

**Number 16****March 2021**[www.castme.online](http://www.castme.online)**Delivering a Common Future:**  
*Connecting, Innovating, Transforming***Editorial**

CASTME, as an international organisation, took part in the Association for Science Education (ASE) Annual Conference on-line on Wednesday 6<sup>th</sup> January, the International Day, and subsequently to Saturday 9<sup>th</sup> January. Despite being on-line, it was a most interesting conference and the direction of science education, progression, recognising competences of students was most apt. CASTME is very grateful for Professor Sir John Holman, President of ASE, for announcing the Findel CASTME 2020 Awards, on the International Day.

The next ASE Annual Conference, hopefully for real and not on-line only, will be: 5<sup>th</sup> – 8<sup>th</sup> January 2022.

**CASTME Activity Hub**

Dr David Moore and Jonathan Ling (Editor) are discussing with their fellow trustees the possibility of establishing a CASTME Activity Hub for interested teachers and others around the Commonwealth. It is intended that the Centre will provide a wide range of activity sheets, free of charge on-line.



Once established the CASTME Activity Hub will enable users to gain considerable benefits from being able to download activity sheets and other material valuable to themselves and provide:

- useful information to CASTME as an organisation.
- services to the Commonwealth and around the world.
- expert advice to STEM deliverers.

Around the world CASTME wants to promote the message that it can help STEM teachers and lecturers deliver increasingly effective practices for all age groups, including Early Years and Life Long, learning.

Professor Chris King, who is Emeritus Professor of Earth Science Education at Keele University his colleagues have been talking with David

(above, with 1960 Morris Minor) and Jonathan.

Over the past 15 years, Chris's team has established a website which informs graphically those science teachers who wish to receive a whole raft of extremely useful Activity Sheets.

The latest one with over 350 earlier ones can be found at: <https://www.earthlearningidea.com/> with the associated blog at: [https:// earthlearningidea.blogspot.com](https://earthlearningidea.blogspot.com).

The Earth learning idea Team, Chris, Peter Kennett and Elizabeth Devon add a new activity every two weeks for those who sign up. Chris, David and Jonathan are currently discussing ways that a similar system might work across the STEM subjects for CASTME. Watch this space!

**CASTME Resources**

The above initiative is just one of many resources to be made available by CASTME: Biology for all ages, Canadian themes, Indigenous Science Networks and links to a myriad of on-line items such as ASE Open access – see <https://www.castme.online/https/castme-onlinesquarespacecom/config/pages/resources>

**Number 16****March 2021****Delivering a Common Future:**  
*Connecting, Innovating, Transforming***Teaching Newton's Third Law - in Ghana***Professor Victor Antwi, Fortune Addo-Wuwer, Nelly Adjoa Sakyi-Hagan**University of Education, Winneba*

Newton's third law of motion is probably one of the easiest and simplest laws in physics for students to recite. However, when they are given questions where they must apply the understanding of the law to solve a problem, it often becomes a challenge. They seem to forget about the fact that action and reaction are opposite and equal. In this study, five sequential activities were used in the teaching of Newton's third law of motion: Concept quiz, conceptual reasoning questions, interactive teaching, reflection, and application and problem-solving questions.

Twenty first year University Physics students at this university were introduced to Newton's third law using real-life examples in an interactive engagement approach. The results indicated that students could give better qualitative reasoning and verbal explanations to most of the qualitative reasoning questions that were put as an effective strategy to assess students' learning after the interactive engagement approach. It was also revealed that students were intellectually active in understanding the concept of Newton's third law of motion.

Editor's Note: There are many ways of stating the law, such as "Action and reaction are equal and opposite", "Forces come in equal and opposite pairs" and "A force is one half of the interaction between two systems".

**Dame Jocelyn Bell Burnell now in Royal Society's Portrait Collection**

CASTME congratulates Jocelyn Bell Burnell that this painting was added on Saturday 28<sup>th</sup> November 2020 to the Royal Society's Carlton House Terrace headquarters in central London. Professor Bell Burnell is well known as the British astrophysicist who made one of the most significant scientific discoveries of the 20th century: that of Pulsars in 1967 when she discovered pulsed radiation from a particular type of star, later called a pulsar.

The portrait is by Stephen Shankland, shown to the right, painting Jocelyn at the Royal Observatory in Edinburgh.



CASTME was honoured to receive a lecture by Jocelyn, in one of its biennial Chisman Memorial Lectures on the "Intersection of Astronomy and Poetry" on 13<sup>th</sup> March 2013 at the University of Westminster when she asked: What topics have caught the attention of poets? How do they handle the science? Are they sympathetic or antipathetic? And Are they up to date?

The talk was fascinating and included the reading of poems by members of the audience.

Incidentally, the editor was honoured and pleased to work with Jocelyn when she worked alongside him as external examiner in Astronomy while he was Chair, and Director of Studies in Physics and Astronomy at the University of Hertfordshire, in the late 1990s.





# ASTME

Commonwealth Association of Science, Technology and Mathematics Educators

## e-Newsletter



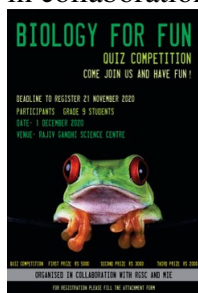
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### The Mauritius Society of Biology

On 1<sup>st</sup> December 2020, the Society held one of their regular events, a quiz organised for grade 9 students in collaboration with the Rajiv Gandhi Science Centre and the Mauritius Institute of Education:



### The Findel CASTME Awards 2021

*Sponsored by Findel International Education Resources and Philip Harris*

For over 30 years the **CASTME Award Scheme** has been sharing best practice across the **STEM** disciplines of **Science, Technology, Engineering, and Mathematics** with an aim of sharing best practice across the STEM disciplines and to demonstrate the importance of STEM to local environments, schools and communities. Awards are offered for educational activities or projects which address the social or human context of STEM: any communities, groups or individuals involved in STEM education in its widest sense: formal or informal, within pre-school, school, college, university or life-long learning situations. In-depth submissions are sought about teaching and learning methods or projects on any STEM activity.

See: <https://www.castme.online/https://wwwcastmeonline/awards>

Anyone who is interested or has any queries, should supply full name and full address to: CASTME Vice Chair (Awards) Kathleen Nugent at [kath.nugent1@gmail.com](mailto:kath.nugent1@gmail.com).

**The three Awards now granted by Findel International Education Resources are:**

- 1 The Findel CASTME Education Award:** for entries which develop an innovative approach to increasing STEM awareness in the everyday world. The most successful entry is awarded:
  - a £300 voucher to spend on Philip Harris science equipment or resources and
  - international membership of the Association for Science Education for one year.
- 2 The Findel CASTME Protect our Planet Award:** for entries which focus on the Sustainable Development Goals such as Climate Change, Responsible Consumption and Clean Water. The most successful entry is awarded a £100 voucher from Findel International.
- 3 The Findel CASTME Community Award:** for entries which focus on mothers, carers and/or on raising awareness of STEM in the community. The most successful entry will receive a £50 voucher from Findel International.

Entries should be submitted by 31<sup>st</sup> October in any year. In all cases, transport and insurance to the recipient country is included. They are judged by a panel of experts with the successful entry in each category formally announced at the ASE Annual Conference early in the following January.

**For further details see the poster on the back page of this newsletter.**

**The Findel CASTME Awards 2020****The Findel CASTME Education Award**

“Science Laboratory and Science Museum”

This was submitted by Sarath Premawardana of Panadura, Sri Lanka who says:

“I am very happy and delighted to receive the Findel CASTME Education Award. It is a great prestige and encouragement for me to continue improving my Science Laboratory and Science Museum. I have continued to develop the laboratory and museum and this award will help me to improve it further. I expect that it will help many more students and teachers in future to broaden their knowledge and skills and take this opportunity to thank the CASTME Trustees for this award”

**The Findel CASTME Award 1**

“Popularising Science and Technology among Children for self-reliance”

This was submitted by the Director of CIST (Children-In-Science & Technology), Professor Ibiyinka Ogunlade of Ekiti State University, Ado-Ekiti, Nigeria, who says:

“I received with great joy the news of the FINDEL CASTME Award to CIST. We are particularly encouraged and pledge to put in more zeal in making our children and society at large, scientifically and technologically literate. Thank you so much for the great news!”

**The Findel CASTME Award 2**

“Making Middle School Science to Spin, Swirl and Sway for Self-Development of Science Educator as Action Researcher and Learner-Teacher”.

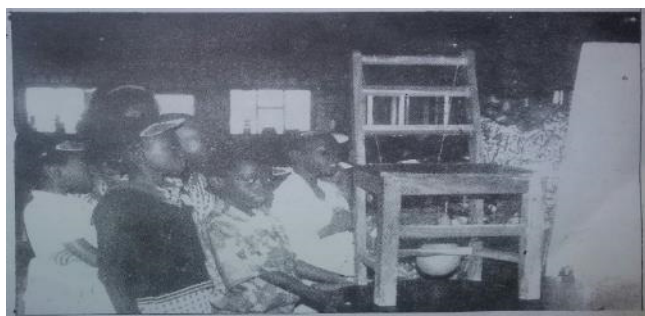
This was submitted by Dr Lalit Kishore of the Disha Foundation, Nirman Nagar, Jaipur, India who says:

“Thank you for your communication and we at Disha were delighted to know the recognition to our work by CASTME. The award will inspire us to innovate and individualize science and math instruction”.

**Children-In-Science and Technology (CIST)**

Prof. Ibiyinka Ogunlade, Department of Chemistry, Ekiti State University, P.M.B. 5363, Ado-Ekiti, Nigeria has been awarded a CASTME community award and has sent the following:

Aimed at popularizing Science and Technology among Children for self-reliance in an outreach of “Science is fun”, demonstrates a Balloon Experiment to show that Air has weight, using locally available materials.







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### Talk and do-Science at Home (Facebook) @Castmeactivities (Instagram)

#### Building towers and knocking them over!

This simple activity enjoyed by all toddlers is scientific learning at its best. Observing the effect of gravity and trying to prevent it. It is also fun to count the blocks as you build to see how high you can get.



#### Playing with toy cars

Which car is fastest down the slope? How do you make them go faster/ slower? Talking with children while they play can increase vocabulary and help children to think about what is happening.

Open questions can encourage children to try out new ideas as they play.



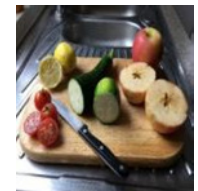
#### “Music is in the ear of the listener”.

Musical instruments can be made from all sorts of items you find at home or outdoors. Listening carefully to different sounds you can make and finding ways to change them is fun and scientifically challenging.



#### Cutting Fruit and Vegetables.

Do all Fruit and Vegetables have seeds in them? When preparing any fruit and vegetables let children help and take the time to look at them and talk about what you see. What do the seeds look like? What are they for? This also provides a chance to use mathematical language such as ‘whole’ and ‘half’ while cutting.



**STEM**  
Walking the Creek

**Science:** Children can explore the creek environment (soil, rocks, plants, and animals), the movement and temperature of the water.

**Technology:** Children can use nets and buckets to collect materials and catch small animals.

**Engineering:** Children can build a dam (e.g., using rocks) and observe how it affects water movement.

**Math:** Children can sort and/or classify the materials they collect.

stemintheearlyyears.com

### STEM in the Early Years

- Professor Christine Tippett, University of Ottawa

The **STEM in the Early Years** team – working out of the University of Ottawa (Ontario, Canada) – has been creating online early childhood STEM resources for parents, caregivers, and educators of children aged 1.5 to 5 years old. The resources have been developed from observations of children’s play, resulting in authentic learning experiences. Our resources are currently available in English, Spanish, and French and mainly use free or inexpensive household materials.

- Visit us on Pinterest: [@STEMintheEarlyYears](https://www.pinterest.com/stemintheearlyyears)
- Explore our website: <https://www.stemintheearlyyears.com>
- Follow us on Instagram: [@stemintheearlyyears](https://www.instagram.com/stemintheearlyyears)
- Follow us on Twitter: [@earlyyearsSTEM](https://twitter.com/earlyyearsSTEM)

We hope our resources will inspire users to explore STEM with young children in a wide range of everyday contexts.



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### THE AWARDS

#### 1) The Findel CASTME Education Award

Presented to the entry that displays an innovative approach to increasing STEM awareness. The awardee will receive a £300 voucher to spend on Philip Harris science equipment or resources as well as an international membership of the ASE for one year.

#### 2) The Findel CASTME Protect Our Planet Award

Presented to a STEM project which focuses on the Sustainable Development Goals such as Climate Change, Responsible Consumption and Clean Water. The awardee will receive a £100 voucher from Findel International.

#### 3) The Findel CASTME Community Award

Presented to a community project focused on mothers, fathers, carers and children and/or on raising awareness of STEM in the community. The awardee will receive a £50 voucher from Findel International.

#### HOW TO ENTER

Entering the CASTME Awards is easy. Simply decide what you want your project to focus on, gather your evidence and produce your report. It really is that easy.

All entries should be submitted to [kathnugent1@gmail.com](mailto:kathnugent1@gmail.com) by 31st October 2021.

The Recipients will be announced in early January 2022 at the Association for Science Education Conference in UK ([ASE.org.uk](http://ASE.org.uk)) during the first day of the conference, which is the International Day.

#### AWARDS CRITERIA

The projects will be judged by a panel of experts using the following criteria:

1. Increasing STEM awareness in the everyday world
2. Improving standards of literacy and numeracy
3. Originality
4. Creativity and inventiveness
5. Practical usage
6. Social relevance
7. Contribution to society
8. Positive effects on gender issues
9. Demonstration of effective project management
10. Clarity and a high standard of presentation, organisation and structure

CASTME and Findel International reserve the right to use any project submissions for marketing and publicity purposes.

Visit [www.castme.online/awards](http://www.castme.online/awards) or email [kathnugent1@gmail.com](mailto:kathnugent1@gmail.com) to find out more

**CASTME links Science, Technology, Engineering and Mathematics (STEM) Educators across the Commonwealth**

**It has a UK-based board of trustees, with regional branches and advisers in the Commonwealth**

**Editor's Note:** For the next edition of this newsletter please send articles to **Jonathan Ling** at:

[j.g.ling@btinternet.com](mailto:j.g.ling@btinternet.com) by 30<sup>th</sup> April 2021

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