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

- Correctly identified “STEM” (81%)
- Engineering field has highest association to STEM across genders (39%)

In the word “STEM” students would associate E with Education, Economics, Ethics, and M with Management and Medicine.*next to Medicine (17%)

PERCEPTIONS ON STEM

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.
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.
Subject Selections

**GRADES 6-8**

- **English**: 81%
- **STEM-related subjects**: 77%
- **Science**: 59%
- **Math**: 55%
- **IT**: 37%

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**

- **English**: 66%
- **Science**: 54%
- **Math**: 48%
- **STEM-related subjects**: 34%

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**: 26%
- **Males**: 14%

Followed by Calculus and General Chemistry
### GRADES 11-12

#### Top subjects chosen (across genders)

- **BASIC CALCULUS**: 33%
- **GENERAL CHEMISTRY**: 31%
- **GENERAL BIOLOGY**: 30%
- **GENERAL PHYSICS**: 22%

#### Current track interests

**FEMALES**
- General Chemistry, General Biology, Basic Calculus, General Physics

**MALES**
- Information and Communications

#### Will take STEM in University

- **Females**: 59%
- **Males**: 73%

#### Engineering as top subject interest for University

- **Females**: 17%
- **Males**: 33%

#### Second top choice for University was Medicine

- **Females**: 15%
- **Males**: 4%

#### University Course Interest

**FEMALES**
- Medicine, Psychology, Nursing, Medical Technology

**MALES**
- Engineering, Computer Science, Information Technology, Chemistry
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)

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

Significant Gender Differences in current courses
Males were most likely to say that a career with good working conditions is important, while females most want to be helping people.

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.

Filipino students are mostly driven by their ‘personal interests’ and ‘skills and abilities’, even beyond “potential earnings”, across genders.

**CAREER FACTORS**

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

55% Males

34% Females

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

**Increase STEM subject uptake by aligning it to students’ values**

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

**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.