Interim Report

The project is running to target. All milestones for April, May and June have been met. Specifically:

1. **Contact local LA about viability of project.**
   Alison Hooper has contact Paul Williams, Bristol Local Authority Science co-ordinator. Paul joined UWE staff for the visit to the STOP day run by the University of Plymouth. He is finding a suitable school to host the UWE STOP day. Given constraints on school time at the beginning of term and constraints on the university finding student ambassadors before the start of the university term, we foresee that the UWE STOP day should be scheduled to take place in October or possibly early November. This will have a knock-on effect to the Milestones scheduled to take place in September, October and November. I foresee that these will have to be rescheduled for October, November and December respectively.

2. **Visit by University of Plymouth staff to view outreach activity at UWE.**
   Carrie Headlam from the Centre for teaching Mathematics, University of Plymouth visited UWE on 28 April to view a Fun Maths Roadshow in action. Her evaluation report is attached.

   Martin Lavelle and Alison Hooper organised a meeting with Hazel Kendrick at the University of Plymouth to go through the training required to publicise to schools the contents of MMG in a Box. This was also attended by Edward Stevens from the Bath spoke. Martin has since trained a student ambassador, Rebecca Whawell, who has disseminated the MMG in a Box resource through the STOP activity days run by Plymouth University to 20 schools in Devon and Cornwall.

3. **STOP project school visit**
   Four UWE academic staff whose expertise spanned the STEM subjects and Paul Williams from Bristol Local Authority visited Honiton Community College on 9 June. The evaluation report is attached.

UWE academics are now in the process of putting together STEM exhibits and activities to make up the UWE STOP activity. We have held one progress meeting on 29 June and the next meeting is scheduled for 2 August.

Please note that the milestones scheduled for September, October and November may slip by one month each. The reasons are given in point 1 above.
Report on a Visit to a Fun Maths Road Show
28th April 2010

On arriving at Bristol I initially met with a member of the Mathematics staff at UWE, Dr Robert Kelland and four student helpers. Together we discussed the various Fun Maths Roadshow activities and the ways in which the UWE team use them in visits to schools.

I then accompanied them to Fairfield School and joined in with the maths workshop which they ran for a group of about 70 pupils in year 8, as part of the school’s “Maths Week”. This was very successful and engaged the pupils in a variety of problem-solving activities.

The student helpers were crucial to the smooth running of the workshop: they had been trained well and had experience of helping on a number of these workshops. They engaged well with the school pupils, and ensured that this was a positive and enjoyable activity. The materials were well prepared and provided a range of activities which were suitable for the age and abilities of the pupils (this was a large mixed ability group).

The maths staff at the school were very happy with the way in which the workshop had motivated and engaged the pupils. I felt that the afternoon had been successful in providing a challenging, interesting and enriching experience which engaged the vast majority of the pupils.

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Constructing a Coherent STEM Strategy with Schools

Evaluation Report of STOP school visit run by the University of Plymouth, viewed by UWE staff and Bristol Local Authority staff

Staff present:

UWE
- Alison Hooper Project leader (mathematics)
- Darren Reynolds Project co-investigator (science)
- Robert Kelland (mathematics)
- Ben Drew (engineering)

Bristol Local Authority:
- Paul Williams (science co-ordinator)

University of Plymouth:
- Steve Edmonds University of Plymouth STOP manager

The STOP visits organised by the University of Plymouth take place every day over the month of June once university examinations are completed. Steve Edmonds, the STOP co-ordinator, manages this role as well as his other duties as Technical Manager Engineering in the Faculty of Science and Technology. The STOP team comprises Steve Edmonds and 13 students who are studying a variety of STEM subject areas within the University of Plymouth. The day starts at 8.30 when the team loads the minibus with exhibit equipment. They plan to arrive at the school scheduled for that day at approximately 9.30. The STOP visit runs from approximately 10.00-15.00. The STOP programme has been running in this format since 2000. There are two possible formats for the day, informal or formal.

**Formal format:** There are 9 exhibit activities and set groups of 6-7 pupils spend 20 minutes at each activity before moving on to the next activity. This format can cope with 60 pupils

**Informal activity:** A class of approx 30 students is free to wander between exhibits and investigate what takes their interest. The activity lasts one period (normally 45 mins). This activity is organised to fit in with the school day and disrupts one class at most for each pupil cohort. The format can cope with one year group (120-150 pupils approx.)

The STOP visit took place on 9 June at Honiton Community College. The visiting staff (UWE staff and Paul Williams) arrived at 10.30 and stayed until 12.30. During that time we viewed two informal STOP activity sessions. One was already in action when we arrived. Two Science teachers from Honiton Community College were with the STOP activity all day – they were the link co-ordinators for the school. The visiting staff wandered freely during the STOP activity, talking with Steve Edmonds, Plymouth University student exhibitors, school staff and occasionally pupils. We endeavoured to keep a low profile so that the pupils could enjoy a normal STOP activity session.

The STOP exhibits were:

**SegWay:** Riding the segway between cones, using balance and movement to steer. Segway which uses a gyroscopic mechanism to steer, was developed by BAeSystems for missile flight. Very popular with pupils but unfortunately not working on visit.

**Bubbles:** Make a giant bubble to enclose a person, bubble shapes with different metal wire shapes. Applications to optimisation and symmetry in nature. Pupils encouraged to make bubble shapes.
Diving equipment: Discuss equipment and materials that divers use. Pupils encouraged to try on a diving suit and be blown up like a balloon.

Rock pool: Marine biologists constructed a mini rock pools and discussed the rock pool environment

Body Matters: Different exhibits to show human anatomy, measure body/mass index, grip strength etc. Students encouraged to play with equipment.

Robots: A student had brought along a robot which he himself had programmed to manoeuvre according to a set of input instructions. Pupils encouraged to get robot to do several manoeuvres.

Engineering exhibits: Various scientific toys – gravity effects on a ball filled with liquid, chaotic magnets, metal with memory, gyroscopes, parabolic mirrors. Pupils encouraged to play and then seek a scientific explanation for the weird effects.

Magnetic Sticks and Balls – construct the skeleton of a building using cube shapes with diagonal struts. Shows ideas behind construction. This can be set up as a competition to see who can build the highest/strongest structure.

Alison Hooper spoke with student assistant Rebecca Whawell (studying BSc Mathematics with Education) whose task is to publicise to mathematics teaching staff the existence of the MMG in a Box, which has been sent to every school in the England and Wales and to explain how best to use its contents. Rebecca was meeting the teachers in the afternoon. She had made a record of what she should say and what to concentrate on (such as the bonus folder). This was her second school visit for MMG in a Box. The work is preparation for her final year project which will look at take-up of MMG in a Box in schools.

The class came into the hall and were given a brief introduction by Steve Edmonds. They then wandered at will for the next 30-40 minutes, stopping at what interested them. The student helpers, who are studying technical degrees such as mathematics and engineering disciplines, were very good. They mainly waited for the pupils to show some interest and did their best to encourage the pupils to join in. Steve Edmonds and the student assistants were all very enthusiastic and friendly. The emphasis was on the pupils having fun so that they see STEM subjects as something enjoyable. This was helped by the fact that pupils had a free choice. The organising teachers at the school were very supportive of the event. There was a good relationship between them and the co-ordinator, Steve Edmonds. We liked the fact that STOP fitted in with the school day. A class only missed one timetabled lesson to attend STOP and then returned to their lessons. From speaking with some of the pupils it seems that pupils were not briefed beforehand about the day. (This may not be the case) The teachers also said that there would be no follow-up in the classroom – the event was seen primarily as an activity to show pupils that STEM subjects could be fun and interesting. At the end of the 40 minute lesson, Steve called everyone together and ran a small quiz for which prizes were handed out. At this stage, Steve was able to explain the wider impact of some of the exhibits on everyday life. We felt that this get-together session which was run quite informally, worked very well.

The consensus of the visiting group was that the STOP event we viewed seemed to be successful given that the purpose was to enthuse students with regard to STEM subjects. We felt that we could run a similar activity in the Bristol area with exhibits either similar to those above or different exhibits which reflected the strengths of STEM activity within UWE. The purpose of the UWE STOP activity would have to be agreed so that the schools were aware of what to expect. The aims could entail the following:

1. Inspire pupils with respect to STEM subjects
2. Encourage pupils to aspire to university to study STEM subjects.
3. Enhance the school STEM curriculum
4. Promote careers that exist with STEM
The STOP activity at Honiton fulfilled the first two aims above and did not address the third or fourth aim. It may be that there is insufficient time to address all of the above aims in one STOP visit.

We wish to thank Steve Edmonds and his team and the staff at Honiton Community School for making us feel so welcome and answering our questions. We hope we are able to put together an event which is as successful as the one we observed.