East Asian Journal of Multidisciplinary Research (EAJMR)
Vol. 2, No.6 2023: 1995-2008

Evaluation on the Responsiveness of Science Technology Engineering (STE) Program in Region XII, Philippines

Cherwin B. Macaranas[1*] , Ava Clare Marie O. Robles[2]
Mindanao State University-General Santos City Campus
Corresponding Author: Cherwin B. Macaranas
cherwin.macaranas@deped.gov.ph

A R T I C L E I N F O

Keywords: Evaluation, Responsiveness, Learning Opportunities, Barriers, STE

Received : 05, March
Revised : 10, April
Accepted: 15, May

A B S T R A C T

In Philippine Basic Education, offering of special curricula is a robust practice. Needless to say, limited evaluation as to the responsiveness of curriculum prevails up to date. This study was conducted to evaluate the responsiveness of Science Technology Engineering as a special curricular program in schools. This inquiry was conducted among 32 administrators, 129 teachers and 241students among STE implementing schools. It determined the level of responsiveness of STE in meeting the needs of the learners, the extent of learning opportunities gained by students and the extent of barriers faced by teachers. Findings revealed an overall "high level" of responsiveness of STE program. Students rated the program with "high extent of learning opportunities" from the implementation. While teachers claimed of being "moderately challenged" in implementing the program. These results imply that schools have been consistently meeting the requirements and standards of the STE curriculum in the country.

DOI prefix: https://doi.org/10.55927/eajmr.v2i5.3787
ISSN-E: 2828-1519
https://journal.formosapublisher.org/index.php/eajmr

INTRODUCTION

Offering of special curricula aside from the standard basic education program is a robust practice in the Philippines. In support to the promotion of scientific skills among students, Science Technology Engineering (STE) program have been offered among junior high school students since 1994. Needless to say, very limited evaluation as to the responsiveness of any of the basic education curricula prevails up to date. The recent basic education monitoring and evaluation framework of the department of education focuses mainly on school governance and processes but none among its tenets is directly intended for curriculum evaluation. This leads to poor decision making among basic education authorities in addressing the needs of the learners specific to the curricular offering they are taking. Similarly, this sad reality resulted to inappropriate trainings given to teachers who are considered integral in curriculum implementation. Concurrently, Joana Ameyaw (2015) posited that the responsiveness of curriculum in schools should constantly be under the close watch of education authorities if the consistency in meeting the needs of the learners in the ever-changing environment is to be achieved.

The Philippine Congress through Republic Act 10533 also known as the Enhanced Basic Education Act of 2013, provides for the mandatory evaluation and review of the entirety of the K to 12 basic education in the country by the end of school year 2014-2015. This evaluation and review aimed at establishing the status of implementation vis-à-vis teachers, classrooms, textbooks, seats, toilets and other shortages that should be addressed. It should be noted that this evaluation and review covers the entire basic education curriculum including the STE program which is the topic of this study. Nonetheless, the realities of the country's basic education remains at the realm of mediocrity as evident in the recent international measures of students' performance. These are standards-based students' assessment which have been incrementally utilized by countries in gauging educational effectiveness (DeBoer, 2011). While it is noteworthy to mention that from 1995 to 2003 Philippines had shown significant improvement in its participation in TIMMS, the country remained at the bottom ranks with students performing below the international average mark of 400. In addition, in the 2018 conduct of Program for International Students Assessment (PISA), the Philippines ranked lowest of the 79 countries assessed in Science and Mathematics Literacy. These are sad realities which are predictors as to the responsiveness of educational system in a country.

In the 2023 basic education report of the country's education secretary, a call for the revision of the current curriculum by making it more responsive to the nation's aspiration was emphasised. A revised curriculum that will develop lifelong learners imbued with 21st century skills, discipline and patriotism (OVP Media, 2023). Needless to say Almerino et. al. (2020) posited that up to this date limited attention is given by scholars about the status of K to 12 curriculum implementation in the country. With the ever increasing and constantly changing demands of the global community, it is high time to revolutionize education system to be responsive in meeting the needs of the learners by

making them job ready, prepared for higher education and can meet the demands of industries elsewhere in the world.

In a nutshell, educators themselves have the innate accountability as to the responsiveness of a curriculum. As curriculum evaluators, it is their primary concern to ensure that as implementers of educational program the daily teaching – learning process should be anchored towards the thrusts and aspirations of the country. Making sure that the curriculum is responsive in meeting the needs of the learners in terms of its implementation, instructional program and instructional support.

Given the above conditions, a timely evaluation as to the responsiveness of a curriculum is needed to address the currently emerging gaps as to students' performance. By means of research, educators have the responsibility to initiate evaluation specific to a curricular offering. Along with the purpose of collectively contributing to scholarly evidence that will propel the country's goal to revolutionize the basic education making it more responsive to the global demands of time.

THEORETICAL REVIEW

In line with the objectives of the present inquiry, this part aimed to provide a brief overview on evaluation of curriculum. Specifically, one that is geared towards the evaluation on the responsiveness of an academic program. Up until this time there are more than 50 models of curriculum evaluation being utilized in the field (Kavgaoglu, 2016). It should be noted that the present study employed the summative-formative evaluation design which was first introduced in the 1960's. The aim of which is to identify issues relative to implementation at one hand and the evaluation of program effectiveness on the other (Scriven, 1967). For the purpose of the current investigation, the researcher considered only the formative evaluation which focuses mainly on the analyses of program implementation vis-à-vis responsiveness of the science technology engineering program in meeting the needs of the learners.

Responsiveness is defined as the quality of reacting quickly and positively (Oxford Dictionary, 2022). Similarly, a responsive curriculum addresses the ever-changing needs of learners by connecting the gaps between the conceptual knowledge and theories absorbed by students in schools and the realities of everyday life and the high economic world of work (Ameyaw, 2015). With this premise, it is safe to say that the responsiveness of curriculum in schools should constantly be under the close watch of education authorities if the consistency in meeting the needs of the learners in the ever-changing environment is to be considered

Several studies have been conducted in line with the responsiveness of programs worldwide, but minimal inquiries are directed toward the responsiveness of curricular programs in schools. One that can be traced is the study of Toivonen (2020), which investigated the cultural responsiveness of Finnish education by exploring how exported curriculum and pedagogy can be planned in a culturally responsive manner. He found three culturally responsive practices, leading to three localized curriculums. This paved the way

for more culturally responsive curricular programs intended for the Asian-based culture schools in Finland. In addition, Matsiliza (2020) investigated the responsiveness of the scholarship of teaching and learning. He argued that the curriculum must respond to the decolonization of nations within the context of its disciplinary culture and practices. His findings revealed that the curriculum for teaching public administration must be framed based on local knowledge and that it should come up with the restoration of the epistemic issues in African institution that offers governance studies. Furthermore, Harrison (2020) conducted a study on culturally responsive pedagogy, which found a link between learning from a country as a teaching approach and improved learning outcomes. It should be emphasised that he above-mentioned studies are geared toward curriculum responsiveness in line with the schools' cultural context.

As the entire world faced the threats of the COVID-19 pandemic, education systems are left with the only option of making curricular activities respond to the myriad of challenges brought about by this global health phenomenon. Toquero (2020), in her investigation of the challenges and opportunities of higher education amidst the COVID-19 pandemic in the Philippines, discussed how higher education has been affected and how it can respond even to future challenges. She recommended that education institutions strengthen practices in curriculum, making it more responsive to the needs of students even beyond the four corners of the classrooms. Hence, educators in their respective schools must initiate evaluation as to how their curriculum respond to the volatile demands of their learners and their community at large.

METHODOLOGY

The study utilized a descriptive research design. Survey questionnaires were administered to three groups of respondents from the STE implementing schools in the region namely administrators (32), teachers (129) and students (241). The first part of the questionnaire intends to find out the level of responsiveness of the program in meeting needs of the learners. Subsequently, questions asking the extent of learning opportunities gained by students were also used. Lastly, teachers were asked as to the extent of barriers they faced in the implementation of the pangram. A self-made questionnaires validated by three experts in science curriculum was used in this study. The respondents were drawn using Cochran's formula for sampling. To come up with the results, weighted mean was utilized through the Statistical Package for Social Sciences (SPSS). Based on the data gathered, the researcher solved for the weighted mean and corresponding overall mean. Five point Likert scale with its equivalent descriptive interpretation was used.

RESULTS AND DISCUSSION

Table 1

Level of Responsiveness of Science Technology and Engineering Program

A. Curriculum Implementation	**Administrators**		**Teachers**	
The school in its implementation of STE program is responsive in…	**Mean**	**Description**	**Mean**	**Description**

1	**Admission -** Meeting the standard admission policies that are clear and are easy to follow based on the issuances an guidelines.	4.70	*Very* Highly Responsive	4.53	*Very* Highly Responsive
2	**Retention –** Meeting standard and clear policy in student retention in the program	4.90	*Very* Highly Responsive	4.69	*Very* Highly Responsive
3	**Curricular Programs -** Complying with the learning competencies intended for STE implementing schools (DO 41, s. 2004 & DO 21, s. 2019).	4.90	*Very* Highly Responsive	4.69	*Very* Highly Responsive
4	**Co-curricular programs -** Providing co-curricular programs that is clear, accepted by students and do not disrupt instructional time	4.71	*Very* Highly Responsive	4.61	*Very* Highly Responsive
	Total Mean	**4.76**	***Very* Highly Responsive**	**4.51**	***Very* Highly Responsive**
B.	**Instructional Program**				
1	**Faculty Development** - Giving seminars and trainings attended by teachers are related to the needs of special science curriculum	4.69	*Very* Highly Responsive	4.36	Highly Responsive
2	**Teachers Qualification** - Ensuring that academic preparation of the teachers matched to the requirement of the curriculum	4.58	*Very* Highly Responsive	4.58	*Very* Highly Responsive
3	**Instructional Strategy** - Instructional activities that show systematic organization, implementation and evaluation following a class size for quality and excellence through a sound classroom management.	4.84	*Very* Highly Responsive	4.59	*Very* Highly Responsive
	Total Mean	**4.76**	***Very* Highly Responsive**	**4.51**	***Very* Highly Responsive**
C.	**Instructional Support**				
1	**Laboratory Facilities, Equipment and Supplies -** Providing appropriate lab equipment apparatuses, considering advances in science and technology which allow for small group works.	4.13	Highly Responsive	3.98	Highly Responsive
2	**Library Facilities and Services -** Providing relevant and updated book selections with extensive collection of science and math oriented books which meet the demands of STE program	3.67	Highly Responsive	3.68	Highly Responsive
3	**ICT Integration -** Teachers development of science lessons by designing informative power point, web pages, flash animations and digital video productions	4.47	Highly Responsive	4.31	Highly Responsive
4	**Physical Facilities (School Site, Buildings and Classrooms) -** A well planned campus with adequate buildings for the social, cultural and sports activities of students with enough tables, chairs and technology	4.53	*Very* Highly Responsive	4.43	Highly Responsive
	Total Mean	**4.18**	**Highly Responsive**	**4.09**	**Highly Responsive**
	Overall Mean	**4.56**	***Very Highly Responsive***	**4.38**	**Highly Responsive**

Legend: 4.50 – 5.00 Very* Highly Responsive, *3.50 – 4.49 **Highly Responsive,** ***2.50 – 3.49 Moderate*** **Responsive,** ***1.50 – 2.49*** **Less Responsive,** ***1.00 – 1.49 Least Responsive***

Table 1 presents the level of responsiveness of STE program in meeting the needs of learners in terms of curriculum implementation, instructional program and instructional support. Results revealed that administrators (overall $\bar{x}$ =4.74) and teachers (overall $\bar{x}$ =4.54) viewed the level of responsiveness of STE program in terms of curriculum implementation as very highly responsive. This implies that schools in the implementation of the program have been consistently meeting the requirements and standards of the STE curriculum. This is supported by the findings of Ameyaw (2017) when he posited that the responsiveness of curriculum in schools should constantly be under the close watch of education authorities if the consistency in meeting the needs of the learners in the ever-changing environment is to be considered.

Similarly, administrators ($\bar{x} = 4.76$) and teachers ($\bar{x} = 4.51$) viewed STE program very highly responsive in meeting the needs of learners relative to instructional program. This implies that schools in the implementation of the program have imbibed the standards in terms of faculty development, teachers' qualification and instructional strategy set by the organization through the issued guidelines. This further implies that schools in the implementation of the program have provided the necessary requirements needed for a successful instructional program. Klodiana, et.al (2021) reiterated the importance of faculty development in supporting education during times of change and the effectiveness of it depends on organizational factors and context. Similarly, teachers' qualification plays an important role in the success of students in the program. In addition, Lee (2020) claimed that students who have been under the instruction of highly qualified teachers were more likely to obtain a higher level of education. Consequently, students' progress is highly influenced by teaching strategies implemented by teachers. As supported by Isa (2020) who posited that teachers' method of teaching greatly affect students' academic performance.

Finally, administrators ($\bar{x} = 4.18$) and teachers ($\bar{x} = 4.09$) viewed STE program highly responsive in meeting the needs of learners in terms of instructional support. This implies that schools have consistently provided the necessary instructional support mechanism through laboratory and library facilities, ICT integration and the overall school physical facilities. Components of instructional support which are pivotal to a successful curricular program. This is supported by Ojouk (2020) who posited that science laboratory, quality classrooms and computer facilities have significant influenced to students' academic performance and recommend that government should provide such requisite facilities if quality education is to be achieved. In addition, Ramil (2018) also claimed that the overall school physical facilities have significant impact to students' academic achievements.

Table 2

Learning Opportunities Gained By Students

A. Inquiry Skills *As a Science, Technology and Engineering Student, I...*		**Mean**	**Description**
1	can ask questions beyond my direct observation of a phenomenon based on scientific principles	3.95	High
2	have the capacity to make a planned procedures/steps in order to solve a	4.20	High

	problem		
3	have the knowledge and skills in collecting data using appropriate tools and equipment	4.09	High
4	am capable of analysing and interpreting collected data for an experiment	4.09	High
5	consider reliability of the sources of information I gather for a scientific investigation	4.33	High
6	can summarize and present results of investigation using available technology and consider alternative perspectives	4.18	High
	Total Mean	**4.14**	**High**
B. Scientific Attitudes ***As a Science, Technology and Engineering Student, I…***			
1	**Critical Thinking -** can explain the outcomes of scientific experiment using evidence, logical explanation, and consider comparison of two observations should be done in the same conditions	**4.43**	**High**
2	**Curiosity -** am a person who actively desire to know or to learn, explore and tinker and investigate about a phenomenon	**4.29**	**High**
3	**Creativity-** have the ability to try new innovative ideas to improve steps, processes or services	**3.99**	**High**
4	**Intellectual Honesty -** learned a habit not to copy someone's work and claim it to be my own	**4.35**	**High**
5	**Accuracy-** see to it that I am observing, describing and measuring accurately in all of my school works	**4.45**	**High**
6	**Objectivity -** am able to deal with facts and conditions without being influenced by my personal feelings, prejudices and expectations	**4.38**	**High**
7	**Independent Thinking -** answer questions using my own observations and experiences and do not easily accept ideas and opinions of others	**4.07**	**High**
8	**Active Listening -** am aware that communication is a two-way process. One should listen more that he speaks	**4.51**	***Very High***
9	**Assuming Responsibility -** am able to take responsibility when taking the lead	**4.18**	**High**
10	**Taking Initiative -** am a source of delight to my fellow students by taking initiative in our activities	**3.99**	**High**
11	**Perseverance-** am a person who persist despite difficulties	**4.44**	**High**
	Total Mean	**4.28**	**High**
	Overall Mean	**4.28**	**High**

Legend: 4.50 – 5.00 Very High, 3.50 – 4.49 High, *2.50 – 3.49 Moderate, 1.50 – 2.49* Low *1.00 – 1.49 Very Low*

Table 2 presents the extent of learning opportunities gained by STE students in terms of inquiry skills and scientific attitudes. Results revealed that as Science Technology engineering students they gained high learning opportunities in terms of inquiry skills ($\bar{x} = 4.14$). This means that they can highly ask questions beyond direct observation of a phenomenon based on scientific principles ($\bar{x} = 3.95$) and have a high capacity to make a planned procedures/steps in order to solve a problem ($\bar{x} = 4.20$). In addition, students have a high knowledge and skills in collecting data using appropriate tools and equipment ($\bar{x} = 4.09$) and are highly capable of analyzing and interpreting collected data for experiment ($\bar{x} = 4.09$). In relation with this, students can highly consider reliability of information for a scientific investigation ($\bar{x} = 4.33$) and can highly summarize and present results using available technology ($\bar{x} =$

4.18). These results imply that learners under the STE program have high ability to ask questions about the world, design and conduct the investigation, employ different strategies to obtain information, and communicate results (DOST-SEI, 2011). In addition, Harlen (2016), pointed out that conceptual understanding and problem solving skills of students are well developed through inquiry-based learning and that an environment that foster collaboration makes learning effective.

In with scientific attitudes, students gained very high extent of learning opportunity in active listening ($\bar{x} = 4.51$). This means that students are fully aware that communication is a two way process and that one should listen more that he speaks. Among the indicators, students rated creativity ($\bar{x} = 3.99$) and taking initiative ($\bar{x} = 3.99$) the lowest. These results imply that students still need to improve their ability to innovate new ideas to improve steps, processes and services by taking initiatives in their school activities. In summary, students have gained high extent of learning opportunities relative to scientific attitudes ($\bar{x} = 4.28$) as learners in the Science Technology and Engineering program. This implies that the program has provided high degree of habits and values of mind which are essential in science and are considered important if the curriculum has to produce lifelong learners and productive citizens of the country (DOST-SEI, 2011). This is supported by Hasanah et.al (2020) when they concluded that scientific attitudes positively helped in the improvement of students' learning outcome and recommend that innate scientific attitudes among learners should be continuously honed and developed for optimum learning.

Table 3

Barriers Faced by Teachers in the Implementation of STE Program

A. Content, Knowledge and Pedagogy **As a Science, Technology and Engineering teacher, I am faced with barriers in…**		**Mean**	**Description**
1	applying knowledge of content within and across curriculum teaching areas	3.58	Very challenging
2	applying extensive knowledge of content beyond his/her are of specialization	3.50	Very challenging
3	motivating learners to investigate the content area to expand their knowledge and satisfy their natural curiosity.	3.44	Moderately challenging
4	citing intra- and interdisciplinary content relationships.	3.33	Moderately challenging
5	addressing content accurately and its focus is congruent with the big ideas and/or structure of the discipline.	3.36	Moderately challenging
	Total Mean	**3.42**	**Moderately challenging**
B. Learning Environment and Diversity of Learners ***As a Science, Technology and Engineering teacher, I am faced with barriers in…***			
1	using differentiated, developmentally appropriate learning experiences to address learners' gender, needs, strengths, interests and experiences.	3.43	*Moderately challenging*
2	utilizing proactive classroom structure management and practices to support flexible movement of learners in all learning activities.	3.39	*Moderately challenging*
3	keeping the learning environment free from congestion and facilitates activities appropriate within the physical learning environment.	3.22	*Moderately challenging*

4	managing learner behavior constructively by applying positive and non-violent discipline to ensure learning-focused environments	3.29	*Moderately challenging*
5	establishing procedures for learners to self-monitor their own classroom	3.16	*Moderately challenging*
	Total Mean	**3.30**	***Moderately challenging***
C. Curriculum and Planning ***As a Science, Technology and Engineering teacher, I am faced with barriers in…***			
1	planning, manages and implements developmentally sequenced teaching and learning processes to meet curriculum requirements and varied teaching contexts	3.33	*Moderately challenging*
2	managing well-structured lessons with emphasis on explicit connections between previous learning and new concepts and skills.	3.27	*Moderately challenging*
3	sequencing activities purposefully to scaffolds learners toward achieving the lesson's objectives.	3.26	*Moderately challenging*
4	connecting outcomes to previous and future learning. Transitions between activities are smooth.	3.38	*Moderately challenging*
5	selecting, develops, organizes and uses appropriate teaching and learning resources including ICT , to address learning goals.	3.24	*Moderately challenging*
	Total Mean	**3.27**	***Moderately challenging***
D. **Assessment and Reporting** As a Science, Technology and Engineering teacher, I am faced with barriers in…		Mean	Verbal description
1	designing, selecting, organizing, and using diagnostic, formative and summative assessment strategies consistent with curriculum requirements.	3.22	*Moderately challenging*
2	Using assessment strategies which engage learners in assessment criteria to self-monitor and reflect on their own progress.	3.35	*Moderately challenging*
3	Predominantly using assessment strategies which are embedded as an integral part of the lesson and are aligned with the intended instructional or consistent with the content standards.	3.28	*Moderately challenging*
4	Monitoring and evaluating learner progress and achievement using learning attainment data.	3.18	*Moderately challenging*
5	Communicating promptly and clearly the learners' need, progress and achievement to key stakeholders, including parents and guardians.	3.23	*Moderately challenging*
	Total Mean	**3.25**	***Moderately challenging***

Legend: 4.50 – 5.00 Extremely challenging, 3.50 – 4.49 Very challenging
2.50 – 3.49 Moderately challenging, 1.50 – 2.49 Less challenging
1.00 – 1.49 Least challenging

Table 3 presents the extent of barriers teachers faced in the implementation of the program. In terms of content knowledge and pedagogy, teachers found applying knowledge of content within and across curriculum teaching areas ($\bar{x} = 4.58$) and applying extensive knowledge of content beyond his/her are of specialization ($\bar{x} = 4.50$) very challenging. This means that teachers need up scaling of their teaching competence in these areas. On contrary, teachers found citing intra- and interdisciplinary content relationships ($\bar{x} = 3.33$) moderately challenging. This means that it at this area where teachers' strength lies. In summary, the overall mean ($\bar{x} = 3.42$) revealed that

teachers were moderately challenged in terms of content knowledge and pedagogy in the implementation of STE program in schools. This implies that at this extent, teachers faced these barriers that may affect the implementation of the program and may in turn will have a ripple effect to students' performance. This is supported by Kathirveloo (2014) who emphasized that pedagogical content knowledge plays an important role in the teaching and learning process because it entails teachers' competence in delivering concepts, relative understanding and sound reasoning of the subject matter. Without a full understanding of knowledge, content and pedagogy teachers will face difficulty and barriers in providing the needed learning opportunities for students.

In line with learning environment and diversity of learners, teachers rated themselves the highest in using differentiated, developmentally appropriate learning experiences to address learners' gender, needs, strengths, interests and experiences ($\bar{x} = 3.43$) and in utilizing proactive classroom structure management and practices to support flexible movement of learners in all learning activities ($\bar{x} = 3.39$). This means that teachers believed that they still have much to improve in these areas. On the contrary, teachers rated themselves the lowest in establishing procedures for learners to self-monitor their own classroom ($\bar{x} = 3.16$) and in keeping learning environment free from congestion and facilitates activities appropriate within the physical learning environment ($\bar{x} = 3.22$).This implies that teachers are well verse on the processes in line with monitoring their classrooms and in managing congestion by maximizing the physical learning space. The overall mean ($\bar{x} = 3.30$) for the extent of barriers teachers faced in terms of learning environment and diversity of learners further implies that teachers need to improve their skills in using differentiated and developmentally appropriate learning experiences and address learners' gender, needs, strengths and interests along with proactive classroom management. These findings conform to the study of Verma (2019), who posited that classroom environment is one indispensable factor that affects students' learning. Positive learning environment can only be achieved when students inside the classroom feel loved, cared, nurtured and supported. An environment that leads students to become inquirer, explorer and true leaders of their own learning.

In terms of curriculum planning, teachers were moderately challenged in all of the indicators. Among these indicators teachers rated themselves the highest in connecting outcomes to previous and future learning along with transitions between activities are smooth ($\bar{x} = 3.38$) and in planning, managing and implementing developmentally sequenced teaching and learning processes to meet curriculum requirements and varied teaching contexts ($\bar{x} = 3.33$). This means that teachers still need to improve their skills in these areas. On the other hand, teachers rated themselves the lowest in selecting, developing, organizing and using appropriate teaching and learning resources including ICT, to address learning goals. ($\bar{x} = 3.24$). This means that teachers exuded adequate skills in these areas. Nonetheless, the overall mean ($\bar{x} = 3.27$) for the extent of barriers faced by teachers in terms of curriculum and planning implies that teachers still need to improvement in establishing seamless connection between

previous and future learning and in designing developmentally sequenced teaching and learning process. This is supported by Holmund (2020) with their discovery that several obstacles are encountered by teachers in curriculum planning along with lack of time, money and knowledge, as well as lack of instructions for integration across curriculum.

Finally, in relation to assessment and reporting, teachers rated themselves the highest in using assessment strategies which engage learners in assessment criteria to self-monitor and reflect on their own progress ($\bar{x} = 3.35$) which means that among the indicators, teachers still need to enhance their skills in this area. At one hand, teachers evaluated themselves the lowest in monitoring and evaluating learner progress and achievement using learning attainment data ($\bar{x} = 3.18$). This means that teachers showed some level of mastery in this area. These results implied that teachers need to improve their skills in using assessment strategies which engage learners in assessment criteria to self-monitor and reflect on their own progress. This agrees with the study of Alonzo (2023) who posited that while teachers have the needed knowledge to implement the so-called outcomes-based assessment they are not fully enshrined in their actual assessment practices. He further posited that a more systematic approach has to be imposed for the alignment of teachers' assessment practice to target the goal of outcomes-based education.

CONCLUSIONS AND RECOMMENDATIONS

This study raised concerns on the responsiveness of the STE program in meeting the needs of learners, the extent of learning opportunities they gained as students in the program and the extent of barriers faced in implementing the program.

Both administrators and teachers rated the implementation of STE program highly responsive in meeting the needs of learners in the region. Results highlighted instructional support with the lowest mean. This implies that gaps in terms of laboratory, library, ICT facilities and the overall school physical facilities were identified and needed to be addressed. On the other hand, students claimed to have provided by the STE program with high extent of learning opportunities in terms of inquiry skills and scientific attitudes. Although, learners are amenable to have the lowest extent of learning opportunities in relation to inquiry skills. Similarly, gaps on this area relative to the teaching-learning processes must be addressed. Finally, teachers claimed to have been moderately challenged by the barriers they faced in implementing the program. Results clearly identified content knowledge and pedagogy with the highest mean. Which means that teachers advertently accepted that further improvement of their skills and competencies in this area still needs to be developed. This result is synonymous with the earlier claim of teachers under instructional program that they need specific trainings on special science curriculum either school-based or higher level trainings and that they should be given seminars and trainings related to the needs of special science curriculum.

Having the above conclusions and in consideration of the STE program implementation in schools, it is highly recommended among education

authorities to ensure standard requirements for laboratories, library and ICT facilities with adequate safety provisions with considerations of the recent advancement in science and technology. In terms of learning opportunities for students, it is highly recommended that teachers should strengthen the provision of inquiry-based teaching and learning as this have been found effective in increasing students' scientific process skills such as critical thinking, defining the problem, formulating a hypothesis, observing and interpreting results and the like. Finally, teachers should be provided with seminars and trainings on content knowledge and pedagogy. Specifically, seminars and trainings related to the needs of the special science curriculum and ICT integration.

FURTHER STUDY

As mentioned above, this inquiry focused only on the evaluation on the implementation of the science engineering program vis-à-vis its responsiveness in meeting the needs of the learners enrolled in the curriculum. In line with the summative-formative evaluation model, further study focusing on the effectiveness of the program may be conducted.

ACKNOWLEDGMENT

The success of this paper would not have been achieved without the invaluable contribution of persons who are part and parcel of this endeavour. To his co-author Dr. Ava Clare Marie O. Robles, DiSDS, Ph.D., who despite some health concerns has continually and consistently provided guidance by unselfishly sharing her knowledge and expertise for this study. Indeed, her unquestioned intelligence has profoundly manifested in the improvements of this paper. To the schools division superintendents and school administrators who granted permission on the conduct of the study. Profound gratitude is also given to the teachers and students who took part in answering the survey questions. Above all, to Almighty God for the heavenly wisdom and guidance making all the obstacles and bottlenecks of this endeavour triumphantly surpassed.

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