

# Attitude Survey on Stem Education among Primary and Junior High School Students

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**Abstract**— This study was conducted to assess student's attitude and confidence from primary and junior high schools of Iriga City towards STEM Education for School Year 2020-2021. Specifically, the study aimed to: (1) evaluate students' attitude towards STEM education; (2) determine students' motivation to choose a career in a STEM field; (3) know the education programs or strategies designed to increase students' attitude toward STEM subjects and careers; (4) develop STEM abilities of students, including those who are not interested in studying STEM fields.

The results are determined into two: primary and junior high schools of Iriga City. Majority of the respondents in Primary Schools were female while in junior high school, male. The perceptive data shows 3.13 weighted mean regarding STEM content and subjects by the primary schools in Iriga City were verbally interpreted into Neither Agree or Disagree. The two junior high schools in Iriga City: Cristo Rey Integrated High School and feel towards STEM education resulted into a Neither agree or disagree interpretation with an average mean of 3.14. Zeferino Arroyo High School had 120 respondents who favored a positive attitude by agreeing on what the students feel or think towards the STEM content and subjects, with an average weighted mean of 3.42. Out of the 12 Career Pathways, 7 STEM fields did not touch the interests of primary schools in Iriga City. Academic performance and grade proxy representation of both primary schools and junior high school in Iriga City have done pretty well in terms of English, Mathematics, and Science. Most of the primary school's students in Iriga City answered "No" in mathematics subject while the other subject displayed "Not sure" in science while, over-viewing advance classes beneficial, junior high school's students chose "Yes" both Math and Science.

The student's perceptive idea towards STEM Education might be affected based on external factors such as having an image of an adult working on STEM field which might have captured the interest of the student. One example of which was knowing an adult working in the said field, Primary school students only know an adult working as Engineers, while Scientists, Mathematicians, and Technologists were responded as "No" meaning do not know any adults working in that job. These external factors may have shaped the student's career choice, particularly in the STEM field. On the other level, the Junior High school level knows an adult working as an engineer and mathematician whereas the scientists and technologists do not. The roundabout on these results signifies that Engineers, as one of the STEM fields in STEM is one of the most-known jobs of students on both school levels whose adult's chosen line of career.

**Index Terms**—Attitude Survey, Primary and Junior High School Students, Stem Education

## INTRODUCTION

The development of STEM continues to be decisive for the development of the modern world. Creative innovation and technological progress are important elements for the improvement of humans' quality of life and for the protection of the environment. Nonetheless, reports showed that nowadays, an insufficient number of students' study STEM fields to cover the future needs of the society (Sjaastad, 2012; EC, 2015) and students' interest towards STEM learning is falling (Kelley & Knowles, 2016). As a result, many countries are trying to find measures in order to improve this situation (EC, 2015). The American education system, for example, is trying to increase the number of students who chose education and careers in STEM fields, to increase workforce in STEM fields and to develop STEM abilities of students, including of those who are not interested in studying STEM fields.

By considering the importance of synergies between science, technology, engineering, and mathematics, students need to be nourished for a positive attitude about them at the beginning. The investigation of students' attitudes towards studying science had been a substantive feature of the work of the science education research community for the past 30–40 years. Its current importance is to emphasize by the now mounting evidence of a decline in the interest of young people in pursuing scientific careers (Department for Education 1994; Smithers and Robinson 1988).

STEM is the acronym of Science, Technology, Engineering, and Mathematics fields. STEM education refers both to teaching and learning in the mentioned disciplines, especially to teach and help the students learn a new discipline based on the integration of Science, Technology, Engineering, and Mathematics on a real-world application (Hom, 2014). A modern instructional design has been popular in the 21st century, Education approach for students in Science, Technology, Engineering and Mathematics (STEM) has received increasing attention over the past decade, the STEM education: a curriculum based on the idea of educating students in four specific disciplines of science, technology, engineering and mathematics and in an interdisciplinary and applied approach. (Honey, Pearson & Schweingruber, 2014).

STEM is an educational field of great importance and over time, research was carried out to investigate: a) students' and youth's attitude towards STEM fields (Faber et al., 2013); b) students' motivation to choose a career in a STEM field (Wang, 2013); c) the sources (persons, environment, etc.) that influence students to pursue a STEM degree (Sjaastad, 2012); d) how girls can be motivated to follow a career in a STEM field (EC, 2015; Talley & Martinez Ortiz, 2017).

The benefits of STEM education include making students

become better problem solvers, self-reliant, innovators, inventors, creators, logical thinkers, and technologically literate (Morrison, 2006). STEM stimulated students to become critical thinkers. Some studies have shown that integrating mathematics and science has a positive impact on students' attitudes and interest in school (Bragow, Gragow & Smith, 1995), their motivation to learn (Gutherie, Wigfield & VonSecker, 2000), and achievement (Hurley, 2001). Recently, another study focused on an educational strategy based on professional practices that can help students make connections between mathematics, statistics, science, and professional practices (Dierdorp et al., 2014).

Therefore, the Student Attitudes toward STEM (S-STEM) Surveys to measure those attitudes consist of four validated constructs that use Likert-scale items to measure student attitudes toward science, mathematics, engineering and technology, 21st-century skills. The surveys also contain a comprehensive section measuring student interest in STEM careers. (American Society for Engineering Education, 2013) The report also summarizes baseline findings of student attitudes toward STEM subjects, careers, and 21st-century skills, demonstrating how this survey can be a useful tool for innovative STEM education and workforce development programs.

## METHODOLOGY

### Respondents of the study

The data of this study were taken from the response of primary and junior high school students in the selected schools in Iriga City who are currently enrolled in a public school for the present school year. For the primary school, a minimum of 160 students specifically the grade 6 students coming from big schools in the city were required for this study. The junior high school with a minimum of 300 students were required for this study. Schools under primary were selected if they are enrolled in a science and mathematics while the schools under junior high school, students who are enrolled in a science and mathematics subject. The willingness and support from the school heads and teachers were also be considered. The 460 students are easily found in the urban areas in the province but this study included schools from the rural areas to be able to get a comprehensive representation and comparison of the students' attitude towards STEM education from these locations.

### Research Instrument

The measurement tool used in the study was a modified version instrument of Student Attitude Towards STEM Survey (S-STEM). According to the STEM Learning and Research Center, this instrument contains four scales (sets of surveys items that most confidently describe a single characteristic of the survey of the survey when the responses to these items are calculated as a single result).

### Research design

The researcher used the descriptive research design. This describes the attitudes, preferences, views, and feelings of a big number of people arriving at a certain conclusion about their confidence and attitudes toward math, science, engineering and technology, and 21<sup>st</sup> century learning respectively consist of Likert-scale questions. Final items in the survey ask students about their attitudes toward 12 different STEM career areas, their performance expectations for themselves in the next year or in the future whether or not they have plans to attend postsecondary school and whether or

not they know adults who work in STEM fields.

### Collection of data

The primary data and information that are collected in this study were students' responses from a survey questionnaire. This data were used for the attitude assessment on students from primary and junior high school towards STEM Education.

### Analysis of Data

After the questionnaires were retrieved, the data were tailed and measured statistically. Thus, the data for the respondent and dependent variables were subjected to analyses and interpretation. All data gathered were presented quantitatively. The statistical tools to be used are the following:

**Percentage Technique.** In order to determine the respondents' nominal data, this consists of the raw counts of the frequency's occurrence of the characteristics under consideration. Ordinary data/ treatment was based on the frequency through the percentage formula.

**Weighted Mean** This was the technique used to get the mean of the attitude on selected primary and junior high school students on STEM. The weighted mean was utilized to quantify the data and make the interpretation of the five-rating scale.

## RESULTS AND DISCUSSION

The data gathered in this study were presented in this section. The presentation of the data was categorized into socio-demographic profile of students, confidence and attitude towards: math, science, engineering and technology, and 21<sup>st</sup> century learning, determine student's motivation in choosing a career in STEM field, and education programs or strategies in increasing student attitudes toward STEM subject and career.

### Part I- Student's Profile

Sex is defined as the biological characteristics which distinguishes an individual from his/her role in the community. The sex of a student distinguishes its different perspectives and can be affected by different factors in determining the character or value or a person.

According to research studies, at a young age, girls lose interest in STEM-related subjects as early as grade 4. In line with this, girls normalize the thought of the field are not well suited for them, lacking naturally in Math and Science and men can only do well more in these careers.

Table 1a exhibited the results, out of the 160 selected students from three primary schools, majority of the respondents were female which is composed of 53.1%. As for the male students, 46.9 percent were gathered.

**Table 1a. Student’s Profile from the Primary Level**

VARIABLES	FREQUENCY	PERCENTAGE
	(n=160)	%
<b>Sex</b>		
Male	75	46.9
Female	85	53.1
<b>Total</b>	<b>160</b>	<b>100</b>
<b>Age</b>		
11	147	91.9
12	13	8.1
<b>Total</b>	<b>160</b>	<b>100</b>

The table 1b showed the student’s profile from the Junior high school level and it revealed that 59% were male students while 41% were female. This result is in settlement with all the studies that show that there is no question about gender difference when it comes to STEM education.

**Table 1b. Student’s Profile from the Junior High School Level**

VARIABLES	FREQUENCY	PERCENTAGE
	(n=200)	%
<b>Sex</b>		
Male	118	59 %
Female	82	41 %
<b>Total</b>	<b>200</b>	<b>100</b>
<b>Age</b>		
15	42	21 %
16	158	79 %
<b>Total</b>	<b>200</b>	<b>100</b>

Age

The age defines the maturity of the students in terms of attitudes or perceptions towards STEM. It implies that the learning ability of the students depends directly on student’s maturity level. Seemingly, as an individual matures in terms of age, the more likely that the leaning capacity of student is greater.

**Part II-STEM Survey**

**Attitude Constructs**

The attitude construct refers to the student attitude towards all four primary subjects of STEM: math, science, engineering and technology, and 21st Century Learning that encompasses a five-scales questions on the confidence and attitude towards STEM strand.

According to the results of the data analysis shown on the table, the three primary schools from Iriga City—Sta. Teresita with 3.13, San Agustin with 3.23 and La Trinidad and with 3.17 average weighted mean, the primary school students neither exhibited a statistically significant more positive attitude nor a negative attitude toward the content areas of STEM.

The attitude survey from Junior high school students were shown from the table’s 2d—Cristo Rey Integrated High School and table’s 2e, Zeferino Arroyo High School, both public schools found in Iriga City. According to the attitude survey data results within the four subjects, Cristo Rey Integrated High School with 80 respondents that got an average weighted mean of 3.14 that concluded into a Neither Agree or Disagree have a verbal interpretation towards their perception and attitude on STEM education whereas subject’s Math, Science and Engineering and Technology stemmed a neither agree or disagree attitude. However, 21st century Learning perceived a positive attitude from the students, while 120 respondents from Zeferino Arroyo High School got an average mean of 3.42 resulted into an attitude of agreeing towards the STEM education. Math and Science subjects conveyed a neither or disagree attitude on the subject, which was both major subject of the said strand.

**Table 2a. Student’s Attitude Survey in Elementary and Secondary School**

STEM Attitude	Weighted Mean				Average Weighted Mean	Verbal Interpretation
	Math Attitudes	Science Attitudes	Engineering and Technology Attitudes	21 <sup>st</sup> Century Learning Attitudes		
<b>Sta. Teresita Elementary School</b>	3.19	3.06	3.08	3.17	3.13	Neither A/D
<b>San Agustin Elementary School</b>	3.16	3.24	3.36	3.15	3.23	Neither A/D
<b>La Trinidad Elementary School</b>	3.19	3.06	3.08	3.17	3.13	Neither A/D
<b>Cristo Rey Integrated High School</b>	2.67	3.23	3.12	3.53	3.14	Neither A/D
<b>Zeferino Arroyo High School</b>	3.09	3.34	3.47	3.84	3.42	Agree

Conversely, getting an “agree” perception from the respondents, both Engineering and Technology and 21st century learning subjects favored a positive attitude towards STEM education that led to an overall positive attitude.

**CAREER INTEREST SECTIONS**

These sections are the list of STEM-related career which involved the subjects: math, science, engineering, and technology. The career interest section used a four-point Likert scale - Not at all interested, Not so interested, Interested, and Very interested. This is to measure student’s attitudes in the twelve STEM career pathways: physics, environmental work, biology and zoology, veterinary work, mathematics, medicine, earth science, computer science, medical science.

According to the study of Weibe (2018), the literature paints a compelling picture that student STEM attitudes and career interests are in fluctuation during their elementary and secondary school years, though stabilizing and solidifying some during their secondary years.

**Table 3a. Career Interests—Primary Schools from Iriga City**

PRIMARY LEVEL-CAREER INTERESTS				
Field	Not at all interested	Not so interested	Interested	Very Interested
Item C1: Physics	13%	42 %	38%	7%
Item C2: Environmental Work	18%	38 %	39%	6 %
Item C3: Biology and zoology	17%	38 %	39 %	7 %
Item C4: Veterinary Work	24 %	40 %	24 %	11 %
Item C5: Mathematics	28 %	36 %	28 %	8 %
Item C6: Medicine	24 %	34 %	29 %	13 %
Item C7: Earth Science	18 %	33 %	43 %	6 %
Item C8: Computer Science	14 %	28 %	43 %	16 %
Item C9: Medical Science	18 %	36 %	32 %	14 %
Item C10: Chemistry	21 %	41 %	28 %	11 %
Item C11: Energy	16 %	34 %	37 %	14 %
Item C12: Engineering	15 %	36 %	38 %	11 %
Item C13: Agriculture/ Food Tech	14 %	41 %	32 %	13 %

According to the data results of Career Interest in the Primary schools from Iriga City, Item’s C1: Physics, C4: Veterinary Work, C5: Mathematics, C6: Medicine, C9: Medical Science, C10: Chemistry, and C13: Agriculture/Food Tech ponted on the “not interested” which only means does not touched the career interests of primary students while as for the Item’s C2: Environmental Work, C3: Biology and Zoology, C7: Earth Science, C8: Computer Science, C11: Energy, and C12: Engineering said, otherwise.

There were number of important implications for supporting students along STEM career trajectories. First and foremost, our work reinforces findings that students, as young as elementary grades, are forming attitudinal associations between their academic and life experience and future STEM career options.

Conferring to study of Maltese & Tai, 2011, while students in younger grades may not have detailed understandings of all possible STEM career pathways, they are beginning to differentiate them in broader ways. Nonetheless, research has shown that students are more likely to pursue postsecondary schooling in STEM fields if they have success in mathematics (Wang, 2012) or high self-efficacy in science (Scott & Mallinckrodt, 2005) in earlier grades.

**Table 3b. Career Interests—Junior High Schools from Iriga City**

JUNIOR HIGH SCHOOL LEVEL-CAREER INTERESTS				
Field	Not at all interested	Not so interested	Interested	Very Interested
Item C1: Physics	7%	47 %	44%	3%
Item C2: Environmental Work	11%	33 %	45%	12 %
Item C3: Biology and zoology	6%	41 %	42 %	13 %
Item C4: Veterinary Work	10 %	45%	32 %	14 %
Item C5: Mathematics	15 %	31 %	38 %	13 %
Item C6: Medicine	12 %	32 %	41 %	16 %
Item C7: Earth Science	8 %	34 %	42 %	16 %
Item C8: Computer Science	12 %	31 %	43 %	15 %
Item C9: Medical Science	9 %	39 %	42 %	11 %
Item C10: Chemistry	11 %	51 %	31 %	7 %
Item C11: Energy	10 %	45 %	38 %	8 %
Item C12: Engineering	8 %	36 %	38 %	19 %
Item C13: Agriculture/ Food Tech	8 %	40 %	39 %	34 %

As shown from the data results that is ranging from “Not so Interested” to “Interested” from Table 3b. Career Interests of Junior High Schools from Iriga City, the respondents took an Interest on the field under the items C2: Environmental Work, C3: Biology and Zoology, C5: Mathematics, C6: Medicine, C7: Earth Science, C8: Computer Science, C9: Medical Science, C12: Engineering while the rest of the career fields in the table, said in another manner.

Researchers, e.g., Jenkins & Nelson, 2005 have found high-school-age students able to provide meaningful information about their interests in future STEM careers. These interests seem to be somewhat stable at this age, as Sadler, Sonnert, Hazari, and Tai (2012) found that students’ career interests when entering high school were the strongest predictors of their career interests when leaving high school.

**Academic and External Items**

Since we are not able to get the student’s academic performance, this variable would be the representation, in the following academic sections, students’ account headed for how well was their expectations on their academic performance in Science, Mathematics and English/Language Class this year (Not very well, pretty well, very well). Answerable by the following:(Yes, No, not sure) student’s plans on taking advance classes in the future.

In the following external section that tackled student’s plan on going to college. If the answers were displayed as “yes” questions regarding the list of colleges, they are planning to apply into and if it is four-year college or community colleges. In addition, the questions about adults who are working on STEM field.

**Table 4a. Expectations and Future Plans on Academic Performance in Major Subjects—Primary Schools in Iriga City**

ACADEMIC SECTION: PRIMARY SCHOOLS IN IRIGA CITY			
<i>How well do you expect to do this year?</i>			
Variables	Not Very Well	OK/ Pretty Well	Very Well
English/ Language Art Class	35 %	45 %	20 %
Math Class	37 %	47 %	16 %
Science Class	33 %	44 %	23 %
<i>In the future, do you plan to take advance classes in</i>			
	Yes	No	Not Sure
Mathematics	37 %	41 %	22 %
Science	28 %	33 %	39 %

The data results taken from the respondents of Primary School in Iriga city were their expectations on their academic performance particularly Math, Science and English were shown in the table. Majority of the students in primary level have accomplished the following subjects with a percentage of: Math 47%, Science 44 % and English 45%. In this account, we were able to imply the academic performance of majority of the students of the Primary Schools in Iriga City are doing pretty well as exhibit in the result without being able to show the student’s grade or other academic achievements. In line with this, the respondents were also asked about the future plans on taking advances classes in Mathematics or Science. Most of the students answered “No” in the subject mathematics while the other subject displays “Not sure” in Science.

The results showed that initially, students exhibit a positive attitude towards mathematics, but their attitude becomes less positive as the students move forward to higher levels of education.

**Table 4b. College plans and school of Interests by the Selected Primary Schools in Iriga City**

	Yes	No	Not Sure
<i>Do you plan to go to college?</i>	69%	10%	21 %
Plan on College Attending	Frequency (n=118)	Percentage %	
Community College	50	42 %	
Four-year College	68	58 %	
<b>TOTAL</b>	<b>118</b>	<b>100 %</b>	
College School’s Interest	Frequency (n=118)	Percentage %	
Camarines Sur Polytechnic College	12	10 %	
University of Saint Anthony	15	13 %	
Baao Community College	8	7 %	
AMA University and College-Iriga	3	3 %	
Undecided	80	67%	
<b>TOTAL:</b>	<b>118</b>	<b>100 %</b>	

College is a higher institution providing a higher education or specialized professional or training. Out of 100 percent, 69 % of respondents in the primary schools in Iriga City were planning to continue their post-secondary high school studies. Those 69 % were 118 respondents who placed “Yes”, as a result, it was subdivided into

two categories, four-year college 58% and community college 42%. In addition, listed on the table is the potential college schools that the respondents are interested to went to. Among the schools listed on the table, University of Saint Anthony got the highest percentage 13% as their potential option in college to be attended in college. Followed by, Camarines Sur Polytechnic College 10% However, it is noted that the 67 % of the respondents were still undecided on their school of interest. School choice is one factor that affects the attitude perceived of a student towards STEM education and one’s

**Table 4c. EXTERNAL FACTORS: Adults that the Primary students in Iriga City know working in STEM Field.**

EXTERNAL FACTORS: PRIMARY SCHOOLS IN IRIGA CITY			
Variables	Yes	No	Not Sure
Do you know any adults who works a scientist?	24 %	48 %	28 %
Do you know any adults who works as an engineer?	46 %	34 %	20 %
Do you know any adults who works as mathematicians?	19 %	46 %	35 %
Do you know any adults who works as technologists?	26 %	43 %	31 %

To partially account for student’s external factors that might affect their interest or can give them a perceptive idea towards the STEM field, respondents are asked whether or not they know adults who work in the said field. In accordance with the survey results, 48 % respondents answered “No” which means students from Primary Schools do not know any adults working as a Scientist. Majority of the respondents also responded “No” on adults working as Mathematicians with 46% and Technologists 43%. Thus, it implied that primary students are new to these terms, whereas adults working in the following fields are not found within the locality and do not personally know an adult working either as a Scientist, Mathematicians and Technologists. However, Engineering is found everywhere and is accessible through one’s locality, responded a “Yes” by means of 46%. Seemingly, most of the primary students in Iriga City knows an adult working as an Engineer.

Furthermore, according to Bandura’s (1986) Social Learning Theory, Adults can be perceived as role models that can facilitate one’s career aspirations and development offering hope and providing guidance in the process.

**Table 4d. Expectations and Future Plans on Academic Performance in Major Subjects—Junior High Schools in Iriga City**

ACADEMIC SECTION: JUNIOR HIGH SCHOOLS IN IRIGA CITY			
<i>How well do you expect to do this year?</i>			
Variables	Not Very Well	OK/ Pretty Well	Very Well
English/ Language Art Class	24 %	65 %	11 %
Math Class	34 %	48 %	18 %
Science Class	21 %	60 %	19 %
<i>In the future, do you plan to take advance classes in</i>			
	Yes	No	Not Sure
Mathematics	45 %	16 %	39 %
Science	47 %	18 %	35 %

The information showed about their expectations on how well the students are to perform this year from the major subjects—Math, English and Science of the Junior High Schools in Iriga City, under the fourth category of the survey questionnaire. As the proxy of the representation of the student’s academic performance and grades, the respondents responded “OK/Pretty Well” on the three subjects. It is implied that they expected to perform a pretty well performance this year, English 65 %, Math 48 % and Science 60%. In relation to the academics, the respondents were also asked about their interest on taking an advance class in the future. Majority of the junior high school students answered “Yes”.

According to the Marlborough Organization (2019), Taking advanced classes early in life helps students develop fundamental life skills while preparing them for challenges they will face later in their academic careers. The main purpose of taking advanced classes in middle school is to prepare students for the academic challenges that lie ahead. Advanced classes can be intimidating to middle school students. However, the benefits of taking these classes are worth the initial struggle.

The junior high school respondents were composed of grade 10 completing students with a remaining two years in preparatory for their college education, 73 % of the respondents responded “Yes” on planning to attend college in the future after pursuing their post-junior high school studies. Without higher education, basic education cannot progress as stated by Sanyal of UNESCO Forum, Higher education is at the top of the education pyramid and determines to a large extent the state of the education system of the country, especially its quality. College in the 21st century is vital for social and human development and therefore such linkages must be established by promoting basic education.

**Table 4e. College plans and school of Interests by the Junior High Schools in Iriga City.**

	Yes	No	Not Sure
<i>Do you plan to go to college?</i>	73%	6 %	21 %
Plan on College Attending	Frequency (n=145)	Percentage	
Community College	30	21 %	
Four-year College	115	79 %	
<b>TOTAL</b>	<b>145</b>	<b>100 %</b>	
Colleges Interests	Frequency (n=145)	Percentage	
Camarines Sur Polytechnic College	21	14 %	
University of Saint Anthony	7	5 %	
Baao Community College	8	6 %	
University of Northeastern of the Philippines	3	2 %	
Oliveros College	1	1 %	
University of Santo Tomas-Manila	1	1 %	
WRI College	2	2 %	
Bicol University	5	3 %	
Ateneo De Naga University	1	1 %	
University of the Philippines	3	2 %	
Undecided	93	63 %	
<b>TOTAL:</b>	<b>145</b>	<b>100 %</b>	

Out of the 145 junior high school students who were taking post-senior high school education, College institution is also determined into two sub-categories: four-year college which majority of the students responded getting a 79 %, while community college, other sub-category got a percentage of 21 %. In line with this, the respondents were also surveyed on the college institutions they had in mind, placing first in student’s interest, Camarines Sur Polytechnic College (CSPC) got a percentage of 14, followed by Baao Community College (BCC) 6%, and University of Saint Anthony (USANT) 5% is found within the premises of Camarines Sur. There also some respondents come back with their school of interest outside the area of Bicol which is some top-tier universities in the Philippines, University of Santo Tomas Main and University of the Philippines.

However, it is shown in the table as well, the large number of students with 63% who were still undecided on the school that they were going to attend to in the future.

**Table 4f. EXTERNAL FACTORS: Adults that the Junior High School students in Iriga City know working in STEM Field**

EXTERNAL FACTORS: JUNIOR HIGH SCHOOLS IN IRIGA CITY			
Variables	Yes	No	Not Sure
Do you know any adults who works a scientist?	25 %	44 %	31 %
Do you know any adults who works as an engineer?	71 %	12 %	17 %
Do you know any adults who works as mathematicians?	42 %	34 %	24 %
Do you know any adults who works as technologists?	32 %	39 %	29 %

Bandura’s (1986) Social Learning Theory lends support for the significance of role models. It suggests that one-way children learn is “by observing and experiencing the behavior of others particularly adults.” (Bricheno & Thornton, 2007, p.384). From the learning that takes place during these interactions, children construct their own beliefs and behaviors, known as socialization (Bricheno & Thornton, 2007, p. 384). These external factors may have shaped the students career choice particularly in the STEM field. Therefore, the respondents were queried some questions regarding on adults they know working in STEM field. The junior high school’s students as expected, knows some adults who were working as engineers, garnering 71 %. As well as adults working as mathematicians with a percentage of 42 while majority of the students who answered “No”, may not be particular with the field or do not know any adults working in the said field which are scientists 44 % and technologists 39 %.

**CONCLUSION AND RECOMMENDATION**

Majority of the respondents in Primary School were female while junior high school were male. Student’s age on both level (11 years old and 15 years old) complemented their age. The perceptive data showed 3.13 weighted mean regarding STEM content and subjects by the primary schools in Iriga City were verbally interpreted into Neither Agree or Disagree. The two junior high school in Iriga City: Cristo Rey Integrated High school thinks and feel towards STEM education resulted into a Neither agree or disagree interpretation with an average mean of 3.14. Zeferino Arroyo High School having 120 respondents favored a positive attitude by agreeing on what the student’s feel or think towards the STEM content and subject with an average weighted mean of 3.42. Out of the 12 Career Pathways, 7 STEM field does not touch the interests of primary schools in Iriga City. This just implied that younger grades do not have yet a detailed understanding of it. Compared to the primary students, Junior high-school-age will be able to provide their interests in future particularly to those who take interest in STEM Career. Out of 12, 8 careers captured student’s interest from the Junior high schools from Iriga City.

Academic performance and grade proxy representation, both primary schools and junior high school in Iriga City have done pretty well in terms of English, Math, and Science. Primary and Junior High Schools planned on going to college and chooses four-year college. Few known schools with quality education Most of the primary school’s students in Iriga City answered “No” in the subject mathematics while the other subject displays “Not sure” in Science while, over-viewing advance classes beneficial, junior high school’s students chose “Yes” both Math and Science. In Iriga City, the chosen schools in primary student’s school of interest, University of Saint Anthony (USANT) and Camarines Sur Polytechnic College (CSPC) got a 10-13 percentage. Results shows that the chosen schools were limited into Camarines Sur premises only.

Meanwhile, Camarines Sur Polytechnic College (CSPC) got 14 % as the highest chosen school of the junior high school students. Baao Community College (BCC) 6% and University of Saint Anthony (USANT) 5 % follows. Nonetheless, a minority of the junior high school students do not limit themselves in the area, but also took an interest in some top-tier universities in the Philippines. Undecidability was never out of the picture for both school levels that the majority of primary and junior high school students voted for as the result have shown.

The student’s perceptive idea towards STEM Education might be affected based on external factors such as having an image of an adult working on STEM field which might have captured the interest of the student. One example of which was knowing an adult working in the said field, Primary school students only knows an adult working as Engineers, while Scientists, Mathematicians, and Technologists were responded as “No” meaning the students have no idea of any adults working in these jobs or profession. These external factors may have shaped the students’ career choices, particularly in the STEM field. On the other level, Junior High school level knows adults working as engineers and mathematicians whereas the scientists and technologists do not.

The roundabout on these results signifies that Engineers, as one of the STEM fields in STEM is actually one of the most-known jobs of students on both school levels whose adult’s chosen line of career.

Based on the following findings of the study, the researcher recommended the following: (a) the teacher and school head should demeanor an education program such as seminars, talk, and open forums to increase student’s attitude in both school levels towards STEM subjects and careers; (b) the students particularly Junior High School students should be partaking a STEM-related events in preparatory of developing its abilities and interest into STEM strand, including those who are not interested in studying the said strand; (c) the Department of Education (DepEd) in the Bicol Region should be updating its importance of STEM education based on literature review and its education program; whereas early as primary school, laboratories and workshops and any STEM-related activities should be utilized; (d) Conduct a year-end program to recognize and

acknowledge role models, an adults working in the STEM field to the junior high school students and primary school students to facilitate a career development by offering hope and showcasing guidance to the students that have been shown to be related to the achievement of youth in many career-related outcomes.

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