

Education and Outreach Grant

1. Key details

Project title: BIDE (Be aware of Infectious Disease Epidemic) project in Ghana

Project location: Accra and Nkurakan, Ghana

Project start date: 06/05/2019

Project end date: 10/05/2019

Expected Costs: £1200.00

Maximum we can award: £1000

2. Project details

2.1 Project description

This engagement program aims at imparting knowledge to school-aged children about infectious diseases and how outbreaks occur. Subsequently, the children will be given hands-on experience on how infectious disease scientists respond to disease outbreaks and carry out laboratory tests to identify an outbreak agent. We will also discuss how different types of infectious diseases are spread, and simple ways to prevent their transmission.

The target group are school-aged children, typically within the ages of 13 and 15 years. It is particularly advantageous to educate them to identify risk associated with common infectious diseases as they represent the highest risk group for norovirus and other infection diseases.

2.2 Benefits to professional development

The project will allow me to improve my scientific communication skills by presenting to the public. Also, this would serve as a way of giving back to my community as a Cambridge-Africa sponsored PhD student. This project will be done in collaboration with [REDACTED], who has been involved extensively in such activities with school children in Sierra Leone during and after the Ebola outbreak. Through [REDACTED] mentorship, I will also gain experience with the organisation and execution of such programs.

2.3 Aims/objectives

With this project, we aim to demonstrate how an infectious disease outbreak is diagnosed and managed within a community. more specifically, our aims are

1. To expose the school children to the science of infectious diseases, sparking their scientific curiosity and making conversations about harmful microbes.
2. To empower the young people with the understanding that if they know how infectious diseases spread, they can prevent infections, improving their health and that of their community.
3. To excite young people about science and encourage scientific studies and careers.

2.4 Methodology

With this project, we aim to demonstrate how an infectious disease outbreak is diagnosed and managed within a community. We are doing this using visual aids and hands on practical demonstrations of molecular techniques that are used within a laboratory.

We have created a case-study of an infectious disease outbreak to be used in this project. An outbreak incidence will be discussed with the children, and a step-by-step approach will be used to characterise and identify the infectious agent. This will involve simulated blood sample testing using basic biochemical testing (glucose testing), and how DNA sequence analysis works through use of visual aids. The disease transmission process will then be discussed, as well as the methods used for outbreak containment. Finally, the children will discuss how to disseminate information to the public about outbreaks and reduce fears associated with the disease.

The method of engagement was selected due to its feasibility and has been used extensively in schools in London and Sierra Leone. The format we have chosen is very simple and will provide hands-on experience to the children in handling basic lab equipment and performing lab tests. Alongside these discussions, they will also have the opportunity to communicate directly with scientists.

2.5 Breakdown of costs

| Item: | Cost (£): |
|--|-----------|
| Lego bricks (4-colour combination) | 33.51 |
| Fixed volume pipettes | 210 |
| Microphone prop | 20 |
| Glucose tests | 10 |
| Glucose powder | 5 |
| Universals (plastic) | 45 |
| Red food dye to make up mock blood samples | 6.41 |
| Gloves nitrile | 8 |
| Face masks | 9.99 |
| Disposable gowns | 50 |
| Safety glasses (optional) | 60 |
| Pipette tips | 7.99 |
| Return Flight Ticket to Ghana | 600 |
| Ground Transport | 50 |
| Contingency | 84.1 |
| Total | 1200 |

2.6 Evaluation measures

A pre- and post-session questionnaire on infectious microbes and diseases will be administered to track the success of the activities in transferring knowledge, participant enjoyment, demographics, open feedback comments and scores for each activity. In this way and through periodic contact with the children via their teachers, we can continuously monitor the effect of the programme. It is our hope that this pilot event will establish a yearly event where new groups of children will be engaged, and the previous group will be visited for a short quiz on their previous engagement, awarding prizes for best students.

2.7 Personnel knowledge

All personnel involved in carrying out the project have at least basic knowledge in Microbiology. I am a PhD student studying human norovirus replication and my previous degrees were focused on microbiology, where I employed molecular and biochemical techniques to study microbes. I have previously taught science in Junior high school, hence, I have experience in handling or interacting with the target group. I have also had experience in conducting this project with [REDACTED] and others in London.

██████████ as stated earlier, has a great deal of experience in this event as ██████ has conducted it in London and Sierra Leone.

Volunteers to be recruited in this project will be University students studying microbiology-related subjects. They will, therefore, have basic knowledge about microbiology which will be required for this project.

2.8 Sustainability

A pre- and post-session questionnaire on infectious diseases will be administered to track the success of the activities in transferring knowledge, participant enjoyment, demographics, open feedback comments and scores for each activity. This, coupled with periodic contact with the children via their teachers, can continuously monitor the effect of the programme. We hope to establish a yearly event where new groups of children will be engaged, and the previous group will be visited for a short quiz on their previous engagement, awarding prizes to enable us to measure the impact of the program on a longer term.

Further, to complete this project we will recruit volunteers, mostly Ghanaian university students, studying microbiology-related subjects. These volunteers will be trained ahead of the event so that they can aid in executing the project. Their training will also enable them to conduct further exercises, and expand the program into the future.

2.9 Safety and insurance details

Health and safety issues have been thoroughly considered and we are confident that there are no risks involved in this project. All biological samples to be used in this project are simulated and non-harmful. However, extensive supervision from the organisers, volunteers and teachers present will be ensured throughout the session.