Feasibility Study on the Conversion of the Existing Special Science Curriculum to Science, Technology, and Engineering (STE) Program at Silway-8 National High School

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.903SEDU0273

Received: 11 May 2025; Accepted: 19 May 2025; Published: 17 June 2025

ABSTRACT

This study examined the viability of converting the existing Special Science Curriculum at Silway-8 National High School into a Science, Technology, and Engineering (STE) Program to improve the institution's ability to provide a more advanced and future-ready education. The school has made a good reputation in science education evidenced by its participation in science fairs, robotics competitions, and investigatory projects. These achievements reflect the students' capabilities and the school's commitment to nurturing scientific talent.

The study highlighted the importance of curriculum continuity and enrichment in science and technology education. The current special science curriculum has fostered academic excellence and student interest in scientific fields; however, the lack of a structured STE pathway limits opportunities for students to enhance their skills in engineering, innovation, and applied sciences. This study sought to assess the academic, structural, and social readiness of the school for the transition to a Science, Technology, and Engineering (STE) Program.

Findings from the Market Study revealed a strong interest in STE-related fields among students, alongside parental support for a program that could enhance academic opportunities and future career prospects. Teachers and administrators also expressed optimism, citing the benefits of integrating technology and engineering into the curriculum to strengthen learners' problem-solving and critical thinking skills.

The Technical Study outlined infrastructure needs such as science laboratories, digital tools, and teaching resources. While gaps were identified, particularly in equipment and teacher specialization, the study proposed a phased implementation plan supported by capacity-building and partnerships with external agencies and LGUs.

From a management perspective, the study assessed the school's readiness to handle new instructional demands. Strategic staffing, regular training, and leadership coordination were proposed to sustain the program. The Financial Study affirmed that the transition was economically feasible through a mix of DepEd fund allocations, local government support, and fundraising efforts.

The Socio-Economic Study emphasized the broader impact of the STE program on learner empowerment, community development, and equitable access to quality education in a technologically evolving society. Ethical and cultural considerations were also integrated to ensure inclusive participation and community relevance.

In conclusion, the study confirmed that the conversion of the Special Science Curriculum to a Science, Technology, and Engineering (STE) Program at Silway-8 National High School was both viable and beneficial. With strong stakeholder support, available resources, and a strategic rollout, the program was poised to deliver a progressive learning experience that prepared students for science and technology-driven futures.

INTRODUCTION

Silway-8 National High School (Silway-8 NHS) has long been committed to providing quality education that equips students with the skills and knowledge necessary to thrive in the 21st century. Currently, the school offers a Special Science Curriculum aimed at enhancing students' scientific literacy and critical thinking. However, the growing demand for specialized training in Science, Technology, and Engineering (STE) fields has underscored the limitations of the existing curriculum. In its current form, the Special Science Curriculum at Silway-8 NHS is not fully equipped to provide the depth and breadth of learning experiences needed to prepare students for the competitive landscape of STEM curriculum exits.

The proposed conversion of the Special Science Curriculum into a comprehensive Science, Technology, and Engineering (STE) Program seeks to bridge this gap by delivering an enriched, hands-on learning environment that emphasizes practical application, technological proficiency, and innovative problem-solving. This transition is driven by three main factors: the increasing demand for STEM-related skills in the local and global workforce, the need for alignment with the Department of Education's (DepEd) enhanced curriculum standards, and the growing interest among students and parents in advanced science and technology education.

At present, Silway-8 NHS serves as the primary secondary education provider for students within Barangay Silway 8 and nearby communities. Despite its crucial role in community development, the school faces challenges in meeting the educational aspirations of its students, particularly those inclined towards science and technology fields. The lack of specialized facilities, limited access to modern laboratory equipment, and gaps in teacher training for advanced STEM subjects further highlight the need for program enhancement.

The implementation of the STE Program at Silway-8 NHS is not merely an upgrade but a strategic response to both local and national educational goals. It supports the Department of Education's thrust to cultivate globally competitive learners equipped with 21st-century skills. Moreover, it addresses the community's call for a stronger focus on STEM education, thereby empowering students to pursue higher education and career opportunities in science, technology, and engineering fields.

Therefore, the conversion of Silway-8 NHS's existing special science curriculum into a full-fledged Science, Technology, and Engineering (STE) Program is both timely and necessary. It represents a proactive step toward elevating the quality of education in Barangay Silway 8, ensuring that learners are not only prepared for local opportunities but are also capable of competing in a globalized world.

Legal Bases

The feasibility study on the conversion of the existing Special Science Curriculum to the Science, Technology, and Engineering (STE) Program at Silway-8 National High School is grounded in several legal frameworks and policies that support the enhancement of Science, Technology, Engineering, and Mathematics (STEM) education in the Philippines. **Republic Act No. 9155, or the Governance of Basic Education Act of 2001**, provides the framework for strengthening the governance of basic education in the Philippines. It empowers schools and learning centers to innovate and implement specialized programs, such as STE, to address local and national development goals. Following this is **Republic Act No. 10533, or the Enhanced Basic Education Act of 2013**, which mandates the implementation of the K-12 Basic Education Program, emphasizing the improvement of Science and Mathematics instruction to meet global standards. The law aims to produce globally competitive graduates equipped with 21st-century skills, particularly in the areas of science and technology. Complementing this is **Republic Act No. 2067, known as the Science Act of 1958**, which underscores the importance of advancing science and technology as vital components of national development. It serves as the foundation for various science and technology programs aimed at promoting innovation and scientific research in the country.

To ensure specialized education is effectively implemented at the secondary level, the Department of Education issued **DepEd Order No. 46, series of 2012**, which provides policy guidelines for the implementation of special curricular programs, including those focused on science to cater to students with high aptitude and interest in the field.

Additionally, the **Philippine Development Plan (PDP) 2023–2028** emphasizes the strengthening of STEM education to develop a globally competitive workforce. It aligns national educational priorities with the demand for scientific and technological skills in the modern economy. In line with this, the **MATATAG Curriculum, introduced in 2024**, aims to further enhance the quality of basic education by focusing on foundational skills, critical thinking, and resilience, with a strong emphasis on STEM subjects. It aligns with the national vision to produce learners equipped with the competencies required for technological advancement and socio-economic progress.

These legal bases collectively justify and reinforce the need for converting the current Special Science Curriculum into an STE program to meet both national priorities and local educational demands, ensuring that learners are prepared for the evolving technological landscape and global competitiveness.

Significance of the Study

The conversion of the special science curriculum to a Science, Technology, and Engineering (STE) program at Silway-8 National High School (Silway-8 NHS) holds significant benefits for various stakeholders. This initiative addresses educational, economic, and social dimensions that contribute to the holistic development of learners, the school community, and the wider society.

Students. Students stand to gain enhanced learning experiences through the integration of technology and engineering into the existing science curriculum. This comprehensive approach promotes critical thinking, creativity, and problem-solving skills, preparing them for senior high school STEM tracks and future careers in Science, Technology, Engineering, and Mathematics. Early exposure to STE subjects nurtures curiosity and fosters lifelong learning habits, empowering students to become competitive in both local and global job markets.

Teachers. Teachers will benefit from professional development opportunities, enabling them to upgrade their competencies in delivering STE subjects. This includes training on innovative teaching methods, use of advanced laboratory equipment, and integration of technology-based instructional materials. Access to updated teaching resources enhances educators' effectiveness, boosts morale, and promotes career growth. Well-equipped teachers can better inspire students to engage in STEM learning.

Parents. The implementation of the STE program provides parents with improved educational options for their children without the financial burden of enrolling them in private institutions that offer specialized STEM curricula. This promotes equitable access to quality education, ensuring that all students, regardless of socioeconomic status, have the opportunity to pursue advanced learning. Parents gain satisfaction knowing their children are receiving a globally competitive education in a public-school setting.

Community. The broader community will benefit from the development of a skilled and knowledgeable workforce capable of contributing to local and national economic growth. As students acquire practical skills in science, technology, and engineering, they become valuable assets to industries and local enterprises. This can attract potential investments and stimulate economic activities within Barangay Silway-8. Additionally, the program fosters community pride and strengthens the partnership between the school and local stakeholders.

Department of Education. For the Department of Education (DepEd), the conversion aligns with its goal of providing quality, inclusive, and globally competitive education. The successful implementation of the STE program at Silway-8 NHS serves as a model for similar initiatives in other schools, promoting innovation in curriculum development and instructional strategies. It supports DepEd's commitment to producing graduates who are prepared to meet the demands of the 21st-century workforce, thereby contributing to the country's long-term educational and economic objectives.

Project Objectives

The following are the objectives of this feasibility study on the conversion of the special science curriculum into a Science, Technology, and Engineering (STE) Program at Silway-8 National High School:

1. **On Market Study**

- Assess the level of interest and demand for an STE program among students, parents, teachers and school administrators.
- Identify the number of students currently enrolled in the special science curriculum who are potential candidates for the proposed STE program.

2. **On Technical Study**

- Evaluate the school's existing facilities, including science laboratories, computer rooms, and classrooms, to determine their adequacy for an STE program.
- Assess the availability of qualified teachers, instructional materials, and technological resources necessary for the successful implementation of the program and propose a class program for STE implementation.
- Identify potential gaps in infrastructure or resources and recommend strategies for improvement.

3. **On Management Study**

- Develop an implementation plan, including the timeline and staffing requirements for the STE program.
- Identify potential challenges and risks, such as teacher preparedness, resource constraints, and student retention, and propose mitigation strategies.

4. **On Financial Study**

- Estimate the financial requirements for implementing the STE program, including costs for equipment, laboratory upgrades, teacher training, and instructional materials.
- Identify potential funding sources such as DepEd grants, local government support, school funds, and partnerships with private institutions or NGOs.
- Conduct a cost-benefit analysis to determine the financial viability and long-term sustainability of the program.

5. **On Socio-Economic Study**

- Examine the potential socio-economic benefits of the STE program, such as improved academic outcomes and increased career opportunities for students.
- Assess the program's impact on the local community, including its contribution to workforce development and alignment with local and national educational goals.

6. **On the Decision to Implement the STE Program**

- Based on the findings from the feasibility study, determine whether the conversion of the special science curriculum into an STE program is viable and sustainable.

METHODOLOGY

Data Gathering Procedure

This study employed a mixed-methods approach, combining both quantitative and qualitative data collection techniques to ensure a comprehensive assessment of the feasibility of converting the special science curriculum into a Science, Technology, and Engineering (STE) Program at Silway-8 National High School.

The study utilized surveys, key informant interviews (KII), and documentary analysis to gather relevant data from students, teachers, parents, and school administrators.

Prior to data collection, official approval from the Schools Division Office of South Cotabato was secured. Once authorization was granted, informed consent forms were distributed to all respondents, ensuring they understood the purpose of the study, their rights, and their voluntary participation. After obtaining signed consent, the researchers administered structured surveys to students and parents to assess their perceptions, readiness, and support for the proposed curriculum change. Additionally, key informant interviews were conducted with teachers and school administrators to gather insights into the potential challenges and requirements for implementation. Documentary analysis was also performed on existing school records, policies, and DepEd guidelines to support the feasibility assessment.

The gathered quantitative data was analyzed using descriptive statistics to identify trends and stakeholder preferences, while qualitative responses were examined thematically to provide deeper insights into the study's findings. This methodological approach ensured a well-rounded evaluation of the feasibility of implementing the STE program at Silway-8 National High School.

Locale of the Study

This study was conducted at Silway-8 National High School, located in Purok Masigla, Barangay Silway 8, Polomolok, South Cotabato. The school served as a key secondary education provider in the area, catering to junior and senior high school students. Silway-8 National High School was strategically selected as the focus of this study due to its existing special science curriculum and its potential for conversion into a Science, Technology, and Engineering (STE) Program. The school was also a primary choice for students from several nearby elementary schools, making it a vital institution for STEM education in the community. The study assessed the feasibility of implementing the STE program within the school, ensuring its alignment with the needs of learners, teachers, and the broader educational landscape of Polomolok, South Cotabato.

Respondents and Informants

The respondents for the feasibility study on the conversion of the Special Science Curriculum to a Science, Technology, and Engineering (STE) Program at Silway-8 National High School were selected using a stratified random sampling method. This ensured fair representation of key stakeholders: students, teachers, school administrators, and parents.

To achieve a representative sample, 30% of the total population from each group was randomly selected, following Creswell's (2014) guideline that this proportion is sufficient for reliable data in feasibility studies. This approach ensured diverse perspectives were considered in evaluating the program's feasibility.

Table 1 Total Number of Respondents

Respondents	Number
Students	42
Parents	42
Teachers	10
Administrators	2
Total	**96**

For the qualitative interview, a purposive sampling technique was applied to select individuals who could provide deeper insights into the feasibility and potential impact of the STE program. The study included one-on-one interviews with representatives from each stakeholder group, consisting of 5 students who shared their experiences, interests, and expectations regarding the STE program, 5 teachers who provided insights on their readiness, training needs, and the potential challenges and benefits of the program, 5 parents who expressed their views on the program's value, affordability, and its impact on their children's education, and 2 school administrators who offered perspectives on the school's capacity, resources, and potential support for the program.

Instrument

In developing the questionnaire for assessing the feasibility of converting the special science curriculum into a Science, Technology, and Engineering (STE) Program at Silway-8 National High School, a structured approach was utilized to ensure the instrument's clarity, relevance, and validity. The process began with a thorough review of literature on specialized science education, STEM curriculum implementation, and factors influencing program transitions in secondary schools. Based on these findings, key domains were identified to guide the questionnaire's development.

The questionnaire was designed around four primary subdomains: Curriculum Relevance and Readiness, Teacher Preparedness and Professional Development, Student Interest and Readiness, and Institutional and Community Support. Each section contained carefully formulated items to gather insights from students, teachers, school administrators, and parents regarding the feasibility, challenges, and potential benefits of the STE program.

To ensure content validity, a panel of educational experts, curriculum specialists, and school administrators reviewed the questionnaire. This expert validation process assessed the clarity, appropriateness, and comprehensiveness of the items within each subdomain. Engaging experts in this validation stage was a well-established practice in survey development, strengthening the instrument's reliability and ensuring that it effectively captured the key factors necessary for evaluating the program's feasibility (Creswell & Creswell, 2018).

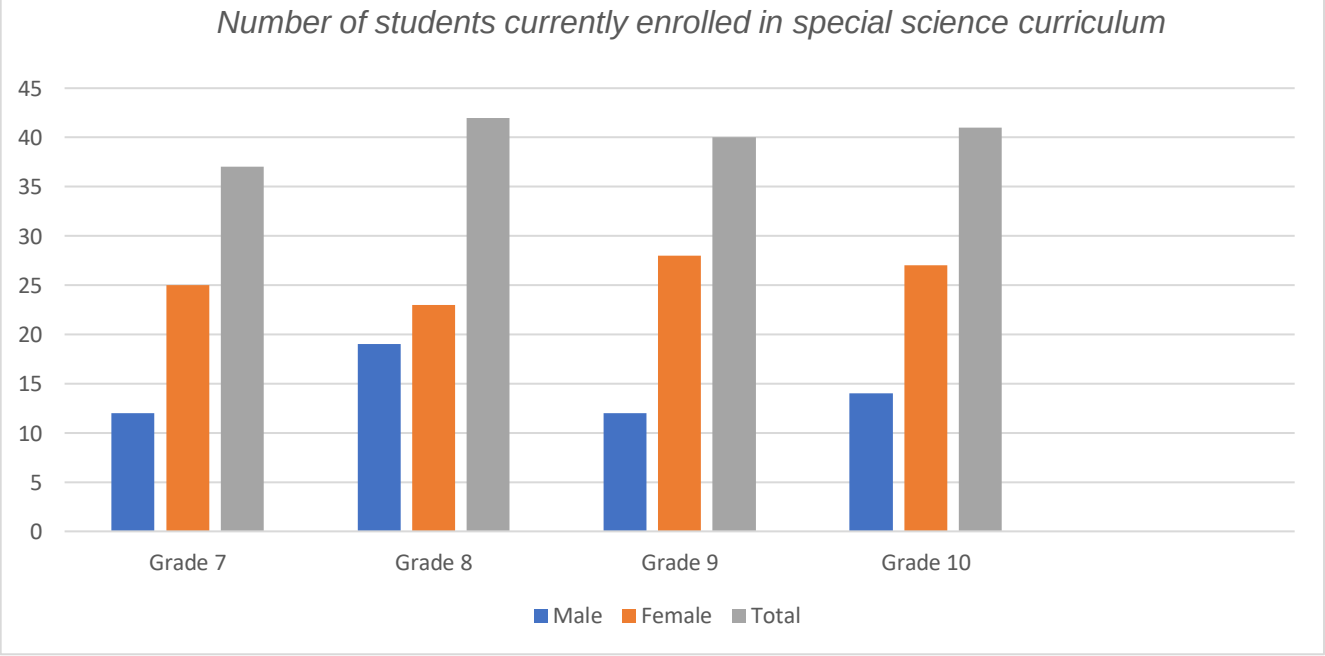
RESULTS AND DISCUSSION

Market Study: Educational Needs and Market Analysis

This section presents the market analysis component of the Feasibility Study on the Conversion of the Science Curriculum to the STE Program at Silway-8 National High School.

The planned conversion of the science curriculum to an STE program directly responds to the educational needs of students at Silway-8 National High School and its surrounding communities. As shown in Figure 3, the total number of learners currently enrolled in the Special Science Curriculum at Silway-8 National High School is 160 students, distributed across Grades 7 to 10. These learners represent the primary pool of potential candidates for the proposed Science, Technology, and Engineering (STE) Program.

Figure 1 Number of Students Currently Enrolled in Special Science Curriculum



The existing 160 SSC learners are highly relevant as immediate and direct candidates for the proposed STE program. Their continued enrollment and performance within a science-focused curriculum position them as likely to transition successfully into the more intensive STE track, should it be offered.

Table 2 presents the learners' interest and readiness regarding the conversion of the science curriculum to the STE program. Based on the findings from the quantitative data, the overall weighted mean is 3.86, with a verbal interpretation of "Agree." This suggests that learners generally support the conversion and recognize its potential benefits.

Table 2 Student Interest and Readiness

Statement	Mean	Description
1. The pursuit of a career in Science, Technology, or Engineering is of interest to me.	3.90	Agree
2. The preference for learning through practical experiments and technology-based activities enhances my engagement.	4.07	Agree
3. The commitment to the additional academic demands of an STE program is something I am willing to undertake.	3.57	Agree
4. The impact of an STE program will improve my future career prospects.	3.92	Agree
5. The confidence in my ability to succeed in Science and Mathematics subjects motivate me.	3.85	Agree
Overall Weighted Mean	**3.87**	**Agree**

Legend:

1.00 – 1.80 Strongly Disagree	2.61 – 3.40 Neutral	4.21 – 5.00 Strongly Agree
1.81 – 2.60 Disagree	3.41 – 4.21 Agree	

The data, obtained from open-ended survey questions and key interviews, enriched the numerical findings with personal insights and experiences from various stakeholders.

Students expressed enthusiasm about the opportunity to learn through practical experiences:

"What excites me the most about the STE program is the chance to explore science, technology, and engineering in a more hands-on way." (KII-S1)

"I'm excited about the new subjects they will include and the opportunity to compete with other schools." (KII-S2)

Teachers emphasized how the STE program could boost students' academic and cognitive abilities:

"Science curriculum students will gain more in-depth knowledge about the latest technology. The program will also enhance their mathematical skills and critical thinking through additional subjects like Robotics and Research." (KII-T1)

"It will help students become more creative, innovative, and better problem solvers. It prepares them well for future careers in STEM fields." (KII-T2)

Administrators viewed the program as a means of institutional advancement:

"The STE program will enhance the quality of education by promoting critical thinking, creativity, and innovation among students. It will elevate our school's academic reputation and foster a research-oriented culture." (KII-A1)

Parents strongly supported the initiative, citing future benefits:

"I think offering an STE program is an excellent idea. It gives students early exposure to important fields like Science and Engineering." (KII-P1)

"This program offers many opportunities that can significantly help students in their academic performance and future career paths." (KII-P3)

These findings strongly support the continued development and potential implementation of the STE curriculum at Silway-8 National High School, ensuring alignment with community aspirations and national educational goals.

Technical Study: Strategic Planning and Sustainability

To evaluate the technical viability of implementing the STE program, a school resource assessment was conducted through inspections, student surveys, and key informant interviews with the teachers and school administrator.

The assessment shows that while basic infrastructure is present, significant upgrades and resource improvements are needed to meet the demands of an STE Program. These include enhancing laboratory equipment, improving computer access and maintenance, and stabilizing internet connectivity.

Table 3 Assessment of Existing Facilities

Facility	Availability	Condition	Remarks
Science Laboratory	1	Fair	Lack of updated equipment and proper storage
Computer Laboratory	2	Fair	Limited units (10 functional computers and 50 laptops)
Classrooms	4	Good	Can accommodate STE classes if scheduled wisely
Internet Connectivity	1	Unstable	Intermittent connection may affect research and tech-based instruction

These findings were echoed in Key Informant Interviews (KIIs) with students and teachers.

"To be honest, our school has facilities like a science laboratory, but not everything we need for long-term use. Some equipment is outdated and the school might need to invest in more updated tools, computers, or even new learning spaces." (KII-S1)

"I think there are not enough facilities and equipment for an STE program." (KII-S4)

"The school has some of the necessary resources to implement an STE program, but there is still a need to improve facilities like science laboratories, ICT tools, and equipment. Infrastructure development would greatly benefit the full implementation." (KII-T1)

"While there may be some materials available, I don't think the school is fully ready—maybe partially ready. We still lack updated laboratories like wet labs, computers, and fast internet connectivity." (KII-T3)

The data collectively suggest that Silway-8 National High School has foundational facilities in place, but there are notable gaps in infrastructure and resource readiness for full-scale STE implementation. While the school is partially equipped to initiate the STE program, significant improvements in laboratory facilities, technological resources, and connectivity are needed. Stakeholder feedback validates these findings and highlights the urgency of upgrading infrastructure to meet the demands of a 21st-century science and technology curriculum.

Table 4 Availability of Qualified Teachers and Resources

Area	Available Personnel	Qualified for STE	Instructional Materials
Science (Biology/ Chemistry/ Physics)	6	6	Textbooks, Modules, Lab kits, Laboratory apparatus and equipment.
Mathematics	5	4	Textbooks, Modules, Math equipment
ICT / Technical Education	3	1	Computers, Laptop, Robotics equipment

The data shows that Silway-8 NHS is mostly ready to implement the STE program in Science and Mathematics, but there are gaps in ICT/Technical Education.

All six Science teachers are qualified, and instructional materials like lab kits and textbooks are available. However, updates in lab tools are needed. In Math, four out of five teachers are qualified, with adequate resources, though improvements may still be beneficial.

In contrast, only one out of three ICT teachers is qualified. While computers and robotics tools exist, they are limited. Combined with unstable internet connectivity, this presents a challenge to fully implementing the technology and engineering components of the program.

The STE Program at Silway-8 NHS will be monitored through key performance indicators that reflect academic quality, faculty readiness, and stakeholder engagement. Success will be measured by maintaining at least 90% student retention in the STE track and achieving an average grade of 85% or higher in STEM subjects. The program will target participation in a minimum of three STEM competitions annually and ensure that 100% of STE faculty receive specialized training. Additionally, at least 70% of STE graduates will be expected to pursue STEM-related courses in post-secondary education. Finally, overall stakeholder satisfaction, measured through surveys, will aim for 80% or higher positive responses, ensuring the program is responsive to the needs of the school community.

Table 5 Monitoring and Evaluation Metrics

Success Indicator	Target
Student Retention in STE Track	≥ 90% per academic year
Average Grade in STEM Subjects	≥ 85%
Participation in STEM Competitions	Minimum of 3 contests per year
Percentage of Teachers Trained in STE	100% of STE faculty
Post-Secondary STEM Enrollments	≥ 70% of STE graduates
Stakeholder Satisfaction (survey results)	≥ 80% positive responses from participants

Proposed Class Schedule for the Proposed Conversion of Special Science Curriculum to STE Program

Figure 4 Proposed Class Schedule

CLASS PROGRAM
School Year 2026-2027
GRADE 7-EINSTEIN
Science, Technology and Engineering (STE) Program

Time	No. of Minutes / Week	Days	Learning Areas	Teacher
7:15 – 7:30		MTWThF	Flag Ceremony/Homeroom Guidance Program	
7:30 – 8:30	300	MTWThF	Mathematics	JM. Apares
8:30 – 8:50		MTWThF	Recess	
8:50 – 9:50	240	MTThF	English	K. Penton
	60	W	Creative Technology	JM. Apares
9:50 – 10:50	240	MTThF	Araling Panlipunan	F. Tumlos
	60	W	Edukasyon sa Pagpapakatao	F. Tumlos
10:50 – 11:50	240	MTThF	Research I	J. Calabon
	60	W	Edukasyon sa Pagpapakatao	F. Tumlos
11:50 – 12:30		MTWThF	Lunch Break	
12:30 – 1:30	300	MTWThF	Integrated Science	JL. Lagdamen
1:30 – 2:30	240	MTWTh	Filipino	L. Amolo
	60	F	MAPEH	L. Pacificar
2:30 – 3:30	120	MT	Creative Technology	JM. Apares
	180	WThF	MAPEH	L. Pacificar
3:30 – 4:30		MTWThF	Enrichment Activities/ Remediation	

Management Study: Risk Assessment and Mitigation Strategies

Based on the findings from the facility and personnel assessments, a phased implementation plan was developed to ensure systematic rollout of the STE program.

The implementation of the STE Program at Silway-8 National High School is strategically divided into four phases to ensure systematic development and sustainability. Phase 1 (June–December 2025) focuses on preparatory activities, including securing SDO approval, forming the implementation team, conducting initial training, and reviewing the curriculum. Phase 2 (January–May 2026) addresses infrastructure setup, with procurement of laboratory and ICT equipment, classroom renovations, and specialized teacher training. Phase 3 (SY 2026–2027) marks the pilot implementation, starting with the Grade 7 STE class, accompanied by stakeholder orientation and early-stage monitoring. Phase 4 (SY 2027–2030) involves the full implementation, expanding to Grades 8–10, with annual reviews and continuous program improvement based on stakeholder feedback. This phased approach enables the school to roll out the program gradually while building capacity and ensuring quality at each stage.

Table 6 Implementation Timeline and Phases

Phase	Activities and Milestone	Timeline
Phase 1: Preparatory Stage	- Approval from SDO - Form implementation team - Initial training - Curriculum review	June–December 2025
Phase 2: Infrastructure Setup	- Lab and ICT procurement - Classroom renovations - Specialized teacher training	January–May 2026
Phase 3: Pilot Implementation	- Launch Grade 7 STE - Stakeholder orientation - Initial monitoring and feedback	SY 2026–2027
Phase 4: Full Implementation	- Expand to Grades 8–10 - Annual review - Improve based on feedback	SY 2027–2030

Staffing Requirements

The interview responses emphasize the importance of specialized training and professional development for teachers who will handle subjects under the proposed STE program. One participant stated,

"Give trainings related to the specialized program of STE since it is a must that teachers who will handle those subjects must be equipped with more in-depth knowledge about that subject area." (KII-T1)

This highlights the need to enhance teachers' subject matter expertise to meet the standards of the STE curriculum.

Another teacher shared,

"Training on integrating technology in the classroom, teaching strategies and assessment methods that would fit or suited for different STE subjects." (KII-T3)

This reflects a broader call for training not only in content delivery but also in instructional innovation and assessment practices tailored for science, technology, and engineering education.

Overall, these responses indicate that while there may be existing qualified teachers, additional training is essential to ensure readiness, confidence, and competence in delivering STE content effectively. These training

programs will play a critical role in strengthening instructional quality and achieving the goals of the STE program.

Potential Challenges and Risks

The feasibility study identified several key risks that could challenge the successful conversion of the STE program at Silway-8 NHS. These risks included lack of sufficient trainings among teachers, Inadequate laboratory/ICT equipment and Inadequate learning resources. However, targeted mitigation strategies and the school's existing partnerships demonstrated potential for overcoming these barriers.

One major concern was the lack of sufficient training among teachers to effectively implement the STE program. Stakeholders noted that while there are available teachers, many may not yet have the specialized training required to teach advanced STE subjects. This could affect the quality of instruction and the overall success of the program. During the key informant interview (KII), a teacher remarked:

"Even if the program sounds good, it won't work well if the teachers are not fully prepared. STE subjects are advanced, and students need teachers who are trained specifically for those fields." (KII-T2)

This emphasized the importance of proactive training and capacity-building initiatives to ensure teachers are well-equipped to deliver the STE program effectively and confidently handle its advanced content areas.

The second key challenges identified is the inadequacy of laboratory and ICT equipment necessary to support the implementation of the STE program. While the school has existing facilities such as a science laboratory, both students and teachers highlighted that many of the materials are outdated or insufficient for long-term use.

"To be honest our school have facilities like science laboratory but not everything we need for long term use. Some equipment is outdated and the school might need to invest in more updated tools, computers or even new learning spaces." (KII-S2)

"No, the school lacks of facilities although we have science laboratory, the materials and equipment are not enough." (KII-S5)

Teachers echoed this concern during Key Informant Interviews (KII). One teacher emphasized:

"No. There are still no wet laboratories needed for the STE Program, yet computerlaboratories are functional but some PC aren't working." (KII-T1)

This underscores the necessity for targeted investment in modern resources to support the hands-on, technology-driven learning that an STE program demands.

Another critical risk identified was the inadequacy of learning resources. Teachers expressed concern over the lack of instructional materials and the absence of clear curriculum guides for STE subjects. One teacher noted,

"For me, it would be about the lack of instructional materials, as well as for its preparation. If I'll be given a subject under the STE program, it would be calculus — and no curriculum guide is given yet for me to know the order of the lesson." (KII-T1)

Another teacher added,

"There's limited access to quality resources. We need structured lesson plans and flexible materials to cater to the specialized nature of STE subjects." (KII-T2)

These statements underscore the urgent need to develop comprehensive teaching guides and provide sufficient instructional materials to ensure effective delivery of the program.

Mitigation Strategies

Table 7 Mitigation Strategies

Risk	Mitigation Strategies	Resources Needed	Responsible Party
Insufficient Training	Schedule regular workshops and training on STE-related topics	Trainers, training materials, venue	DepEd, school head, academic coordinators
Inadequate Laboratory and ICT Equipment	Prepare phased procurement plan; submit proposals to DepEd Computerization Program	Procurement plan, proposal forms	School head, ICT coordinator, finance staff
Inadequate Learning Resources	Form school-based team to develop and reproduce STE materials	Budget for printing, access to LRMDS	Teachers, school learning resource team

To address these risks, the study proposed several strategies:

Lack of Qualified STE Teachers / Insufficient Training

To address the lack of qualified STE teachers and insufficient training, the school may conduct targeted in-service training (INSET) and workshops focused specifically on STE content and pedagogy. These capacity-building activities can be strengthened through partnerships with DepEd, local universities, and science education organizations, allowing for sustained professional development opportunities. Additionally, teachers should be encouraged to participate in webinars, certification programs, and academic scholarships related to STE fields to deepen their subject expertise and enhance instructional skills necessary for the successful implementation of the program.

Inadequate Laboratory and ICT Equipment

To mitigate the issue of inadequate laboratory and ICT equipment, the school should implement a phased procurement plan aligned with available funding sources such as the DepEd MOOE, LGU assistance, and partnerships with NGOs. This strategic approach will allow the school to gradually acquire the necessary tools and materials without overwhelming existing resources. Additionally, submitting proposals to the DepEd Computerization Program can help secure additional ICT resources, such as computers and software, which are essential for delivering the technology and engineering components of the STE curriculum effectively.

Inadequate Learning Resources

To address the lack of instructional materials, the school can form a school-based resource development team tasked with creating lesson plans and adapting existing materials to suit the STE curriculum. This team can also encourage collaboration and resource-sharing within the division and through online platforms such as DepEd Commons and the Learning Resources Management and Development System (LRMDS). Furthermore, allocating specific funds for the printing and reproduction of STE instructional content will ensure that teachers and students have consistent access to high-quality learning materials tailored to the specialized demands of the program.

The study proposed key strategies to address risks in implementing the STE program. To tackle the lack of trained teachers, the school can conduct targeted INSETs and partner with DepEd and universities for continuous development. For inadequate lab and ICT equipment, phased procurement plan using funds from DepEd, LGUs, and NGOs is recommended, along with proposals to the DepEd Computerization Program. To resolve limited learning resources, forming a school-based team to adapt materials and promote resource-sharing is advised, with funds allocated for printing and reproduction of STE content.

To strengthen the implementation of the STE Program, Silway-8 NHS will benchmark three leading institutions. The Philippine Science High School System will guide the school in aligning with national standards, improving laboratory quality, and enhancing faculty specialization. Koronadal National Comprehensive High School's STE Program will serve as a model for curriculum implementation, student

performance tracking, and participation in competitions. General Santos City National High School's STE will offer insights into effective teacher training, collaboration with LGUs, and strategies for improving student retention. These benchmarks will help mitigate potential challenges and support informed decision-making throughout the implementation process.

Table 8 Benchmark Schools and Focus Areas

Benchmark School	Focus of Comparison
Philippine Science High School System	National standards, lab quality, faculty specialization
Koronadal National Comprehensive High School – STE Program	Curriculum implementation, student performance, competitions
General Santos City National High School – STE	Training programs, LGU collaboration, student retention

Financial Study: Financial Projections and Cost- Benefit Analysis

The financial study analyzed the feasibility of converting the existing special science curriculum to the Science, Technology, and Engineering (STE) program by assessing the required budget, identifying potential funding sources, and conducting a cost-benefit analysis. Table 6 show a strong consensus on the financial viability and long-term sustainability of the conversion with an overall weighted mean of 4.34 with a verbal description of strongly agree which shows a very high level of agreement/support. Learners generally agree that the school has the financial capacity to sustain the program, with support from DepEd and the local government. There is strong agreement that acquiring additional resources, like laboratory equipment, is necessary for the program's success. Respondents also believe that with proper financial planning, the program's sustainability is very achievable. Lastly, they strongly agree that the long-term benefits of the STE program justify the financial investment.

Table 9 Financial Viability and Sustainability

Statement	Mean	Description
1. The school has the financial capacity to sustain an STE program.	4.00	Agree
2. The funding from DepEd and local government will be sufficient to cover the program's needs.	4.20	Agree
3. The acquisition of additional resources (e.g., laboratory equipment) will be required for the program's success.	4.40	Strongly Agree
4. The long-term sustainability of the program is feasible with proper financial planning.	4.50	Strongly Agree
5. The potential benefits of the program justify the financial investment.	4.60	Strongly Agree
Overall Weighted Mean	**4.34**	**Strongly Agree**

Legend:

1.00 – 1.80 Strongly Disagree	2.61 – 3.40 Neutral	4.21 – 5.00 Strongly Agree
1.81 – 2.60 Disagree	3.41 – 4.21 Agree	

Resource Allocation

The financial study outlines a projected total cost of ₱4.1 million for the successful implementation of the STE Program at Silway-8 National High School. Major expenditures include laboratory setup (₱2,000,000) and ICT and robotics equipment (₱1,200,000), both critical to delivering hands-on, technology-driven instruction. Funding for these components is expected from a combination of Local Government Unit (LGU) grants, the DepEd's Maintenance and Other Operating Expenses (MOOE), the Special Education Fund, and external donors such as NGOs.

Additional allocations include ₱500,000 for teacher training and seminars, which may be sourced through NEAP, SEAMEO, and private partnerships, and ₱300,000 for curriculum development, to be covered by the

school and DepEd. To ensure ongoing accountability, ₱100,000 is allocated for monitoring and evaluation, supported by the PTA and internal school funds. The mixed funding strategy demonstrates a collaborative investment model involving DepEd, LGUs, NGOs, and the school community, ensuring a sustainable financial foundation for the program.

Table 10 Financial Study and Cost Estimates

Component	Estimated Cost (₱)	Proposed Funding Source
Laboratory Setup	2,000,000	LGU Grant, DepEd MOOE
ICT & Robotics Equipment	1,200,000	LGU, NGO Support, Special Education Fund, DepEd Computerization Program
Teacher Training & Seminars	500,000	NEAP, SEAMEO, Private Partnership
Curriculum Development	300,000	DepEd MOOE, School Budget
Monitoring & Evaluation	100,000	PTA, School Funds
Total	**4,100,000**	**Mixed Source: DepEd, LGU, NGOs, School**

Funding Sources

Potential funding sources for these costs include the Schools Maintenance and Other Operating Expenses (MOOE) for general operating costs, local government unit (LGU) assistance for community-based support, and private-sector partnerships. NGO support, particularly in STEM-related initiatives, could provide additional funding for equipment and training. Furthermore, school funds and donations from parents or local businesses could help cover some of the costs, especially for instructional materials.

Cost-Benefit Analysis

The cost-benefit analysis revealed that the conversion of the current science curriculum to an STE program would deliver substantial long-term benefits, such as improved student engagement, enhanced career readiness in science and technology fields, and the development of a more competitive and innovative student body, that outweigh the initial financial investment. This is supported by survey data found in table 1, which show an overall weighted mean score of 3.86, indicating that learners generally agree or with high level of agreement/support with the conversion of the science curriculum to the STE program.

Teachers also emphasized that professional development workshops are essential for enhancing their instructional competence, which in turn would positively impact student learning outcomes. As one teacher stated during the key informant interview (KII):

"Hands-on training, seminars, and workshops on STE-related topics, along with regular coaching and mentoring, would help." (KII-T4)

The community impact of the program was underscored during a key informant interview (KII), where a parent shared:

"I think offering an STE program is an excellent idea. It gives students early exposure to fields like Science, Technology, and Engineering." (KII-P2)

One of the school administrators emphasized the strategic importance of the program, stating:

"To ensure sustainability, we will establish strong partnerships with local stakeholders, regularly evaluate the program, allocate funds in the MOOE for necessary resources, and institutionalize STE-focused initiatives in our School Improvement Plan." (KII-A1)

The financial analysis indicated that the conversion of the science curriculum to the STE program is financially viable. By optimizing the use of the school's MOOE and tapping into additional funding sources such as non-government organizations, local government units, and private partnerships, the necessary financial resources can be secured to support its implementation.

Socio-Economic Study: Ethical and Socio-Cultural Considerations in Educational Projects

Table 11 presents the overall perception of parents toward the conversion of the science curriculum to an STE program at Silway-8 National High School is highly positive. Based on the findings, the overall weighted mean score is 4.28 with a verbal description of strongly agree interpreted as very high level of agreement/support. Parents strongly believe that the STE program will significantly enhance the quality of education offered at the school and encourage students to pursue careers in STEM fields. They also agree that the transition from the existing special science curriculum to an STE program is both necessary and beneficial for learners. Additionally, parents perceive that the program will boost the school's competitiveness and reputation within the community. Most importantly, the majority of parents expressed their full support for the implementation of the STE program at Silway-8 NHS, indicating strong community backing essential for the program's success.

Table 11 Parents Overall Perception of the STE Program

Statement	Mean	Description
1. The STE program will significantly enhance the quality of education at Silway-8 NHS.	4.26	Agree
2. The program will encourage students to pursue careers in STEM fields.	4.26	Agree
3. The transition from the special science curriculum to STE is necessary and beneficial.	4.21	Strongly Agree
4. The program will increase the school's competitiveness and reputation.	4.30	Strongly Agree
5. The implementation of the STE program at Silway-8 NHS has my full support.	4.38	Strongly Agree
Overall Weighted Mean	**4.28**	**Strongly Agree**

Legend:

1.00 – 1.80 Strongly Disagree	2.61 – 3.40 Neutral	4.21 – 5.00 Strongly Agree
1.81 – 2.60 Disagree	3.41 – 4.21 Agree	

During the key informant interview (KII), participants recognized that the STE program can significantly expand students' career pathways. One teacher expressed that early exposure to Science, Technology, and Engineering would broaden learners' understanding of future college courses.

"It will help students to think critically, creative and good in problem solving problems. It will also prepare them to become innovative in Math and Science preparing them to their career in the future." (KII-T3)

Another participant emphasized that the STE program could enhance students' understanding of technological advancements in various fields such as medicine and engineering. A student shared:

"The STE program will help me develop and improve my knowledge in science, especially since I study and learn robotics." (KII-S5)

The data from the key informant interviews reveal that the STE program holds strong potential to broaden students' future career opportunities. Teachers and students alike believe that early exposure to Science, Technology, and Engineering cultivates critical thinking, creativity, and problem-solving skills, which are essential for success in STEM-related fields. The program is seen not only as a way to strengthen academic foundations in Math and Science but also as a platform for learners to explore and understand emerging technologies, including robotics, medicine, and engineering, thus preparing them for diverse and innovative career paths.

Ethical and Socio-Cultural Strategies

Selection and Qualification Standards That Are Inclusive: Ensure that all learners have equitable access to the STE program, regardless of socio-cultural background, disability, or other personal factors.

STE Program's Community-Based Outputs: Incorporate local examples and cultural references in lessons, ensuring that student projects (e.g., Science Investigatory Projects) benefit the local community and foster a sense of relevance.

Interaction with the Community: Involve the community in decision-making, promoting a shared sense of responsibility for the program's success. Regular consultations will help ensure the program remains responsive to community needs and values.

On the Decision to Implement the STE Program

The proposed conversion of the current science curriculum to an STE program is not only feasible but also essential. It provides a long-term way to improve the quality of education, encourage students to pursue STEM careers, and fit in with national educational priorities. With thorough preparation, solid collaborations, and a staggered distribution of resources, this conversion will benefit Silway-8 National High School students and the community for years to come.

The execution of the conversion of the science curriculum to a STE program is advised based on the thorough findings of the feasibility study. The results of the technical, management, financial, market, and socioeconomic evaluations provide compelling evidence for the necessity and feasibility of this change.

Justification for Implementation:

1. **Market Demand and Accessibility** The market study indicates a high demand for an STE program, with students and parents expressing strong support. The program will provide an opportunity for students to explore various STEM fields, ensuring that they are equipped with skills and knowledge that are highly valued in the labor market. The conversion aligns with the growing interest in STEM education and is an essential step in preparing students for future career opportunities.
2. **Technical Readiness and Infrastructure Requirements** While the current science curriculum provides foundational knowledge, the transition to an STE program requires investments in new resources, such as laboratory equipment, technology, and specialized teaching materials. Ensuring that the school is equipped to meet these requirements is essential for the program's success. The feasibility study outlines the infrastructure needs and provides a plan to acquire the necessary resources over time.
3. **Management and Personnel Support** The school's administration and teaching staff will require additional training and professional development to implement the STE curriculum effectively. Partnerships with DepEd, local government units (LGUs), and educational NGOs will be critical in providing the necessary support. The involvement of these stakeholders will ensure that teachers are well-prepared and that the management systems are strengthened to support the program's implementation and sustainability.
4. **Financial Viability** The financial analysis confirms that the conversion to an STE program is feasible within the existing budget framework of Silway-8 National High School. With funding support from DepEd, the LGUs, and potential private-sector partnerships, the program can be sustained in the long run. The cost of acquiring additional resources, such as laboratory equipment, can be managed through phased investments, ensuring that the program's financial sustainability is achievable.
5. **Socio-Economic Relevance** The socio-economic study highlights that the STE program is aligned with local community needs. By increasing access to advanced science and technology education, the program will help bridge educational gaps, especially for students from underserved backgrounds. The STE program will enhance students' career readiness and provide them with opportunities for higher education and employment in STEM-related fields, contributing to the long-term socio-economic development of the community.

CONCLUSION

On the Market Study

The results of the market analysis indicate strong support and interest in the conversion of the current science curriculum to the STE program at Silway-8 National High School. Surveys and interviews with parents and

community stakeholders reveal that there is a high level of agreement regarding the advantages of implementing the STE program. Parents highlighted the program's potential to improve educational quality, increase student engagement in STEM fields, and provide enhanced career pathways for students. They also emphasized that the integration of science, technology, and engineering into the curriculum would better prepare students for future academic and professional success.

On the Technical Study

The technical assessment indicates that while the school's current science curriculum provides foundational knowledge, there are gaps in the infrastructure and resources needed to fully implement the STE program. The need for additional laboratory equipment, technological tools, and specialized teaching materials is evident. Moreover, teacher training in STEM-related subjects will be essential to ensure effective delivery of the new curriculum. Despite these challenges, there is a feasible solution through phased investments in infrastructure and resources, with support from the Department of Education (DepEd) and local government units.

On the Management Study

The management study highlights the need for a strategic approach to implementing the STE program, as there are several potential risks that could affect its successful implementation. Key concerns include the need for additional qualified personnel, teacher training in STEM education, and the management of new resources. Addressing these concerns through collaboration with DepEd, local government units, and educational NGOs will be critical for the successful implementation and sustainability of the program. Proactive risk management strategies and ongoing stakeholder engagement will ensure that the STE program meets its objectives and contributes to the long-term development of the school.

On the Financial Study

The financial analysis reveals that while the conversion of the science curriculum to the STE program requires significant investment, it is financially feasible. The estimated costs for acquiring additional resources, such as laboratory equipment and technology, are substantial. However, the school has a solid financial foundation, supported by DepEd and local government funding. Furthermore, the school has historically received contributions from non-governmental organizations, which will help secure additional funding for the STE program. The commitment of stakeholders, including the local government, to support the program's implementation provides a promising outlook for the financial sustainability of the conversion.

On the Socio-Economic Study

The socio-economic analysis demonstrates that the conversion to an STE program aligns with the educational and socio-economic needs of the Silway-8 National High School community. Many families in the area face economic challenges, and the introduction of the STE program will provide students with valuable skills that are increasingly sought after in the job market. Additionally, the program will help improve student retention by addressing educational gaps and enhancing career readiness. By focusing on the integration of science, technology, and engineering, the program will offer students greater opportunities for future academic and career success, contributing to the long-term socio-economic development of the community.

On the Decision to Implement the STE Program

Based on the findings from all the studies, the decision to implement the conversion of the Special Science Curriculum into a Science, Technology, and Engineering (STE) Program at Silway-8 National High School was deemed feasible and highly recommended. The strong stakeholder support, availability of resources, readiness of the school community, and alignment with national education priorities collectively supported the implementation of the program to enhance students' competencies in science, technology, and engineering and to provide them with greater opportunities for future academic and career success.

RECOMMENDATION

On the Market Study

Initiate the formal planning and proposal process for the conversion of the current science curriculum to the STE program at Silway-8 National High School, considering the strong support and interest from students, parents, and community stakeholders. Conduct ongoing community awareness sessions and orientations to further engage stakeholders and ensure sustained participation and support from parents, teachers, and local leaders.

The strong community support shown in the market study reflects a clear demand for the STE program, especially given its potential to improve educational quality and career readiness in STEM fields. Establishing a formal proposal will align with this demand and demonstrate to stakeholders—especially government agencies, donors, and private sector partners—that there is widespread support for the curriculum conversion. Continued engagement through awareness campaigns will help maintain support, address concerns, and involve the community in the success of the program, ensuring smooth implementation.

On the Technical Study

Collaborate with the Department of Education, local government units, and partner organizations to prioritize the recruitment of qualified STEM teachers and the acquisition of necessary teaching resources and laboratory equipment. Simultaneously, invest in upgrading school facilities to support the needs of the STE program, with phased infrastructure development for long term sustainability.

The transition from the current science curriculum to the STE program will require additional qualified teachers and enhanced facilities to support hands-on STEM learning. Collaborating with DepEd and other partners will ensure the recruitment of skilled educators and the procurement of specialized resources. To accommodate the program's initial needs, the school can adopt a phased infrastructure approach, with a focus on providing temporary solutions, such as mobile labs, until permanent facilities are developed. Over time, investment in well-equipped classrooms and laboratories will enable a fully integrated STE learning environment.

On the Management Study

Establish a dedicated program implementation committee composed of school leaders, LGU representatives, education sector partners, and community stakeholders to oversee the transition to the STE program. This committee should develop a comprehensive risk management and sustainability plan addressing human resource allocation, curriculum delivery, and long-term resource generation.

The conversion to an STE program is a complex process that requires effective management to mitigate potential risks such as teacher shortages, infrastructure gaps, and curriculum challenges. A dedicated implementation committee will provide structured oversight and coordinate efforts across different sectors. By developing a risk management and sustainability plan, the committee will proactively address issues such as staffing, curriculum delivery, and long-term funding, ensuring the program's success and sustainability.

On the Financial Study

Strengthen financial planning by crafting a multi-year budget proposal to secure continued funding support from national, local, and private sectors. Leverage the school's track record in effectively utilizing funds to advocate for increased investment and ensure transparency, accountability, and efficient resource use throughout the program's implementation.

The financial viability of the STE program is critical for its successful conversion. A multi-year budget will provide clarity on the resources needed at each phase, from teacher recruitment to infrastructure development. Engaging national and local funding sources, as well as private sector partners, will help secure a diversified funding base. By ensuring transparency and accountability, the school can build trust with stakeholders and

demonstrate efficient use of funds. Regular financial monitoring will ensure the program remains on track and resources are utilized effectively.

On the Socio-Economic Study

Introduce additional support programs such as scholarship opportunities, school-based feeding programs, and community training initiatives for parents to complement the STE program. These programs will help mitigate socio-economic barriers to education and reinforce the STE program's role in fostering inclusive community development.

Given the socio-economic challenges faced by many families in the Silway-8 National High School community, it is essential to implement support programs alongside the STE curriculum to maximize the program's impact. Scholarships will reduce financial barriers to participation, while a school-based feeding program can address immediate nutritional needs, improving attendance and student engagement. Offering livelihood training for parents will empower families economically, reducing the pressure on students to leave school for work. These combined initiatives will enhance the overall effectiveness of the STE program and provide broader socio-economic benefits for the community.

On the Decision to Implement the STE Program

The conversion of the Special Science Curriculum into a comprehensive Science, Technology, and Engineering (STE) Program at Silway-8 National High School was determined to be both viable and advantageous based on the study's findings. In light of this, it is strongly recommended that the school administration, in collaboration with the Schools Division Office of South Cotabato, move forward with the official implementation of the STE Program. To ensure its success and sustainability, this undertaking should be guided by a well-structured implementation plan, inclusive stakeholder engagement, and the strategic mobilization of resources. Clear timelines, capacity-building initiatives, and continuous monitoring and evaluation must also be integrated to support long-term effectiveness and alignment with educational goals and national STEM priorities.

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