



EXPLORING THE ISSUES AND CONCERNS ON THE OFFERING OF SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS (STEM) STRAND AMONG SENIOR HIGH SCHOOLS IN LAMBAYONG MUNICIPALITY

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ABSTRACT

The study aimed to explore the issues and concerns on the offering of Science Technology Engineering and Mathematics Strand among Senior High Schools in Lambayong municipality for the school year 2023-2024. The eleven school heads together with their academic coordinators are the participants of the study. It employed a phenomenological study using thematic analysis in processing the responses of the participants.

On the perceived freezing issues faced by senior high schools in Lambayong Municipality in offering the STEM strand. The following themes were Lack of facilities and equipment and lack of competent and qualified teachers.

On the issues and concerns of secondary schools on the offering of Science Technology, Engineering, and Mathematics Strand, the themes generated Human resources and equipment

Interestingly, On the possible plans of the school in offering Science Technology, Engineering, and Mathematics Strand following themes were Improve school facilities and capacitate teachers.

Keywords: *Issues and Concerns, STEM, Senior High School, Lambayong*

INTRODUCTION

Science, technology, engineering, and mathematics (STEM) education remains a critical area of need when it comes to recruitment, retention, and reform in education. One of the challenges of bringing about change in STEM is the complexity that comes as a result of many intersecting fields, each with its epistemology, culture, and practice.

Each field represented in STEM is made up of communities of practice, and expert communities that share goals, structures, expectations, and practices. These communities of practice are generally oriented to sharing culture and knowledge within the community but can be used for reform by shifting to a focus on student outcomes. Leveraging intersecting communities of practice to build professional learning communities that have varying levels of expertise, representation of each of the included fields and involve experts and education could represent a transformative tool in STEM education.

STEM curriculum is aimed to help students improve their abilities in solving basic to complicated problems in their communities and throughout the world, as well as in science, technology, engineering, and mathematics ideas. It also aims to educate pupils for college and future careers as scientists, technology specialists, engineers, mathematicians, programmers, science and math instructors, and other related fields (Estonanto, 2017).

In research, there are three broad assumptions presented on how education influences economic performance: 1. The innovation approach; 2. The Human Capital as investment and 3. Knowledge-Transfer Approach (Combalicer, 2016).

In the Division of Sultan Kudarat, only a few Senior High Schools offer Science, Technology, Engineering, and Mathematics. In Lambayong municipality out of 6 schools, only 1 senior high school offers Science, Technology, Engineering, and Mathematics Strand.

Thus, this study will be conducted to explore the issues and concerns among senior high schools offering Science, Technology, Engineering, and Mathematics Strand in the municipality of Lambayong

Research Questions

Generally, this study focuses on the issues and concerns of public secondary schools in the municipality of Lambayong on the Science, Technology, Engineering, and Mathematics strands.

Specifically, it will explore to answer the following objectives.

1. What are the perceived freezing issues faced by senior high schools in Lambayong Municipality in offering the STEM strand?

2. What are the issues and concerns of secondary schools on the offering of Science Technology, Engineering, and Mathematics Strand?
3. What are the possible plans of the school in offering Science Technology, Engineering, and Mathematics Strand?

METHODOLOGY

This investigation employed a phenomenological research design as it can study people's experiences, how people construct meaning in their lives, and commonalities that transverse individuals experiencing a specific phenomenon (Edmonds & Kennedy, 2017). Notably, this study utilized Transcendental phenomenology, which aimed to seek understanding in human experience, which is performed by laying aside prepossessed ideas to view the phenomena to be investigated through a new lens, allowing it to immerge, giving its distinct meaning and form.

The focus participants of this study are eleven (11) school heads and academic coordinators, who were selected through purposive sampling. This phenomenological study selected participants that fit the suggestion of Creswell (2014) as an ample number of participants to generate meaningful themes and valuable interpretations.

RESULTS

On the perceived freezing issues faced by senior high schools in Lambayong Municipality in offering the STEM strand. The following themes were **Lack of facilities and equipment** and **lack of competent and qualified teachers**.

On the issues and concerns of secondary schools on the offering of Science Technology, Engineering, and Mathematics Strand, the themes generated **Human resources and equipment**

Interestingly, On the possible plans of the school in offering Science Technology, Engineering, and Mathematics Strand following themes were **Improve school facilities and capacitate teachers**.

DISCUSSION

On the perceived freezing issues faced by senior high schools in Lambayong Municipality in offering the STEM strand

With this context and issues in the municipality of Lambayong, the following themes were generated based on the responses of the participants of the study; **Lack of facilities and equipment** and **lack of competent and qualified teachers**.

Lack of facilities and equipment is the first theme that was generated.

Instructional materials play an important role in teaching and learning at all levels of education because they allow children to broaden and deepen their knowledge by providing a variety of firsthand, developmentally appropriate experiences and by assisting children in acquiring symbolic knowledge by representing their experiences. In this theme, the participants shared:

Participants shared their sentiments on the lack of facilities and equipment as they shared;

“The school needs more preparations in terms of physical aspects and capacitating teachers in terms of science and engineering specialization” **Participant 1- Principal II;**

“We don’t have many facilities and equipment to cater to the needs of the STEM students. But we do not close our doors to this strand, if given the chance we will conform to the requirements”. **Participant 2- Head Teacher III;**

“Lack of Science and Mathematics facilities and equipment for STEM learners and lack of qualified teachers to teach”. **Participant 3- Principal I, and**

“No references/books and No facilities, laboratory equipment to be specific”. **Participant 8- Principal I**

Along with that context, there is an increasing concern about developing STEM instructional materials to prepare students for a scientifically and technologically advanced society. Concerns have arisen from both research and curriculum perspectives about the lack of a unified focus and the need for greater integration of the four disciplines as the importance of STEM education has been recognized globally.

The second generated theme was the **lack of competent and qualified teachers.**

Quality education needs quality teachers to teach in different learning areas to prepare students as they enter in tertiary education. Somehow the participants of the study shared their experiences and observations about why the school is not offering STEM strand as they shared;

“How much we wanted to offer STEM, to increase our enrollment, however, due to a lack of competent qualified teachers to teach all the subjects of this strand. In addition, we don’t have many facilities and equipment to cater to the needs of the STEM students. But we do not close our doors to this strand, if given the chance we will conform to the requirements”. **Participant 2- Head Teacher III;**

“One of the issues faced by the school not offering a STEM strand because of the limited number of students and the limited number of Mathematics and Science teachers in the SHS”. **Participant 4- Senior High School Coordinator;**

“One of the issues faced by the school not offering a STEM strand because of the limited number of learners and an insufficient number of Mathematics and Science teachers in the SHS”. **Participant 5-Principal I;**

*“The school’s inability to offer a STEM strand is partly due to lack of qualified STEM teachers and low enrolment population”. **Participant 7- Senior High School Coordinator***

Among the numerous crises faced by the improvement of STEM education in the country is the lack of educators with exceptional mastery in the field related to STEM (Feliciano et al., 2013).

On the issues and concerns of secondary schools on the offering of Science Technology, Engineering, and Mathematics Strand

All the disciplines that make up STEM; also play an important role in the development of twenty-first-century skills such as critical thinking, problem solving, cooperation, leadership ability, scientific thinking, adaptability, entrepreneurship, curiosity and imagination, communication, access to information and use (Bybee, 2010).

But somehow there are freezing issues and concerns among schools in the municipality of Lambayong as to why they are not offering STEM strands.

With the responses of the participants of the study, the following themes were generated **Human resources and equipment**.

With this matter, the participants shared their thoughts about the human resources and equipment of the school.

*“Human resources and equipment hinder our school from offering STEM”. **Participant 3- Principal I;***

*“Insufficient member of teachers majoring English, Math and Sciences”. **Participant 1-Principal II;***

*“We lack buildings, equipment, and laboratories that may address the subject requirements”. **Participant 3- Head Teacher III, and***

*“Several STEM lover students, Shortage of qualified Science teachers in STEM strand, Lack of quality textbooks, and Inadequate equipment and internet”. **Participant 6- Academic Coordinator***

*“Lack of facilities, teachers’ books, and other learning materials”. **Participant 9- Senior High School Coordinator***

On the possible plans of the school in offering Science Technology, Engineering, and Mathematics Strand

This scenario is greatly seen in the country especially since the Department of Education has just implemented the additional two years which is the senior high school. Then, to represent the country's shifting demographics, it's critical to enhance worker diversity.

In this context, the participants of the study shared their plans for the possible offering of STEM in their respective schools. The following theme was generated **Improve school facilities and capacitate teachers**. But to attain these competencies the school needs facilities and teachers to have a meaningful teaching and learning process, as the

participants shared their ideas on the plan of their school;

*“Improve more school facilities and capacitate teachers through training and seminars”. **Participant 1-Principal II;***

*“Strengthen school facilities such as classrooms and laboratories and capacitate teachers through training and seminars”. **Participant 5-Principal I;***

Conclusions

The following conclusions are drawn based on the findings of the study.

Lack of facilities and equipment and lack of competent and qualified teachers are the common reasons why they are not offering STEM strands. To meet and to address the following freezing problems faced by the schools not offering STEM strands they need to Improve school facilities and capacitate teachers.

Recommendations

From the salient findings of this study and the conclusion reached, the following recommendations are presented; The school heads may encourage Science and Mathematics teachers to undergo training in curriculum planning and implementation. The Department of Education may provide technical assistance on the implementation of the STEM strand in schools that want to implement STEM strands. The Department of Education may provide all the necessary facilities and equipment to the school to cater to STEM students. Continuous retooling and professional development programs for STEM teachers must be sustained to align their pedagogy to the Generation Z students, and Similar studies using other variables should be conducted to determine if the same results are obtained to confirm the conclusion that the extent of implementation of the STEM curriculum

Compliance with Ethical Standards

This paper has a single author and confirms the ethical standards.

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