

# STEM

SCIENCE | TECHNOLOGY | ENGINEERING | MATHEMATICS  
THE TRINIDAD & TOBAGO STEM PROGRAMME NEWSLETTER

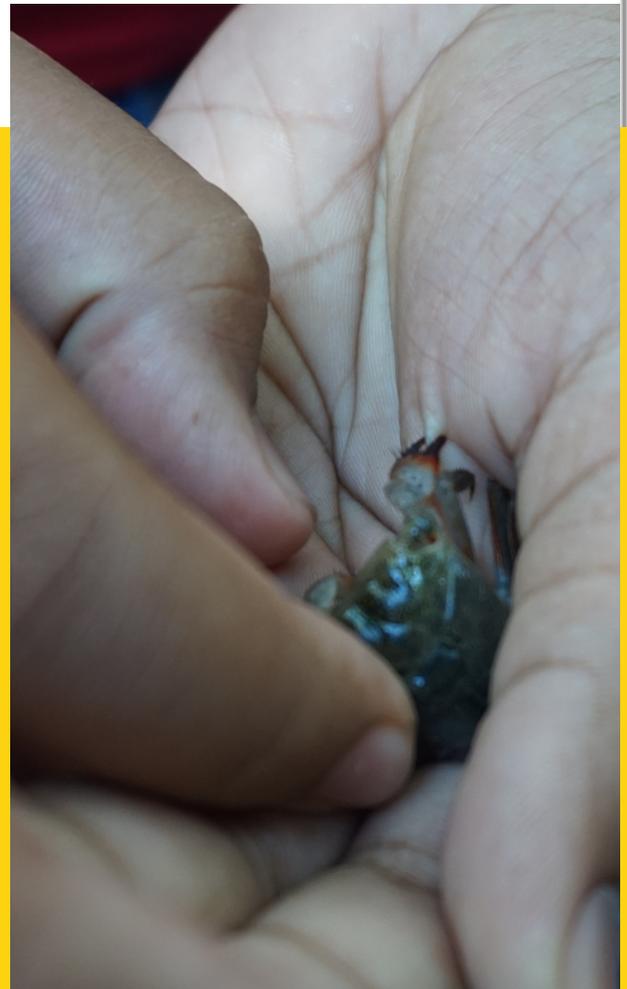
VOL 2 2019

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The Trinidad and Tobago STEM Programme is sponsored by Shell Trinidad and Tobago



STEM students aboard one of the Coast Guard vessels during the STEM Easter Vacation Camp field trip to the Staubles Bay, Chaguaramas base.

This issue of the STEM Programme Newsletter focuses on the highlights of the STEM Programme during the final term in 2018/2019 academic year.

The quarter started with the STEM Easter Vacation Camp with the new form 1 Bursary students and ended with the STEM Teacher Training workshops in June. We also take a look at some of the activities students were engaged in during this term at some of the schools such as Trinity College, St Francis Boys' College and Cowen Hamilton Secondary.

The Q&A- Facilitator section, features IT Facilitator- Anthony Petit.

The final section in the newsletter looks at whats 'Up Next in STEM'.

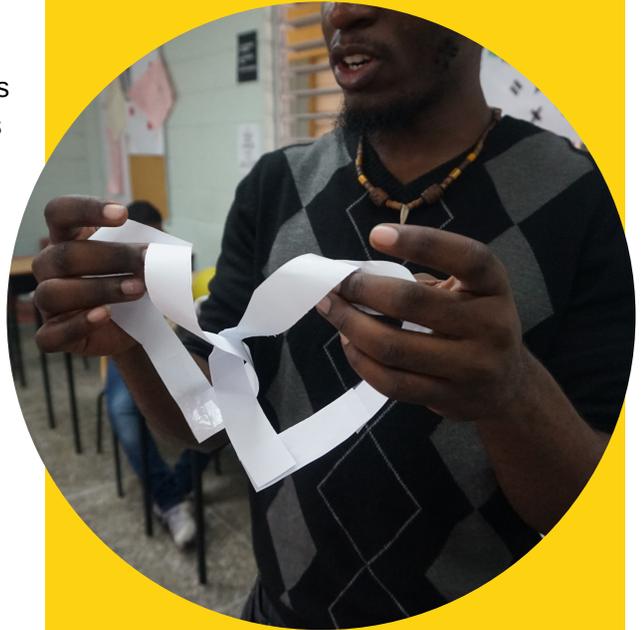
**WELCOME**

# VACATION CAMP STEM EASTER

Our campers are Avengers!!!!

Yes we said it our campers are Avengers. What do we mean by this? If you saw the final Avengers movie you would have seen where the characters Scott Lang (Ant-Man), Tony Stark (Ironman) and Dr. Bruce Banner (The Hulk) discuss the possibilities of using time travel to reverse the effects of 'the snap' by the world's nemesis Thanos. Tony Stark eventually solves the seemingly impossible task by using an inverted 'Möbius strip.'

What is a 'Möbius strip' you ask? Technically it is a surface with one continuous side formed by joining the ends of a rectangle after twisting one end through  $180^\circ$ . It was discovered by German mathematician August Mobius in the 1800s. How does this relate to the participants at the STEM Easter Vacation Camp?



Mathematics Facilitator, Shaquille George, explains the mobius strip to the students

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## Mathematical Discovery

On the first day of camp, our STEM students were introduced to and explored the mathematical discovery. As part of the Mathematics session campers even made their own versions of the 'Möbius strip'. This gave them the edge to understand the concept referred to during the final Avengers movie – got it now right?



'Getting it just right'- Students making adjustments to the Mobius strips during the Mathematics session

During the 4-day camp held in April campers were also engaged in creative and critical thinking activities- which is an important component for STEM education. This session provided students with the opportunity to practice thinking and problem solving techniques. Campers were challenged to solve problems within different scenarios using the information provided and their imaginations to arrive at the best answers.



## Creative + Critical Thinking



Facilitator Ebony Anderson interacts with the campers during the balloon balance activity for the Creative & Critical Thinking session.



All smiles as the campers begin their tour of the Caroni Swamp and Bird Sanctuary

## CAMP Field Trips

For STEM students, the camp experience would be incomplete without field trips. The participants journeyed to the Caroni Swamp and Bird Sanctuary as well as the Trinidad and Tobago Coast Guard base at Staubles Bay, Chaguaramas. At Caroni, they learnt about the importance of preserving our wetlands and the role they played in the environment. At the Coast Guard base, the students learnt about the role of that particular arm of the defense force, the types of careers available and toured one of the vessels operated by the Coast Guard...what a treat!



'Learning about the past' - the campers view the exhibits in the museum at the Coast Guard Base in Staubles Bay, Chaguaramas



'Taking a closer look' - the campers observe a specimen whilst on tour at the Caroni Swamp

# VACATION CAMP STEM EASTER

## Shell Science Bus and Student News Report

The camp concluded with a visit by the Shell Science Bus Team who engaged the group in a variety of activities including puzzles, a science game and creating various projects using snap circuit energy kits that exposed them to alternative forms of energy. This was followed by the campers turning into “reporters” and present their own “news reports” that summed up the activities that took place over the four days.



Getting it to light! The girls work together during the visit by the Shell Science Bus team, getting their bulb in their circuit set to light.



Celebration time with the members of the Shell Science Bus team after their session.

## REPORTING FOR STEM NEWS



Lights, camera, action!  
Campers give their 'news report' on the final day of camp

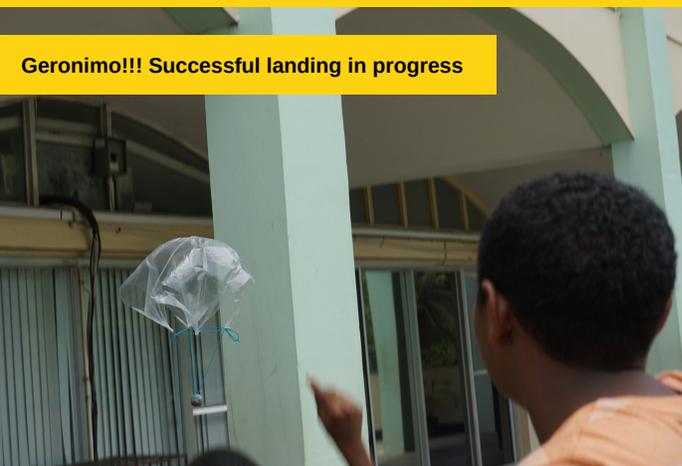
# STEM CHALLENGE



Students of Trinity College, Moka work together to build their parachute model.



All smiles!  
The students ready to test their prototypes.



Geronimo!!! Successful landing in progress

## PARACHUTE CHALLENGE

Ever dreamed of parachuting? We challenged the STEM students to build a parachute. The activity began with an introduction to the physics on how parachutes work, the different types of parachutes and the roles of each type.

### Activity:

The students worked in groups of two utilizing the materials provided, and built a parachute model that will safely take an object to the ground. The major challenge was to choose the correct type and weight of materials to ensure a successful landing.

Materials: plastic bags or newspaper or kite paper or brown paper

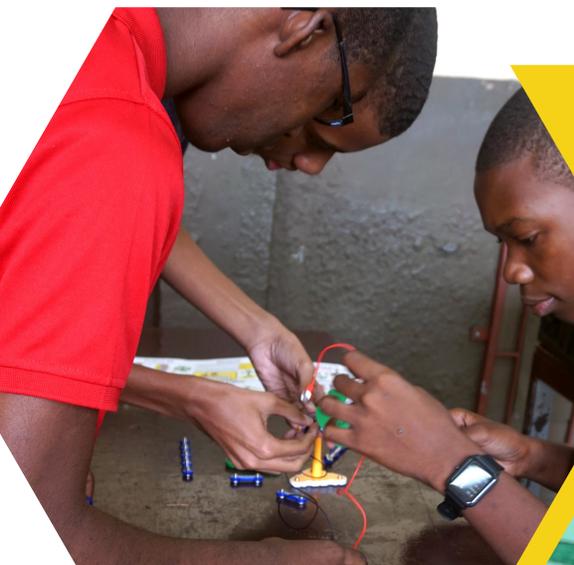
Nylon or yard

Scissors, tape and plasticine as the weight

# STEM Activities This Term : Highlight

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All concentration, the students of St. Francis give the circuit kits their undivided attention

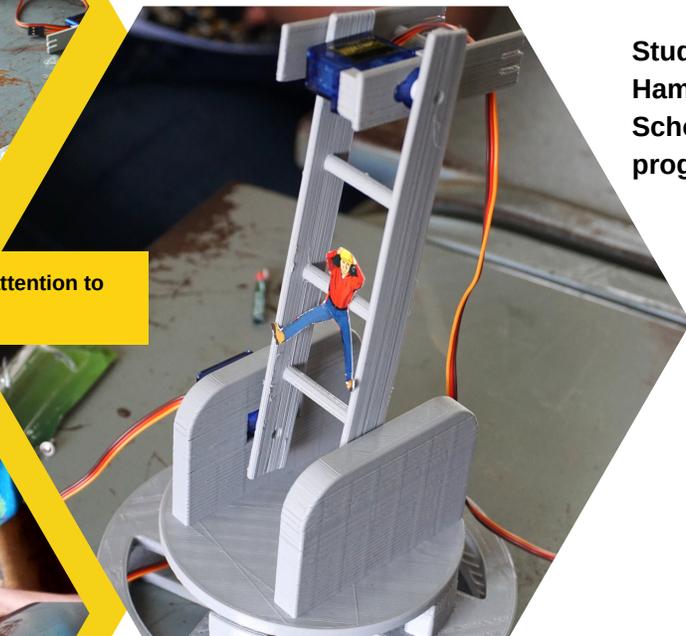


## ENERGY - ST FRANCIS COLLEGE

Students at St. Francis College used the Snap Circuit Kit as part of their lesson on energy and the conversion of different forms of energy.



The students of Cowen Hamilton give their attention to their robotic arms



## ROBOTICS - COWEN HAMILTON SECONDARY SCHOOL

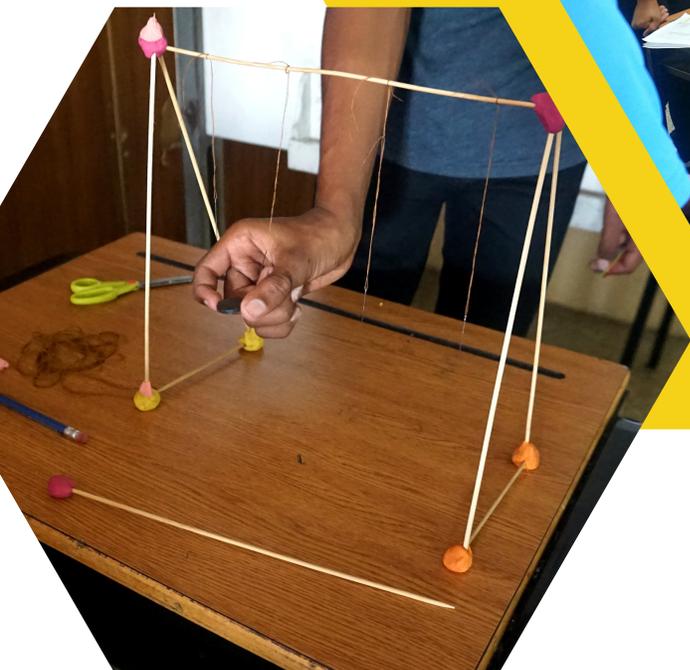
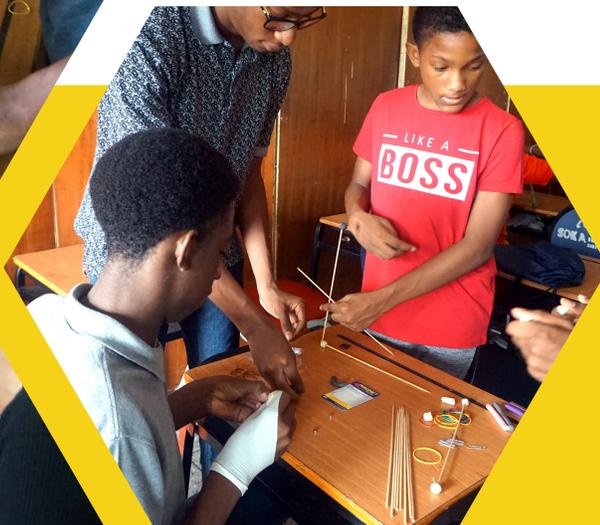
Students at Cowen Hamilton Secondary School design, built and programmed a robotic arm.



# STEM Activities This Term : Highlight

## MAGNETIC FORCES - TRINITY COLLEGE, MOKA

Students at Trinity College build structures to test magnetic forces during a physics session.





Professor Mellowes delivers the keynote address at the opening to STEM Teacher workshops.



Teachers participate in the STEM hands on activities

# STEM TEACHER TRAINING WORKSHOPS 2019

The delivery of curriculum in the classroom in a manner that integrates problem solving, exploratory learning, teamwork, creative thinking, hands-on activities and field trips into the delivery of lessons is the cornerstone of the transformation of the education system. Teachers are critical to this process and the STEM Programme has focused on teacher development through teacher training workshops that focus on enhancing the learning environment for students.

The STEM Teacher Training Programme is designed to train a cadre of teachers, to raise their level of awareness, strengthen competencies, improve their methods of delivery and transform their thinking, attitudes and approach to teaching STEM Education in selected curriculum areas currently offered by schools in Trinidad and Tobago.

The STEM Teacher Training Workshop designed and delivered by the Caribbean Academy of Sciences (CAS) for the Shell STEM programme was held on Thursday 27th and Friday 28th June, 2019 at the University of Trinidad and Tobago, Chaguanas Campus. The team of CAS facilitators also conducted the Teacher Training workshop with teachers in 2018 and has conducted similar workshops in other Caribbean territories.

The sessions were highly interactive and delivered low cost STEM course material and activities that could easily be integrated with the curricula for lower forms (1-3) in the secondary school system. The sessions captured the interest of over 30 teachers in attendance. While the content targeted the lower school teachers and curriculum, its basic elements can be applied throughout all levels of the school system.

Dr. Rowena Kalloo, served as the Chief Facilitator, with Professor Emeritus Winston Mellowes, President of CAS facilitating sessions throughout the two-day sessions. Other facilitators included Dr Cathy Radix, Mr. Daniel Ringis, Mr Otis Caruth and Ms Simone Henry. Ms Petal Jetoo also joined the team from Guyana.



CERTIFICATE OF PARTICIPATION: Dr. Radix presents one of the teachers, Mr Dolly of Trinity College with the Certificate of Participation on the final day of the two-day STEM Teacher Training workshops 2019.

# Q+A

## FACILITATOR FOCUS: Q+A

### Anthony Petit – IT Facilitator

The facilitators in the programme provide the unique experiences and the 'Aha moments' for students. But who are these facilitators? They are a mixed group that consists of teachers, experts and organizations in the field of STEM. The facilitators are essential partners in the programme. This feature introduces the STEM Programme Facilitators in a brief Q&A session.

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#### 1. When did you start facilitating in the programme?

2016

#### 2. Why did you decide to join the STEM programme?

I joined the STEM Programme because it gave me an opportunity to pass on information to young people that is needed in today's I.T. connected world.

#### 3. What are your hopes for the programme?

That it expands to Tobago as well as other schools. I truly feel this expansion is vital because the kids need this information desperately if they're to have a chance in the future.

#### 4. What was like when you first started the programme?

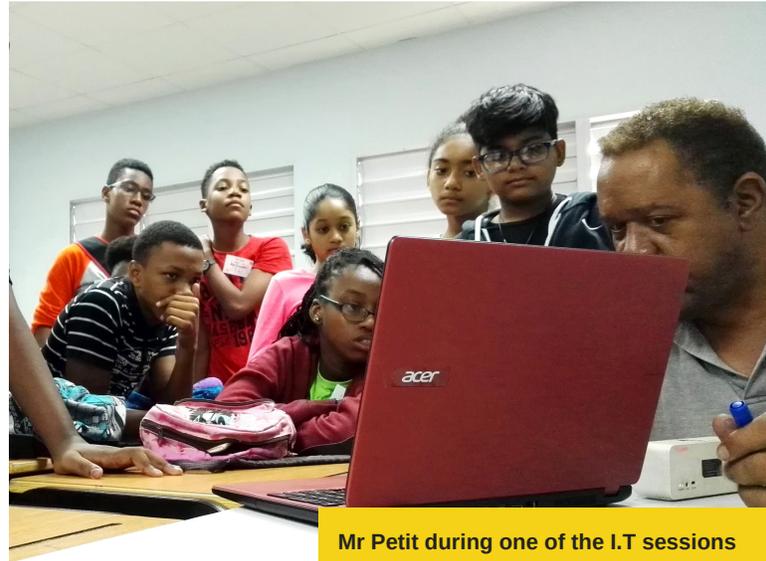
It was interesting. Many of these young kids don't want to be there on a Saturday morning so the challenge was to make them look forward to coming to class by making the session interesting to them on many levels.

#### 5. What changes have you seen since you first started?

Inclusion of extra schools and other forms than the original set.

#### 6. What subject/s are you teaching? What is unique different or engaging about your sessions?

I teach I.T. and Programming. I engage the students so they learn through active participation and by teaching. To me, the best way to get them to remember the coursework is to actually have THEM answer questions, rather than just sit back and listen to me talk. I also try and make the class fun. Kids today have short attention spans; so you have to be innovative in your approach to teaching them to keep them interested.



Mr Petit during one of the I.T sessions with students

#### 7. What do your sessions involve?

Learning about programming. Learning about Artificial Intelligence Programs. Interacting with actual Artificial Intelligence Programs. Actual programming. Creating a Pseudo A.I. The I.T. World and how it works in the real world. Question and answer sessions from the students. Creating actual programs they have chosen rather than forcing them to do something I want them to do.

#### 8. How does the subject area you're teaching play into the development of the T&T and the globe?

Programming is one of the largest fields today. And all technology requires some form of programming. Not to mention the world is moving towards A.I. This is the future of technology and they need to understand how it works to be able to be part of that future.

#### 9. Why do you think your subject area is important for students?

Every major country is rushing to create their own version of A.I. and the need for programmers and A.I. Tech are growing exponentially as the industry continues to expand. Because technology is integral to everything we do today, students who do not become programmers or A.I. Technicians, understanding how the technology works will be vital in helping them in every other field they study in the future.

- **STEM Vacation Camps**

STEM Juniors: Monday 15th July – Tuesday 23rd July 2019

STEM Seniors: Thursday 25th July - Friday 2nd August

- **New STEM Students Outreach**

Form 1 Orientation into the STEM Programme

- **NESC Technical Training**

One year technical training programme with National Energy Skills Center (NESC)



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