

**Igniting Student Academic Interest in TVET through Integration of STEM Concept in Teaching and Learning of skill in Agriculture in Anambra State.**

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**Abstract**

*The study was carried out to ascertain the Student Academic Interest in TVET through Integration of STEM Concept in Teaching and Learning of skill in Agriculture in Anambra State. Three research questions guided the study. The descriptive survey research design was employed in the study. The study was carried out in Anambra State. The population was 208 comprising 126 students and 82 staff of vocational and technical education in the research state. Simple random sampling techniques were used to select 116 respondents that comprises 85 students and 31 staff. Instrument for data collection was a questionnaire developed by the researcher through an extensive literature review. The instrument was titled: "STEM Model Needed for Enhancing Students Academic Interest in TVET (SMESAIT). The questionnaire had 32 question items which was structured using likert scale of Highly Agree, Agree, Disagree and Highly Disagree. The research instrument was validated by three experts in the faculty of Vocational and Technical Education, University of Nigeria, Nsukka and the reliability of the instrument was ascertained through a pilot-test by sampling Vocational and technical education lecturers 21 students in Enugu State which was outside the study area. Cronbach's Alpha was used to measure the internal consistence of the pilot test and 0.81 values were obtained showing the consistence and reliability of the instrument. Data collected were analyzed using mean scores and standard deviation to answer the research questions while t-test statistics was used to test the null hypotheses. The findings of this study revealed among others that vocational education lecturers need to embrace the STEM content in TVET Education. From the findings of the study it was recommended that schools and training institutions should revise their TVET curricula to include more STEM-related model and hands-on activities that encourage innovation and exploration and Regular training and workshops should be provided to educators to equip them with the knowledge and skills to effectively integrate STEM into their teaching practices.*

**Keys:** Student Interest, TVET, STEM, Teaching methods

### Introduction

In Nigeria, institutions such as polytechnics and vocational schools offer TVET programs aimed at bridging the skills gap in the labour market. Gerde et al (2022) noted that despite its significance, TVET has faced challenges in attracting students. Factors such as societal stigma, limited exposure to career opportunities, and inadequate infrastructure have contributed to the under representation of TVET in educational choices. Similarly, TVET have been seen as a dumping ground to those who are not academically vibrant coupled with other issues which have affected the enrolment and interest of students in the area (Aldehmash et al 2021). To revitalize interest in TVET, it is imperative to modernize its approach and align it with contemporary educational trends like STEM.

STEM education emphasizes the integration of scientific principles, technological tools, engineering practices, and mathematical reasoning. Incorporating STEM concepts into TVET programs can provide several benefits. According to Berisha (2020) industries are increasingly seeking professionals with a strong foundation in STEM disciplines and embedding STEM into TVET, students acquire skills that are directly applicable to current job market demands. Huang et al (2022) noted that in development of critical thinking, STEM education encourages problem-solving, innovation, and analytical thinking. These skills are transferable across various occupations and enhance students' adaptability in dynamic work environments. Graduates with STEM-integrated TVET qualifications are better positioned to secure employment in high-demand sectors, leading to improved career prospects (Petrova 2021). Also, integrating STEM into TVET can help dismantle gender stereotypes associated with certain professions, encouraging more women to pursue careers in fields traditionally dominated by men such as TVET.

Technical and Vocational Education and Training (TVET) plays a pivotal role in equipping students with practical skills and competencies essential for the workforce. However, in many regions, including Nigeria, TVET has often been perceived as a less prestigious educational pathway compared to traditional academic routes. This perception has led to declining enrollment rates and limited interest among students. To address this challenge,

integrating Science, Technology, Engineering, and Mathematics (STEM) concepts into TVET curricula has emerged as a promising strategy to enhance student engagement and interest. TVET encompasses educational programs that focus on imparting practical skills and knowledge related to specific trades or occupations. According to White (2020) these programs are designed to prepare individuals for employment in various sectors, including manufacturing, construction, information technology, and healthcare. It engages the students in the learning that will be encounter in the real life and equip them with employability mindset especially skill in agricultural.

Agricultural skill refers to the practical and cognitive abilities that individuals need to perform tasks and solve problems in farming, food production, and related agribusiness activities. According to Ibe et al. (2025) it encompasses not only the physical capacity to undertake routine activities such as planting, managing soil fertility, tending to livestock, and operating machinery, but also the knowledge and judgement required to adapt to changing technologies and market demands. Contemporary agricultural skills include both psychomotor skills, the hands-on expertise needed to carry out tasks effectively and cognitive components, such as understanding crop science, soil management, livestock care, and environmental stewardship, which together enable individuals to make informed decisions in complex agricultural environments. Research indicates that agricultural skills are essential for entrepreneurial success in agribusiness, as they mediate the relationship between formal agricultural education and the ability of graduates to launch and manage agricultural enterprises (Bowen 2016). Moreover, policy analyses highlight that the modern agricultural workforce requires a broad and evolving skill set, including technical competencies, digital literacy, and entrepreneurial and problem-solving skills, to navigate innovations such as precision farming technologies and to ensure sustainable production systems (Umar et al 2024). The need for continuous learning and training is underscored by the rapid pace of technological change and shifts in consumer and environmental expectations. In essence, agricultural skills are a dynamic blend of traditional farming expertise and modern knowledge, enabling practitioners to enhance productivity, adapt to innovations, respond to climate and market changes, and contribute to

sustainable food systems. In the modern agricultural production, there is need to incorporate STEM concept

To effectively integrate STEM concepts into TVET, several strategies can be employed. Chude et al (2019) stated that there is need to revise existing TVET curricula to incorporate STEM subjects, ensuring that they are relevant to the specific trades or occupations offered. This may involve introducing courses in robotics, coding, renewable energy, and data analysis. There is also need to equip TVET instructors with the necessary skills and knowledge to teach STEM subjects effectively (Hubbard et al 2015). Professional development programs and workshops can enhance their proficiency in delivering interdisciplinary content. Establish partnerships with industries to provide students with real-world applications of STEM concepts. Internships, apprenticeships, and collaborative projects can bridge the gap between theoretical learning and practical experience. Leverage digital tools and platforms to facilitate STEM learning. Virtual simulations, online resources, and interactive software can enhance student engagement and understanding of complex concepts (Mintii, 2023).

To achieve this, there is need to conduct an outreach programs to inform students, parents, and communities about the benefits of STEM-integrated TVET. Highlighting success stories and showcasing career opportunities that can shift perceptions and encourage enrollment. Williams (2018) observed that several countries have successfully implemented STEM integration in TVET, yielding positive outcomes. For instance German dual education system combines classroom instruction with hands-on training in industries. This approach ensures that students acquire both theoretical knowledge and practical skills, making them highly employable. Singapore's Institute of Technical Education (ITE) has integrated STEM into its curricula by offering specialized programs in areas such as aerospace engineering and information technology. Collaboration with industries ensures that the training aligns with market needs. In Kisumu County, Kenya, a study identified factors influencing students' enrollment in STEM programs within TVET institutions. Socioeconomic factors, parental education levels, and personal motivation were found to significantly impact students' choices.

Addressing these factors through targeted interventions can enhance enrollment rates in STEM-integrated TVET programs (Bowan 2020; Velychko et al, 2022 and Umar et al 2024).

While integrating STEM into TVET offers numerous benefits, several challenges must be addressed. According to Baporikar (2015) noted that limited access to modern equipment and facilities can hinder the effective delivery of STEM education. Investment in infrastructure is crucial to provide students with hands-on learning experiences. Traditional teaching methods and curricula may resist the incorporation of STEM concepts. Stakeholders must be engaged in the process to ensure a smooth transition. Societal perceptions about gender roles can discourage certain groups from pursuing STEM-related TVET programs. Initiatives to promote inclusivity and diversity are essential (Desimone & Garet 2015). Hence, continuous evaluation and adaptation of STEM-integrated TVET programs are necessary to keep pace with technological advancements and industry requirements.

### **Statement of the Problem**

Despite the strategic importance of agriculture to economic growth, food security, and employment generation in Anambra State, students' interest and engagement in Technical and Vocational Education and Training (TVET), particularly in agricultural trades, remains relatively low. Many learners perceive agricultural TVET programmes as labour-intensive, outdated, and disconnected from modern scientific and technological advancements. This perception is reinforced by traditional teaching approaches that often emphasize routine skill acquisition without adequately integrating scientific reasoning, technological innovation, engineering problem-solving, and mathematical application. As a result, students are unable to see the relevance of agricultural skills to contemporary challenges such as climate change, mechanization, agribusiness development, and sustainable food production, leading to low enrolment, poor motivation, and limited academic curiosity in agricultural TVET pathways.

Furthermore, the rapid evolution of the agricultural sector towards precision farming, smart technologies, and data-driven decision-making demands a workforce equipped with interdisciplinary competencies. However, the teaching and learning of agricultural skills in many TVET institutions in Anambra State have not sufficiently embraced the integration of STEM

concepts that could stimulate critical thinking, creativity, and innovation among students. The absence of contextualized STEM-based instructional strategies limits students' ability to connect theoretical knowledge with practical agricultural applications, thereby weakening their problem-solving capacity and reducing their preparedness for modern agricultural enterprises. This gap not only affects students' academic interest but also undermines the potential of TVET to produce skilled, adaptable, and future-ready agricultural professionals.

Consequently, there is a pressing need to address how the integration of STEM concepts into the teaching and learning of agricultural skills can ignite students' academic interest in TVET programmes in Anambra State. Without a deliberate shift towards interdisciplinary, learner-centered, and technology-enhanced instructional practices, agricultural TVET risks remaining unattractive to young learners and misaligned with contemporary workforce demands. Addressing this problem is critical for revitalizing students' perception of agricultural TVET, enhancing learning outcomes, and positioning agriculture as a dynamic, innovative, and intellectually engaging career pathway within the state.

### **Purpose of the Study**

The general purpose of the study was to determine the ways of igniting student academic interest in TVET through Integration of STEM Concept in Teaching and Learning of Skill in Agriculture in Anambra State. Specifically, the study sought to:

1. Find out the STEM concept needed to ignite students' academic interest through teaching and learning in agricultural skills
2. Ascertain the role of STEM in boosting TVET through teaching and learning
3. Find out the possible challenges of integrating STEM concept in TVET through teaching and learning.
4. Suggest possible solution to the problem of integrating STEM concept TVET through teaching and learning.

### **Research Questions.**

The following research questions guided the study

1. What are the STEM concept needed to ignite students' academic interest through teaching and learning in agricultural trade?
2. What are the roles of STEM in boosting TVET through teaching and learning?
3. What are the possible challenges of integrating STEM concept in TVET through teaching and learning?
4. What are the possible solutions to the problem of integrating STEM concept TVET through teaching and learning?

### **Hypotheses**

1. There is no significant difference in the mean ratings of the responses of male and female lecturers on the role of STEM in boosting TVET through teaching and learning
2. There is no significant difference in the mean ratings of the responses of male and female lecturers on the possible challenges of integrating STEM concept in TVET through teaching and learning.
3. There is no significant difference in the mean ratings of the responses of male and female lecturers on the possible solutions to the problem of integrating STEM concept TVET through teaching and learning.

### **Methodology**

The descriptive survey research design was employed in the study. The population was 208 comprising 126 students and 82 staff of vocational and technical education in the research state. Simple random sampling techniques were used to select 116 respondents that comprises 85 students and 31 staff. The study was carried out in Enugu State. Instrument for data collection was a questionnaire developed by the researcher through an extensive literature review. The instrument was titled: "STEM model Needed for Increasing Students Interest Teaching and Learning in TVET (SCESITL). The questionnaire had 39 question items which was structured using likert scale of Highly Agree, Agree, Disagree and Highly Disagree. The research instrument was validated by three experts in the faculty of vocational and technical education, University of Nigeria, Nsukka and the reliability of the instrument was ascertained through a

pilot-test by sampling 7 vocational and technical education lecturers 21 students in Enugu State which was outside the study area. Cronbach's Alpha was used to measure the internal consistence of the pilot test and 0.81 values were obtained showing the consistence and reliability of the instrument. Data collected were analyzed using mean scores and standard deviation to answer the research questions while t-test statistics was used to test the null hypotheses.

## Result

The result of the study was obtained from the research questions answered and hypotheses tested through data collected and analyzed.

**Research Questions 1:** What are the STEM concept needed to ignite students' academic interest through teaching and learning in agricultural trade?

**Table 1:** Mean rating, standard deviation and t-test analysis of the responses of TVET lecturers and students on the role of STEM in boosting TVET through teaching and learning

S/N	Item Statement	X	SD	t-cal	Remark
1	Soil science and nutrient analysis.	3.43	1.63	0.60	RQ, NS
2	Plant biology and genetics	2.88	1.72	0.51	RQ, NS
3	Climatic science and weather forecasting	2.65	1.52	0.53	RQ, NS
4	Precision agriculture technology	3.45	1.61	0.52	RQ, NS
5	Irrigation engineering and water management	2.65	1.60	0.50	RQ, NS
6	Renewable energy application in agriculture.	3.15	1.72	0.61	RQ, NS
7	Integrated pest management	2.75	1.63	0.53	RQ, NS
8	Post-harvest technology and food preservation.	3.28	1.51	0.53	RQ, NS
9	Post harvesting technology and food preservation	2.95	1.52	0.56	RQ, NS
10	Data collection and statistical analysis	2.55	1.62	0.58	RQ, NS

Key: X=mean, SD=Standard deviation, Cal=t-calculated, Required, NS= Not significant

Table 1 shows that both TVET lecturers and students generally acknowledged a wide range of STEM concepts as relevant for igniting students' academic interest through teaching and learning in agricultural trade. The mean ratings for all items ranged from 2.55 to 3.45, indicating moderate to high agreement on the importance of concepts such as soil science and nutrient analysis, precision agriculture technology, post-harvest technology, renewable energy applications, and plant biology. Although the standard deviations (1.51–1.72) suggest some

variation in respondents' views, the t-calculated values for all items were low and marked as not significant (NS), implying no significant difference between lecturers' and students' responses. Overall, the findings indicate a shared perception among respondents that diverse STEM concepts play a complementary role in enhancing teaching and learning in agricultural trade, thereby supporting students' academic interest.

**Research Question 2:** What are the roles of STEM in boosting TVET through teaching and learning?

**Table 2:** Mean rating, standard deviation and t-test analysis of the responses of TVET lecturers and students on the role of STEM in boosting TVET through teaching and learning

S/N	Item Statement	X	SD	t-cal	Remark
1	STEM encourages practical activities, which match the skills focus of TVET.	3.43	1.63	0.60	RQ, NS
2	STEM activities train students to tackle real-world technical challenges	2.88	1.72	0.51	RQ, NS
3	STEM teaching connects classroom knowledge with real-life applications.	2.65	1.52	0.53	RQ, NS
4	Exposure to STEM broadens students' understanding of available TVET career paths.	3.45	1.61	0.52	RQ, NS
5	TVET students learn to analyze, evaluate, and improve technical processes. Students become comfortable with digital tools needed in modern trades	2.65	1.60	0.50	RQ, NS
6	STEM methods boost numeracy, essential in areas like carpentry, mechanics, and ICT.	3.15	1.72	0.61	RQ, NS
7	STEM prepares students for industries driven by rapid technological change	2.75	1.63	0.53	RQ, NS
8	Understanding scientific principles strengthens technical proficiency.	3.28	1.51	0.53	RQ, NS
9	STEM-based teaching ensures students can use ICT tools in modern TVET sectors	2.95	1.52	0.56	RQ, NS
10	STEM promotes skills that help students create and manage small businesses	2.55	1.62	0.58	RQ, NS
11	Teaching eco-friendly practices in STEM prepares students for green jobs	3.20	1.41	0.57	RQ, NS

Key: X=mean, SD=Standard deviation, Cal=t-calculated, Required, NS= Not significant

Data presented in Table one revealed that the mean of the 11-items ranged from 2.55 to 3.40. This shows that each and all of the items had a mean value above the cutoff point of 2.50 which indicated that all the 12 items are the role of STEM in boosting TVET through teaching

method. The table also revealed that each and all the items had their standard deviation ranging from 0.54 to 1.72; this shows that the respondents were not far from the mean and from one another in their responses. The result of the test of hypothesis in Table 2 indicated that each of the items had its calculated t-value lower than table value of 1.96. This shows that there was no significant difference in the mean ratings of lecturers and students on the role of STEM in boosting TVET through teaching and learning. Therefore the hypothesis of no significance difference was upheld for all the 11-items.

**Research Question 3:** What are the possible challenges of integrating STEM concept in TVET through teaching and learning?

**Table 3:** Mean rating, standard deviation and t-test analysis of the responses of TVET lecturers and students on the possible challenges of integrating STEM concept in TVET through teaching and learning

S/N	Item Statement	X	SD	t-cal	Remark
1	Students see how science, tech, engineering, and math interact in real work	2.88	1.70	0.51	RQ, NS
2	Shortage of lab equipment, technology tools, and instructional materials. Setting up modern labs and tech centers can be very expensive.	3.28	1.12	0.54	RQ, NS
3	Some instructors prefer old ways and are hesitant to adopt STEM approaches	3.15	1.82	0.56	RQ, NS
4	Many TVET centers lack computers, internet, and modern machinery	3.25	0.64	0.54	RQ, NS
5	Too many students make it hard to implement hands-on STEM activities	2.75	1.46	0.57	RQ, NS
6	TVET curricula may not be flexible enough to incorporate dynamic STEM content	2.66	1.76	0.58	RQ, NS
7	STEM projects often require more time than traditional lessons allow.	3.32	0.90	0.54	RQ, NS
8	Students weak in basic STEM subjects struggle with advanced concepts.	3.15	1.81	0.56	RQ, NS
9	Technical STEM materials are often in complex language, challenging for students.	3.16	1.52	0.54	RQ, NS
10	Some students may not see the relevance of STEM to their chosen trade.	2.64	1.73	0.57	RQ, NS

Key: X=mean, SD=Standard deviation, Cal=t-calculated, Required, NS= Not significant

Data presented in Table two revealed that the mean of the 10-items ranged from 2.64 to 3.38. This shows that each and all of the items had a mean value above the cutoff point of 2.50 which indicated that all the 10 items are the possible challenges of integrating STEM concept in TVET through teaching method. The table also revealed that each and all the items had their standard deviation ranging from 0.84 to 1.91; this shows that the respondents were not far from the mean and from one another in their responses. The result of the test of hypothesis in Table 3 indicated that each of the items had its calculated t-value lower than table value of 1.96. This shows that there was no significant difference in the mean ratings of lecturers and students on the possible challenges of integrating STEM concept in TVET through teaching and learning. Therefore the hypothesis of no significance difference was upheld for all the 13 items.

**Research Question 4:** What are the possible solutions to the problem of integrating STEM concept in TVET through teaching method?

**Table 4:** Mean rating, standard deviation and t-test analysis of the responses of TVET lecturers and students on possible solutions to the problem of integrating STEM concept in TVET through teaching and learning

S/N	Item Statement	X	SD	t-cal	Remark
1	Organize regular STEM workshops and training for TVET instructors	3.37	1.83	0.56	RQ, NS
2	Organize regular STEM workshops and training for TVET instructors	3.45	1.76	0.75	RQ, NS
3	Collaborate with industries for internships, mentorships, and equipment donations.	2.85	1.65	0.51	RQ, NS
4	Adapt STEM teaching using affordable tools and indigenous resources.	2.68	1.77	0.54	RQ, NS
5	Blend STEM concepts with current vocational subjects rather than creating new ones	2.79	1.59	0.61	RQ, NS
6	Introduce special programs to encourage more female participation	3.47	1.76	0.54	RQ, NS
7	Use project-based, inquiry-based, and experiential learning strategies	3.35	1.72	0.51	RQ, NS
8	Manage large class sizes by dividing students into smaller working groups	3.25	1.60	0.76	RQ, NS
9	Teach STEM ideas using simple, clear language suitable for vocational learners	2.88	1.72	0.51	RQ, NS
10	Offer remedial classes or bridge programs before introducing advanced STEM topics	2.77	1.56	0.80	RQ, NS
11	Create simple, practical rubrics for evaluating STEM-based projects	2.98	1.74	0.50	RQ, NS
12	Leverage online courses, tutorials, and virtual labs to teach STEM concepts	2.80	1.82	0.61	RQ, NS

*Key: X=mean, SD=Standard deviation, Cal=t-calculated, Required, NS= Not significant*

Data presented in Table four revealed that the mean of the 12-items ranged from 2.77 to 3.47. This shows that each and all of the items had a mean value above the cutoff point of 2.50 which indicated that all the 13 items are the possible solutions to the problem of integrating STEM concept TVET through teaching method. The table also revealed that each and all the items had their standard deviation ranging from 0.56 to 1.81; this shows that the respondents were not far from the mean and from one another in their responses. The result of the test of hypothesis in Table 1 indicated that each of the items had its calculated t-value lower than table value of 1.96. This shows that there was no significant difference in the mean ratings of lecturers and students on the possible solutions to the problem of integrating STEM concept TVET through teaching and learning. Therefore the hypothesis of no significance difference was upheld for all the 13items.

### **Discussion of Findings**

The findings of the study on the role of STEM in boosting TVET through teaching and learning revealed that STEM encourages practical activities, which match the skills focus of TVET, STEM activities train students to tackle real-world technical challenges, STEM teaching connects classroom knowledge with real-life applications, exposure to STEM broadens students' understanding of available TVET career paths, TVET students learn to analyze, evaluate, and improve technical processes. Students become comfortable with digital tools needed in modern trades, STEM methods boost numeracy, essential in areas like carpentry, mechanics, and ICT, STEM prepares students for industries driven by rapid technological change, STEM-based teaching ensures students can use ICT tools in modern TVET sectors. The findings of this study is in line with Huang (2022) who noted that TVET is a veritable tools for engaging students in a skill acquisition, hence, there is need to properly engage them with STEM concept which will enable them to embrace some science concept for better learning enhancement. Similarly, the findings of the study is in line with Umar et al (2024) who noted that certain role help the STEM to function properly in TVET related area. The author noted that such roles include STEM methods boost numeracy, essential in areas like carpentry, mechanics, and ICT, STEM prepares

students for industries driven by rapid technological change, STEM-based teaching ensures students can use ICT tools in modern TVET.

The findings of the study on the possible challenges of integrating STEM concept in TVET through teaching and learning revealed that students see how science, tech, engineering, and math interact in real work, there is shortage of lab equipment, technology tools, and instructional materials. setting up modern labs and tech centers can be very expensive, some instructors prefer old ways and are hesitant to adopt STEM approaches, too many students make it hard to implement hands-on STEM activities, TVET curricula may not be flexible enough to incorporate dynamic STEM content, STEM projects often require more time than traditional lessons allow, (Students weak in basic STEM subjects struggle with advanced concepts, technical STEM materials are often in complex language, challenging for students, Imported STEM models may not always fit local industries or students' realities. The study is in line with Velychko et al (2022) who found out that even though STEM concept will enhance TVET learning, a lot of challenges could be a hindrance towards actualizing this goal. The author noted that such challenges could range from financial to technical issues. The findings of Aldehmesh et al (2021) support the present findings, noting that a lot of industries where TVET ought to partner with are lacking in the society, hence enrolment in TVET becomes a very big issue, coupled with integrating STEM in the area. Then author noted that since the enrolment of students in TVET is an issue, the integrating of STEM in the area will further increase the poor enrolment since most of the students are afraid of certain science concept or subject.

The findings of the study on the Suggest possible solution to the problem of integrating STEM concept TVET through teaching and learning revealed among the following that there is need to organize regular STEM workshops and training for TVET instructors, organize regular STEM workshops and training for TVET instructors, collaborate with industries for internships, mentorships, and equipment donations, adapt STEM teaching using affordable tools and indigenous resources, blend STEM concepts with current vocational subjects rather than creating new ones, introduce special programs to encourage more female participation, use project-based, inquiry-based, and experiential learning strategies, Manage large class sizes by dividing students

into smaller working groups, teach STEM ideas using simple, clear language suitable for vocational learners and create simple, practical rubrics for evaluating STEM-based projects. The findings is in line with Desimone and Garet (2015) who found out that STEM being a global concept could be blended into the curriculum of TVET to enable it function properly. The authors observed that routine organization of seminar for TVET staff and students on the mode of application of STEM concept in TVET will go a long way. Williams (2018) also noted that there is need to collaborate with industries for internships, mentorships, and equipment donations, adapt STEM teaching using affordable tools and indigenous resources, blend STEM concepts with current vocational subjects rather than creating new ones among others.

### **Conclusion**

Integrating STEM concepts into TVET is a strategic approach to enhance student interest and engagement in vocational education. By aligning TVET programs with industry needs and contemporary educational trends, students are better prepared for the workforce. However, successful integration requires collaborative efforts from educational institutions, industries, policymakers, and communities. Through concerted actions, STEM-integrated TVET can contribute to the development of a skilled and adaptable workforce, driving economic growth and innovation.

### **Recommendations**

1. There is need for regular training and workshops should be provided to educators to equip them with the knowledge and skills to effectively integrate STEM into their teaching practices.
2. Government should incorporate technology, experiments, and project-based learning to make TVET subjects more interactive and relatable for students.
3. Collaborate with industries, STEM organizations, and technical experts to provide mentorship, internships, and exposure to real-world applications of TVET.

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