CHASING STEM CAREERS: A TWO-WAY PERSPECTIVE ON IMPLEMENTING ELECTIVE SUBJECTS ON STEM IN RSHS FOR R1

A Research Paper
Presented to the Faculty of the
Regional Science High School for Region I
Bangar, La Union

In Partial Fulfillment of the
Requirements in the Subject
Practical Research I

By

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June 2023

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ACKNOWLEDGEMENT

First and foremost, the researchers would like to thank the **Lord Almighty God** for providing them with the wisdom and knowledge that enabled them to complete this study. Thank you for giving them the courage to confront all the challenges that this study posed. Without Your assistance, this study would be impossible to complete.

The researchers would also want to convey their heartfelt gratitude and appreciation to their **parents** for their unwavering support and encouragement during this study, particularly when it came to financial matters.

The researchers would like also to express their sincerest gratitude to the administration headed by their principal, **Ma'am Nancy G. Hoggang** for allowing of this study and for instilling within them the ethics in research as well as scientific trait and values.

We would like to convey our sincere gratitude and appreciation to every respondent who participated wholeheartedly in this study. Your participation and openness to sharing your valuable insights were crucial to the success of this study. Your considerate replies and contributions have considerably improved our comprehension and helped us compile useful data. We sincerely appreciate all your time, work, and dedication to this project. Your active participation has had an enormous influence, and we are extremely grateful that we had the chance to collaborate with such a committed group. We appreciate your significant assistance in improving understanding and progressing this project.

Lastly but not the very least, the researchers would like to give their unending thanks to their research adviser and consultant **Ma'am Antoniette G. Padua** for always being there to help them in technical aspects, improvisation of the manuscript and for the lessons she had shared that helped and motivated the researchers to finish this study. The researchers appreciate all your efforts and sacrifices.

Finally, the researchers would like to express their sincerest gratitude and deepest appreciation to all the people who contributed and unselfishly lent their hands, hearts, and minds for the successful completion of this study.

To God be the Glory!

- **The Researchers**

DEDICATION

The researcher would like to offer this humble research paper,

to the **Almighty Father** for His unending love,

as He became their source of strength all throughout this study.

Lord God, they present to you the fruit of their hard work,

to be blessed with your grace that it may become as one of their beautiful symbols of Your goodness.

Likewise, it is dedicated to their loving and supportive **parents** and **friends**,

who served as their inspiration and provider of endless pieces of advice,

and never-ending words of encouragement.

Also, for financial support, and sacrifices during the development of this work.

And lastly, to **themselves** for having the determination to accomplish this work.

and for never getting tired of this journey.

- AJJ

RESEARCH ABSTRACT

TITLE: **CHASING STEM CAREERS: A TWO-WAY PERSPECTIVE ON IMPLEMENTING SPECIAL STRANDS ON STEM IN RSHS FOR R1**

Total No. of Pages: 72

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Key Words**:** Education, STEM, Elective subjects, Future Careers, Importance of Education, Point of View, Challenges, Implementation, Perception, Specificity, Program.

ABSTRACT: Education has taken leaps and bounds. As society moves forward, education will continue to progress, developing more efficient methods in teaching the future generations. One example is the implementation of elective subjects in tertiary education. This study aims to explore the perception geared towards the employment of elective subjects in the Science, Technology, Engineering, and Mathematics (STEM) strand through the perspective of both students and teachers. This study employed a qualitative research approach, specifically a phenomenological design. Twenty grade 10 students and 10 junior and senior high school teachers at the Regional Science High School

of Region 1 were selected, totaling 30 respondents with the use of non-probability sampling, particularly convenience sampling. A one-on-one interview consisting of semi-structured questions was used to gather data. Furthermore, data collection was done ethically and analyzed using thematic analysis which yielded findings that the implementation of STEM AMS and REM will provide additional knowledge that serves as a bridge to a student's career path while serving as an adversity that will push both the students and teachers to newer heights. In order to get the most out of these sub-branches, however, challenges like finance, equipment, facilities, and staff should be resolved. The researchers concluded that both the grade 10 learners and the junior and senior high school teachers showed significant interest and enthusiasm to the implementation of elective subjects. Insinuating that both points of view acknowledge elective subjects as a steppingstone that leads them to an improved educational experience.

TABLE OF CONTENTS

Page

.

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

"Education is the most powerful weapon which you can use to change the world," said Nelson Mandela, former President of South Africa**.**

According to the United Nations Educational, Scientific and Cultural Organization or UNESCO (2018), education is a system designed to develop a learner's general knowledge, competencies, literacy, and numeracy skills. Typically carried out inside a school with people of all ages, genders, and races, education is a significant part of human life. In the Philippines, the current basic education system consists of a 13-year four-stage program. These include Primary, Intermediate, Junior, and Senior High Schools, with students starting from ages five to four and graduating of ages seventeen to eighteen (Philippine Qualifications Framework, 2019).

Having been recently added, Senior High School is a huge turning point in a student's learning progress, with two years of specialized upper secondary education; students may choose a specialization based on aptitude, interest, and school capacity. Due to the nature of this stage diverging into different strands that lead to different professions, learners must now categorize themselves into three academic tracks: Academic, Technical-Vocational-Livelihood, and Sports and Arts. The Academic track includes three strands: Science, Technology, Engineering, and Mathematics (STEM), Accountancy, Business, and Management (ABM), and Humanities, Education, Social Sciences (HESS).

In a study conducted by Rosslin Robles (2018), entitled Profiling and Mapping of Prospective Senior High School Students on the Implementation of K12 in the Philippines, Robles identified STEM as the most preferred strand among senior high schools.

According to the Philippine Institute for Developmental Studies (2021), countries with leading STEM graduates have contributed to shaping the world we all live in; the software we use for work, apps on our phones to communicate with each other, vehicles we use to go to work, and numerous more inventions and innovations we use in our day-to-day lives, are all connected to STEM.

Science, Technology, Engineering, and Mathematics are branches of study that is deemed critical to modern society's growth and progress. STEM education is widely acknowledged for its relevance in the growth of science and technology, which leads to innovation and economic development (Department of Education of Australia, 2023).

According to Wyatt Dalton (2020), the STEM strand has been established as a specialized track in the senior high school curriculum by the Department of Education (DepEd), with the purpose of providing students with the knowledge and skills required to pursue careers in the STEM fields. The curriculum also includes a research component, which encourages students to investigate scientific topics and do research in their areas of interest.

However, under this strand, the majority of the learners that graduate are entering paramedical courses or courses that specialize in medical knowledge. With the advancement of education, private schools such as Lorma Colleges and Saint Louis University have implemented a specialized course under STEM. This is known as STEM-

HAS (Health and Allied Sciences) in which the aim is to prepare students for paramedical courses. This implementation is equipped by having additional subjects that focus on medicine or paramedical courses (Anito et al., 2019).

On the other hand, aside from medical courses, there are also learners who are interested in taking courses such as ICT (Information and Communications Technology), Robotics, and Engineering. Thus, this prompted the researchers to conduct a study pertaining to the perceptions of grade 10 learners in the Regional Science High School for Region 1 on the possibility of implementing elective subjects under STEM education.

These additional elective subjects will benefit the school as well as its learners since it will nurture and help them develop their foundation when they attend their college course.

This study is geared towards exploring the perception of implementing elective subjects on the preparations of grade 10 students. This study aims to achieve the following objectives: First, to know what the thoughts of Junior and Senior High School teachers on the possible implementation of elective subjects in STEM along with Grade 10 students. Secondly, to know what possible challenges will occur in implementing this program. Lastly, to know what elective subjects should be implemented.

This study was geared towards exploring the perception of the possibility of implementing elective subjects on the preparations of grade 10 students.

Specifically, this study aimed to answer the following problems:

1. What are the perceptions of Junior High School and Senior High School teachers and Grade 10 learners on the implementation of additional or specialized subjects in STEM?
2. What are the possible challenges in the implementation of the program?
3. What elective subject would you like to be implemented?

Thirty (30) respondents consisting of ten (10) Junior and ten (10) Senior High School Teaching Staff and twenty (20) Grade 10 students at the Regional Science High School for Region 1 School Year 2022-2023.

This study was conducted at the Regional Science High School for Region 1 on March 2023 – July 2023. Likewise, this study focuses only on teaching personnel from the junior and senior divisions and grade 10 students at the Regional Science High School for Region 1 School Year 2022-2023.

Students will benefit greatly from the proposed study, which will serve as a valuable tool in helping them understand and identify their individual strengths and weaknesses. Armed with this knowledge, students can devise personalized learning strategies that capitalize on their strengths while addressing their weaknesses, resulting in improved academic performance.

Furthermore, the study's findings can help students understand their learning style, including how they process information and which teaching methods work best for them. With this knowledge, they can advocate for themselves and communicate their needs to

their educators, who can make the necessary accommodations and provide the necessary support to ensure their success.

This study can also benefit educators by providing them with valuable insights into their students' learning styles, which can help them tailor their teaching methods to better serve their students' needs. Furthermore, educators can use this information to identify struggling students early on and provide targeted support to help them succeed.

CHAPTER II

METHODOLOGY

This chapter revolved around the methods and processes that were used throughout the study. Subsequently, it includes the research approach, research design, sample, sampling technique, location, research instrument, validity of research instrument, data gathering procedure, data analysis procedure, and ethical consideration that were used throughout the study.

Research Approach

Qualitative research involves collecting and analyzing non-numerical data in the form of text, audio, or video to understand concepts, opinions, or experiences (Bhandari, 2023). It can be used to gather in-depth insights into a problem or generate innovative ideas for research. Furthermore, the City University of Seattle Library (2022), defines Qualitative research as a scientific approach which produces descriptive data, such as observations of behavior or personal accounts of experiences. The goal of gathering this qualitative data is to examine how individuals can perceive the world from different vantage points.

In conducting this study, the researchers opted to use qualitative research due to its characteristic of garnering comprehensive data to gather the perceptions of both teachers and students on the possible implementation of elective subjects under STEM in answering the research problems. Moreover, the researchers needed to ask questions that cannot be easily put into numbers to understand human perception and insight. According to the

National Library of Medicine (2018), qualitative research approach can be used to address the “how’s” and “why’s” of a problem due to the distinct characteristics of its research questions that enables the researchers to have a deeper understanding of experiences, phenomena, and context.

Research Design

A form of qualitative inquiry that emphasizes lived experiences of individuals by exploring the meaning of an event while gaining a deeper understanding of the phenomenon is called phenomenological design (Asiki et al., 2023). The phenomenological method is centered on investigating events that have had an impact on an individual. This method emphasizes the details and identifies a phenomenon as it is perceived by a person in each circumstance (Harappa, 2022).

Requiring having an in-depth understanding of teachers’ and students’ experiences, perceptions, and opinions, the researchers adopted phenomenological research as the research design of this study. Moreover, phenomenology is committed to the examination of how people make sense of their life experiences and thoughts (Villa, 2018). Thus, allowing the researchers to fully gather and understand information or data from their respondents.

This study is a two-way perspective which focused on their various ideas, thoughts, and opinions of both Junior and Senior High School as well as learners from Grade 10 of the Regional Science High School for Region 1 located at Maria Cristina East, Bangar, La Union. According to Mapua Malayan Colleges (2023), Senior High School aims to prepare students before entering college, equipping them with the global skills, competencies, and

knowledge needed to achieve successful career paths in the future. For Grade 10 completers, it means embarking on a new academic journey. It may seem intimidating at first, especially as a student decides which strand to take or which school to enroll in, but finding the right track and strand that matches their strengths and skills will surely help ease the students' nerves to get them going. As such, this prompted the researchers to focus on the Grade 10 learners as they are the ones who will soon enroll for Senior High.

Moreover, according to a research study conducted by Bartleby Research (2022), A high school teacher's purpose is to prepare students for their future by providing them with the knowledge and skills they need to succeed. High school teachers typically specialize in a particular subject, such as English or math, and use their expertise to help students learn the material. In addition to teaching content, high school teachers also play a key role in helping students develop important life skills, such as time management, critical thinking, and communication. Due to this, the researchers took the initiative to put the teachers as respondents of both Junior and Senior High School about their opinions and thoughts about the possible implementation of the specialized course.

Sample Size, Sampling Technique and Location

A total of thirty (30) respondents were chosen for the study, Twenty (20) learners of Grade 10 and ten (10) Junior and Senior High School teachers at the Regional Science High School for Region 1. The researchers utilized convenience sampling, a non-probability sampling technique in choosing the respondents. Limited in time and resources, the researchers opted to use convenience sampling technique. As stated by Nikolopoulou (2022), convenience sampling methods allow for ease in accessing the respondents that can

be due to geographical proximity, availability at a given time, or willingness to participate in the research.

Research Instrument

According to Columbia University (2021), a research instrument is a tool used to collect, measure, and analyze data related to your research interests. One such example is interviews. The Society for Human Resource Management (2023), coins interviews as a vital component which enables the researchers to determine a respondent's experience, thoughts, and opinions through verbal manners like a discussion or a dialogue. Sharma (2020), on the other hand, defines interviews as a method of collecting data involving presentation of oral-verbal stimuli and reply in terms of oral– verbal responses.

Data Gathering Procedure

In conducting this study, the proponents used semi-structured interviews as the data instrument of this research. According to Alison Doyle (2022), a semi-structured interview is a meeting where the interviewer asks open-ended questions, instead of following a strict and formalized list of questions. The semi-structured interview format encourages two-way communication. Both the interviewer and the candidate can ask questions and further the conversation. This type of interview allowed for a more thorough discussion of the respondent's perception on the possibility of implementing elective subjects under STEM, which provided more in-depth data for the researchers to use.

The gathering of data was done by interviewing both students and teachers at the Regional Science High School for Region I with the use of semi-structed interview

questions. The researchers acquired sufficient data that will be useful for the objective of this study.

With the teacher's consent, the interview was held on the school's premises. The respondents were given an authorization letter that would act as their consent to take part in the study before the researchers started gathering data. All respondents were asked at their most convenient time so that the participants could give an in-depth explanation of all the questions that was asked.

Prior to interviewing the respondents, the researchers had the task of having professionals who are leading experts in fields related to research validate the interview questions.

The validity of the interview questions as the research tool for the study was interpreted using the five-point Likert Scale. The scale is as follows:

Point Value	Statistical Range	Descriptive Equivalent Rating
5	4.51-5.00	Very High Validity (VHV)
4	3.51-4.50	High Validity (HV)
3	2.51-3.50	Moderate Validity (MV)
2	1.51-2.50	Poor Validity (PV)
1	1.00-1.50	Very Poor Validity(VPV)

The interview questions shall yield a rate within the range of 3 to 5 to be considered suitable to use in gathering precise data and information. The average validity scores the researchers received was 4, which denotes High Validity (HV) and suggests that the interview questions were relevant to the study's objective. The researchers also paid

attention to, considered, and properly used the validators' comments and suggestions to enhance the interview questions.

Moving over, the data gathering process of the researchers consisted of two (2) types of participants, grade 10 learners and teachers of JHS and SHS. An Authorization letter was given to the participant to formally acquire the permission to participate as a respondent of the study. The respondent and the researchers had a one-on-one interview. Interviews with semi-structured questions were used by the researchers to efficiently collect data and information. Moreover, a total of six (6) open-ended questions were given to the respondents as well as an ample amount of time for them to freely discuss and explain their own thoughts.

Data Analysis Procedure

For the decoding and dissection of data, the researchers used Thematic analysis. This method of analyzing qualitative data in the form of text, audio, or video, involves the statement of the main topics or ideas that an interview transcript holds (Petrakis, 2017). Furthermore, according to Moira Maguire and Brid Delahunt of the Dundalk Institute of Technology (2017), Thematic analysis is known for its advantage over other qualitative analysis methods since it is used to identify themes or patterns in the data that are important and interesting, which allowed for flexibility in analysis that granted the researchers to be more inventive with the data that led to a more satisfactory comprehension of the insights that the participants have provided.

Ethical Considerations

The protection of human subjects through the application of appropriate ethical principles is important in all research study. In a qualitative study, ethical considerations have a particular resonance due to the in-depth nature of the study process. The researchers strictly adhered to the following to establish and protect ethics in the conduct of this research, along with honesty, integrity, and objectivity: The researchers informed the participant about the purpose of the study, how the data collected will be used, and who will have access to the findings.

The researchers ensured the importance of the research subject's free involvement. The study's participants have the option to decline to take part if they so want. When creating the semi-structured questionnaire, the researchers were urged to refrain from using any language that was offensive, discriminatory, or otherwise unacceptable. Furthermore, there was no need for physical contact with the respondents, making the research study free of all potential conflicts and physical harm. no harm to participants in any way.

The data alone that was pertinent to the study was evaluated by the researchers. In the same way, the researchers accurately and with fairness reported their findings. The researchers maintained the respondents' privacy and assured that no identifying information would be accessible to outside parties. Finally, the APA method is employed to correctly cite the authors' works from any sources that were utilized in this research.

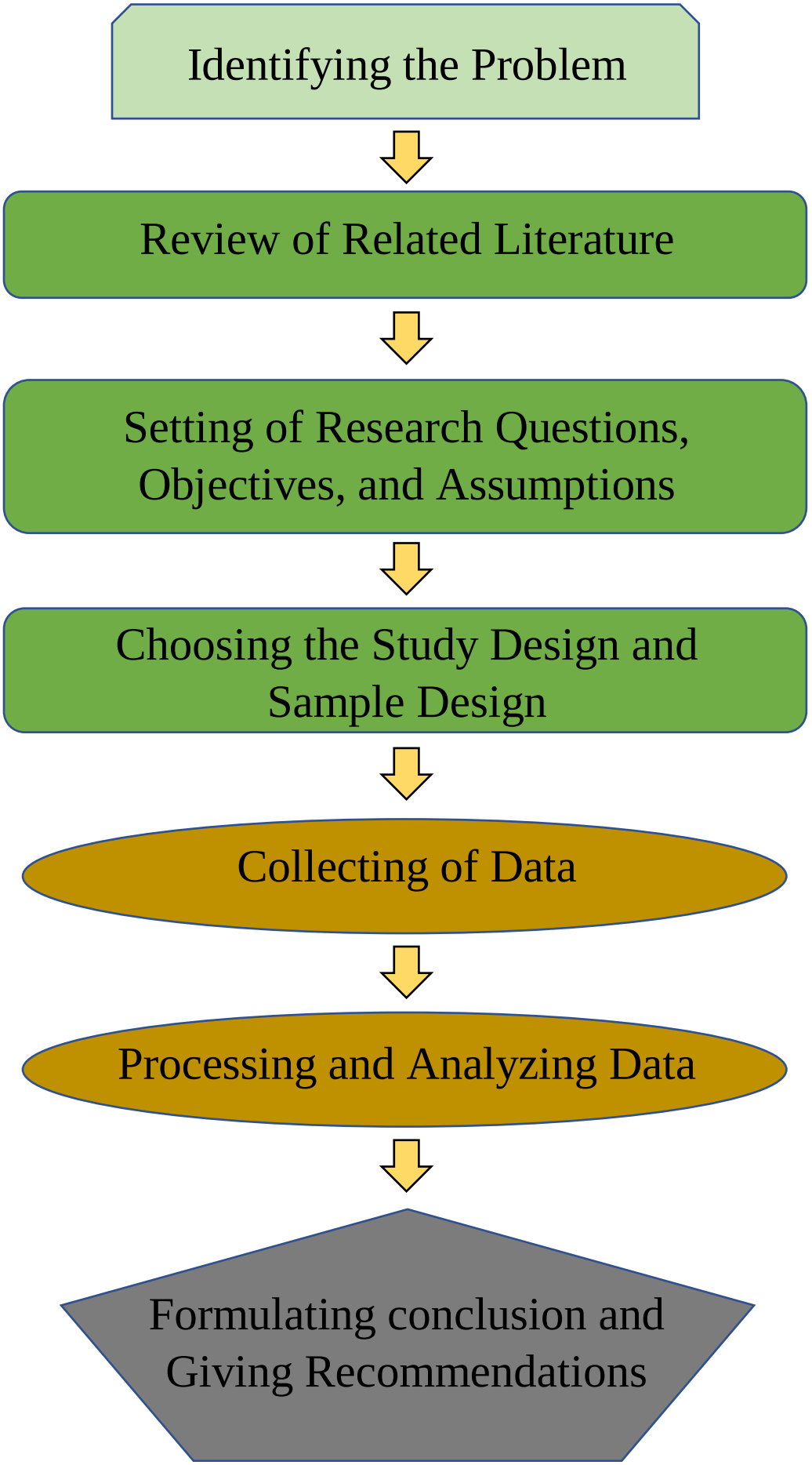

Figure 1. The Stages in the Research Process

CHAPTER III

FINDINGS AND DISCUSSION

The presentation, analysis, and interpretation of data are all covered in this chapter. The in-depth analysis of the collected data from the respondents yielded different themes, and it is interesting to learn about the unspoken perceptions and thoughts of thirty (30) participants regarding the potential implementation of additional elective subjects under STEM in the Regional Science High School for Region I. The research focused on the interesting and amusing minds of Grade 10 students as well as Junior and Senior High School teachers in the program.

A total of 8 themes were constructed based on the results gathered from the respondents entitled, “Illuminating minds, shaping futures”, “Bridging future careers with specificity”, “Pandemic Babies”, “Whirlwind of Finance and Equipment”, “In the face of adversity, stress, and difficulty”, “To the top”, “Unveiling the tapestry of a radiant future”, and lastly “A beacon of hope” in order.

Illuminating minds, shaping futures

The development of any country’s youth depends on the considerable attention given to Science, Technology, Engineering and Mathematics (STEM) education (Umar, 2019). This section entitled, “Illuminating minds, shaping futures,” discusses the perception of grade 10 students and both junior and senior high school teachers about the possible implementation of elective subjects under STEM. According to Adesope (2021), STEM sub-branches of STEM adequately equip students with the necessary skills and

knowledge needed for effective participation and contribution to society. The National Science Foundation or NSF (2020), highlighted the importance of creating an innovative approach to STEM education that prepares and advances each nation for the future, urging the creation of further effective methods in teaching STEM that allows the students to gather more information about their surroundings and to learn supplementary knowledge in a spectrum of topics.

According to a student respondent, *"Maybe it is good because there will be an additional curriculum in stem which helps the students to have more knowledge and to have brand new sets of education based on their interest."* A teacher respondent on the other hand, stated that, *"Adding or implementing another program in our curriculum specifically in our strand as STEM in our curriculum will become an honor of or school and will give a great opportunity to the learners of course to the teachers also. Because adding that or implementing that will give additional information, will give additional knowledge to the learners for their future careers."* A study by Margot and Kettler (2019), concluded that both teachers and students value the addition of elective subjects as it will challenge their capacities as student and teacher which allows them to learn a better understanding of new knowledge and skills.

Bridging future careers with specificity

The 20th century ushered in technological breakthroughs, such as aviation that led to cheaper and faster transport of people and goods to nearly all parts of the world. Consequently, the competitive landscape intensified for those in search of quality jobs amid globalization as distance became less of a barrier for businesses to operate and expand, thereby increasing demand for a skilled and knowledgeable workforce (Waite et al., 2019).

Entitled, “Bridging future careers with specificity,” this section revolves around the perception that additional elective subjects serve as a pathway to securing one’s specific future career. According to Pereira (2022), STEM education gives people skills that make them more employable and ready to meet the current labor demand, providing a path for students who will pursue a higher education to continue their careers with multitudinous background knowledge.

A respondent vocalized, *“Simply my expectations of course for the stem sub-branch are actually good because it focuses merely on the target subject that we would like to implement in the future, if ever implemented. And of course, students will be more focused or decided on the course that they will be taking in the future.”* Pereira (2022), corroborated that STEM education links these disciplines into a cohesive system and allows for elective subjects for further specialization of each student’s interest and skills, providing opportunities to better pursue their careers in the future.

Pandemic Babies

According to Commission on Human Rights of the Philippines (2022), school disruptions can have a significant impact on a child’s overall cognitive and motor skills development, as well as his or her socio-emotional skills. Entitled, “Pandemic Babies,” this section dwells on the perception of the inherent long-term effects of the pandemic on the educational development of the students as a major problem on the implementation of elective subjects.

During the interview, a respondent conveyed*, “Kwan siguro, kumbaga parang that is higher education na eh diba? Lalo na ‘pandemic babies’ ‘yung mga students natin*

ngayon so dun palang sa basics medyo nahihirapan na sila, how much more kapag medyo yung subject, yung topic, yung lessons, is medyo mas mahirap, diba? So, that is one of the challenges na ma-eencounter ng teachers at students. So, bale yung difficulty ng curriculum." (*Maybe, it seems like that is higher education, right? Right now, our students are considered to be 'pandemic babies' so even with the basics they are having a bit of a hard time, how much more so when the subject, the topic, the lessons are a bit difficult, right? So, that is one of the challenges that teachers and students will encounter. Basically, the difficulty of the curriculum.*)

This underlying learning problem has been compounded by COVID-19-led school closures, which have long-term detrimental effects on the economy and student development. Moreover, it has triggered an education crisis and exacerbated the decrease in Intelligence Quotients (IQs) to 81.64, while 100 is the average (Cruz, 2023). Moreover, COVID-19 has been the major cause of the rise in the number of out-of-school youth from 16.9 percent in January to 25.2 percent in April 2020 (Commission on Human Rights of the Philippines, 2022).

Whirlwind of Finance and Equipment

STEM stands for Science, Technology, Engineering, and Mathematics. STEM education has been understood as an interdisciplinary approach of education that aims to connect independent disciplines to help students to solve authentic problems. STEM education has the potential to motivate students to study and participate in the STEM field in their future careers (Lee et al., 2019; Margot and Kettler, 2019). This section entitled, "Whirlwind of Finance and Equipment" focuses on the perception of both teachers and

students on the possible challenges that the school may encounter on implementing the specialized course under STEM.

According to International Journal of Learning and Teaching (2020), There is a widespread depiction of STEM education but there are various interpretations of what it entails. STEM education, in the focus of this study, aims to shift teaching practices from traditional lecture-based teaching into those that are inquiry, project-based and problem-based learning to present interdisciplinary, meaningful learning experiences that could include two or more of the four main disciplines identified in STEM education. This educational program has been considered foundational to economic growth by many countries. It has received great attention from various educational systems, but the actual implementation has triggered several problems, especially in developing countries in Asia.

In the interview, a respondent answered, *"First is financial, second is the pressure of the surroundings and people around it to thinking of their thoughts about you, third is the facilities po that will be occupied."* On the other hand, a teacher respondent also stated, *"One of the challenges would be the facilities like laboratories and classrooms that would cater to the needs of the learners as well as the financial support that the school needs for the program."* Based on a study conducted by Heliyon (2021), Successful STEM integration requires adequate resources such as time and space for collaboration, time for preparation, and technological equipment. The teachers considered that STEM education was also dependent on the socio-economic conditions of students. They said that equipment, materials, and financial conditions were limited. Their school leaders were not always supportive. Therefore, even when teachers were willing to teach STEM, it was

difficult because of the lack of resources and support from school leaders and administrators.

In the face of Adversity, Stress, and Difficulty

The Cambridge Dictionary (2023), coins adversity as a difficult situation or event, whereas stress, as defined by the World Health Organization or WHO (2023), is a state of worry or mental tension caused by a difficult situation. The terms 'adversities' and 'stress' are often used interchangeably since both can be referred to as the occurrence of negative events that have been considered harmful in developmental literature (Daches, 2019). Entitled, "In the face of Adversity, Stress, and Difficulty," this section revolves around the said factors as a challenge or obstacle in the implementation of elective subjects under STEM.

According to a student respondent, *"Since mas specialized na po, mas lalo pong hihirap ang core subjects ng senior high school kaya sa tingin ko po ay mas maiistress po hindi lang ang students kundi pati na rin po ang mga teachers." (Since it's more specialized, our core subjects in senior high school will get more difficult, so I guess not only us students, but also the teachers will experience more stress.)* A teacher respondent also added, *"Teachers may need to adjust their instructional strategies, schedules, and curriculum frameworks to accommodate interdisciplinary learning effectively.)* Highlighting that the changes needed to implement the additional elective subjects will be stressful for both teachers and students.

Affecting any individual who pursues knowledge, academic stress is a phenomenon caused by continuous social and self-imposed pressure in a learning environment (Reddy

et al., 2018). Depaynos et al. (2021), argued that academic stress can be helpful to both students and teachers by perceiving these adversities and difficulties as a challenge or motivation which makes the students do their best, enhancing the learning of students and teachers and their overall perception towards academic demands.

To the Top

According to a study of Abdulraffi Balindong (2018), Every graduating student must make a choice, as they must decide what they want to do in the future. As the course they have decided on dictates their future career, the decision would put pressure on the students. While there are those who are confident in their decision, there are those who are troubled.

A considerable number of cases have drawn society's attention, where college students who specialized in science, technology, engineering, and mathematics (STEM) during their secondary education are opting for non-STEM fields as their major when they enter college (Chen & Weko, 2009). Another concerning issue is the high dropout rate or the choice of non-STEM programs by students who initially intended to pursue a career in a STEM field. The Higher Education Research Institute (2010) also highlighted that college STEM disciplines experience a loss of 20% to 50% of students, indicating a shortage of workforce in STEM fields that society is currently facing. This section entitled, “To the Top” focuses on the perspectives and opinions of students on which elective subject should be implemented under STEM program based on their aligned course in college as well as to know if they have already chosen their college course.

According to a student, *"math subjects siguro kuya kasi ano, yun nga kuya, balak kong mag-engineering kapag sa ano, kaya yun yung course na tututukan ko kasi yun yung makakatulong kapag college na po ako." (Maybe it's Math subjects, bro, that's right bro, I plan to major in engineering, so that's the course I'll focus on because that's what will help me when I'm in college.)* Another respondent also stated, *"Just like what I said earlier po, I will pursue Engineering because I will take on robotics engineering course in the future or in collage that's all po."* This proves that learners of their caliber have already chosen their college course in the future and implementing such specialized courses will be a key factor for their future college life.

According to Quiño (2022) factors such as financial aid, educational quality, tuition affordability, and environment and culture influence students' decision to enroll in college. The importance of course selection during senior high school is emphasized, with students being encouraged to pursue their dreams based on their abilities and knowledge. While parents can influence career choices, young adults must make their own decisions and strive for self-sufficiency. Financial difficulties and peer influence can impact students' choices, but scholarships offer opportunities for overcoming financial constraints. Students are aware of the country's high demand for various occupations and the rising unemployment rate, which motivates them to choose careers that align with their skills and interests. Overall, students are advised to consider these factors and make independent choices to pursue their goals.

Unveiling the Tapestry of a Radiant Future

Active engagement of experts from diverse fields will drive change in our society. STEM education exposes students to effective interdisciplinary communication. Scientists

research and experiment, offering team discoveries. Technology experts provide gadgets that can make the work of the team more effective. Engineers help to solve challenges by designing and running platforms that enable change. Mathematicians analyze information to eliminate mistakes and provide precise calculations. Our world is continuously changing. The only way we can be ready for its challenges is through communication and collaboration (studyusa, 2022).

In comparison to the older generation, youth are more concerned about climate change. Statistics indicate that 70% of young people (18 to 34) are concerned about global warming. Their inquiries can be addressed by STEM education. It could teach them where to look for the answers required for sustainable growth. The rise of a STEM-literate society is ensured by education, which is a potent tool. Entitled, "Unveiling the Tapestry of a Radiant Future," this section discusses the importance of STEM education in our country provided with the idea of implementing additional elective subjects under the program STEM.

One of the respondents during the interview stated, *"Feel ko siguro mga math subjects, kasi actually very aligned na ako sa kung anong coures talaga kukunin ko sa collage. I'll pick nalng the most ideal among the two." (I feel maybe subjects under math, because I am actually very aligned with what courses I will take in the college. I'll pick the most ideal among the two.)* Another respondent also answered, *"Ako is science kasi nasa field of medicine po siya. Since nung bata pa ako, gusto ko nang magpursue ng med. Tas favorite subject ko ang Science." (For me its science subjcets because my college course is in the field of medicine and ever since I was young, I wanted to pursue med. I also love science and it's my favorite subject.)*

A teacher respondent also said, *"Para sakin, I'm going to choose math subjects kasi sobrang daming mga estudyante ang nagkakaroon ng interest sa larangan ng engineering lalong-lalo na sa robotics, kaya naman siguro magandang course ito na ituro kasi mas magiging..umm active ang mga bata kasi syempre ito ang course na kukunin nila sa college eh, mas magiging sanay na sila in the future." (For myself, I'm going to pick additional math subjcets because so many students are interested in engineering, particularly robotics. Because of this, it's probably a good course to teach because the students will be more, uh, active because, of course, this is the course they will take in college, they will be more skilled in the future.)*

Our rapidly evolving world necessitates our ability to adapt accordingly. STEM education plays a transformative role in society by instilling a fresh perspective and equipping individuals with valuable skills applicable across various fields. These skills empower young minds to embrace flexibility, identify patterns, establish connections, and critically assess information. According to BLS (2021), jobs in STEM occupations grew by 10.5%, or 817,260 jobs, between May 2009 and May 2015, compared with 5.2% growth in non-STEM jobs. Moreover, this trend is expected to continue, and, of this growing number of careers, 59% of the projected increase is expected to be in computer and mathematical scientist occupations. In addition, the number of healthcare practitioners and technicians — which the Bureau of Labor Statistics (BLS) does not count as STEM fields, but which do require significant STEM education — is projected to have grown by 26% between 2010 and 2020. Thus, supporting this implementation of adding elective subjects under STEM will greatly help the learners unveil the tapestry of a radiant future.

A Beacon of Hope

According to Meyrick (2018), STEM activities in the classroom endeavor to improve the quality of the learning process as well as learning outcomes. This section entitled, "A Beacon of Hope" Focuses on knowing their views on the possible implementation of the elective subjects and what subjects do they want to be added.

Through STEM activities for children, early learners learn to apply these foundational concepts about the world around them to their everyday lives. It piques their curiosity and creativity and helps them make connections between concepts, objects, and ideas. They learn to work with others to test, hypothesize, repeat, and optimize to find the answers or solutions they seek.

During the interview, one of the respondents conveyed, *"Despite yung disadvantage, mas malaki pa rin siguro yung advantage niya para sa mga future senior high school students and kung ako man ay pagpipiliin, mas kukunin ko yung math subjects or robotics since nakatuon doon yung interest ko especially sa engineering." (Despite the disadvantage, its advantage is still better for future senior high school students and if I had to choose, I would choose math subcjets and robotics since my interest is focused there especially in engineering.)* On the other hand, a teacher respondent also answered, *"For me, I'm actually looking forward because as I see, it is actually a good program of STEM tulad nung sabi ko kanina right? Umm it focuses or it also helps our studens or learners to be more decided on having affirmation on the course that they will be taking later on. Kasi ang problema ngayon is although the first aim of the Secondary High School is to redirect the students on what course that they would like in college. However, because of the changing system that we have, it turns out like, kahit GAS ka, pwede ka mag take ng*

course sa college na STEM related without taking the necessary subjects in the Senior High School. With this case, of course, mas matututukan talaga kung if the student would like to pursue the medical courses in college. And then later this will help them of course para hindi magbago-bago yung isip nila later on. Kung para ba sila sa medical or para sa engineering. Because as early as possible, they expereiene kung ano yung grades or ano yung hardship or struggles na pwede nilang ma-encounter later on or kaya ba nilang ihandle." (For me, I'm actually looking forward because as I see, it is actually a good sub-branch of STEM like I said earlier right? Umm it focuses or it also helps our students or learners to be more determined on having affirmation on the course that they will be taking later on. Because the problem now is although the first aim of the Secondary High School is to redirect the students on what course that they would like in college. However, because of the changing system that we have, it turns out like, even if you are GAS, you can take a course in college that is STEM related without taking the necessary subjects in the Senior High School. With this case, of course, the focus will be more on if the student would like to pursue the medical courses in college. And then later this will help them of course so they don't change their mind later on. Whether they are for medical or engineering. Because as early as possible, they experience what the grades are or what the hardships or struggles they may encounter later on or whether they can handle it.)

According to studyusa (2022), STEM education goes beyond school subjects. It gives a skill set that governs the way we think and behave. Merging science, technology, engineering, and mathematics, STEM education helps us to solve the challenges the world faces today. Each STEM component contributes significantly to a well-rounded education. Learners gain a thorough understanding of the world around them through science. It aids

in their development of research and analytical skills. Young people are better prepared to work in a high-tech environment thanks to technology. Students can develop their problem-solving abilities and apply their knowledge to new projects through engineering. People can use mathematics to analyze data, correct mistakes, and make deliberate decisions when creating solutions. STEM education integrates these fields into a single, integrated system. As a result, it trains professionals who can innovate and find sustainable solutions to transform society, making them the Beacon of Hope.

CHASING STEM CAREERS:

A TWO-WAY PERSPECTIVE ON IMPLEMENTING ELECTIVE SUBJECTS UNDER STEM IN RSHS FOR RI

EDUCATION

Education has taken leaps and bounds. As society moves forward, education will continue to progress, developing more efficient methods in teaching the future generations.

EDUCATION IN THE PHILIPPINES

Even before COVID-19 struck and caused problems for millions of families, the country's financial status is one of the top factors that add to the growing education issues in the Philippines. Furthermore, more children, youth, and adults can't get a leg up and are thus left behind due to unfair access to learning. Moving forward, such issues can lead to worse long-term effects. Now, we'll delve deep into the current status and how we can take part in social efforts to help fight these key concerns of our country.

DECLINING STAGE

A 2018 study found that a sample number of 15-year-old Filipino students ranked last in reading comprehension out of 79 countries. They also ranked 78th in science and math. One key insight from this study is it implies those tested mostly came from public schools. Hence, the crisis also lies in the fact that a lot of Filipinos can't read or do simple math.

WHAT TO DO?

As society moves forward, education will progress, developing more efficient methods for teaching future generations. One such example is the addition of elective subjects under STEM which will help the learners build their foundation for their college course.

BEACON OF HOPE

The implementation of adding elective subjects under STEM serves as an adversity that will push both the students and teachers to greater heights, further progressing the educational advancement in the country.

Qualitative RESEARCH

RESULTS

Based on the analysis and interpretation of the collected data, there is significant interest and enthusiasm among Grade 10 students as well as Junior and Senior High School teachers in the program. The data highlights the importance of incorporating specialized elective subjects in the curriculum of the Regional Science High School. It demonstrates the potential for these subjects to have a positive impact on the student's educational experience and future career prospects.

CONCLUSION

The implementation of elective subjects on the Science, Technology, Engineering, and Mathematics (STEM) strand of Senior High School is essential for progression. This research yielded positive and negative perceptions of the implementation. Ultimately, according to the respondents, the positive aspects of elective subjects greatly outweigh the potential negative effects.

WHY STEM?

Why stem? In a study conducted by Rosslin Robles (2018), entitled Profiling and Mapping of Prospective Senior High School Students on the Implementation of K12 in the Philippines, Robles identified STEM as the most preferred strand among senior high schools.

POSSIBLE SUBJECTS UNDER STEM

- ANATOMY
- PHYSIOLOGY
- BOTANY

POSSIBLE SUBJECTS UNDER STEM

- PROGRAMMING OR ROBOTICS
- ADDITIONAL MATH FOR ENGINEERING

Figure 2. Information Dissemination Infographics

CHAPTER IV

CONCLUSION AND RECOMMENDATIONS

Nelson Mandela was right when he stated, “Education is the most powerful weapon you can utilize to transform the world.” Yes, the solution to any issue lies in education - it is essential to progress. Thus, the implementation of elective subjects on the Science, Technology, Engineering, and Mathematics (STEM) strand of Senior High School is essential for progression. This research yielded positive and negative perceptions of the implementation. Ultimately, according to the respondents, the positive aspects of elective subjects greatly outweigh the potential negative effects.

Based on the analysis and interpretation of the collected data, there is significant interest and enthusiasm among Grade 10 students as well as Junior and Senior High School teachers in the program. The data highlights the importance of incorporating specialized elective subjects in the curriculum of the Regional Science High School. It demonstrates the potential for these subjects to have a positive impact on the students' educational experience and future career prospects. The respondents' feedback has highlighted their enthusiasm for STEM education, particularly in fields like robotics, engineering, and mathematics. Their positive outlook and recognition of the benefits that specialized STEM courses can bring to their learning journeys further reinforce the importance of incorporating such elective subjects into the educational curriculum.

The respondents also highlighted the need for adequate resources, both financial and equipment, to support the implementation of these specialized courses. School administrations should prioritize allocating sufficient funding - this investment will enhance the quality of education and help students to flourish in STEM-related courses. In light of the findings, future researchers can use this study as a guide to venture more about the perspectives, views, and opinions of the possible implementation of the program. This may also serve as an eye-opener to the public and to the authority regarding the advantages that elective subjects on STEM can give to the learners. Moreover, the research findings emphasize the importance of aligning education with the demands of the future and preparing students to become active contributors in a rapidly changing world, thus it is recommended to provide students with opportunities to engage in elective subjects that can cultivate a generation of skilled professionals who are prepared to tackle complex challenges, drive innovation, and contribute to the development of society.

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APPENDICES

APPENDIX A

Research Validity Testing Tool

Region I
La Union Schools Division Office
REGIONAL SCIENCE HIGH SCHOOL FOR REGION I

RESEARCH INSTRUMENT
VALIDITY TESTING TOOL

Research Title:	CHASING STEM CAREERS: A TWO-WAY PERSPECTIVE ON IMPLEMENTING ELECTIVE SUBJECTS ON STEM IN RSHS FOR R1
Proponents:	Garcia, Aaron Jay S. Paguirigan, Braedan Anthony Jorge H. Paguirigan Obiacoro, Jose III
Research Problem with Specifics:	This study was geared towards exploring the perception of the possibility of implementing elective subjects on the preparations of grade 10 students. Specifically, this study aimed to answer the following problems: 1. What are the thoughts of Junior and Senior High School teachers and Grade 10 learners on the possible implementation of elective subjects? 2. What are the possible challenges in the implementation of the program? 3. What elective subject would you like to be implemented?

Rate the Research Interview Questions according to their Content Validity. Put a check (√) mark as your rating for the instrument.

Criteria		5	4	3	2	1
		Very highly valid	**Highly Valid**	**Valid**	**Somewhat Valid**	**Not Valid**
Content Validity	The test fully represents what it aims to gather.		✓			

Comments & Suggestions:

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Validator:

Nancy G. Hoggang — Signature over printed name

April 17, 2023 — Date Validated

Interview Questions

A. What are the thoughts of junior and senior high school teachers on the possible implementation of elective subjects under STEM?

a1. As a grade 10 student at the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

a2. As a Junior or Senior High School Teacher of the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

B. What are the possible challenges in the implementation of the program?

b1. As one of the teachers of RSHS for RI, what do you think are the possible challenges that will occur in implementing this program?

b2. Being one of the grade 10 learners who will soon enter Senior High School, what do you think are the possible challenges that will occur on implementing this program?

C. What are your views on the possible implementation of the additional elective subjects under stem and what subjects should be added?

c. Considering your thoughts and opinions on the possible implementation, what subject would you like to be added and why?

Region I
La Union Schools Division Office
REGIONAL SCIENCE HIGH SCHOOL FOR REGION I

RESEARCH INSTRUMENT
VALIDITY TESTING TOOL

Research Title:	CHASING STEM CAREERS: A TWO-WAY PERSPECTIVE ON IMPLEMENTING SPECIAL STRANDS ON STEM IN RSHS FOR R1
Proponents:	Garcia, Aaron Jay S. Paguirigan, Braedan Anthony Jorge H. Paguirigan Obiacoro, Jose III
Research Problem with Specifics:	This study was geared towards exploring the perception of the possibility of implementing elective subjects on the preparations of grade 10 students. Specifically, this study aimed to answer the following problems: 1. What are the thoughts of Junior and Senior High School teachers and Grade 10 learners on the possible implementation of elective subjects? 2. What are the possible challenges in the implementation of the program? 3. What elective subject would you like to be implemented?

Rate the Research Interview Questions according to their Content Validity. Put a check (√) mark as your rating for the instrument.

Criteria		**5**	**4**	**3**	**2**	**1**
		Very highly valid	**Highly Valid**	**Valid**	**Somewhat Valid**	**Not Valid**
Content Validity	The test fully represents what it aims to gather.	✓				

Comments & Suggestions:

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Validator:

Jake Mantilla	**April 13, 2023**
Signature over printed name	Date Validated

Interview Questions

A. What are the thoughts of junior and senior high school teachers on the possible implementation of elective subjects under STEM?

a1. As a grade 10 student at the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

a2. As a Junior or Senior High School Teacher of the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

B. What are the possible challenges in the implementation of the program?

b1. As one of the teachers of RSHS for RI, what do you think are the possible challenges that will occur in implementing this program?

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Region I
La Union Schools Division Office
REGIONAL SCIENCE HIGH SCHOOL FOR REGION I

RESEARCH INSTRUMENT
VALIDITY TESTING TOOL

Research Title:	CHASING STEM CAREERS: A TWO-WAY PERSPECTIVE ON IMPLEMENTING ELECTIVE SUBJECTS ON STEM IN RSHS FOR R1
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		Very highly valid	**Highly Valid**	**Valid**	**Somewhat Valid**	**Not Valid**
Content Validity	The test fully represents what it aims to gather.		✓			

Comments & Suggestions:

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Validator:

Aurelia S. Garcia	**April 14,2023**
Signature over printed name	Date Validated

Interview Questions

A. What are the thoughts of junior and senior high school teachers on the possible implementation of elective subjects under STEM?

a1. As a grade 10 student at the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

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b2. Being one of the grade 10 learners who will soon enter Senior High School, what do you think are the possible challenges that will occur on implementing this program?

C. What are your views on the possible implementation of the additional elective subjects under stem and what subjects should be added?

c. Considering your thoughts and opinions on the possible implementation, what subject would you like to be added and why?

APPENDIX B

Interview Questions

Region I
La Union Schools Division Office
REGIONAL SCIENCE HIGH SCHOOL FOR REGION I

Interview Questions

A. What are the thoughts of junior and senior high school teachers on the possible implementation of elective subjects under STEM?

a1. As a grade 10 student at the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

a2. As a Junior or Senior High School Teacher of the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?

B. What are the possible challenges in the implementation of the program?

b1. As one of the teachers of RSHS for RI, what do you think are the possible challenges that will occur in implementing this program?

b2. Being one of the grade 10 learners who will soon enter Senior High School, what do you think are the possible challenges that will occur on implementing this program?

C. What are your views on the possible implementation of the additional elective subjects under stem and what subjects should be added?

c. Considering your thoughts and opinions on the possible implementation, what subject would you like to be added and why?

APPENDIX C

Consent Form

REGIONAL SCIENCE HIGH SCHOOL FOR REGION I
Ma. Christina East, Bangar, La Union

April 13, 2023

_____
_____
_____

Madam/ Sir:

We, the undersigned students, are from the Regional Science High School for Region I. As part of our subject, **Practical Research I**, we are currently doing a research project entitled, **Chasing Stem Careers: A Two-way Perspective on Implementing Special Strands on Stem in RSHS for RI.**

In this regard, may we humbly request for your time to please **validate our Data Gathering Tool – Interview Questions**. The result of this validity test will be reflected on our write-up of Chapter II which will be submitted before the Third Quarterly Test on April 20-21, 2023.

We look forward to a favorable response regarding this humble request in the name of noble cause of research.

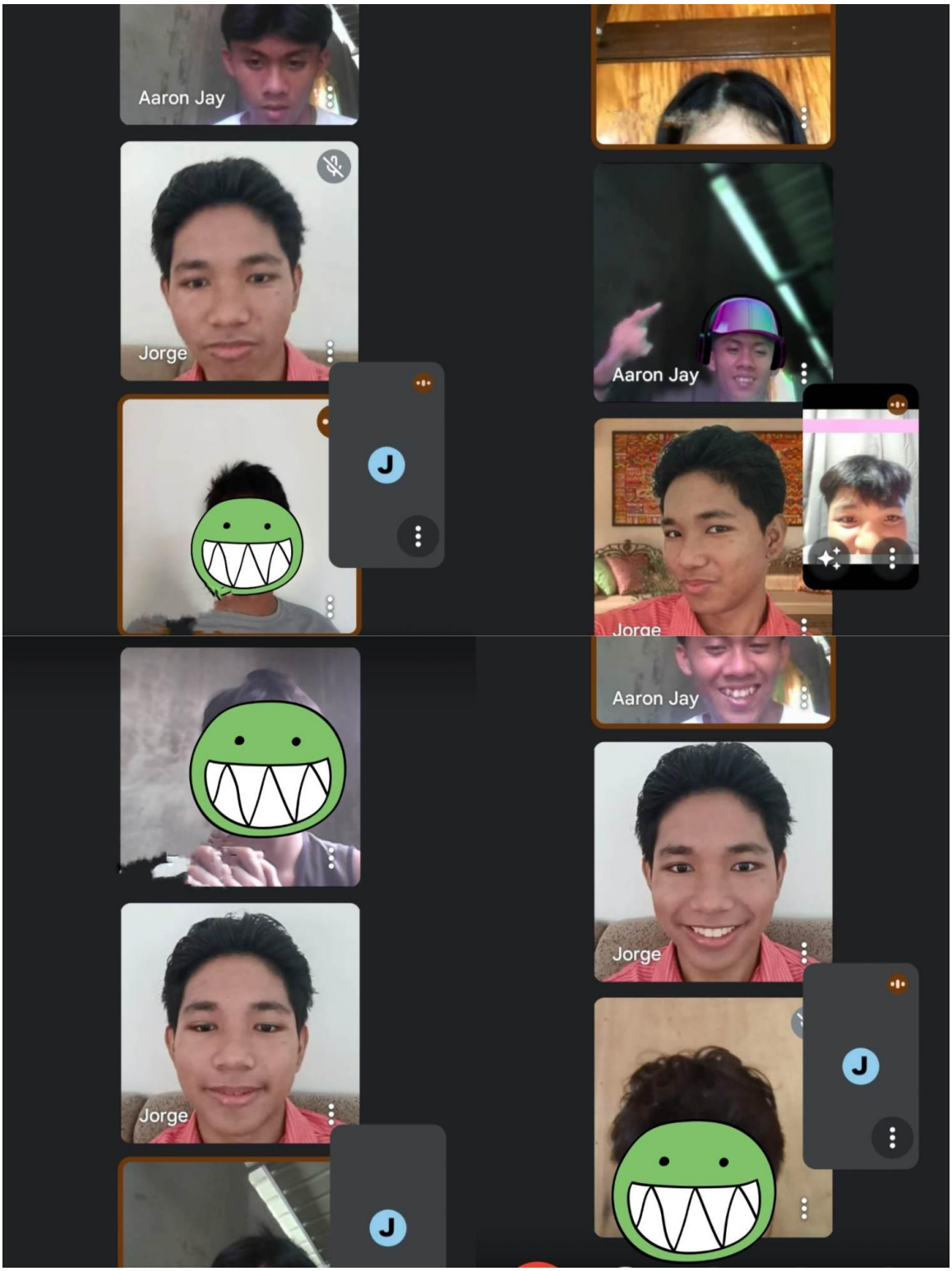
Thank you and may the Lord bless you with thousand folds.

Very truly yours,
AARON JAY GARCIA
BRAEDAN ANTHONY JORGE PAGUIRIGAN
JOSE OBIACORO III
Grade 11 Researchers

Noted:
ANTONIETTE G. PADUA
Research Adviser

Appendix D

Interview Process Documentation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Appendix E

Transcribed Data

Question # 1	A. . What are the thoughts of junior and senior high school teachers on the possible implementation of elective subjects under STEM? **a1**. As a grade 10 student at the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM? **a2**. As a Junior or Senior High School Teacher of the Regional Science High School for Region 1, what are your thoughts on the possible implementation of elective subjects under STEM?	Codes
Respondent # 1	Ah I think it would be a very flexible idea for students to be able to learn such additional (ah) lessons for them to be able to ah have ample in a or enough knowledge in the future in case they were unsure of their choice for a course.	• Additional knowledge • Future careers • Unsure of chosen course
Respondent # 2	For me stem is first of all the course that i will get in collage which is connected to stem, which will help me and improve my skills and knowledge about the course that I will guarantee to get at collage.	• Improve Skills • Enhance Knowledge • Future college course
Respondent # 3	Maybe it is good because there will be an additional curriculum in stem which helps the students to have more knowledge and to have brand new sets of education based on their interest.	• Additional Curriculum • Added knowledge • Interest
Respondent # 4	For me, I can only relate in elective subjects related to robotics because of what I want to persue is about robotics engineering. And REM would be very helpful in the course that I will venture because it will ggive me additional knowledge about robotics and engineering.	• Very Helpful • Additional knowledge • Foundation for future course
Respondent # 5	Uhmm malaki po yung advantage niya kasi, ako din po is planning for med and magiging advance din po yung knowledge ko about this.	• Big advantage • Advance knowledge
Respondent # 6	Kuya umm, dahil want ko din pong mag medicine I think po na good thing po siya kasi ma aadvance na po yung advance naming sa science and madadagdagan po siya tas para hindi narin po kami mahirapan sa college.	• Advance curriculum • Added lessons

		• Foundation for college life
Respondent # 7	Sa tingin ko po is mas magiging specific iyong kukunin ng mga Grade 10 learners kapag kukuha sila ng stem course na kung saan mas specialized yung kukunin nilang subjects at tingin ko mas magiging advantage nila iyon sa college.	• Specific course • Advantage in the future course • Specialized curriculum
Respondent # 8	Big advantage po ito para sa magprepremed po tas magmemed. Advantage po ito sa mga elective subjects under STEM or medical students. Super advantage po ito na makatutulong po sa pag-aaral.	• Big advantage for students • Foundation for college career
Respondent # 9	Maganda po siya kasi para makakuha po tayo ng additional na information or knowledge.	• Additional knowledge
Respondent # 10	Siguro kuya mas magiging maganda kasi yun nga hindi na lang STEM yung ma-aano namin tsaka mas makakafocus po tayo sa parang medical at dun sa robotics kapag ma-iimplement yun kuya.	• Focused selection
Respondent # 11	Advantage 'yun saamin kasi parang madadagdagan ng knowledge about sa mga future na kukunin ko sa college.	• Added knowledge • Future's foundation • Advantage for college course
Respondent # 12	Sa tingin ko po is mapapadali niya po yung college na education na kukunin ko kasi parang magkakaroon po ako ng kumbagang maaga na start sa college po.	• Builds foundation for college life • Headstart
Respondent # 13	Sabi nga po nila, mas priority po yung mga taga rs sa ibang mga colleges kasi mas may advance po silang tinuturo saamin dito sa Junior High para preparation din po sa futures naming kaya sobrang advantage po nito sa amin lalo na at stem din po ang kukunin naming sa Senior High.	• Preparation for one's future • Advantage for college course
Respondent # 14	Para sa akin po mas nakaka-advance para sa akin yung gantong setup kasi yung kukunin ko pong course sa college is about robotics po.	• Advance curriculum
Respondent # 15	For me kuya it's a great idea po. Kasi para sa mga fixed na po yung mga gustong kunin ket pwede po silang mag-apply sa branches po ng STEM. Kunware kung medical po yung fixed na field na gusto nila, pwede po silang mag-apply sa AMS.	• Great idea for those with fixed course idea

Respondent # 16	Madadirect po yung gusto mong course sa kukunin sa college. Para yun nalang yung ilelearn ganon, wala nang additional 'chuchunes'.	• Direct path to college course • No more additional 'chuchunes'
Respondent # 17	Siguro ket mas lalong maprepressure ang mga Grade 10 kasi kt mas mapressure ka nga agpili kasdiyay.	• Added pressure
Respondent # 18	Uhmm kuya nakakatulong po siya sa kwan… too uhmm to gain another knowledge about the elective subjects under STEM, to develop umm other topics to future… for their future college life.	• Added knowledge • Builds foundation for college life
Respondent # 19	Ummm my thought is I feel like ok lang, like kapag ma-implement since if yung course din lang na kukunin sa college is along syempre med… medicine yung kukunin edi syempre yung elective subjects under STEM, siguro yun helpful, actually parang additional information and knowledge na maybe makatulong din sayo sa pagdecide kung ano talaga yung kukunin mo. Ok lang, ok lang.	• Added knowledge • Catalyst for course picking
Respondent # 20	Ok lang since it will give more options para sa mga student dito sa RS and lalaki rin yong possible na students na mag enter dito sa RS if inline yung kukunin nila sa collage sa dito sa elective subjects under STEM	• Added options • Student population increase
Respondent # 21	Adding or implementing another program in our curriculum specifically in our strand as STEM in our curriculum will become an honor of or school and will give a great opportunity to the learners of course to the teachers also. Because adding that or implementing that will give additional information, will give additional knowledge to the learners for their future careers.	• Honor to the school • Great opportunity • Added knowledge
Respondent # 22	Simply my expectations of course for the stem sub-branch are actually good because it focuses merely on the target subject that we would like to implement in the future, if ever implemented. And of course the student will be more focused or decided on the course that will be taking in the future.	• Focuses on target audience • Catalyst for course picking
Respondent # 23	Ano, uuhh maganda naman 'yang set-up kasi dapat lang talaga na may mga…mga ibibigay na ano… na special na pag-aaral patungkol sa mga medisina para 'yung mga bata ay maihanda sila sa susunod na tatahaking pag-aaral.	• Preparation for one's future
Respondent # 24	For me kasi, since nasa Regional Science High School tayo, for me is yes. Pwede siya but uhh what do you call this one, kasi sa robotics diba kailangan na meron kang equipments for that one. So, do we have enough equipment? If yes, pwede, but if not, hindi siya	• Challenging for both teachers and students

	advisable. And then, yes kasi again, kapag sa college na is, meron din naman 'yan. Oo pwede siya as long as the teachers can implement that one, the administration, and kung kaya siya ng students. So that is my perception.	
Respondent #25	It would be great if our school will be implementing elective subjects under STEM, however in terms of readiness, we still lack many so its success still depends in this aspect.	• Preparedness
Respondent #26	The idea is good. However, there might be problems on scouting teachers who are qualified to teach subjects in these fields	• Resources first
Respondent #27	It will provide the students with practical skills and knowledge which may directly be applicable to real world scenarios and future careers.	• Preparation for one's future
Respondent #28	I am in favor of implementing it	• In favor
Respondent #29	In my own perspective, the implementation of STEM AMS and REM in our school is a very good idea and it will be a great avenue in promoting critical thinking and problem solving since these programs encourage students to engage in hands on inquiry based learning experiences, by applying mathematical and scientific principles to real world problems, students will have the chance to develop critical thinking and problem solving skills which are valuable in various aspects of life. elective subjects under STEM, programs will also provide opportunities for students to explore their creativity in developing innovative solutions. Through research, engineering projects, and mathematical modeling, students can tackle challenges with unique perspectives, fostering a culture of innovations.	• Avenue in promoting critical thinking and problem solving skills • Tackle challenges with unique perspectives • Fostering a culture of innovations.
Respondent #30	Learners will now have a strong foundation for their chosen program in the future, since these specialized STEM tracks will focus more on Health Science subjects and more on mathematics for elective subjects under STEM,	• Provides a strong foundation
Theme: Illuminating Minds, shaping Future and Bridging Future Careers with Specificity		
Question # 2	**B. What are the possible challenges in the implementation of the program?** **b1.** As one of the teachers of RSHS for RI, what do you think are the possible challenges that will occur in implementing this program?	**Codes**

	b2. Being one of the grade 10 learners who will soon enter Senior High School, what do you think are the possible challenges that will occur on implementing this program?	
Respondent # 1	Well, ah the possible challenges I think are, we will face if in case it would be implemented in the future, the students will have a hard time or let's say would be challenged in case a … wait a minute … in that situation they would be, they would find a very hard time in applying such lessons to their normal lives it's the additional track and the additional lessons of course it's a big shocker for them sometimes it will surprise them perhaps because its let's say it's too sudden and who and the stem is already a very big challenge for them then there's these additional activities for lessons that will be applied in school in the future but of course it always depends on the student from RS.	• Intensified curriculum difficulty
Respondent # 2	Maybe the facilities that will be occupied by the incoming learners	• Shortage of facilities and equipments
Respondent # 3	Their perspective in the stem strand will change because, as I have said before their will be an additional knowledge which mean additional activities they will be tackled in the future.	• Intensified curriculum difficulty
Respondent # 4	First is financial, second is the pressure of the surroundings and people around it to thinking of their thoughts about you, third is the facilities po that will be occupied.	• Financial problems • Added pressure • Shortage of facilities and equipments
Respondent # 5	Uhmm siguro po ano, parang magiging mahirap kasi advance nga po yung pag-aaralan.	• Intensified curriculum difficulty
Respondent # 6	Ah umm, dahil nga po advance siya, I think may mga topics po na medyo mahihi … mahihirapan po kasi syempre advance na siya haahhaha	• Intensified curriculum difficulty
Respondent # 7	Since naging specific yung pagkuha ng stem course, mas maraming magiging undecided na kung saan pwede nilang ma-encounter 'yong parang pagiging alinlangan sa pagdecide ng need na itake na course and baka maging hindrance nila iyon sa dating nila ng college lalo na kapag napagtanto nila na hindi iyon yung akmang kinuha dapat nila na strand.	• Strengthening the undecisive factor

Respondent # 8	Since mas specialized na po, mas lalo pong hihirap ang core subjects ng senior high school kaya sa tingin ko po ay mas maiistress po hindi lang ang students kundi pati na rin po ang mga teachers.	• Intensified curriculum difficulty
Respondent # 9	Siguro mas makakastress kuya tapos yung time management po.	• Adjuvant of stress
Respondent # 10	In terms of classroom kuya, yung paghahati-hati about samga kukuha ng elective subjects under STEM, kakailanganin ng mas marami pang classroom at space sa school kuya.	• Shortage of facilities and equipments
Respondent # 11	Yung mga possible po na activities po is advanced po talaga compared po sa dating setup	• Intensified curriculum difficulty
Respondent # 12	Yung adjustments po siguro kuya. Parang maninibago po both yung students at teachers.	• Adjustments for change
Respondent # 13	Mas madadagdagan po yung stress na mararanasan naming students lalo na po at mas advanced na po ang aming aaralin.	• Intensified curriculum difficulty • Adjuvant of stress
Respondent # 14	Financial problems po kuya.	• Financial problems
Respondent # 15	Kuya adiyay ano, adiyay, baka gamin adiyay teachers ngay, han nga diyay specific kuma adiyay isursuro na, kurang ti teachers kasdiyay kuma kuya.	• Shortage of staff • Scouting qualified teachers
Respondent # 16	Specialized subjects ganon kuya. Mahihirapan yung mga teachers siguro kuya and also po sa students kuya	• Intensified curriculum difficulty
Respondent # 17	Nu like han nga aligned dadiyay maalam nga course yanti college ken dadiyay ayanti strand nga pilyem ket kasla narigaten nga i-allign. Um kasla marigatan kan tun nga ag-adjust, kasla immadayo kan idyay course nga kayat mo nu haan nga aligned diyay pilyem.	• Strengthening the undecisive factor • Straying off-path
Respondent # 18	About sa research, conducting research kuya, siguro mahihirapan kami sa research namin	• Pressured researcher
Respondent # 19	Possible challenges, ummm, siguro yung pinaka mahirap is tawag dito, learn and i-process mo lahat ng information na madadagdag pag na implement yung elective subjects under STEM	• Difficulty in learning and processing of information
Respondent # 20	Yung sudden na pagkakaroon ng bagong topic sa, baka hindi ka familiar at baka mahirapan ka doon.	• Intensified curriculum difficulty
Respondent # 21	The preparation and financial aspect. What about the rooms or devices that are needed in implementing these additional programs in our strand? Financial, of course,	• Financial problems

	we need money to provide the requirements, funds, and others.	• Shortage of facilities and equipment
Respondent # 22	Uhhh the main challenge of this is who will be teaching these courses? Right? Uhh there will be another series of changes when it comes to the implementation of the curriculum. Kase elective subjects under STEM, focuses more on the aspect that you would like to implement or the different subjects that you would like to be taught later on. So of course number one is who are the capable teachers to teach the subject. Number two what are our basis in implementing the curriculum? Right? And then number three, what makes it different from the STEM na meron na tayo and the HAS that we have in Lorma?	• Shortage of staff • Adjustments for change • Scouting qualified teachers
Respondent # 23	'Yung mga kagamitan na maaaring makatulong sap ag-implementa ng mga 'yan. Syempre mahal ang mga magagamit na laboratory equipment, mga tools, mga iba pa para mas lalo na mai-angat 'yung kwan 56ay an, 'yung inimplement o 'yung binibigay na bagong pag-aaral.	• Shortage of facilities and equipment
Respondent # 24	Kwan siguro, kumbaga parang that is higher education na eh diba? Lalo na 'pandemic babies' 'yung mga students natin ngayon so dun palang sa basics medyo nahihirapan na sila, how much more kapag medyo yung subject, yung topic, yung lessons, is medyo mas mahirap diba? So, that is one of the challenges na ma-eencounter ng teachers at students. So, bale yung difficulty ng curriculum.	• Pandemic babies • Intensified curriculum difficulty
Respondent #25	The challenges will be the provision of physical facilities apparatuses especially in elective subjects under STEM, robot/machines and other materials in Robotics and specialized personal or teachers that will handle the subjects related to this strand.	• Shortage of facilities and equipment
Respondent #26	Scouting qualified teachers for this subjects to be taught, and equipment to be used for teaching these subjects	• Shortage of staff • Scouting qualified teachers
Respondent #27	Teachers may need to adjust their instructional strategies, schedules, and curriculum frameworks to accommodate interdisciplinary learning effectively	• Adjustment for change
Respondent #28	Looking for a teacher that is really of specialization to the subjects offered for the program	• Scouting qualified teachers
Respondent #29	While the potential benefits of additional elective subjects under STEM,programs are substantial, it is important to consider factors such as resource allocation teacher training curriculum development and ongoing	• Adjustment for change • Scouting qualified teachers

	evaluation to ensure successful implementation and sustainability collaboration among educators policymakers and stakeholders is crucial to design and execute effective elective subjects under STEM,	• Training curriculum development
Respondent #30	One of the challenges would be the facilities like laboratories and classrooms that would cater to the needs of the learners as well as the financial support that the school needs for the program.	• Shortage of facilities and equipment • Financial Support
Theme: Pandemic Babies, Whirlwind of Finance and Equipment, and In the Face of Adversity, Stress, and Difficulty		
Question # 3	**C. What are your views on the possible implementation of the additional elective subjects under stem and what subjects should be added?** **c**. Considering your thoughts and opinions on the possible implementation, what subject would you like to be added and why?	**Codes**
Respondent # 1	Ummmmmmm, probably science subject po. Since yeah since stem offers the primary up, we could say my primary goal. Or perhaps a my occupy ay opo however deep down im still having second thoughts in my choices but yah, Thank you.	• Goal secured
Respondent # 2	What I will chose is additional science subject, Because the course that I will get in the near future is related to which is Nursing.	• Foundation for future college course
Respondent # 3	science kuya kasi…. kwan po ughh… dream job ko po is nasa medical field po.	• Future Doctor
Respondent # 4	Just like what I said earlier po, I will pursue engineering because I will take on robotics engineering course in the future or in collage that's all po.	• Focus on goals
Respondent # 5	Umm science po kuya, since sabi ko nga po kanina is planning din po akong pumasok sa med kaya siguro po is makakatulong po ito sakin in the future talaga.	• Planned Future
Respondent # 6	Ohh… siguro po sa science po or basta related to med po….. kasi gusto ko pong pumasok sa field of medicine din	• Aspiring Doctors
Respondent # 7	Despite yung disadvantage, mas malaki pa rin siguro yung advantage niya para sa mga future senior high school students and kung ako man ay pagpipiliin, mas kukunin ko yung additional math since nakatuon doon yung interest ko especially sa engineering.	• Focused attention • Starting line

Respondent # 8	Ako is added science kasi nasa field of medicine po siya. Since nung bata pa ako, gusto ko nang magpursue ng med. Tas favorite subject ko ang Science.	• Budding medical practitioners
Respondent # 9	Yung saakin po is additional trigo kasi na-iinterest ako sa Math.	• Math is Life
Respondent # 10	Added math siguro kuya kasi ano, yun nga kuya, balak kong mag-engineering kapag sa ano, kaya yun yung course na tututukan ko kasi yun yung makakatulong kapag college na po ako.	• Aspiring Engineer
Respondent # 11	Nasa medical field po ang passion ko kaya science nalang po kuya	• Goal oriented
Respondent # 12	IT po ang interest ko ngayon. Mahilig po ako sa mga computer kaya gusto ko pong mag-aral under sa stem na may additional programming or coding po, baka sakali pong makapag-aral po ako ng coding.	• Technology is advancing
Respondent # 13	Math po kuya kasi I hope to be a Chemical Engineer in the future.	• Future Engineers
Respondent # 14	Kuya ngayon ang pinagpipilian ko is Civil Engineering atsaka Mobile Engineer po kaya mas pipiliin ko pong mag-aral sa may additional math or programming po	• Goal secured • Future Engineers
Respondent # 15	Mga math po kuya kasi Engineer po yung gusto kong course sa college so mas magiging aligned po yung Senior High ko.	• Goal secured • College course aligned • Foundation of future career
Respondent # 16	Civil or architecture po yung kukunin ko sa college kuya kaya mga math po siguro mas maganda po.	• Goal oriented • Future Engineers
Respondent # 17	Science kuya gamin ag-forensics ak po kuya.	• Goal secured • Future Criminalistics
Respondent # 18	Ummm science subject na about chemicals kuya, kasi gusto ko pong umm mag pharmacist kuya.	• Goal oriented • Aspiring Pharmacists
Respondent # 19	Feel ko siguro added math, kasi actually very aligned na ako sa kung anong coures talaga kukunin ko sa collage. I'll pick nalng the most ideal among the two.	• Goal oriented • Future course secured
Respondent # 20	Probably mga robotics or coding kasi im quite inclined sa robotics and medyo interested din ako sa robotics and engineering.	• Future Engineer • Robotics inclined

Respondent # 21	I would choose programming and coding because I am fond of doing or reading such related article regarding robotics and I would another opportunity or another big honor to our school if… if we have that kind of program. But before that, we have to make sure, or the school needs to make sure that we have umm competent teachers to do that or same teacher who will go into training regarding that one.	• Robotics inclined • Capable Teachers • Future Engineer
Respondent # 22	For me, I'm actually looking forward because as I see, it is actually a good sub-branch of STEM tulad nung sabi ko kanina right? Umm it focuses or it also helps our studens or learners to be more decided on having affirmation on the course that they will be taking later on. Kasi ang problema ngayon is although the first aim of the Secondary High School is to redirect the students on what course that they would like in college. However, because of the changing system that we have, it turns out like, kahit GAS ka, pwede ka mag take ng course sa college na STEM related without taking the necessary subjects in the Senior High School. With this case, of course, mas matututukan talaga kung if the student would like to pursue the medical courses in college. And then later this will help them of course para hindi magbago-bago yung isip nila later on. Kung para ba sila sa medical or para sa engineering. Because as early as possible, they expereiene kung ano yung grades or ano yung hardship or struggles na pwede nilang ma-encounter later on or kaya ba nilang ihandle.	• Looking forward • Straight upward • Foundation added • Focused goals • Mock trial
Respondent # 23	Siguro science kasi siguro pwede akong makapagsaliksik din tungkol sa mai-uugnay ko doon sa aralin sa Filipino na may kaugnayan sa medisina kasi sa robotics, hindi ako masyadong maalam diyaan.	• Supporting foundation for one's plan • Research leads the way
Respondent # 24	Math or coding kasi diba that is programming, robotics and I am major in math, so aligned naman siguro 'yung knowledge ko doon sa strand na 'yon keysa sa science or sa medicine, so 'yun.	• Robotics inclined • Goal secured
Respondent # 25	I will choose math since my specialization is mathematics. Just like the sayings says we can only give what we have	• Robotics inclined • Capable teachers
Respondent # 26	Para sakin, I'm going to choose math subjects kasi sobrang daming mga estudyante ang nagkakaroon ng interest sa larangan ng engineering lalong-lalo na sa robotics, kaya naman siguro magandang course ito na ituro kasi mas magiging..umm active ang mga bata kasi	• Future Engineer • Goal oriented • Active participation • Foundation of one's future

	syempre ito ang course na kukunin nila sa college eh, mas magiging sanay na sila in the future.	
Respondent # 27	The selection of a specialized course should be based on a comprehensive assessment of resources, curriculum development, teacher expertise, and student aspirations. I will choose information and technology because this is my passion even though it is not my specialization	• Future IT expert • Capable teachers
Respondent # 28	Anything related to math because it's my specialization	• Topic oriented • Capable teacher
Respondent # 29	if given the opportunity, I will choose additional math since I'm interested and willing to learn and undergo training about robotics and engineering which will help me to encourage learners more the venture on math and IT studies	• Robotics inclined • Goal oriented • Arms and legs
Respondent # 30	I would like to teach microbiology parasitology zoology and AnaPhy, so I will choose added science subjects	• Goal oriented • Science enthusiast
Theme: To the Top, Unveiling the Tapestry of a Radiant Future, A beacon of Hope		

CURRICULUM VITAE

Name: AARON JAY S. GARCIA

Age: 17

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Gender: Male

Religion: Roman Catholic

Nationality: Filipino

EDUCATIONAL BACKROUND:
Secondary: Regional Science High School fo Region I ***Primary:*** Bulbulala Elementary School

Name: BRAEDAN ANTHONY JORGE H. PAGUIRIGAN

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Name: JOSE C. OBIACORO III

Age: 17

Date of Birth: January 21, 2006

Gender: Male

Religion: Roman Catholic

Nationality: Filipino

EDUCATIONAL BACKROUND:
Secondary: Regional Science High School fo Region I ***Primary:*** Cantoria Central School Special Science Class