

# Science laboratory resources and their role in shaping the career decisions of Science, Technology, Engineering, and Mathematics (STEM) Students

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## Abstract

This study examined the role of science laboratory resources in shaping the career decisions of Grade 12 Science, Technology, Engineering, and Mathematics (STEM) students at Divine Word College of San Jose. Specifically, it assessed laboratory resources in terms of equipment availability, accessibility, and frequency of use, and students' confidence and interest in pursuing STEM careers. Utilizing a descriptive-correlational research design, the study gathered quantitative data from ninety-eight (98) Senior High School STEM students enrolled during the second semester of Academic Year 2025–2026. Data collection was conducted via a researcher-made online questionnaire, and analysis was performed using weighted mean and Pearson correlation. The findings revealed that the frequency of laboratory use, accessibility of resources, and equipment availability were all rated high to very high. Similarly, students demonstrated strong enthusiasm for STEM fields, exceptional confidence in pursuing STEM pathways, and a strong perceived influence of laboratory resources on their professional choices. Furthermore, correlational analysis revealed a significant, moderately positive relationship between science laboratory resources and students' career decisions. This suggests that enhanced laboratory resources and hands-on learning opportunities directly foster more confident and defined career choices. The study concludes that institutional laboratory resources play a vital role in shaping STEM career trajectories. Consequently, it is recommended that institutions consistently upgrade laboratory facilities and integrate robust experiential and inquiry-based learning activities into the curriculum to further sustain student interest.

**Keywords:** STEM education, career decisions, laboratory resources, inquiry-based learning, descriptive-correlational

## **Science laboratory resources and their role in shaping the career decisions of Science, Technology, Engineering, and Mathematics (STEM) Students**

### **1. Introduction**

The word “STEM” integrates four disciplines of science, technology, engineering, and mathematics, where it conceptualizes science and mathematics ideas to students within the applied context of technology and engineering (Adebusuyi et al., 2022; Yaki, 2022). The integration of science, technology, engineering, and mathematics in real-world settings to address challenging issues was known as STEM education (S.-C. Fang, Yang, and Fan, 2023; Wang et al., 2020). The goal of this educational program was to cultivate students with essential knowledge and key competencies in problem-solving, creativity, and computational thinking skills (Shahbazloo & Mirzaie, 2023; Tan et al., 2023; Wang et al., 2024), thereby strengthening their readiness for future career and professional opportunities (Verma, 2025). STEM education was popular all around the world, and its methods were crucial in elementary, secondary, and postsecondary education (Bolatli and Korucu, 2018; Bryan and Guzey, 2020). STEM was particularly helpful in K–12 settings because it created the groundwork for a country's future wealth, security, and employment in science and engineering.

STEM learning experiences enhanced students' job preparation and orientation toward STEM-related occupations. According to the study, students' decisions to pursue STEM courses and occupations in the future might have been greatly influenced by their high school interest in and confidence in STEM subjects (Rivera, H., & Li, J., 2020). Beyond this, STEM education was recognized as essential for innovation, national growth, economic development, and global competitiveness (Li et al., 2024; Rotermund & Burke, 2021). These conclusions were consistent with the findings of Oliss et al. (2023), who highlighted that the effective development of the nation's STEM workforce accounted for its global market competency, adaptability to emerging challenges, and resiliency to complex economic fluctuations. To achieve this outcome, it was expected of educational institutions to offer students worthwhile educational experiences that would equip them for future professions in STEM fields.

One of the most crucial elements of successful STEM education was the availability and use of science laboratory resources because it significantly influenced the learning experience and academic outcomes of the students (Lazaro and Paglinawan, 2025). Science laboratories constituted a space equipped with scientific materials where students were able to perform experiments and manipulations to obtain scientific knowledge and concepts (Caballes et al., 2024; Cabusor & Antonio, 2025). Equipment, tools, materials, laboratory facilities, and technology tools were examples of laboratory resources that enabled students to immerse themselves in the learning process through hands-on experiences, in which they explored scientific concepts and theories and applied knowledge in real-world contexts (Recoco et al., 2025). Experiential theory involved students in direct experience and introspection to expand their knowledge, hone their abilities, and strengthen their ability to apply what they had learned in real-world situations (Thomas, 2025). Students experimented and observed in lab settings, which enhanced their conceptual comprehension and piqued their interest in scientific subjects.

The process of achieving career certainty was intricate and had a long-term effect on a person's life. Selecting a career was difficult and involved a lot of interconnected aspects (Kazi & Akhlaq, 2017). According to Ali and Syafiq (2019), students should be continuously exposed to the job they are skilled in through their surroundings and personal experiences. Early in school, a person should learn about several options for careers (Cho, 2017; Jamaluddin et al., 2019). According to Puad and Desa (2020), pre-university students should be able to design methods to accomplish their career goals and make important judgments regarding their future careers. Students may have become more confident in their scientific skills when they were exposed to functional and well-equipped laboratory facilities, which may have affected their desire to pursue jobs in STEM. This experiential learning process not only helped students reinforce theoretical understanding but also developed their practical skills in

navigating authentic challenges (Easton, 2025). In line with this, Hebebe & Usta (2022) emphasized that the availability and effective utilization of science laboratory resources positively influenced the development of students' fundamental skills, such as critical thinking, creativity, and problem-solving. These skills were crucial for future-proofing careers that ensured competency within the technology-driven workforce (Narine et al., 2023). However, inadequate access to well-equipped science laboratories may have deprived students of valuable learning experiences and substantially hindered students' academic achievement (Okoro, 2025; Recoco et al., 2025).

People in the STEM fields contributed significantly to raising a country's standard of living, economic expansion, and competitiveness in the world market (National Center for Science and Engineering Statistics, 2021). In addition to determining one's destiny, a profession in STEM promoted societal advancement and economic growth (Hasanah, 2020). Their career awareness strongly influenced students' interest in STEM careers. The study also discovered that students' expectations for their future careers and their confidence in STEM topics had significant roles in determining their future career choices (Jiang, H., Zhang, L., & Zhang, 2024). Conversely, this implication of deficiencies in science laboratory resources was concerning because Bacovic et al. (2022) contended that the production of STEM graduates drove the nation's economic growth and expanding employment opportunities. According to Mangarin and Macayana (2024), the shortage of well-equipped science laboratories in the Philippines continues to pose a significant challenge, especially in providing quality science education. This shortage was consequential given that sustained use of science laboratories enhanced engagement in science, while inconsistent utilization of laboratory activities affected learning quality and may have contributed to the production of insufficiently prepared science graduates (Ahmed et al., 2025).

According to Dumapias (2025), it could be observed that fewer STEM graduates entered the workforce and contributed to the nation's progress. This could be attributed to students' lack of interest in pursuing STEM careers, and one factor influencing interest in STEM was the students' attitude toward their science subjects. However, few studies had directly looked into how science laboratory resources influenced students' career choices, despite the fact that prior research had looked at elements like students' attitude, academic achievement, self-efficacy, and career knowledge in relation to STEM career choice. Additionally, there was a contextual vacuum at nearby colleges like Divine Word College of San Jose, where it had not been thoroughly investigated how laboratory resources are directly related to STEM career choices. Therefore, the purpose of this study was to ascertain how science laboratory resources influenced the career choices of STEM students at Divine Word College of San Jose (DWCSJ).

**Objectives of the Study** - Generally, this study aimed to determine the role of science laboratory resources in shaping the career decisions of Science, Technology, Engineering, and Mathematics (STEM) students. Specifically, it sought to (1) determine the level of science laboratory resources in terms of laboratory equipment availability, accessibility of laboratory resources, and frequency of laboratory use; (2) determine the level of career decisions of STEM students in terms of confidence in pursuing STEM careers, interest in STEM career professions, and perceived influence of laboratory resources on their career decisions; and (3) assess if the career decisions of STEM students were significantly affected by the science laboratory resources of Divine Word College of San Jose.

**Significance of the Study** - This study may provide valuable insights to STEM students to understand how their laboratory experiences affect their future professional choices and career interests. The findings might help educators understand how crucial it is to make the most of lab facilities in order to boost student interest and fortify their propensity for STEM-related employment. School officials can use the results to promote STEM programs by upgrading equipment, enhancing laboratory facilities, and efficiently allocating resources. Additionally, policymakers might learn important information that helps them make judgments about bolstering scientific education and encouraging STEM job routes. Finally, this study could serve as a useful guide for future research on laboratory resources and career decision-making in STEM education.

**Scope and Delimitation of the Study** - The main goal of this study was to examine how science laboratory

resources influenced STEM students' career choices at Divine Word College of San Jose (DWCSJ). The participants in this study were enrolled in the STEM Senior High School (SHS) Second Semester of Academic Year 2025–2026. The laboratory equipment availability, accessibility of laboratory resources, and laboratory management practices inside the organization were among the laboratory-related aspects that were the focus of the research. The study excluded other academic strands and was limited to job choices in STEM fields. Furthermore, unless they were directly related to laboratory experiences, outside variables, including peer pressure, family history, socioeconomic status, and personal goals, were not covered by this study.

## 2. Methodology

**Research Design** - The descriptive-correlational research design was used due to the nature of the study's problems, as the research sought to describe the science laboratory resources and their role in shaping the career decisions of Science, Technology, Engineering, and Mathematics (STEM) students. It characterized the availability and state of science laboratory resources as well as the students' career choices or preferences; thus, the study was descriptive. In addition, it was correlational since it aimed to ascertain whether students' career choices in STEM-related fields were significantly influenced by the science laboratory resources they had access to. A quantitative research design known as descriptive-correlational research explained current variables and looked at their relationship without changing the variables in question (Creswell & Creswell, 2018). Additionally, because the researcher only observed and evaluated the current conditions rather than changing any variables, the study was regarded as non-experimental.

**Respondents of the Study** - The respondents of the study were the SHS students enrolled in the STEM strand at Divine Word College of San Jose during the second semester of the 2025–2026 academic year. These students were selected as participants because they were directly exposed to science laboratory resources while pursuing their academic programs. The researchers collected information from survey responses in order to describe how science laboratory resources could affect their career decisions, so the information supplied by respondents was critical to understanding the relationship between science laboratory resources and career decisions of STEM students. A complete enumeration was employed where SHS students enrolled in the STEM strand at Divine Word College of San Jose served as respondents for the study. The total number of STEM students was ninety-eight (98), which constituted a manageable population, making it possible for researchers to contact every subject of interest. The use of a total population for this study provided an opportunity for all relevant opinions to be reflected in the research findings and provided extensive data regarding how science laboratory resources influenced STEM students in their career choices.

**Research Instrument** - The study employed a researcher-made questionnaire. The instrument consisted of a set of structured questions that aimed to collect the level of science laboratory resources' availability, accessibility, and frequency of use, as well as the respondents' level of confidence in pursuing STEM careers, interest in STEM professions, and their perceived influence of science laboratory resources on career decisions. The research instrument utilized a 4-point Likert scale to methodically gather quantifiable data that could be statistically examined to ascertain the connection between science laboratory resources and career decisions of the respondents. To determine the validity of the instrument, the researcher used expert validity while also ensuring the reliability of the research instrument; the researchers conducted a pilot test involving 30 Grade 11 STEM students from Divine Word College of San Jose. The results were analyzed using Cronbach's alpha coefficient.

**Table 1**  
*Reliability Analysis Results*

Item	Reliability Coefficients	Interpretation
Science Laboratory Resources		
1. Laboratory Equipment Availability	0.94	Very High Reliability
2. Accessibility of Laboratory Resources	0.92	Very High Reliability
3. Frequency of Laboratory Use	0.90	Very High Reliability

Career Decisions of STEM Students		
1. Confidence in Pursuing STEM Careers	0.94	Very High Reliability
2. Interest in STEM Career Professions	0.92	Very High Reliability
3. Perceived Influence of Laboratory Resources on Career Decisions	0.93	Very High Reliability

Legend: 0.90 and Above – Very High Reliability; 0.80-0.89 – High Reliability; 0.70-0.79 – Acceptable Reliability; 0.60-0.69 – Questionable Reliability; 0.50-0.59 – Poor Reliability; Below 0.50 – Unacceptable Reliability

Table 1 illustrates that the research instrument demonstrated a very high reliability across the six scales ( $\alpha = 0.92-0.94$ ), indicating excellent internal consistency. The results confirmed that all items across the six scales were reliable and appropriate for use in the study. With these findings, the survey questionnaire was subsequently administered to the final set of STEM student respondents.

**Data Gathering Procedure** - The data gathering procedure was conducted for a period of four weeks. First, the researchers obtained approval from the Divine Word College of San Jose SHS principal to conduct the study with SHS STEM students. Once approved by the principal, the researchers collaborated with the teachers to determine the most suitable time to administer the survey questionnaire to the respondents. The researchers provided the validated researcher-made survey questionnaire to the selected respondents. Ninety-eight (98) DWCSJ STEM students in Grade 12 were given the validated researcher-made survey questionnaire and administered online via Google Forms. The respondents were also assured that all of their responses remained confidential and used solely for academic purposes. The gathered responses were then arranged, tabulated, and encoded by the researchers in preparation for statistical analysis. The information was subsequently analyzed to ascertain the connection between science laboratory resources and career decisions of STEM students.

**Statistical Treatment of Data** - The data were analyzed using a descriptive correlational research design. In the descriptive statistics, the level of availability, accessibility, and frequency of use of science laboratory resources, as well as the career decision of STEM students, were measured using the composite mean and standard deviation. The Pearson product-moment correlation coefficient was employed to determine the relationship between variables. This enabled the researchers to measure the association between science laboratory resources and the respondents' career decisions. A significance level of 0.05 was adopted for the statistical test. Therefore, the result with a  $p$ -value less than 0.05 indicated a significant relationship between the variables.

**Ethical Considerations** - Research ethics conveyed scientific ethical principles. The Principles of Research Ethics outlined the core principles and ideals of the research community. Comparably, societal morality served as the foundation for general morality (The Norwegian National Research Ethics Committees, 2019). The researchers adhered to ethical guidelines while conducting the research study. To guarantee adherence to the school's regulation, explicit consent was obtained from the principal and administration of Divine Word College of San Jose SHS prior to data collection. In order to acknowledge their voluntary involvement in the study, informed consent was sought from the student respondents and their parents or guardians. Participants were given guarantees that the information gathered was used only for academic and research purposes and that their answers were kept completely private. Without taking ethical considerations into account, the study technique was not completed. The study approach depended on the truthfulness of data reporting, privacy, secrecy, and findings. The researchers had to follow ethical guidelines at every step of the research process. A study's design and sampling strategies, data collection method, data collection instruments, materials, and data processing procedures were all more likely to be accurate and equitable (Knottnerus & Tugwell, 2018).

### 3. Results and Discussions

Table 2 shows the mean level of science laboratory resources in terms of laboratory equipment availability, accessibility of laboratory resources, and frequency of laboratory use. Data reveal the respondents' perception of the availability and utilization of science laboratory apparatus. The indicators obtained weighted means ranging from 3.02 to 3.35, with interpretations from "High" to "Very High." The highest-rated indicator was the availability of functional and well-maintained laboratory equipment ( $WM = 3.35$ ), while the lowest was the presence of

modern laboratory tools (WM = 3.02), suggesting that although basic equipment was generally sufficient, modernization of laboratory resources remained an area for improvement. Overall, the composite mean of 3.20 (High) indicated that laboratory equipment was moderately available and generally supported science instruction. This implied that schools had adequate laboratory resources to facilitate learning; however, improvements were still needed in terms of upgrading equipment, increasing material availability for all students, and ensuring regular replacement of outdated tools. According to Ahmed (2025), the availability and proper utilization of laboratory facilities significantly enhanced students' understanding of scientific concepts by providing meaningful hands-on learning experiences. When laboratory equipment was functional and accessible, students became more engaged and were better able to connect theoretical knowledge with practical application. However, limitations in equipment availability and modernization still restricted optimal learning outcomes. Overall, the findings suggested that while laboratory resources were generally adequate, strengthening infrastructure and updating laboratory tools could further improve science learning effectiveness and student performance.

**Table 2**

*Mean Level of Science Laboratory Resources in terms of Laboratory Equipment Availability, Accessibility of Laboratory Resources, and Frequency of Laboratory Use*

Laboratory Equipment Availability	Weighted Mean	Interpretation
1. The laboratory has sufficient equipment for conducting experiments.	3.32	Very High
2. The equipment used in the laboratory is functional and in good condition.	3.28	Very High
3. There are enough materials for all students during laboratory activities.	3.35	Very High
4. Modern laboratory tools (e.g., digital instruments) are available.	3.18	High
5. The available equipment supports hands-on learning effectively.	3.05	High
6. The laboratory tools and instruments are readily available when needed during class activities.	3.02	High
<b>COMPOSITE MEAN</b>	<b>3.20</b>	<b>High</b>
<b>Accessibility of Laboratory Resources</b>		
1. I am given enough time to use laboratory equipment.	3.29	Very High
2. The laboratory is open and available for academic use when needed.	3.31	Very High
3. I feel comfortable using laboratory equipment during activities.	3.35	Very High
4. Laboratory resources accessible without unnecessary delays or restrictions.	3.12	High
5. Safety equipment and emergency materials are easily accessible in the laboratory.	3.40	Very High
6. The school provides sufficient opportunities for students to access laboratory resources for learning activities.	3.08	High
<b>COMPOSITE MEAN</b>	<b>3.26</b>	<b>Very High</b>
<b>Frequency of Laboratory Use</b>		
1. I visit and use the science laboratory during hands-on learning classes and activities.	3.18	High
2. I participate in laboratory experiments regularly.	3.22	High
3. I use the laboratory frequently throughout the school year.	3.10	High
4. I use the laboratory facilities every time there is a task or project.	3.05	High
5. The frequency of laboratory use meets my learning needs as a STEM student.	3.14	High
6. The laboratory is used more than once per week for science-related activities.	3.30	Very High
<b>Composite Mean</b>	<b>3.17</b>	<b>High</b>

Legend: 3.26–4.00 Very High; 2.51–3.25 High; 1.76–2.50 Low; 1.00–1.75 Very Low

In terms of accessibility of laboratory resources, the indicators obtained weighted means ranging from 3.08 to 3.40, with interpretations from “High” to “Very High.” The highest-rated indicator was students' ability to use laboratory equipment with proper guidance (WM = 3.40), indicating that teacher support played a strong role in facilitating laboratory learning. On the other hand, the lowest-rated indicator was the availability of the laboratory when needed (WM = 3.08), suggesting that access was sometimes limited outside scheduled laboratory sessions.

Overall, the composite mean of 3.26 (Very High) indicated that laboratory resources were generally accessible and effectively utilized by learners. This suggested that students were given adequate opportunities for hands-on learning, which enhanced their participation and engagement in science activities. However, slight limitations in scheduling and immediate access to laboratory facilities still existed and may have affected optimal learning experiences. This finding was supported by Mutoro et al. (2024), who emphasized that accessibility of laboratory facilities significantly influenced learners' academic performance and engagement in science subjects. Their study found that when learners had regular access to functional laboratory equipment, their understanding of scientific

concepts improved due to increased experiential learning opportunities. However, restricted access to laboratory facilities limited student participation and reduced the effectiveness of practical instruction. Overall, the results suggested that while laboratory accessibility was generally strong, improving availability and scheduling flexibility could further enhance students' science learning experiences.

Lastly, in terms of the frequency of laboratory activities and students' engagement in science learning. The indicators obtained weighted means ranging from 2.95 to 3.30, with interpretations from "High" to "Very High." The highest-rated indicator was that laboratory work enhanced understanding (WM = 3.30), indicating that students strongly recognized the value of hands-on laboratory activities in improving conceptual understanding. On the other hand, the lowest-rated indicator was the frequency of laboratory use more than once a week (WM = 3.05), suggesting that laboratory activities were conducted but not frequently enough to ensure consistent experiential learning.

Overall, the composite mean of 3.17 (High) implied that students experienced a moderate level of laboratory exposure. This indicated that while laboratory activities were integrated into science instruction, their frequency remained limited. As a result, students may not have fully maximized opportunities for repeated hands-on engagement, which was essential for strengthening scientific skills and deeper conceptual learning. This finding was supported by Lazaro & Paglinawan (2025), who found that laboratory resource availability was positively associated with student engagement in science. Their study emphasized that when learners had access to laboratory facilities and engaged in structured practical activities, their participation, interest, and understanding of science concepts significantly improved. However, they also noted that limitations in resource utilization and inconsistent laboratory engagement reduced the effectiveness of science learning experiences. Similarly, the study highlighted that while laboratory resources may have been available, their impact on student learning was maximized only when they were used regularly and effectively integrated into instruction. This aligned with the present findings, where students recognized the value of laboratory work but reported only moderate frequency of use. Overall, the results suggested that increasing the regularity and structured implementation of laboratory activities could further enhance students' engagement and improve learning outcomes in science education.

**Table 3**  
*Mean Level of Career Decisions of STEM students in terms of confidence in pursuing STEM careers, interest in STEM career professions, and perceived influence of laboratory resources on their career decisions*

Confidence in Pursuing STEM careers	Weighted Mean	Interpretation
1. I see myself working in a STEM profession in the future.	3.45	Very High
2. I feel confident in my ability to succeed in a STEM career.	3.38	Very High
3. I believe I have the necessary skills to pursue a STEM career.	3.30	Very High
4. I remain confident in my abilities even when STEM careers are challenging.	3.36	Very High
5. I feel that I can perform competitively in STEM-related careers.	3.28	Very High
6. I believe my educational experiences have given me more self-assurance to pursue a profession in STEM.	3.32	Very High
<b>Composite Mean</b>	<b>3.35</b>	<b>Very High</b>
<b>Interest in STEM Career Professions</b>		
1. I am interested in pursuing a career related to STEM in the future.	3.50	Very High
2. I enjoy learning skills that will help me in a STEM career.	3.46	Very High
3. I discuss STEM careers with my family, friends, classmates, and peers.	3.52	Very High
4. I believe that STEM careers match my personal interests and strengths.	3.48	Very High
5. I see STEM careers as a meaningful contribution to my personal growth and professional development.	3.30	Very High
6. I believe that working in a STEM profession leads to my personal success	3.44	Very High
<b>Composite Mean</b>	<b>3.45</b>	<b>Very High</b>
<b>Perceived Influence of Laboratory Resources on Career Decisions</b>		
1. The availability of laboratory resources exposes me to a variety of STEM career choices.	3.40	Very High
2. Utilizing laboratory tools and equipment improves my problem-solving skills relevant to STEM careers.	3.35	Very High
3. Engaging with laboratory experiments and equipment affects my understanding of potential STEM careers.	3.38	Very High
4. Accessibility of laboratory resources helps me to obtain STEM skills that will shape my future STEM career choices.	3.36	Very High

5. Frequent use of the laboratory resources influences my choice of future career in the STEM field.	3.28	Very High
6. Frequent use of the science laboratory enhances my understanding of practical applications in the STEM field.	3.30	Very High
Composite Mean	3.35	Very High

Legend: 3.26–4.00 Very High; 2.51–3.25 High; 1.76–2.50 Low; 1.00–1.75 Very Low

The data presented in Table 3 shows the mean level of students' interest, confidence, and aspiration toward STEM-related fields. The indicators obtained weighted means ranging from 3.28 to 3.45, all interpreted as "Very High." The highest-rated indicator was students' determination to take a STEM course (WM = 3.45), indicating a strong commitment toward pursuing STEM education. Meanwhile, the lowest-rated indicator was seeking STEM career information (WM = 3.28), although still interpreted positively, suggesting that students were generally interested but may have needed further guidance in career exploration. Overall, the composite mean of 3.35 (Very High) implied that students demonstrated a high level of confidence, motivation, and aspiration toward STEM-related fields. This suggested that learners not only performed well in science learning activities but also strongly envisioned themselves in STEM professions in the future. This finding was supported by Chen et al. (2024), who emphasized that students' STEM learning opportunities and self-concept significantly influenced their career aspirations in STEM fields. Their study found that when students perceived themselves as capable in science and were exposed to meaningful STEM learning experiences, their interest and intention to pursue STEM careers increased significantly. The authors further explained that self-concept acted as a strong motivational factor that strengthened the relationship between STEM exposure and career aspiration, meaning students who believed in their abilities were more likely to pursue STEM pathways (Chen et al., 2024). In relation to the present study, the high composite mean reflected strong student self-efficacy and positive perception toward STEM, which may have been developed through continuous exposure to science learning activities and laboratory-based experiences. This indicated that improving science learning environments could directly contribute to strengthening students' STEM ambitions. Overall, the results suggested that students possessed strong STEM-related motivation and confidence, which could be further enhanced through sustained exposure to engaging and supportive science learning environments.

In terms of students' interest and attitude toward STEM careers and learning, the indicators obtained weighted means ranging from 3.30 to 3.52, all interpreted as "Very High." The highest-rated indicator was students' curiosity about science applications (WM = 3.52), indicating a strong interest in understanding how science was applied in real-world contexts. Meanwhile, the lowest-rated indicator was discussing STEM careers with others (WM = 3.30), although still interpreted positively, suggesting that students were highly interested in STEM but were less engaged in verbal discussions about career pathways. Overall, the composite mean of 3.45 (Very High) implied that students exhibited a very high level of interest, motivation, and positive attitude toward STEM-related fields. This indicated that learners not only enjoyed science learning but also recognized its importance in personal development, academic growth, and future career opportunities. The consistently high ratings across all indicators suggested strong enthusiasm and a favorable perception toward STEM education. This finding was supported by Dumapias (2025), who emphasized that students' interest in STEM was strongly influenced by their perception of science relevance, curiosity toward scientific phenomena, and exposure to meaningful learning experiences. The study further explained that when students recognized the value and application of STEM in real-life situations, their motivation and engagement toward STEM careers significantly increased. Dumapias (2025) also highlighted that sustained interest in STEM developed through consistent exposure to engaging science learning environments that promoted curiosity and active participation.

In relation to the present study, the high composite mean suggested that students possessed strong intrinsic motivation and positive attitudes toward STEM, likely reinforced by their exposure to science instruction and laboratory-based learning experiences. This indicated that meaningful science education played a crucial role in shaping students' STEM aspirations. Overall, the results revealed that students demonstrated strong and consistent interest in STEM, which could be further strengthened through continued exposure to interactive and application-

based science learning experiences.

Moreover, in terms of the perceived influence of laboratory resources and hands-on science experiences on students' career development and skill enhancement. The indicators obtained weighted means ranging from 3.28 to 3.40, all interpreted as "Very High." The highest-rated indicator was that hands-on experience influenced career choice (WM = 3.40), indicating that students strongly believed practical science activities played a key role in shaping their future career decisions. Meanwhile, the lowest-rated indicator was that lack of resources reduced interest (WM = 3.28), though still strongly agreed upon, suggesting that students recognized how limited access to laboratory tools could still affect motivation and engagement. Overall, the composite mean of 3.35 (Very High) implied that students strongly perceived laboratory experiences as important in developing both academic skills and career direction. This suggested that exposure to practical science learning not only strengthened understanding but also helped students become more aware of possible career paths in science-related fields. This finding was supported by Martin (2021), who emphasized that access to laboratory resources and hands-on learning experiences significantly influenced students' engagement, skill development, and career awareness. The study highlighted that when students were actively exposed to laboratory activities, they developed stronger problem-solving abilities and a clearer understanding of potential career opportunities in science-related fields. Conversely, limited access to laboratory resources reduced students' interest and restricted their exposure to meaningful learning experiences that supported career exploration (Martin, 2021). In relation to the present study, the high composite mean suggested that students strongly associated laboratory experiences with career development and skill enhancement. This reinforced the importance of providing adequate and accessible laboratory resources to support both academic learning and career readiness. Overall, the results indicated that hands-on laboratory experiences played a significant role in shaping students' skills, motivation, and career aspirations in science-related fields.

**Table 4**  
*Correlational Analysis*

Variables	r	r <sup>2</sup>	t-value	p-value	Interpretation
Lab Resources → Career Decisions	0.747	0.557	11.278	0.0	Significant

Legend:  $p < 0.05$  Significant

The correlational analysis presented in Table 8 reveals a strong and statistically significant positive relationship between laboratory resources and students' career decisions ( $r = 0.747$ ,  $p < 0.001$ ). This indicates that as the availability and adequacy of laboratory resources increase, students' clarity, confidence, or inclination in making career decisions also tend to improve. The strength of the correlation suggests that laboratory resources are not merely supplementary factors in the learning environment but may play a substantial role in shaping learners' future academic and career pathways. Furthermore, the coefficient of determination ( $r^2 = 0.557$ ) implies that approximately 55.7% of the variation in students' career decisions can be explained by the availability of laboratory resources. This is a relatively high proportion, indicating that more than half of the influence on career decision-making in this context may be associated with exposure to adequate laboratory facilities, equipment, and learning materials. The remaining 44.3% may be attributed to other variables such as personal interests, family influence, academic performance, peer factors, and guidance counseling support, which were not included in the analysis.

The computed t-value of 11.278 further confirms that the relationship is statistically significant, reinforcing that the observed correlation is unlikely to have occurred by chance. This strengthens the validity of the findings and supports the rejection of the null hypothesis. In practical terms, this suggests that improving laboratory resources in educational institutions may contribute meaningfully to students' career awareness and decision-making processes, particularly in science-related fields where experiential learning is essential. Overall, the findings highlight the importance of well-equipped laboratory environments in shaping students' academic experiences and long-term career planning. According to Libres and Dalman (2019), students' academic performance and overall educational experiences are greatly impacted by the sufficiency and caliber of laboratory facilities. Schools aiming to enhance students' career readiness should consider investing in laboratory facilities

and ensuring that learners have sufficient hands-on exposure to scientific tools and experiments. Laboratory exercises can enhance students' conceptual grasp of the subject matter and promote meaningful learning.

#### 4. Conclusions

The findings of the study emphasized the importance of the available, accessible, and well-utilized laboratory resources in shaping the STEM students' career decisions. STEM students in the Divine Word College of San Jose demonstrated having a very high level of accessibility and utilization of sufficient available laboratory sources, which contributed positively to their engagement and participation in science education, thereby strengthening their theoretical understanding and practical application of scientific concepts through meaningful practical experiential learning opportunities and inquiry-based learning. Furthermore, STEM students strongly agreed that they have a higher level of confidence and interest in pursuing STEM-related careers, which allowed them to cultivate a clearer awareness of their career pathways. Consequently, they strongly agreed that the utilization of laboratory resources exposed them to practical learning experiences, thereby supporting more informed and purposeful career decision-making. Overall, the study concluded that laboratory resources played a pivotal role in shaping STEM students' career decisions. This finding is supported by the study of Libres & Dalman (2019), who emphasized that students' academic performance and overall education experiences are greatly impacted by the sufficiency and caliber of laboratory facilities. Similarly, Ruqia et al. (2025) highlighted that laboratory exercises can enhance students' conceptual grasp of the subject matter and promote meaningful learning. Schools that provided adequate science laboratory support and meaningful practical experiential learning opportunities were more likely to foster well-defined and more confident career decisions among students toward STEM fields.

**Recommendations** - In light of the findings, it is recommended that schools invest in the continuous improvement and modernization of science laboratory resources in order to provide practical experiential learning, especially in a technology-driven era. Science teachers may also be encouraged to integrate more experiential and inquiry-based science laboratory activities to increase learning engagement and participation, which promotes interest and confidence in science education and career decision-making toward STEM fields. Moreover, future researchers may conduct similar studies involving different STEM student populations, particularly in schools with inadequate laboratory resources, in order to determine whether the limited availability, accessibility, and utilization of these resources produce differing outcomes on STEM students' confidence, interest, and career decision-making in STEM-related fields. Furthermore, school administrators and policymakers may consider implementing programs that provide sustained support for science laboratory resources, particularly in under-resourced schools and learning institutions. Lastly, career guidance programs in schools may incorporate laboratory learning exposure that enables learners to connect scientific learning to related STEM fields in order to develop students' clear awareness of potential career pathways.

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