

Perceptions of the Filipino Youth Around STEM and The Need to Understand It

BACKGROUND

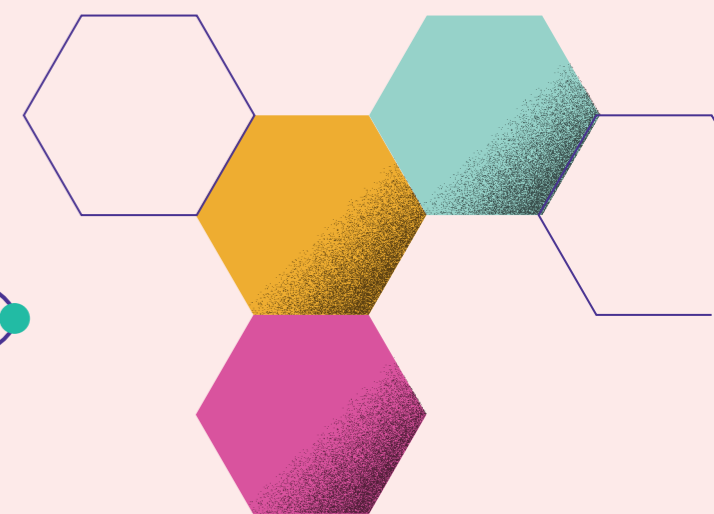
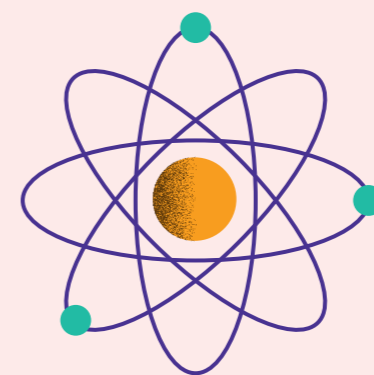
STEM IDENTITY AMONG YOUTH

A Prelude to Advancing Women in STEM

Science, Technology, Engineering, Mathematics (STEM) plays a vital role in the country's economic development especially as we move closer towards the 4th Industrial Revolution.

In the Philippines, girls make up only 43% of STEM enrollments—lower than in previous years and mostly in non-engineering or non-IT fields, according to statistics from the Commission on Higher Education (CHED). The STEM workforce is growing and has the highest entry-level wages and experiences the most wage growth over their careers, but women are left out. This gender disparity is alarming because if the situation is not addressed now, women will continue to miss out on opportunities, especially since STEM careers are referred to as the 'jobs of the future'.

In this Baseline Study, we have established that the work of the future is rooted in STEM skills and that STEM jobs pay higher earnings and that enabling STEM potential should start with education. To advance women in STEM, we need to encourage our girls and women to take an interest in STEM education and appreciate the opportunities offered by STEM in supporting their career and life advancement.



Objectives

Conduct a National STEM Benchmarking Study in the Philippines which will cover the Interests, Perceptions, and Awareness of STEM subjects and STEM-related careers with a particular focus on gender differences.

Evaluate the perceived importance of STEM subjects to students

Determine student interest in considering further STEM education

Determine student interest in STEM careers

Assess young Filipinos' engagement with STEM outside of education

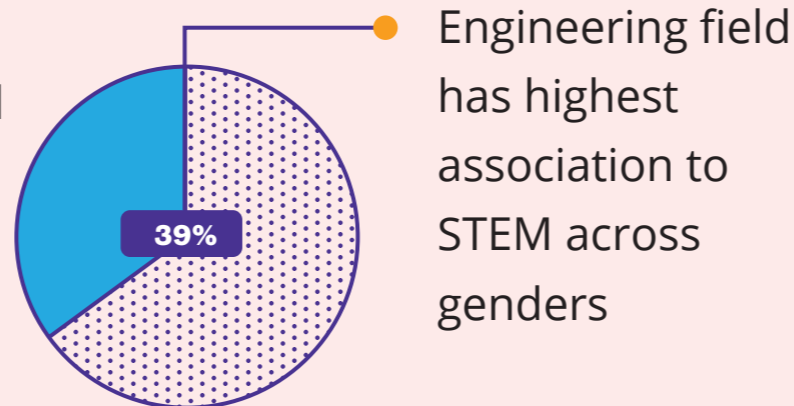
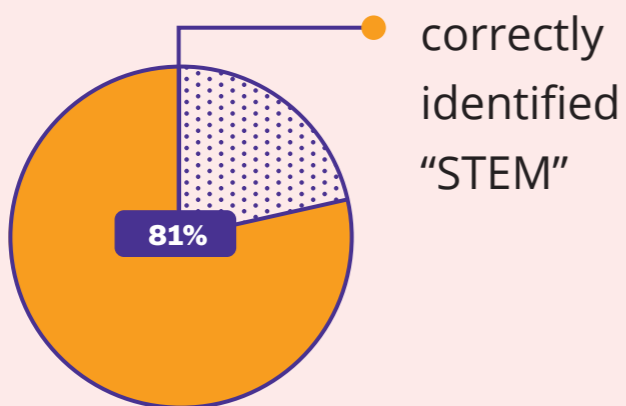
Understand student awareness of STEM-related careers

Identify barriers and access points to STEM careers

Understand the factors that influence career choices

PERCEPTIONS ON STEM

Definition of STEM



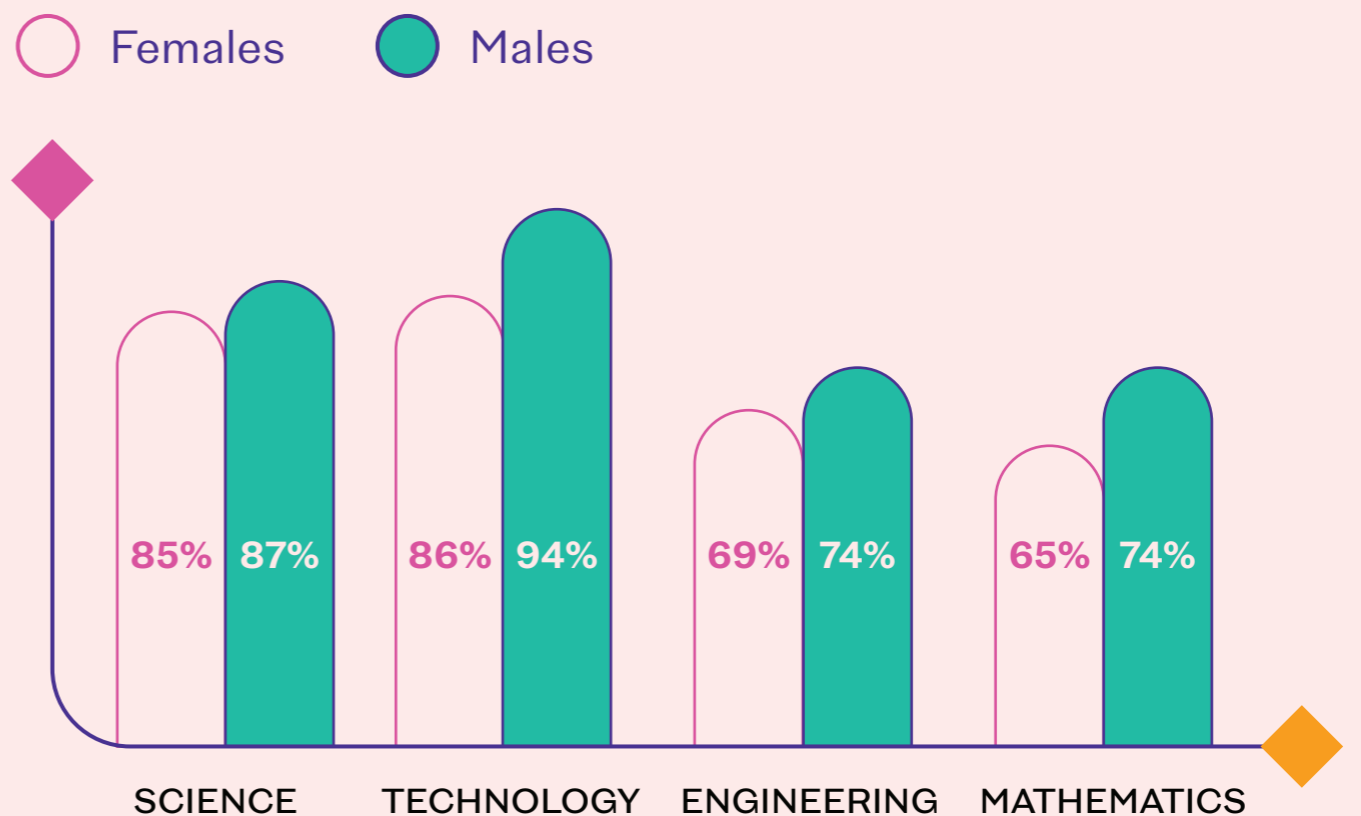
*next to Medicine (17%)

In the word "STEM" students would associate **E** with Education, Economics, Ethics, and **M** with Management and Medicine.

Interest vs. Importance

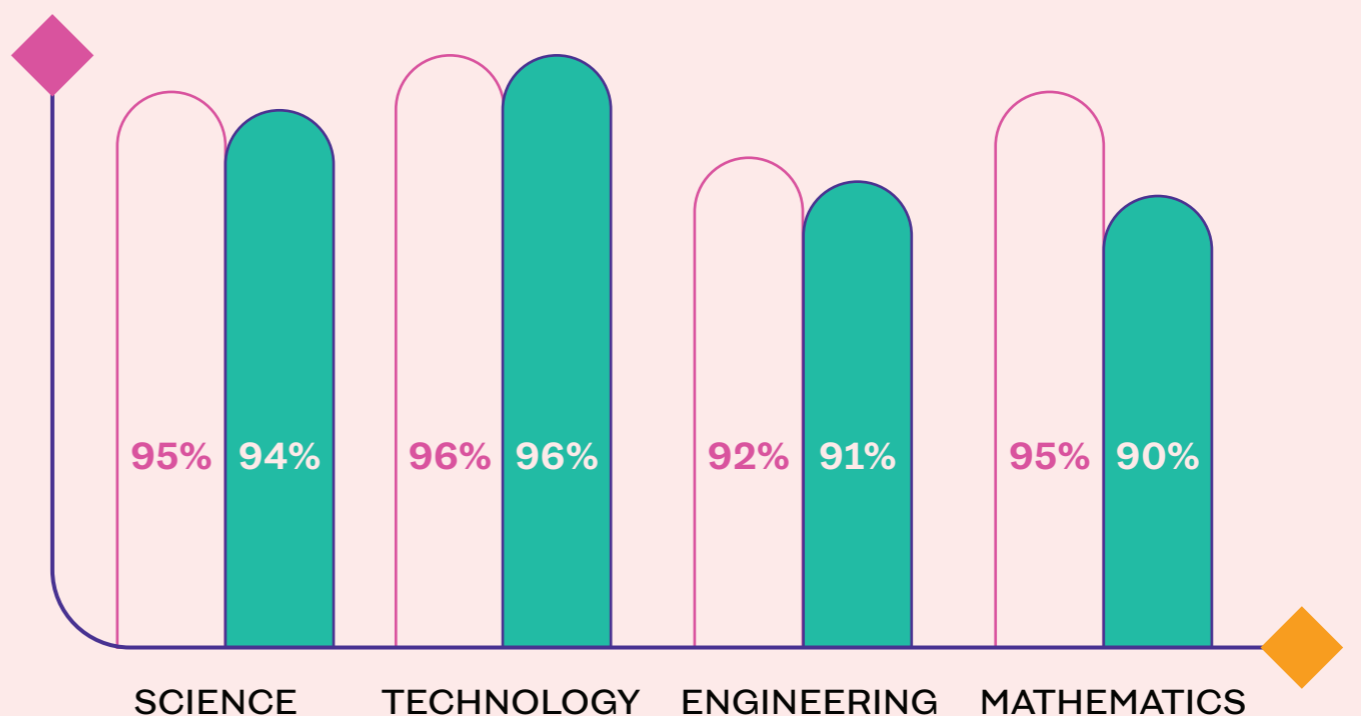
INTEREST

No significant gender difference in the interest in studying STEM at Grades 6-8; however, this percentage decreases in higher levels. By Grade 11-12, there will be significant gender differences in the interest to pursue STEM tracks.

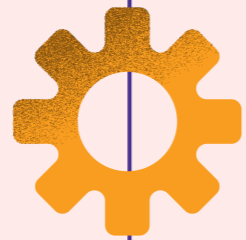


IMPORTANCE

Males and Females both recognized the importance of Science, Technology and Engineering skills to acquire a good job in the future. 80% recognize the positive impact of Science and Technology on the world.

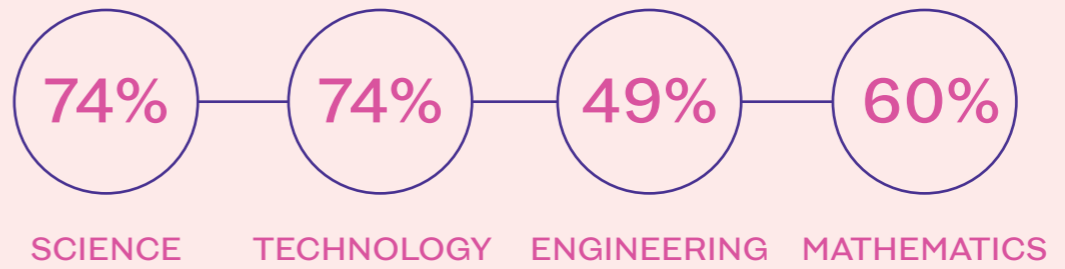


Confidence in STEM

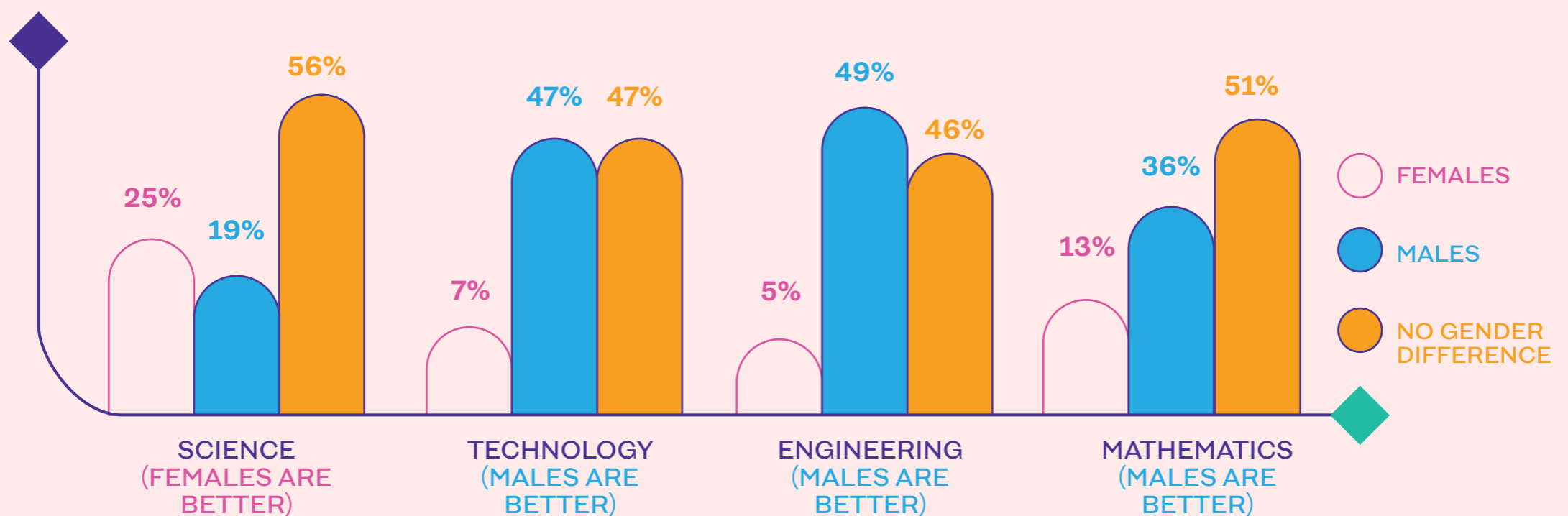
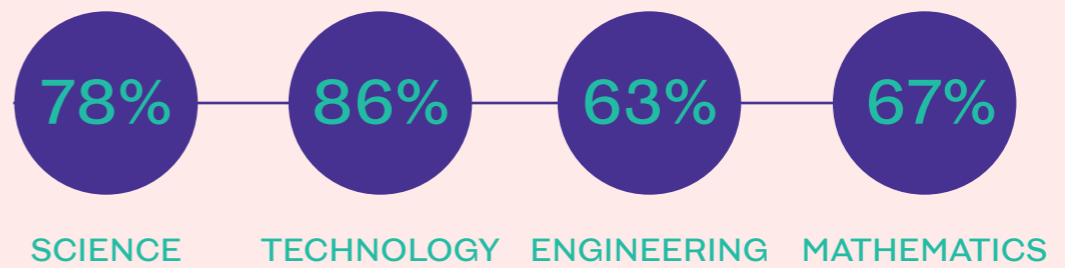


Gender Differences in Perceived Performance

FEMALES



MALES



Majority of careers were seen as gender-neutral, with the majority believing STEM careers such as doctor, scientist or mathematician are suited to both boys and girls.

Participation in STEM Events



Change in Interest of STEM uptake AFTER participation in STEM Events



STEM UPTAKE



Subject Selections

GRADES 6-8



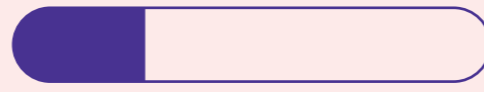
81%
English



55%
Math



77%
STEM-related
subjects

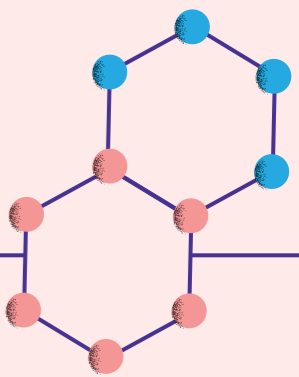


37%
IT



59%
Science

No gender difference in the interest of studying STEM-related subjects at Grades 6-8, except in Math—**60%** of Males would like to take up Math in Grades 9-12; while only **48%** of Females would like to take up Math in those years.



GRADES 9-10



66%
English



34%
STEM-related subjects



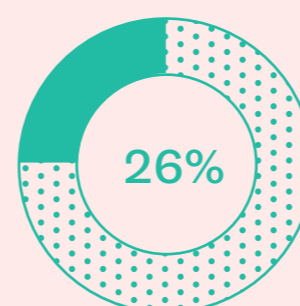
54%
Science



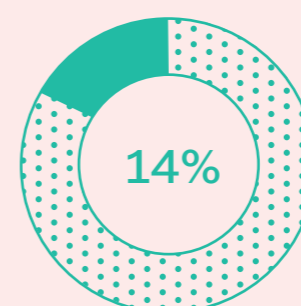
48%
Math

Arts & Design however was the top subject considered to be selected in higher years, followed by General Biology (19%).

Biology as top subject interest

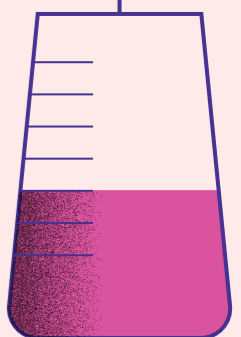


Females



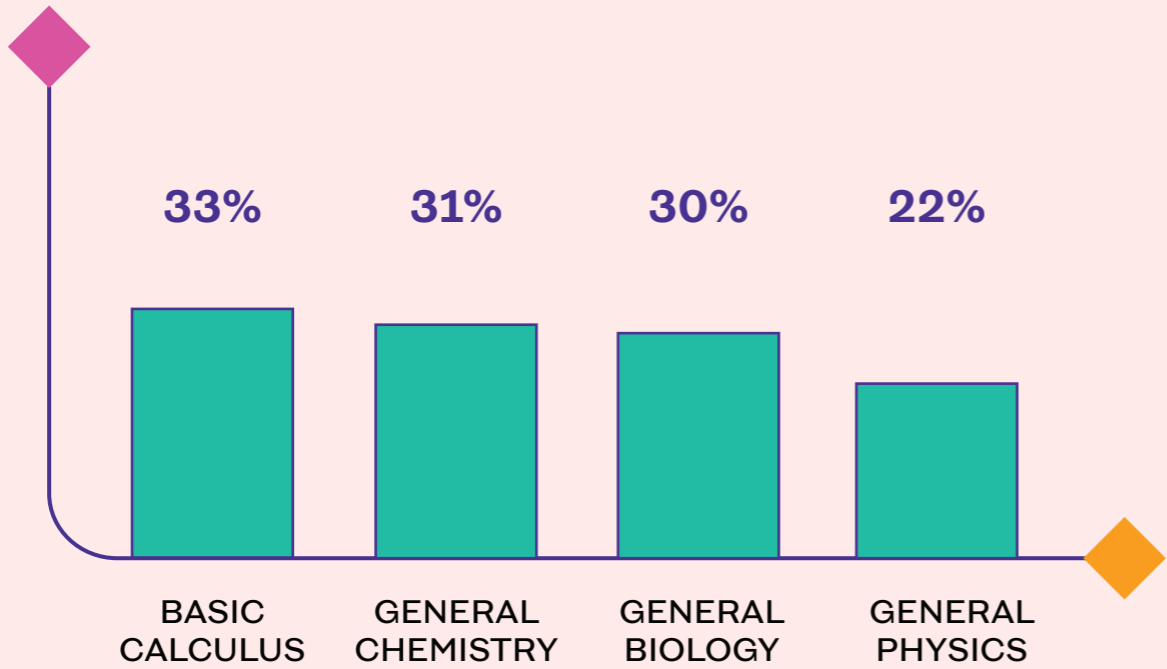
Males

Followed by Calculus and General Chemistry



GRADES 11-12

Top subjects chosen (across genders)



Current track interests

FEMALES

General Chemistry, General Biology, Basic Calculus, General Physics

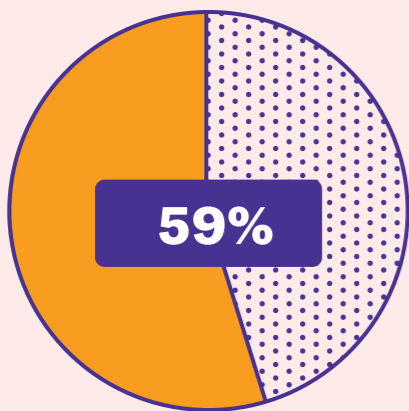
MALES

Information and Communications

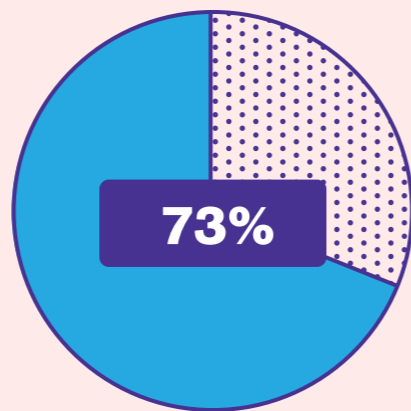
Will take STEM in University



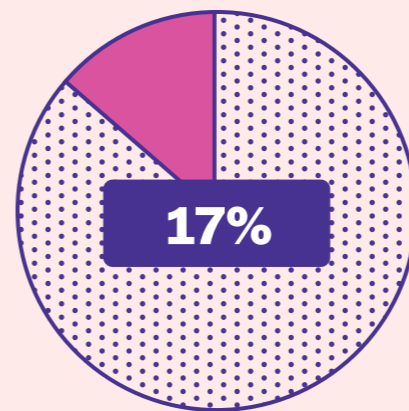
Engineering as top subject interest for University



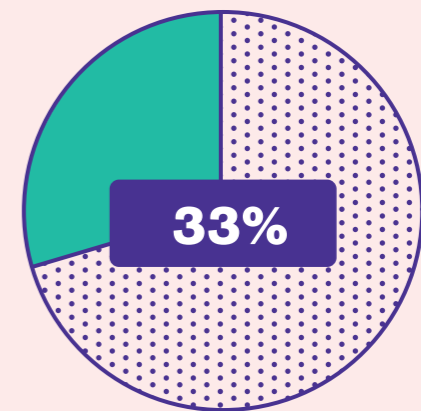
Females



Males



Females



Males

Second top choice for University was Medicine



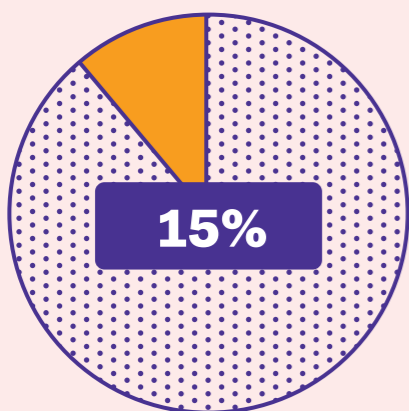
University Course Interest

FEMALES

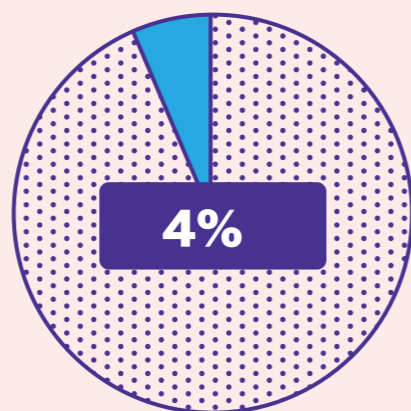
Medicine, Psychology, Nursing, Medical Technology

MALES

Engineering, Computer Science, Information Technology, Chemistry

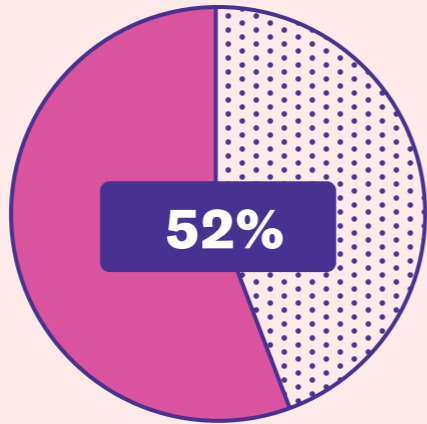


Females



Males

UNIVERSITY LEVEL



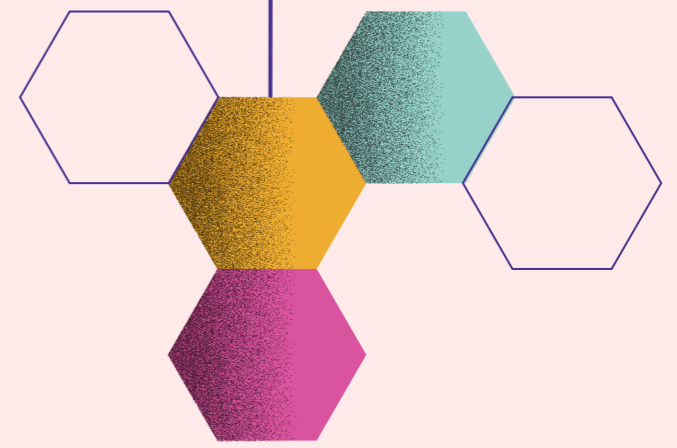
of University students are taking up STEM

Engineering was the top course uptake in both genders

16% Females

27% Males

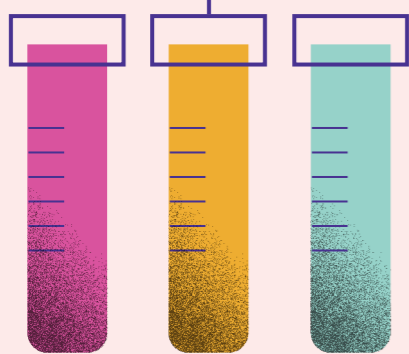
Education and IT follow after (8/15 top University courses are STEM)



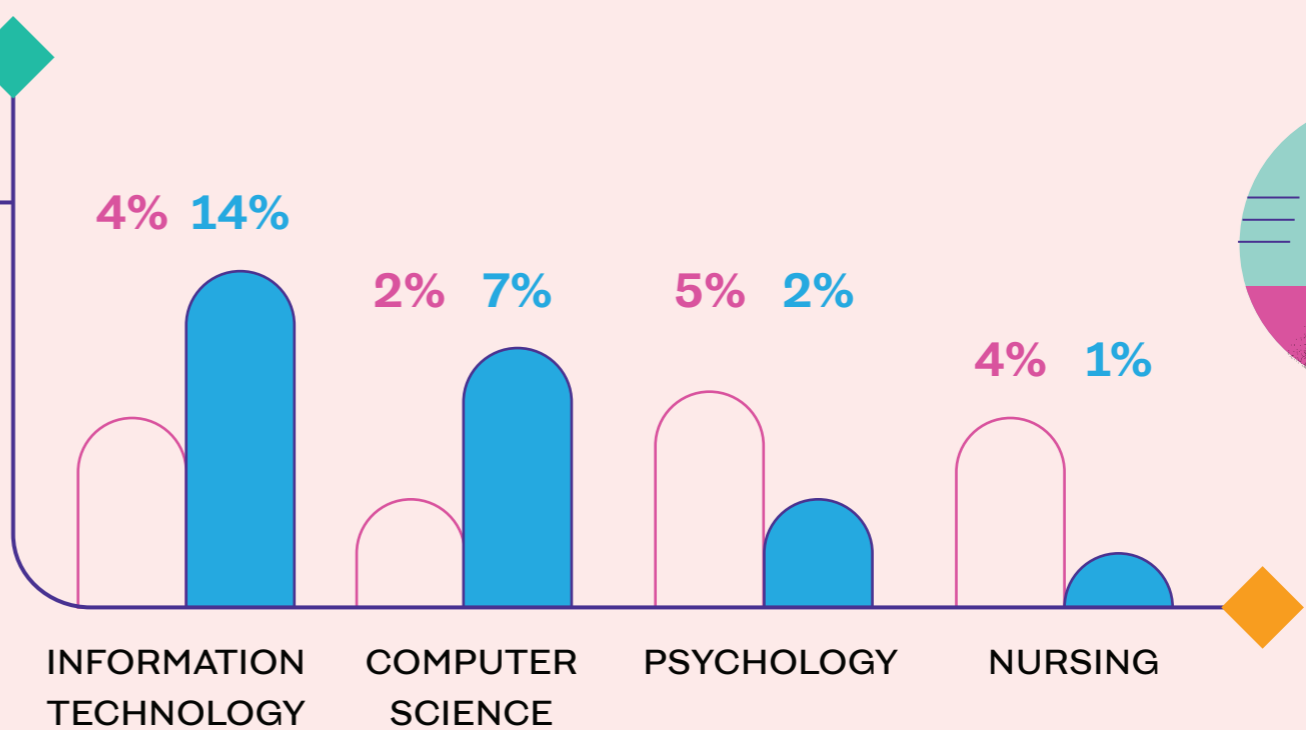
Significant Gender Differences in current courses

Males (57%) are more likely to study STEM compared to **Females (46%)** in University Level

Subjects with the largest male skews were **Engineering, IT** and **Computer Science**

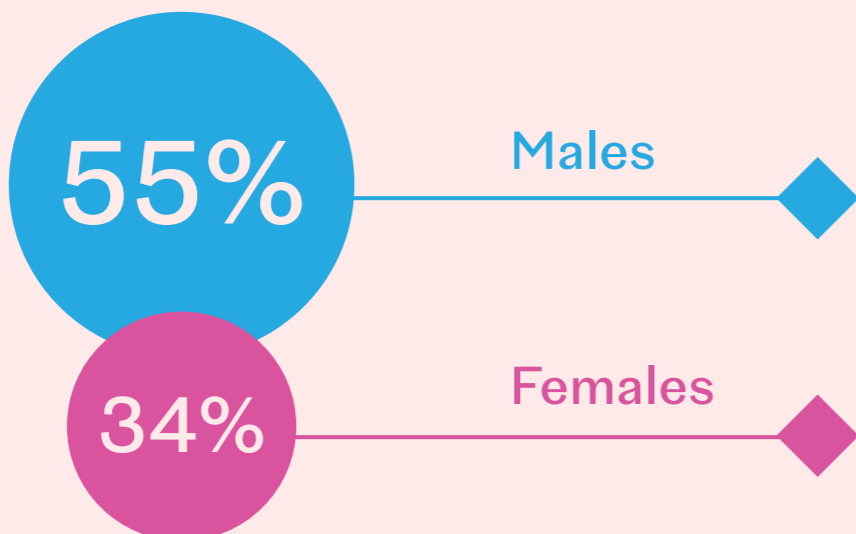


● Males
○ Females



Career Selections

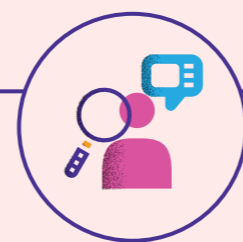
Males show overall higher preference for STEM careers compared to Females.



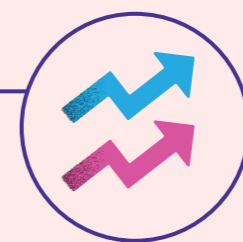
Despite Engineering being the career path most associated with STEM (and being the top STEM subject studied at a higher education level), interest in Engineering was lower than interest in Science and Technology.

CAREER FACTORS

Males were most likely to say that a career with good working conditions is important, while females most want to be helping people.



good working conditions



job security



ability to help people

Influencers and Enablers

Filipino students are mostly driven by their 'personal interests' and 'skills and abilities', even beyond "potential earnings", across genders.

INFLUENCERS

Subject selection

- ◆ Parents
- ◆ Teachers

Career selection

- ◆ Parents
- ◆ Role Models

GENDER INFLUENCES

Females

- ◆ ENABLERS Skills & abilities
- ◆ INFLUENCERS Successful role models

Males

- ◆ ENABLERS YouTube and work experience
- ◆ INFLUENCERS Teachers, peers

OPEN-ENDED DATA



Factors that make them consider STEM

Job stability

Interest

Contribution to society

Other factors

- ✓ Advantages in university
- ✓ Role models in the STEM field
- ✓ Successful experts STEM
- ✓ Decision of parents

STEM Careers

It is evident that while across genders STEM is perceived to offer various job opportunities, it was the field of Engineering that topped the lists. Several also mentioned going into medicine and healthcare, although these careers are not considered STEM in the Philippines (DOLE).

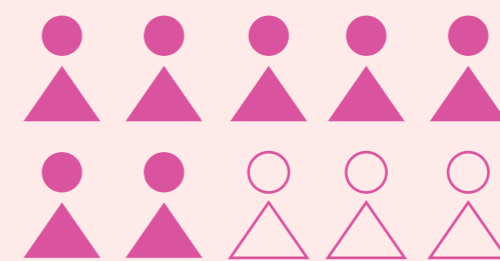
FACTORS FOR DROPOFF OF FEMALES CHOOSING STEM CAREERS

Lack of confidence in their Technology, Engineering or Math skills

Females were highly likely to say that boys were better at Technology and Engineering.

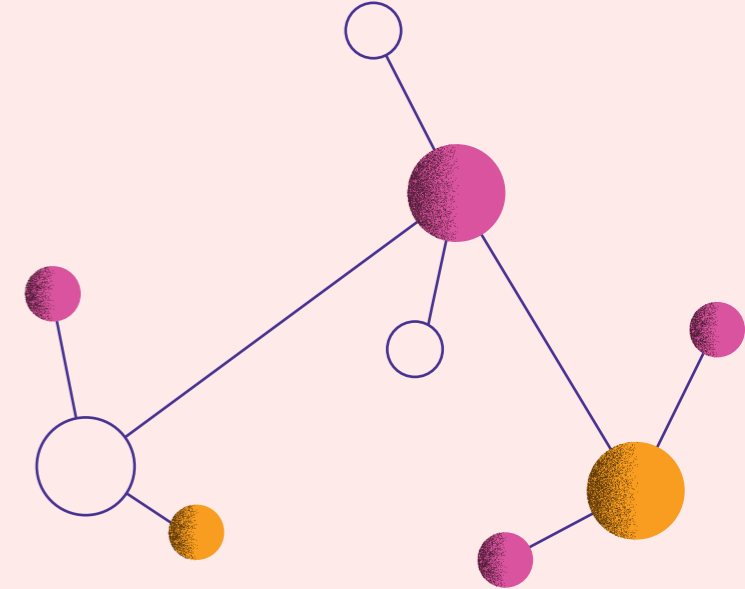
Lack of awareness of STEM-related careers

In terms of career preference, females were less likely to want a STEM-related career than males (34%, vs. 55%). When asked what careers they associate with STEM degrees, females over-index on medical careers.



Seven in ten students were certain about their career plan, while the remaining one in three were uncertain. Females were slightly less likely to be certain about their career plans, hence more can be done to influence their career choices.

IMPORTANCE OF STEM BETWEEN MALES AND FEMALES



MALES

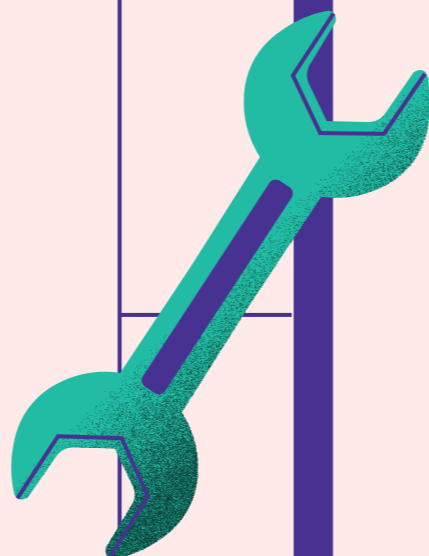
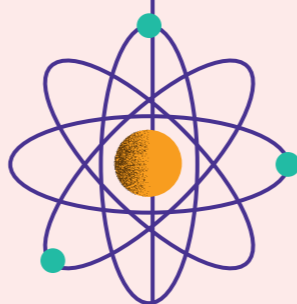
"STEM can be **encountered in daily life.**"

"It is the **foundation for knowledge** on jobs."

"STEM is needed to **excel** in one's job or career."

"STEM allows us to **develop better technologies.**"

"STEM **helps the world** we live in today."



FEMALES

"STEM is used to **better understand the world** as it is applicable to our daily lives and for our future as the world constantly changes."

"There is an **abundance of STEM jobs** and these give good pay and a better future."

"STEM allows us to **solve problems** (specifically that of the environment and of health) that can be used for the field of medicine, technology, and engineering."

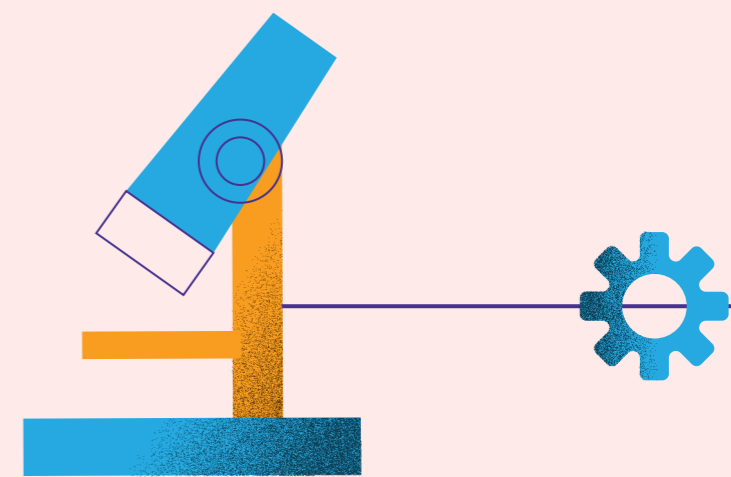


Others:

STEM is used for objectivity in decision-making.

Science is the prerequisite to "higher" fields like Technology, Engineering, and Math choices.

RECOMMENDATIONS AND INSIGHTS



Recommendations

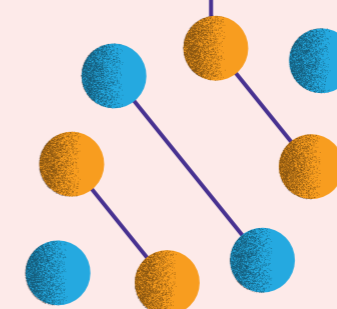
More could be done to improve awareness of non-medical STEM careers

Increase STEM subject uptake by aligning it to students' values

More to be done to raise awareness on other STEM careers or industries (apart from Engineering and Medicine)

Increase STEM career uptake by partnering with STEM-related business people

Encourage students to take up Science and Technology (as they are already interested in these); this could be done by improving awareness of the career paths available after these degrees.



Notable Insights on the Appreciation and Importance of STEM:

While majority recognize the importance of STEM, there are a few significant answers relating STEM to just the knowledge of each individual field. **STEM skills are treated separately from that of STEM knowledge**, and this correlates to how some would answer that "STEM" (pertaining only to STEM knowledge) is not necessary to acquire a good job but rather skills and experience

