

SCHOOLS OUT OF THIS WORLD

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build a space community!

Teacher Handbook

SCHOOLS OUT OF THIS WORLD

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Important Information

Deadline date: 31.01.2019

Email address for final report: philipharrisstemchallenge@findel-international.com

Date of Presentation and Awards Event: 24.02.2019

Location of Presentation and Awards Event: Emirates Golf Club, Emirates Hills 2, Dubai

Welcome

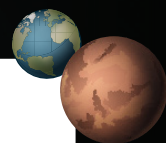
The Philip Harris STEM Challenge is a space-themed 12 week STEM project open to groups of up to 6 students aged between 12 – 14 years old. It has been designed to inspire students to create STEM related solutions by using hands-on learning to create skill development. The information in this handbook is designed to provide guidance for the various elements of the scheme and the different roles required by the students within the project.

Background

Philip Harris is a leading global supplier of science equipment and resources for educational establishments. We can trace our origins back to 1817 when Birmingham-born chemist Philip Harris began expanding his business to offer a more comprehensive range of science equipment alongside chemistry, focusing on the growing demand in schools and colleges.

Philip Harris still retains the values of its founder and has a keen interest in promoting science teaching and learning within the education sector. With this in mind, the Philip Harris STEM Challenge has been created. The objective of the challenge is for students to develop a range of skills within the classroom whilst working as a team to provide problem solving solutions.

By providing a real-life STEM based project, the challenge aims to empower students by gaining project management skills as well as personal development skills which will enhance their team working, creative and innovative skills.



Philip Harris STEM Challenge

The project begins on 28.10.2018 and lasts for approximately 12 working weeks allowing for holidays within the academic timetable. The scheme ends with the Presentation and Awards Event (PAE) where the following elements are marked by a panel of Assessors:

- ✓ A written report, bound and professionally written
- ✓ A 5 minute oral presentation given to all teams
- ✓ An exhibition stand to demonstrate the project visually

The assessment criteria can be found in Appendix 3 at the rear of this booklet.

The following awards will be presented:

- ✓ Best Overall Project
- ✓ Most Innovative Award
- ✓ Pupil's Choice Award

We hope you enjoy the challenge and thank you for your support. If you have any questions during the course of your project, please do not hesitate to get in touch via the Philip Harris STEM Challenge email: philipharrisstemchallenge@findel-international.com.

Role of the Teacher

The teacher is the main point of contact for the challenge within the school and should ideally be the same as named in the registration document.

In this way, you are the overseer and will ensure regular meetings of the student group. You will also be responsible for all the students attending the PAE, acting in locus parentis and organising relevant risk assessments, transportation and paperwork necessary for your own school requirements.

Practically, you will need to ensure the team meets regularly, has access to any facilities that may be needed such as D&T workshops to build models, and access to information within the school.

The roles within the project are varied and flexible and with this in mind, we encourage all team members to be fully involved and work together to complete an award-winning project.



Contact and time commitment:

We request full team attendance at the PAE and approximately one - two hours per week support for the project.

Duty of care:

Philip Harris require that the following is observed for the protection of participating students:

- ✓ The school is responsible to obtain all relevant risk assessments with support from Philip Harris as appropriate and is reminded that teachers are in loco parentis
- ✓ Photographs and other media may be taken during the Philip Harris STEM challenge activities and events. This may be used in promotional materials and online media marketing. The participating school is wholly responsible for obtaining parental permission for the students taking part and must confirm to Philip Harris that all such permissions have been obtained at the start of each activity/event and must give specific details of any student for whom permission has not been obtained or has been declined
- ✓ At all events students will be notified of house rules and informed that under no circumstances are they to leave the venue without written permission from the school. All Health and Safety rules relevant to the programme will be drawn to the attention of and observed by students engaged in any element of the programme
- ✓ It is the responsibility of the school to ensure that their insurances are adequate for the purpose of involvement in the scheme, including cover for out-of-hours risk and any transport arrangement and drivers. All relevant Philip Harris staff possess DBS accreditation
- ✓ No illegal substances, smoking or alcohol are allowed at any time

Philip Harris may send home at any time, a student that in their opinion has ignored a warning or is not behaving satisfactorily. In this event, the school should advise the student's parents or guardians.

Promotion

Promoting the Philip Harris STEM Challenge within your school and community can make for excellent publicity opportunities with local and educational press. Please encourage your team to use blogs and articles in newsletters to promote the excellent work the team will be undertaking.



The Assessment Criteria

The Presentation and Awards Event (PAE) is the culmination of the Philip Harris STEM Challenge where the teams display their projects, present and talk about their experiences in the hope of winning one of the awards. The assessment panel consists of a selection of professionals from a variety of STEM industries. The assessment process will consist of the formal 5 minute presentation, a visit to the stand by the panel to ask questions and the reviewing of the project report. All the projects will be marked and awarded accordingly. The awards are presented as below -

- ✓ Best Overall Project - the team with the highest marks across all categories
- ✓ Most Innovative Project - the best original idea/concept
- ✓ Pupils' Choice Award - the team with the most votes from the students on the day

For the PAE, students are expected to produce a project report, an exhibition display in the form of a stand and a 5 minute presentation. The presentations will be timetabled throughout the day leaving time for all students to visit the other stands.

The assessment process is separated into 8 different criteria which is listed in Appendix 1.

Some elements of these criteria may be unfamiliar to many of the students so they may require assistance.

- ✓ Project report - please advise students on the style and content of the report. The GANTT chart should be evident alongside appendices and diagrams if applicable. The report should include technical information as well as the ideas conceived throughout the project, and the final idea with justification. Check deadlines for submission and check the written aspects of the report, ensuring accurate English and good grammar is used throughout but this should be student led
- ✓ 5 minute presentation - this is a presentation to all the other schools and every pupil should participate. Preparation and practice are key and it is beneficial if the presentation can be made to your senior management team/other pupils prior to the Presentation and Awards Event (PAE)
- ✓ Display stand - this is a visual display of the project and should be clear and understandable



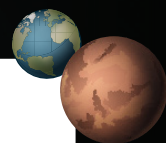
Exhibition Stand

The display stand should tell the story and should not attempt to be a larger version of the project report. Some features of a good project display are:

- ✓ A project title
- ✓ A logical order from left to right across the display panels
- ✓ A clearly identified original brief
- ✓ An indication of the method of approach
- ✓ A clearly described project outcome

Design features:

- ✓ The smallest font should be readable from a distance of around two metres: encourage the team to use colours to make the display more visually interesting
- ✓ Keep to a consistent style of messages in terms of both font and content
- ✓ A picture can replace a thousand words so check to see if graphics can help
- ✓ By all means, use clever visual techniques, but use them for clarity and not as a gimmick
- ✓ Novel techniques can inject fun and can therefore make a complex issue more interesting
- ✓ A table display should relate clearly to the display panel information
- ✓ A person not familiar with the project should be able to take in the displayed information in about a minute and a half and have no need to ask questions to clarify



Project Report writing

The team are expected to produce a professional project report detailing the work undertaken during the challenge. This is an intrinsic part of the project and as such it should be started as early in the project phase as possible and worked on throughout. It should include research, testing and outcomes as well as recording sketches and designs that will improve the report.

The report should be written in a simple, straightforward style and be presented on A4 paper and bound into a convenient booklet.

As this is a professional document, long passages of prose should be avoided as this is not an English essay. Using bullet points to list the important points is acceptable and encouraged, as is the use of annotated diagrams, appendices and splitting the report into suitable titles and headings/sub-headings.

The report should be submitted as per instructions and should be no longer than 40 pages. A few copies should be included on the stand.

The following is guidance on the report:

- ✓ Front cover including team name, school name, logos
- ✓ Acknowledgements
- ✓ Contents page with numbers and reference
- ✓ Team introduction - the team members and teachers involved
- ✓ Project introduction and initial thoughts, ideas
- ✓ Planning, research and testing - the GANTT chart, role allocation, initial research, sources, scientific experiments carried out, modelling and testing
- ✓ Results analysis - scientific data and any issues encountered
- ✓ Recommendations - main proposal
- ✓ Conclusions
- ✓ References
- ✓ Glossary
- ✓ Appendices

The pupils should try to say how their projects relate to the wider world including how some of their ideas might be useful elsewhere.



Appendix 1 – Criteria for the Assessment Process

Each category carries a total **mark of 8** that can be broken down in the following way:

Description	Marking Range
Performance is generally lower than what is expected	0 - 3
Evidence of good techniques/ judgement/ understanding that has been effectively applied throughout	4 - 7
Evidence of exceptional performance	8

There are further examples for each of the 8 categories below:

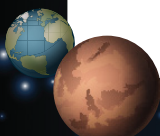
1. Report Writing	
The overall presentation of the report Clarity of written descriptions, spelling and grammar	Quality of illustrations Does it cover the topic brief adequately?
2. Verbal presentation	
Clarity of verbal descriptions. How organised were they? Did all participants speak?	Did the students engage with the assessors? Did the teams display a good knowledge of their brief?
3. Display Stand	
Clarity of message and illustrations (effective summary) How imaginative and engaging were the team?	Effective use of visual aids Did the students engage in the less formal setting?
4. Responding to Questions	
How well do they know and understand what they have been doing?	Do they have ideas beyond what has been said so far? Are they aware of any limitations in their suggestions?
5. Interpretation of Brief and Research	
Brief understood and presented to the panel clearly Appropriate research carried out	Multiple solutions considered Reasons demonstrated for their focus
6. Recommendations and Feasibility	
Sound and realistic solution(s) chosen that could/ would work well in practice Consideration of costs and financial savings	Solution relates to the set brief and team specification Have the team related their findings to the wider world or provided further development suggestions?
7. Project Management (tasks/resources/time)	
The extent to which they are listed, ordered and divided identified tasks	How did they fit the relevant activities into the time frame?
8. General application of STEM within the project	
Are Science, Technology, Engineering and/or Maths present in the project?	Is STEM demonstrated through the understanding and application of solutions?


This is a space-themed notebook template. The background is a dark blue space filled with white stars. A large white rectangle in the center serves as the writing area, with horizontal blue lines. The word "Notes" is written in a blue, sans-serif font at the top left of this area. The corners are decorated with space-related illustrations: a blue and red rocket ship in the top-left, a small green alien in the bottom-left, a satellite in the bottom-right, and the Earth and Mars planets in the top-right.

[illegible]



Notes

[illegible]



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