EDUCATING and ENGAGING GIRLS in STEM

SCIENCE • TECHNOLOGY • ENGINEERING • MATH
Guided by current research and how girls learn best, Miriam College takes on the challenge of engaging its students in STEM through:

1. **Encouragement.** Raised expectations coupled with consistent praise and positive feedback for each thought-provoking question asked, for thinking out of the box, or for a problem successfully solved will go a long way in boosting a girl’s confidence and performance in STEM.

2. **Engagement.** STEM subjects are taught in the context of real life situations so girls can make the easy connection between what they learn in class and its application in the real world.

3. **Creativity.** Our students are encouraged to approach projects using their creativity, talent and learning styles.

4. **Collaboration.** Knowing that girls work best using their social skills, the school provides opportunities for collaboration and teamwork, encouraging them to share ideas and develop solutions together.

5. **Inspiration.** Exposure to women role models who have made an impact in the fields of STEM not only inspire girls but break stereotypes that only males succeed in these areas. Women role models present them with possibilities of who and what they can become in the future.

**What studies say...**

- Girls are as excited in STEM as boys, but by Middle School (Grades 7 to 11) more girls have negative perceptions of STEM and try to avoid these subjects. (Maccoby & Jacklin, 1979)

- Gender differences in Math and Science interest and achievement begin to appear in Middle School. (Marshall, 1987)

- Best jobs of the future will be in STEM but women are traditionally under-represented in these areas (AAUW, DOST)
Developing curious minds in CSC

The Child Study Center (CSC) builds up the innate curiosity of pre-schoolers by using activity-based lessons that are essential to experiential learning and critical thinking.

Mini-field trips, such as a visit to the grocery and using real money, promote experiential learning. Experts and role models visit classes to give kids a feel of what their work is all about.

Activity-based lessons allow pre-schoolers to:

- Use simple scientific skills of exploration, observation and experimentation
- Use technology wisely
- Develop their creativity, problem solving and critical thinking skills
- Develop skills in analyzing, reasoning and communicating using different media

Activity-based lessons teach them simple Science and values at the same time.

Pre-schoolers conduct actual experiments to find out which objects sink or float.
Strengthening interest in Grade School

Grade School students are immersed in learning STEM through a variety of ways to help shape a positive attitude towards these subjects before they reach High School. Girls are engaged in collaborative projects in the classroom, stimulating fieldtrips outdoors, and are encouraged to join national and local competitions to build more confidence in these subject areas.

Programs in the Grade School:

- Use of Concrete-Pictorial-Abstract approach in teaching Math in all levels
- Adoption of Singapore Math and Science methodologies
- Enhanced Science Investigatory Projects
- Creation of a Math training pool for inter-school competitions
- Specialized local and international faculty training in the fields of STEM
- Benchmarking in Math and Science subject areas with Primary Schools in Singapore
- Continuation of Skills Training in Developing and Enhancing Math, English and Science (STRIDES), a program enrichment for advance learners

Girls are encouraged to discover solutions as a team.

Students use picture graphs as a fun approach to learning Math.

Outdoor activities help make lessons more interesting and stimulating.

Dynamic approaches to teaching encourage probing and participation among students.
Intensifying learning in High School

At the High School, standards in STEM are raised and higher expectations of students’ work are set for them to develop confidence, competitiveness, creativity, critical thinking, and concept mastery.

Programs in the High School
- Utilizing the tablet to enhance teaching and learning in STEM
- Enhanced Senior Electives covering areas of STEM
- Devoting more hours to STEM subjects per week with emphasis on laboratory work
- Continuation of the programs in Math and Science for the gifted (Programs of Excellence or ProEx) and for those who need to cope with the rigors of the subjects (Learning Enhancement and Advancement Program or LEAP)
- Launch of SciMax (Science and Math Exposition), featuring students’ Science investigatory projects, Math Made Extreme activities, Science Music Video Awards, etc.
- Specialized local and international faculty training for effective and dynamic STEM teaching.

Collaborative learning is encouraged at the High School.

Girls are exposed to discovery-oriented activities that nurture interest in engineering and architecture.

Students are engaged in technology-driven learning.
Institutional initiatives

Miriam College aims to create a learning environment that enables its students to embrace STEM in their everyday lives. As such, there is a continuous effort to enhance our programs to keep girls and young women curious, creative, confident, and competitive.

E-learning tool project

Miriam College introduced the use of the tablet to a pilot batch of First Year High School students, starting SY 2012-2013. The tablet serves an interactive tool to help them organize their work, collaborate with others, communicate with teachers, and create multimedia presentations and projects in a variety of subjects including STEM.

Robotics in the curriculum

Miriam College will integrate robotics-based activities to equip students with this essential 21st century skill.

- Robotics Club
- Annual and summer Robotics Workshop
- Engineering Sciences Elective
- Robot-building competitions in Alternative Learning Experiences (ALEX)/Science and Math Exposition

MC Science Garden

The MC Science Garden will be an open classroom for active learning and scientific explorations where the students can learn about the environment through topics such as urban gardening, vermicomposting and hydroponics.

Partnerships

- National Coalition of Girls School (NCGS). A leading advocate for girls' education with a distinct commitment to the transformative power of all girls' schools.
- AGHAM Party list
- Department of Science and Technology (DOST)

MIRIAM COLLEGE
Katipunan Avenue, Loyola Heights Quezon City 1108, Philippines
Tel. nos.: (+632) 580-5400 to 29; (+632) 435-9240 to 46
Website: www.mc.edu.ph