits of Grade 10 STE students through the utilization of the reading and Math solving problem-activities in the Thinking Habits in the 21st Century: A K to 12 Approach module.

Objectives	Activities	Time Frame	Persons Involve	Expected Output
1. Identify the level of the students thinking skills and 21st century skills 2. Implement the THINKING Innovation 3. Develop thinking habits among students by providing regular time to read 4. Improved students' level of thinking skills and establish thinking habits and 21st century skills	1. Assess and evaluate students' thinking skills and 21st century skills 2. Identify students with non-established thinking habits and low scores in the identified 21st century skills 3. Orient identified Grade 10 STE students with low thinking skills and 21st century skills on the Thinking skills module and the Project Thinking Innovation 4. Call for a parents' meeting to orient them on the conduct of the study 5. Identify a specific schedule for the THINKING program 6. Prepare the reading materials that will be utilized in the THINKING Program	November 2019 November 2019 to February 2020(every Wednesday and Friday of the week)	English Teacher Research Team	Identified Grade 9 students with low thinking skills and 21st century skills Oriented STE parents and students on the THINKING Innovation

	7. Start the 10-week pilot implementation of the THINKING Program.			Established thinking habits and increased thinking skills and 21st century skills

RESEARCH QUESTIONS

1. What is the level of thinking habits of the respondents in terms of the following:
    - 1.1 Applying past knowledge to new situations;
    - 1.2 Questioning and posing problems;
    - 1.3 Thinking and communicating with clarity and precision; and
    - 1.4 Thinking about thinking (metacognition)
2. What is the level of the 21st century skills of the respondents on the bases of the following:
    - 2.1 Critical Thinking;
    - 2.2 Creative Thinking; and
    - 2.3 Problem Solving Skills

3 How does the use of *Thinking Skills in the 21st Century: A K to 12 Approach* module enhance the thinking skills and 21st Century skills of Grade 10 STE students?

4 Is there a significant difference between the pre-test and posttest?

SCOPE AND LIMITATION

This study focused on the use of the *Thinking Habits in the 21st Century: A K to 12 Approach* module and limited to Grade 10 STE students of Cagayan de Oro National High School. The sections are composed of 26 students from section Edison and 27 students from Newton, adding the numbers of students from both sections would total to 53 students. These 53 students were the participants in the action research conducted. The module is composed of stories written by one of the researchers and the corresponding comprehensive questions are based on Costa and Kallick's Thinking Habits. Also, the activities included in the module are brainstormed and prepared by the researchers. The implementation of the study ran from November 2019 to February 2020.

Furthermore, the study dealt with the following areas of concern: the effect of the module on students' thinking habits and 21st Century skills. The module is composed of reading materials with activities considering the thinking habits of Costa and Kallicks identified thinking habits concerning 21st Century skills. A pretest was conducted before the implementation of the THINKING program and posttest was conducted after the implementation of the THINKING program. The test is composed of questions that will measure their thinking skills and 21st century skills.

RESEARCH METHODS

The method that was utilized in the study is quantitative. The necessity of this method was to analyze the data and answer the questions raised. The descriptive method was essential to explain the thinking habits and 21st century skills of the Grade 10 STE students of Cagayan de Oro National High School and how the module enhanced the students' thinking habits and 21st century skills. On one hand, quantitative method was

utilized to get the numerical description during the pretest and posttest and get the comparative results between the two.

SAMPLING

This study employed a purposive sampling in the choosing of the participants. According to Palys (2008), purposive sampling is a non-probability sample that is selected based on the characteristics of a population and the objective of the study. This method is appropriate in this study, thus only Grade 10 STE students are considered in the study.

a. DATA COLLECTION

The researchers collected data through pre-test and posttest, conducted focused group discussions (FGD) and classroom-based sessions. In analyzing the data, frequency and mean were used to determine the increase of the scores from the test given.

The pre-test and posttest used in this study were essential as it was expressed by Salkind (2010) that to measure the "value-added" in the study, the aforementioned tests should be conducted. The pre-test was the basis for the present status of learners and the determining factor for further activities to be given. The posttest then identified if the strategy and activities were effective in addressing the problem as stated in the purpose of the study. On another note, a focused group discussion was utilized to get useful opinions and insights on how students perceive their situation in terms of status and performance before the implementation of the strategy. Hence, the researchers conducted a Focus Group Discussion with the participants.

In analyzing the results, the researchers will employ a simple statistical method to determine the increase of scores from the given tests.

b. ETHICAL ISSUES

To ensure that the data gathered as well as the personal background are held confidential and given proper protocol, a letter of consent was sent to the respondents' parents and guardians. As students, hence children, under the STE Program, the researchers ensure that utmost confidentiality to any information derived from the study is given consideration. As stipulated in The Research Exception under the Data Privacy Act of 2012 | Data Privacy Philippines (2018), enough safeguards should be followed and no further acts should directly affect the participants' data. The rights of the participants were taken into consideration without compromising both the integrity of the research and the results.

c. DATA ANALYSIS

This study employed descriptive statistics in analyzing the data. Descriptive statistics are used to quantify and measure data and generalize results from a given sample. It is seemingly fit for the study as it seeks to measure the outcome of students after providing the THINKING module and conducting a series of class activities.

In addition, In scoring the instruments, the following guidelines were followed:

Thinking Habits

The following page is the scoring guide for the five-item questions in each level of the thinking habits:

Range of Scores	Description
3.25 – 4.00	Very Good
2.51 – 3.25	Good
1/76 – 2.50	Fair
1.0 – 1.99	Poor

For the five-item questions in each level of Thinking Habits, 5 is Excellent; 4 – 4.99 is Very Good; 3 – 3.99 is Good; 2 – 2.99 is Fair; and 0 – 1.99 is Poor.

Below is the scoring guide for the Overall number of items for the Thinking Habits:

Range of Scores	Description
16 – 20	Very Good
12 – 15	Good
9 – 11	Fair
8 – 0	Poor

For the twenty-item questions; 16 – 20 is Very Good; 12 – 15 is Good; 9 – 11 is Fair; and 8 – 0 is Poor.

For the five-item questions in each level of Thinking Habits, 5 is Excellent; 4 – 4.99 is Very Good; 3 – 3.99 is Good; 2 – 2.99 is Fair; and 0 – 1.99 is Poor.

Below is the scoring guide for the Overall number of items for the 21st Century Skills:

Range of Scores	**Description**
8 – 10	Very Good
5 – 7	Good
4 – 0	Poor

For the 10 - item question, 8-10 is Very Good; 5 – 7 is Good; 4 – 0 is Poor.

Below is the guide for score interpretation:

Interpretation	**Meaning**
Very Good	The participant has very satisfactorily manifested at a higher level in terms of acquisition of this characteristic and extended these in his or her life as a student.
Good	The participant has satisfactorily manifested acquisition of this characteristic and extended these in his or her life as a student.
Fair	The participant has manifested acquisition of this characteristic at below satisfactory level and extended these in his or her life as a student.
Poor	The participant has low manifestation of acquisition of this characteristic and extended these in his or her life as a student.

RESULTS AND DISCUSSIONS

This study assessed the effectiveness of the Thinking Habits in the 21st Century: A K to 12 Approach Instructional Module in Enhancing Grade 10 STE Students' Thinking and 21st Century Skills. The results obtained were put through a statistical analysis and are presented in this part of the research. For better understanding, the results were divided and presented under the following questions:

1. What is the level of thinking habits of the participants in terms of the following:
    - 1.1 Applying past knowledge to new situations
    - 1.2 Questioning and posing problems
    - 1.3 Thinking and communicating with clarity and precision
    - 1.4 Thinking about thinking (metacognition)

Table 1. Distribution of Participants Thinking Habits

THINKING HABITS PRETEST								
Scores and Interpretations	**Applying Past Knowledge**		**Questioning and Posing Problems**		**Thinking and communicating with clarity and precision**		**Thinking about Thinking**	
Description	f	%	f	%	f	%	f	%
Very Good	45	84.9	0	0	3	5.66	27	50.9
Good	6	11.32	10	18.9	25	47.17	14	26.42
Fair	2	3.77	12	22.6	23	43.39	8	15.09
Poor	0	0	31	58.5	2	3.77	4	7.5
N	53	100	53	100	53	100	53	100
Mean Description	4.06 (Very Good)		1.60 (Poor)		2.54 (Fair)		3.45 (Good)	
SD	0.66		0.79		0.67		1.01	

Table 2. Distribution of Participants Thinking Habits

THINKING HABITS POSTTEST								
Scores and Interpretations	**Applying Past Knowledge**		**Questioning and Posing Problems**		**Thinking and communicating with clarity and precision**		**Thinking about Thinking**	
Description	f	%	f	%	f	%	f	%
Very Good	50	94.34	9	17	10	18.9	28	52.8
Good	3	5.7	21	39.62	18	33.96	21	39.62
Fair	0	0	21	39.62	24	45.28	4	7.55
Poor	0	0	2	3.8	1	1.9	0	0
N	53	100	53	100	53	100	53	100
Mean Description	4.42 (Very Good)		2.75 (Fair)		2.72 (Fair)		3.49 (Good)	
SD	0.60		0.91		0.84		0.74	

Table 1 shows the distribution of participants according to thinking habits.. As shown in the table, specifically on Applying Past Knowledge, the student-participants exhibit a **Very Good** mean of 4.06 in the pretest. This implies that the participants were able to grasp the meaning of the sentences as gathered from the story. are exposed to questions that require them to link the content of the story to the given situation. This indicates also that student-participants find it easy to recall the events in the selection. In the meantime, the posttest reveals a **Very Good** rating with a mean of 4.42. This means that there is an increase of .36 after the implementation of the Thinking Habits module. This signifies that the Grade 10 students' skill in applying past knowledge was strengthened and established.

Further, Table 1 presents shows the distribution of respondents' level of thinking habits in terms of questioning and posing problems. The table shows that the participants

attained a rating of **Poor** with a mean of **1.60** and a standard deviation of 0.91 in the pretest. The rating denotes that the student-participants have difficulty to apply critical thinking that will elicit reflection and help students construct their own meaning. But after the implementation of the Thinking Habits Module, the student-participants seem to improve as indicated in the posttest rating with a mean of **2.75**. This indicates that their performance improved to **Fair** rating. This implies that the participants have the ability to comprehend and identify a problem and use past or new knowledge to provide solutions to new situations. This could, also, indicate that this is probably due to the exposure of the participants to ask and answer higher order questions during the implementation of the Thinking Habits mdoule but have not established this habit and still needs constant exposure to this type of questioning.

Additionally, the table shows the distribution level of students' Thinking Habits in terms of Thinking and Communicating. It can be gleaned in the table that the participants' level of thinking habits is **Fair** with a mean of 2.54 and a standard deviation of 0.67 in the pretest. The result in the pretest implies that the student-participants seem to have difficulty using clear and precise language in communicating with others as reflected in the table. Another implication would be that the participants have difficulty in vocabulary and grammar which they think play a big part in establishing thinking habits/skills of the students. This supports the statement of Kallick and Costa (2009) that language refinement plays a critical role in enhancing a person's cognitive maps, and their ability to think critically is the knowledge based for their efficient action. After the implementation and utilization of the Thinking Habits module during the PROJECT Think hour, the participants rating improved to 2.72 which is described **Fair**. This indicates that the participants have improved in analyzing how words are being utilized in reading materials. They seem to have gauged the strategies

in learning vocabularies. With the improvement in one of the thinking habits, specifically thinking and communicating with clarity and precision, Costa (2009) states that enriching the complexity and specificity of language simultaneously produces effective thinking. Though the increase in terms of mean is only 0.18 but still it could be that the participants were able to hone this particular thinking habit.

Table, also, shows the distribution level of the Students' Thinking Habits in terms of Metacognition. The mean in the pretest is 3.45 (Good). This indicates that the participants have manifested acquisition of this habit (thinking about thinking). This means that the participants have knowledge but have a little difficulty in planning a strategy for producing the information that is needed, to be conscious of one's steps and strategies during the act of problem solving, and to reflect on and evaluate the productiveness of the thinking situations. But in the posttest, the table presents the mean of 3.49 which is described as **Good.** This means that with the exposure and intensive practice of answering questions in the readings from the Thinking Habits module, the participants improved in the thinking about thinking of the thinking habits.

2. What is the level of the 21st century skills of the participants on the bases of the following:

    2.1.1 Critical Thinking

    2.1.2 Creative Thinking

    2.1.3 Problem Solving Skills

Table 2 Distribution of Respondents' Level of 21st Century Skills in terms of Critical Thinking Skills, Creative Thinking Skills and Problem Solving Skills

21st CENTURY SKILLS PRETEST						
Scores and Interpretations	**Critical Thinking**		**Creative Thinking**		**Problem Solving Skills**	
Description	f	%	f	%	f	%
Very Good	5	9.43	12	22.64	19	35.8
Good	15	28.30	17	32.08	24	45.28
Poor	33	52.3	24	45.3	10	18.86
N	53	100	53	100	53	100
Mean Description	1.39 (Poor)		1.69 (Poor)		2.18 (Good)	
SD	0.77		0.91		0.76	
21st CENTURY SKILLS POSTTEST						
Scores and Interpretations	**Critical Thinking**		**Creative Thinking**		**Problem Solving Skills**	
Description	f	%	f	%	f	%
Very Good	52	98.1	40	74.1	53	100
Good	1	1.19	13	24.1	0	0
Poor	0	0	1	1.9	0	0
N	53	100	53	100	53	100
Mean Description	2.98 (Good)		2.72 (Good)		3.70 (Very Good)	
SD	0.13		0.49		0.46	

Table 2 shows the percentage distribution of participant's 21st century skills in terms of Critical Thinking in the pretest and posttest. The pretest presents a large number of the

population, 33 percent are rated Poor and 28.30 percent are rated Good and 9.43 percent (3) of the participants rated Very Good. The overall rating is also Poor (Mean=1.39) with a standard deviation of 0.77. This means that the variation of the ratings or values is small as values are quite similar. The overall Poor rating means that the respondents have not been trained to answer this type of questions. They have poorly manifested ownership and extended this characteristic in their lives as students. This finding is supported in Salic's (2019) study in which she expressed that a Poor performance in their capacity to think critically probably because the respondents have not really been exposed to critical thinking questions. The respondents may also have the difficulty in enhancing their critical thinking skills because they may lack background information, poor reading skills, lack of classroom experience in using critical thinking and that they would usually rely on what seems the easiest for them which is purely "knowledge" level, simple recalling and comprehension.

After the implementation of the Thinking Habits module, the Critical Thinking Skills of the 21st Century Skills improved as it attained an overall mean of 2.98 which is described as **Good** in the posttest. This means that the participants with the constant exposure to readings and activities in their English and Math subjects which trained them to think critically. This implies that the participants in this study have experienced the depth and strength of critical thinking during the allotted time for Project THINK. These critical thinking skills involve problem solving, decision making, metacognition, rationality, rational thinking, reasoning, knowledge, intelligence, including a moral component such as reflective thinking.

Moreover, the table presents the respondents' level of 21st Century Skills in Terms of Creative Thinking, wherein the students are given way to create possible outcomes of the story. Creating involves imagination and visual imagery. The result shows that Creative Thinking in the pretest is rated Poor with a mean of 1.69 and a standard deviation of 0.91.

Its standard deviation is 0.49 which means that the ratings or values are close to each other. In addition, the result may also mean that there is a probability that the rating is Poor in creative thinking skills is due to the reason that the teacher has less experience in incorporation this particular skill into the learning that he conducts in class. While after the implementation of the Thinking Habits module, the performance of the participants improved to a mean of 2.72 which is described as Good. This means that the student-participants can perform any activity in the class that involves their imagination as they can use their senses. The participants, as observed by the researchers, use their creative thinking skills and make use of their senses when they asked to do creative thinking activities.

Additionally, the table presents frequency distribution of the students' level of 21st century skills in terms of problem solving in pretest. The overall rating is **Good** with a mean of 2.18 and a standard deviation of 0.76. The result shows that most of the students (45.38%) got a rating of **Good** and 35.8% obtained a **Very Good** rating. The result suggests that the respondents are exposed to problem solving skills as they are aware on how to define the core of problem and can think of alternatives solutions, if they are asked to. The result also means that the participants have ability to come up with different solutions that ca best address the provided problems in the activities provided. This observation is even strengthened when the posttest revealed a **Very Good** rating with the mean 3.70 and a standard deviation of 0.46. This means that with the implementation of the Thinking Habits module, the problem solving skills of the participants were enhanced. This is supported by a citation in NZMaths that students motivated to widen their concept on problem solving skills involved greater understanding and knowledge on how to utlilize this skills and if this is mastered, the mathematical “power” arises in problem solvings. This means that the

students are given the ability to apply problem solving skills in Mathematics problems and even reading comprehension question to solve conceptual and real world problems.

3 How does the use of *Thinking Skills in the 21st Century: A K to 12 Approach* module enhance the thinking skills and 21st Century skills of Grade 10 STE students?

Table 3 Distribution of Participants' Overall Thinking Habits and 21st Century Skills in considering the Pretest and Posttest

Scores and Interpretations	Thinking Habits Pretest	Thinking Habits Posttest	21st Century Skills Pretest	Thinking about Thinking
Mean Description	11.45 (Fair)	13.38 (Good)	5.28 (Good)	9.40 (Very Good)
SD	1.74	1.86	1.61	0.76

Table 3 shows the distribution of participants considering overall mean of Thinking Habits and 21st Century Skills in the pretest and posttest. The table presents the overall rating **Fair** (mean=11.45) in the Thinking Habits pretest. This means that the participants has developed the thinking habits but has not established yet. And after the implementation of the Thinking Habits module, the participants' rating improved to **Good** (mean=13.38) with a standard deviation of 1.86. This means that with the constant exposure to activities that involve thinking skills, it naturally seems to have become a habit for them to attack comprehension questions and Mathematical activities with the different thinking habits emphasized in this study. Whereas, the 21st Century skills seem to improve from the pretest with a rating of Good (mean=5.28) to a rating of Very Good (mean=9.40) with a standard deviation of 0.76 in the posttest. This means that the 21st century skills have been established among the student-participants and that it was only enhanced and strengthened with the Thinking Habits module.

4 Is there a significant difference between the pre-test and posttest?

Null Hypothesis

Ho: There is no significant difference in the participants' level of thinking habits and 21st century skills in the pretest and posttest.

As computed, the result revealed that the value of t is 13.736693. The value of p is < .00001. The result is significant at p < .05 thus, the null hypothesis is accepted. This means that the Thinking Habits module, as innovation applied in English and Math classes, have a significant difference in the performance of the student-participants. This strengthens the observation of the researchers that when the participants are exposed to reading selections or critical thinking questions it helped them establish their thinking habits and developed their 21st century skills.

SUMMARY OF FINDINGS

1. **Thinking Habits in terms of Applying Past Knowledge, Questioning and posing problems, Thinking about thinking (metacognition), Thinking and communicating with clarity and precision**

The performance of the Grade10 respondents considering thinking habits based on the *Habits of the Mind of Learning* showed the following results: the student-participants exhibit a **Very Good** mean of 4.06 in the pretest. In the meantime, the posttest reveals a **Very Good** rating with a mean of 4.42. The distribution of respondents' level of thinking habits in terms of questioning and posing problems revealed that the participants attained a rating of **Poor** with a mean of **1.60** and a standard deviation of 0.91 in the pretest. But after the implementation of the

Thinking Habits Module, the student-participants improved as indicated in the posttest rating with a mean of **2.75**. This indicates that their performance improved to **Fair** rating. The Thinking and Communicating revealed a **Fair** rating with a mean of 2.54 and a standard deviation of 0.67 in the pretest. After the implementation and utilization of the Thinking Habits module during the PROJECT Think hour, the participants rating improved to 2.72 which is described **Fair**. The Students' Thinking Habits in terms of Metacognition resulted to a mean in the pretest of 3.45 (Good). This indicates that the participants have manifested acquisition of this habit (thinking about thinking). But in the posttest, the table presents the mean of 3.49 which is described as **Good.** This means that with the exposure and intensive practice of answering questions in the readings from the Thinking Habits module, the participants improved in the thinking about thinking of the thinking habits. The overall thinking habits of the respondents in the pretest is **Fair** (mean=11.45) and after the implementation of the Thinking Habits module, it improved to **Good** with a mean of 13. 38.

2. **21st Century Skills in terms of Critical Thinking Skills, Creative Thinking Skills and Problem Solving Skills**

The Critical thinking skills attained a rating of **Poor** (Mean=1.39) with a standard deviation of 0.77 in the pretest. After the implementation of the Thinking Habits module, the Critical Thinking Skills of the 21st Century Skills improved as it attained an overall mean of 2.98 which is described as **Good** in the posttest. Moreover, the table presents the respondents' level of 21st Century Skills in Terms of Creative Thinking in the pretest is rated **Poor** with a mean of 1.69 and a standard deviation of 0.91. Its standard deviation is 0.49 which means that the ratings or

values are close to each other. Subsequent to the implementation of the Thinking Habits module, the performance of the participants improved to a mean of 2.72 which is described as **Good**. Additionally, the table presents frequency distribution of the students' level of 21st century skills in terms of problem solving in pretest. The overall rating is **Good** with a mean of 2.18 and a standard deviation of 0.76. The result shows that most of the students (45.38%) got a rating of **Good** and 35.8% obtained a **Very Good** rating. The result means that the participants have ability to come up with different solutions that ca best address the provided problems in the activities provided. This observation is even strengthened when the posttest revealed a **Very Good** rating with the mean 3.70 and a standard deviation of 0.46. In conclusion, the 21st Century skills improved from the pretest with a rating of Good (mean=5.28) to a rating of Very Good (mean=9.40) with a standard deviation of 0.76 in the posttest. This means that the 21st century skills have been established among the student-participants and that it was only enhanced and strengthened with the Thinking Habits module.

3. **Thinking Habits and 21st Century Skills in the Pretest and Posttest**

With the computed result, it revealed that the value of t is 13.736693. The value of p is < .00001. The result is significant at p < .05 thus, the null hypothesis is accepted. This means that the Thinking Habits module, as innovation applied in English and Math classes, have a significant difference in the performance of the student-participants.

CONCLUSION

Overall, the result of the study indicated that the strategy employed was effective and helpful in:

1. Firstly, enhancing the learning outcome among Grade10 students of the Science, Technology and Engineering Program as reflected in the results of the study. With the help of the Thinking Habits in the 21st Century: A K to 12 Approach module provided in the English and Math classes, the learners were able to attain cognitive equilibration, specifically, thinking habits and 21st century skills needed for them where they assess schema, assimilate new learning by answering the worksheets and balance their learning by either altering or adapting to the ideas presented.
2. Secondly, the Thinking Habits in the 21st Century: A K to 12 Approach module contributed or affected positively the thinking skills and 21st century skills as proven in the study which resulted to an increase of the mean from 11.45 to 13.38 in the Thinking Habits and an increase of the mean from 5.28 to 9.40 in the 21st Century Skills.
3. Lastly, the process owner of this research is optimistic towards a much better performance as respondents are rated Good to Very Good in their thinking habits and 21st century skills. With proper intervention and continuous implementation of the module, they could develop better thinking habits and more developed 21st century skills.

RECOMMENDATIONS

The researchers' recommendations to further improve the innovations, specifically the thinking habits module, used are as follows: first, hands- on activities aside from the reading materials and reading comprehension questions, should be added; second, researchers should add specific activities that will address 21st

Century skills and; last, the researchers should pursue the Project THINK (Thinking Inspires New Knowledge) as a whole period class instead of just being a part of regular classes specifically in English and Mathematics.

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REFLECTION

Content

Modern society is becoming more dynamic, knowledge is becoming accessible and users are being encouraged to continuously reconsider, transfer

directions and alter problem-solving approaches more rapidly. Thus, encouraging reflective thinking during learning is becoming increasingly important to help learners develop strategies to apply new knowledge to the complex situations in their daily activities.

Teachers will always have a lot on their plate when it comes to the students' educational welfare. The students' welfare will always come first and teachers should be one of the frontliners in not only looking after them but at the same time finding means and ways in enhancing an improving their skills and talents. In terms of skills, the process owner of this research have always aimed to strengthen students' thinking habits which she sees as an influence in enhancing the students' 21st century skills. It took a lot of patience in understanding the situation of the students during the early implementation of the PROJECT THINK but at the same time it also acted as a learning experience for both the researchers and the participants. There have been many epiphanies on both sides, with the researchers—-they have understood the importance of establishing the thinking skills of the students and when they saw the joy in the students' eyes whenever they get better scores from one activity to another, it just confirms how all the small bump-roads that they had to go through just to push through this dream, is all worth the time an effort.

Experience

Project THINK (Thinking Inspires New Knowledge) was intended to a one-hour session every Wednesday and Friday. The aim was to implement the Thinking Habits in the 21st Century: A K to 12 Approach module during students' reading since initially the target was to focus on reading as a tool in establishing their thinking

habits which will eventually increase their level in the 21st century skills. But, given that one of the researchers is a Math major, she suggested that Mathematics should be included. Since, the researchers wanted to see if it is done daily, could it be a factor to help establish or enhance their thinking skills thus, it was decided that 30 minutes of the one-hour schedule for English and Math be dedicated to the Project THINK in which we called it THINK hour but the hour pertaining only to the 30 minutes allotted. During the implementation, the researchers were overwhelmed with the positive feedback of the students though they started with hesitations, especially that the first few reading materials were difficult for them. But when they adjusted to the pattern of how the questions were asked, then they became very positive about the materials. The grades after the third story started increasing.

EVALUATION

When the researchers were evaluating the process and the feedbacks of the students, they realized that they would have done more hands-on activities that would require the students to produce an output. Though, the results showed an increase, but it was not as high as the researchers expected. The researchers felt that if the

ACTION PLAN

PROJECT THINK (Thinking Inspires New Knowledge) INNOVATION

Goal: To strengthen and establish thinking habits of Grade 10 STE students through the utilization of the reading and Math solving problem-activities in the Thinking Habits in the 21st Century: A K to 12 Approach module.

Objectives	Activities	Time Frame	Persons Involve	Expected Output
1. Identify the level of the students thinking skills and 21st century skills 2. Implement the THINKING Innovation 3. Develop thinking habits among students by providing regular time to read 4. Improved students' level of thinking skills and establish thinking habits and 21st century skills	1. Assess and evaluate students' thinking skills and 21st century skills 2. Identify students with non-established thinking habits and low scores in the identified 21st century skills 3. Orient identified Grade 10 STEstudents with low thinking skills and 21st century skills on the Thinking skills module and the Project Thinking Innovation 4. Call for a parents' meeting to orient them on the conduct of the study 5. Identify a specific schedule for the THINKING program 6. Prepare the reading materials that will be utilized in the THINKING Program 7. Start the 10-week pilot implementation of the THINKING Program.	June 2020 June 2020 to December 2020 (every Wednesday and Friday of the week)	English Teacher Research Team	Identified Grade 9 students with low thinking skills and 21st century skills Oriented STE parents and students on the THINKING Innovation Established thinking habits and increased thinking skills and 21st century

				skills

A Man Who Had No Eyes
by MacKinlay Kantor

A beggar was coming down the avenue just as Mr. Parsons emerged from his hotel.

He was a blind beggar, carrying the traditional battered cane, and thumping his way before him with a cautious, half-furtive effort of the sightless. He was a shaggy, thick-necked fellow; his coat was greasy about the lapels and pockets, and his hand splayed over the cane's crook with a futile sort of clinging. He wore a black pouch slung over his shoulder. Apparently he had something to sell. The air was rich with spring; sun was warm and yellowed on the asphalt. Mr. Parsons, standing there in front of his hotel and noting the clack-clack approach of the sightless man, felt a sudden and foolish sort of pity for all blind creatures.

And, thought Mr. Parsons, he was very glad to be alive. A few years ago he had been little more than a skilled laborer; how he was successful, respected, admired. . .Insurance. . .And he had done it alone, unaided, struggling beneath handicaps. . .and he was still young. The blue air of spring, fresh from its memories of windy cools and lush shrubbery, could thrill him with eagerness.

He took a step forward just as the tap-tapping blind man passed him by. Quickly the shabby fellow turned.

"Listen, guv'nor. Just a minute of your time."

Mr. Parsons said, "It's late. I have an appointment. Do you want me to give you something?"

"I ain'tno beggar guv'nor. You bet I ain't. I got a handy little article here"--he fumbled until he could press a small object into Mr. Parsons' hand--"that I sell. One buck. Best cigarette lighter made."

Mr. Parsons stood there, somewhat annoyed and embarrassed. He was a handsome figure with his immaculate gray suit and gray hat and malacca stick. Of course the man with the cigarette lighters could not see him. . ."But I don't smoke," he said.

"Listen. I bet you know plenty people who smoke. Nice little present," wheedled the man. "And, Mr., you wouldn't mind helping a poor guy out?" He clung to Mr. Parsons' sleeve.

Mr. Parsons sighed and felt in his vest pocket. He brought out two half dollars and pressed them into the man's hand. "Certainly. I'll help you out. As you say, I can give it to someone. Maybe the elevator boy would--. He hesitated, not wishing to be boorish and inquisitive, even with a blind peddler. "Have you lost your sight entirely?"

The shabby man pocketed the two half dollars. "Fourteen years, guv'nor." Then he added with an insane sort of pride: "Westbury, sir. I was one of 'em.'

"Westbury," repeated Mr. Parsons. "Ah, yes. The chemical explosion. . .The papers haven't mentioned it for years. But at the same time it was supposed to be one of the greatest disasters in--"

"They've all forgot about it." The fellow shifted his feet wearily. "I tell you, guv'nor, a man who was in it don't forget about it. Last thing I ever saw was C shop going up in one grand smudge, and gas pouring in all of the busted windows."

Mr. Parsons coughed. But the blind peddler was caught up with the train of his one dramatic reminiscence. And, also, he was thinking that there might be more half dollars in Mr. Parsons ' pocket.

"Just think about it, guv'nor. There was 108 people killed, about 200 injured, and over 50 of them lost their eyes. Blind as bats--" He groped forward until his dirty hand rested against Mr. Parsons' coat. "I tell you, sir, there wasn't nothing worse than that in the war. If I had lost my eyes in the war, okay. I would have been well took care of. But I was just a workman, working for what was in it. And I got it. You're darn right I got it, while the capitalists were making their dough! They was insured, don't worry about that. They--"

"Insured," repeated his listener. "Yes. That's what I sell--"

"You want to know how I lost my eyes," cried the man. "Well, here it is!" His words fell with the bitter and studied drama of a story often told, and told for money. "I was there in C shop, last of all the folks rushing out. Out in the air there was a chance, even with buildings exploding right and left. A lot of guys made it safe out the door and got away. And just when I was about there, crawling along between those big vats, a guy behind me grabs my leg. He says, 'Let me pass, you--to' Maybe he was nuts. I dunno. I try to forgive him in my heart, guv'nor. But he was bigger than me. He hauled me back and climbs right over me! Tramples me into the dirt and he gets out, and I lie there with all that poison gas pouring down on all sides of me, and flame and stuff. . ." He swallowed--a studied sob--and stood dumbly expectant. He could imagine the next words: (Tough luck, my man. Now, I want to--were) "That's the story, guv'nor."

The spring wind shrilled past them, damp and quivering.

"Not quite," said Mr. Parsons.

The blind peddler shivered crazily. "Not quite? What do you mean you--"

"The story is true," Mr. Parsons said, "except that it was the other way around."

"Other way around?" he croaked unamiably. "Say, guv'nor--"

"I was in C shop, " said Mr. Parsons. "It was the other way around. You were the fellow who hauled back on me and climbed over me. You were bigger than I was, Markwardt."

The blind man stood for a long time, swallowing hoarsely. He gulped: "Parsons. By God. By God! I thought you--" and then he screamed fiendishly: "YES. MAYBE SO.MAYBE SO. BUT I'M BLIND! I'M BLIND, AND YOU'VE BEEN STANDING HERE LETTING ME SPOUT TO YOU, AND LAUGHING AT ME EVERY MINUTE! I'M BLIND."

People in the street turned to stare at him.

"YOU GOT AWAY, BUT I'M BLIND! DO YOU HEAR? I'M"

"Well," said Mr. Parsons, "don't make such a row about it, Markwardt. . .So am I."

True or False.

1. Markwardt did not consider himself a beggar but a peddler.
2. Markwardt told a lie about how he survived the disaster at C shop.
3. Markwardtthought all along that Mr. Parsons did not survive the chemical explosion at Westbury.
4. Due to the difficulties of being blind, Markwardt, unlike Mr. Parsons was unsuccessful in his life.
5. Mr. Parsons also became blind because of the chemical explosion at Westbury.

Write only the letter of your answer.

6. What led Mr. Parsons to buy the lighter?
   a) He was in a hurry and didn't want the peddler to delay him.
   b) He was annoyed by the blind man's insistence that he buy a lighter.
   c) He felt sorry for the blind man.
   d) He was not interested to hear the blind man's story.

7. If you were Mr. Parsons, would you buy the lighter even if it had no use to you?
   a) Yes, because I could give it to someone who needs it.
   b) No, because the blind man would take advantage of me.
   c) Yes, so the blind man can go away.
   d) No, because the item is useless.

8. If you were Markwardt, how do you think you would react if you found out that Mr. Parsons was the one you hauled back at C Shop 14 years ago?
   a) I would run away.
   b) I would be angry.
   c) I would be happy.
   d) I would be so ashamed.

9. Do you think Mr. Parsons wanted to humiliate the blind man in telling him the truth?
   a) No, he only needed to tell Markwardtthe truth.
   b) No, he wanted Markwardt to be honest.
   c) Yes, because he did not like Markwardt's reversing the story.
   d) Yes, he was angry with Markwardt.

10. Do you think that Markwardt's disability can be used as an excuse for hislies?
    a) Yes, because his physical disability places him in a lesser position.
    b) Yes, because his physically disability would allow him to do as he pleases.
    c) No, he should only lie to people who have wronged him.
    d) No, because physical disability is not an excuse for him to take advantage of others.

11. How would you describe Markwardt's attitude?
    a) He is hard-working.

b) He is a swindler.
c) He is persevering.
d) He is a liar.

12. How would you describe Mr. Parsons' attitude towards life despite being blind?
    a) He is regretful.
    b) He is vindictive.
    c) He is pessimistic.
    d) He is happy and contented.

13. What feeling did Mr. Parsons have when he revealed that he was also blind?
    a) Mr. Parsons felt angry because Markwardt lied about his situation.
    b) Mr. Parsons felt satisfied because he showed Markwardt that his blindness did not stop him from becoming successful.
    c) Mr. Parsons felt ashamed of himself because he was blind.
    d) Mr. Parsons felt happy because the blind man was humiliated.

14. How did Markwardt feel when Mr. Parsons revealed his identity?
    a) He felt happy to realize that Mr. Parsons is still alive.
    b) He felt angry because Mr. Parsons became successful in life.
    c) He felt ashamed of himself because his story was a lie.
    d) He felt proud because he persevered in life by peddling.

15. Which of the following instances characterizes the encounter between Mr. Parsons and Markwardt?The encounter shows:
    a) the fate of blind men.
    b) the relevance of karma when people lie to others.
    c) that one can make a living out of begging from rich people.
    d) thedifferent fate of two people who both became blind from the same accident.

16. What do you think Mr. Parsons meant in the last line "So am I."?He meant that:
    a) he too became blind from the chemical explosion at C Shop.
    b) he was as miserable as Markwardt.
    c) he was also relieved because he was blind.
    d) they both survived.

17. What did Mr. Parsons want to prove to the blind man? Mr Parsons wanted to prove to Markwardt that:
    a) one's blindness need not be a reason for being poor.
    b) What Markwardt did during the accident put him where he is now.
    c) he was right.
    d) Markwardtought to pay for the wrong he did at C Shop.

18. Why did Markwardt want Mr. Parsons to hear his story?
    a) He wanted Mr. Parsons to know about his past.
    b) He wanted Mr. Parsons to pity him so he could ask for more money.
    c) He wanted Mr. Parsons to feel glad about helping.
    d) He wanted to defend himself from Mr. Parsons.

19. Why do you think Mr. Parsons and Markwardt met after so many years?
    a) I think it was to show that people are responsible for other people's situation.
    b) I think it was to show that lying does not always help us in our situation.
    c) I think it was to show that people's lives are different from one another no matter what one does to succeed.
    d) I think it was to show the destiny of two people with the same unfortunate experience and their life's outcome.

20. What conclusion can be drawn from the story?
    a) The story concludes that those who do ill to others will never succeed.
    b) The story concludes that Mr. Parsons did not let the accident adversely affect his future; he used the experience to motivate him to succeed in life.
    c) The story concludes that Markwardtnever recovered after the explosion.
    d) The story concludes that the blind man is a liar telling people to help him because he lost his eyesight.