

MORE MATHS GRADS

A Project funded by the Higher Education
Funding Council (HEFCE)

INTERIM 5 EVALUATION REPORT

IMPACT

Final Draft

**Prepared by Carol Flavin
Flavin Project Innovations Ltd**

**Flavin Project Innovations Ltd
42 Clifton Road
Manor Heath
Halifax
HX3 0BT**

Mobile: 00 44 (0) 7957870260

Email: Carol.Flavin@btinternet.com

Web: www.flavinprojects.co.uk



flavin project innovations ltd

managing innovation, management services
research, development and evaluation

July 2009

Contents

Executive Summary	3
1. Introduction to the Report	4
1.1 Introduction to the Evaluation	4
1.2 The Evaluation Process.....	4
1.3 Evaluation Activity	4
1.4 Evaluation Methods	4
2. Findings from the Evaluation.....	6
2.1 Changes to the delivery of the MMG Project.....	6
2.2 Progress from the previous evaluation	6
2.3 Internal Evaluation	6
2.3.1 Introduction	6
2.3.2 How Internal Evaluation has been used	6
2.4 <i>User Perception Survey Analysis.....</i>	<i>9</i>
2.4.1 Introduction to the Survey.....	9
2.4.2 Careers Using Maths (Careers Theme).....	10
2.4.3 Learning About the Subject of Maths (Subject Theme).....	11
2.4.4 Supporting Maths Teachers (Teacher Theme)	12
2.4.5 Benefits to the Organisation.....	12
2.4.6 Benefits to their Students	13
2.5 <i>Student Survey Analysis.....</i>	<i>14</i>
2.5.1 Introduction to the Survey.....	14
2.5.2 Information About The Responders	14
2.5.3 Maths Activities.....	15
2.5.4 Helped With My Maths.....	16
2.5.5 Understanding Maths Is Useful	17
2.5.6 Most Useful Maths Activity	18
2.5.7 Repeat Activities?	18
2.5.8 Learned Something Important.....	19
3. Conclusions	20
Annex 1 - Responses to the User Perception Survey.....	24
Annex 2 – Responses to the Student Survey Analysis.....	37
Annex 3 - Regional Internal Evaluation Reports.....	56

Executive Summary

The findings from this More Maths Grads Project (MMG) impact evaluation are based on the responses to two surveys. The first was a **User Perception Survey** with project partners. Responders represented many of the schools and colleges that the project has worked with in each of the three delivery regions (**26** in total). The second was an online survey with students in receipt of the MMG maths activities, events and programmes. **668** students completed the survey representing **31%** of the **2142** who had received maths interventions during March – mid June 09. A total of **35** organisations were represented through these responses. This was a good response rate and reflects the positive relationships that the regions have developed with the schools they have worked with. This summary of the evaluation report has focused on three out of the four main themes of the project (the fourth is HE based and will be covered in the final report).

Careers Theme

91% of partners who had used careers materials, **92%** of those who used the maths careers website, **100%** of those who went to careers fairs and **87.5%** of those who attended careers workshops considered them appropriate or very appropriate.

As a result of the MMG maths related activities, **44%** of students agreed or strongly agreed that they understand more about the maths related careers that are available, **37%** that they that they are now more interested in studying maths or a maths related subject to a higher level as a result of the activities, **46%** that they now have a better understanding about why maths will be more useful to them in the future and **31%** that they are seriously thinking about taking a maths degree at university. **27%** of students considered that the maths, events and programmes that they did helped them make decisions about their future study of maths subjects.

Student Theme

100% of partners who attended maths events and activities, **93%** of those who attended visits to universities, **100%** of responders supported by the ambassador scheme and **89%** of those in receipt of information regarding further maths study considered them appropriate or very appropriate.

43% of students considered the maths, events and programmes that they did changed their views about maths in a positive way. **44%** of students said 'yes' they are going to continue studying maths or maths related subjects past their current level of study although **25%** said 'yes' they would have been doing this without taking part in the activities, events and programmes they have done. **62%** of students agreed or strongly agreed that they had learned some new and useful things about maths, **49%** that they had gained new maths skills because of the activities and **52%** that they knew more about maths than they did before. **46%** agreed or strongly agreed that they understand maths better than they did, **37%** that they now enjoy maths more than they used to and **36%** that they are more interested in maths than they used to be.

Teachers Theme

91% of partners agreed or strongly agreed that their teachers were supported by the project, **91%** that MMG resources had helped enrich and enhance their students in maths related disciplines, **89%** that the maths initiatives had helped raise student aspirations relating to mathematical sciences and **72%** that the maths initiatives had helped raise attainment levels in mathematical sciences.

In **summary**, the partners provided very positive responses to all three themes for this project: careers, subject and teachers. The students' responses in some ways were less positive. It is clear from the internal evaluation summaries provided by the Project Officers, that the activities undertaken by the students were well received at the time of undertaking them. The purpose of this survey was to ask the students to reflect on what impact the activities had had on them. Looking at the age and school year range of responders (46% years 7 & 8) it is possible to infer that some of them were too early in the education cycle to have made clear decisions about their future and their continued study of maths related subjects.

On a positive note, the project activities have helped many of them with their maths; they have learned new and useful things (62%) and know more about maths than they did before (52%). They have gained new maths skills (49%), and understand maths better than they did before. Some now enjoy maths more than they used to (37%) and are more interested in maths than they used to be (36%).

"The activities were real life that motivated my learners to take maths seriously. For example, making travel decisions from financial perspectives, applying maths to government projects to ensure safety of citizens, to health sciences and research for cure of diseases, to religious activities, various employments and government plans for the future. My learners were able to recheck their views regarding use of maths for their future career and job prospects." Brook House Sixth Form College, London

1. Introduction to the Report

1.1 Introduction to the Evaluation

This report is the fifth interim evaluation of the More Maths Grads (MMG) Project, undertaken by the External Evaluators, Flavin Project Innovations Ltd (FPI Ltd).

The More Maths Grads Project aims to widen participation within mathematical sciences from groups of learners who have not previously been well represented in Higher Education and to increase the supply of mathematical and science graduates in England to play a key role in meeting the demands of industry, commerce and education.

The Project is based at the University of Birmingham and the lead partner is the Higher Education Academy Subject Centre for Maths, Stats and OR (MSOR Network). The project is being piloted in three regions: West Midlands, Yorkshire and the Humber, and London. This pilot project will be working with HEIs, colleges and schools in the pilot regions, and is supported by a wide range of professional bodies and organisations representing and covering different aspects of the mathematical and sciences disciplines.

The More Maths Grads (MMG) Project was developed following a wide consultation among the mathematical sciences community and a six month exploratory investigation funded by HEFCE. MMG is funded by the Higher Education Funding Council for England as part of the Strategic Development Fund ('widening participation' agenda).

1.2 The Evaluation Process

The theme of this evaluation is the impact of the More Maths Grads Project. This evaluation relates to the period from December 2008 – June 2009.

1.3 Evaluation Activity

This report is the second of two interim evaluations assessing the impact of the project on the recipients of the activities of three of the four themes of the MMG Project (careers, student and teacher). The HE Curriculum theme will be considered in the final report. The evaluations have focused on the impact of outcomes and outputs of the project as well as the benefits. These aspects of the evaluation have focused on feedback from target groups, target sectors and recipients. The impact evaluation has been undertaken using a range of methods including on-line tools, and surveys. The evaluator has reviewed the outcomes of monitoring visits undertaken by project management. The tools used to undertake the evaluation have provided both quantitative and qualitative data for analysis purposes, although the emphasis is on qualitative feedback. The evaluations have been targeted at participants or users and institutions and organisations involved in delivering, trialling or assessing all aspects of the project.

1.4 Evaluation Methods

Evaluation methods undertaken include:-

- a. Feedback using surveys and feedback mechanisms from target groups (online Student Survey and a User Perception Survey with partner organisations)
- b. Face-to-face interviews
- c. Observation and sampling by invitation from regional teams.

- d. Attendance at dissemination events.
- e. Meeting attendance and regular updates.
- f. Analysis, monitoring and support.
- g. Internal Project evaluation reflections, based on information provided by regional teams.

Final Draft

2. Findings from the Evaluation

2.1 Changes to the delivery of the MMG Project

The evaluators have brought together two impact surveys in this report: one focusing on the perceptions of the project partner organisations and the other on the impact that the activities of the project have had on participants (students).

The original intention was to undertake the partner survey in the autumn, but the delivery of the project has now been modified to merge with the requirements of the new HEFCE National STEM Programme, which starts in early autumn. As a result, the delivery aspects of the MMG Project will largely cease at the end of the summer term, and direct contact with both students and partner organisations under the banner of MMG (as opposed to STEM or Science, Technology, Engineering and Maths) will be substantially reduced. This would have created difficulties in making meaningful contact for the purpose of evaluation during the autumn term.

2.2 Progress from the previous evaluation

The Project Director provided a detailed progress report to the project funders HEFCE and the Executive Group in May 2009. The evaluator has undertaken a number of monitoring and review process in the last six months, and has made the decision to focus on the two impact surveys (**Annex 1 & 2**) for the findings of this report, rather than duplicate information provided by the Project Director.

2.3 Internal Evaluation

2.3.1 Introduction

The Project Officers have been undertaking extensive and regular internal evaluation of their activities at the time of delivering them, and these have been inputted into a database. The reports from these internal evaluations will be provided as part of the final report to HEFCE in autumn 2009. Sample reports from this database have been made available to the evaluator.

2.3.2 How Internal Evaluation has been used

The Project Officers provided short reports to the evaluator explaining how the internal evaluation reports from the database has supported the decision making processes within each of the regions, particularly relating to:

- Successful activities, events and programmes
- Appropriate and valuable teaching and delivery resources
- Appropriate and reusable careers resources

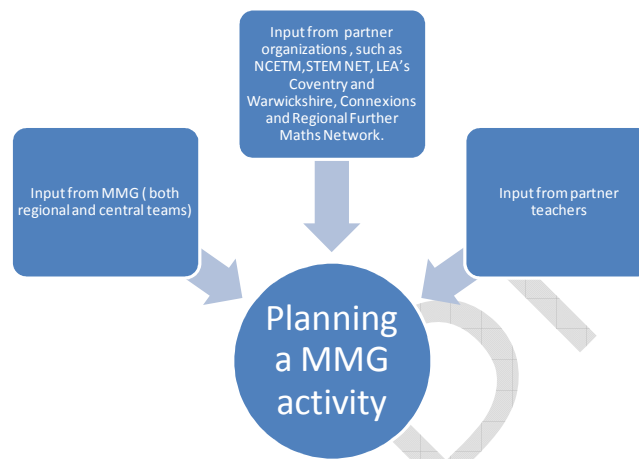
Each of these reports enlarged on how internal evaluation supported or reinforced their delivery of the MMG Project outputs and outcomes. They also explained any changes or modifications made to their delivery of the MMG Project as a direct result of the internal evaluation.

"Throughout the process of internal evaluation, a key focus was building on the delivery of events that proved to be suitable for all audiences – we quickly established a few of our activities were in more demand than others on offer in our original menu of activities." London

"Data summaries have been of most use when analyzing our larger events such as Maths at Work. It is helpful to have an overview, because sometimes one or two comments from particular pupils can give a certain impression, whereas the data shows that the vast majority of pupils thought something different." Yorkshire and Humberside

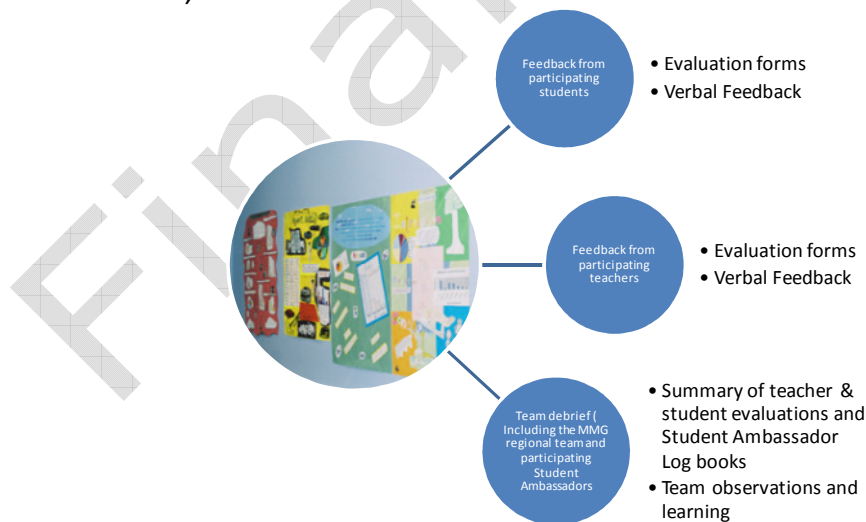
West Midlands provided the following diagrams:-

"The planning of more maths grads West Midlands is done very carefully according to the requirements of the region and participating schools and organizations. The following chart summarizes the planning phase of MMG West Midland activities;



Evaluation Strategy:

After the activity has been undertaken the internal evaluation process is summarized below;



The full text from these reports has been incorporated as **Annex 3** to this report.

The bid to HEFCE made passing mention (p26) that there would be a 'control' school in the West Midland to facilitate comparison. This school is the Bluecoats, and as none of the students completed the online student survey, this makes meaningful comparison in this report difficult. The evaluator has recommended

that the information relating to the control school be used by the WM Project Officers in the autumn making use of the internal evaluation database. This would then take place at a time when the delivery has ceased and the Project Officers will have more time to design the reports.

Final Draft

2.4 User Perception Survey Analysis

2.4.1 Introduction to the Survey

A User Perception Survey with MMG Partner Schools and Colleges was undertaken in April – Mid June 2009. This was provided in either paper or locked Word document format by the evaluators. The Project Officers were asked to contact the appropriate representatives on behalf of the evaluators.

A total of **26** organisations responded – **10** from the West Midlands, **8** from Yorkshire and Humberside and **8** from London. The analysis of the survey, including a list of responders can be found in **Annex 1**. The original target was 7 from each region.

The focus of the survey was the original bid to HEFCE outlining the main outward facing activities of the project, including 'careers using maths,' 'learning about the subject of maths,' and 'supporting your maths teachers'. In addition, responders were asked to assess benefits of involvement with the project on their organisation and the students.

Target audience was at least one representative from the main partner schools and colleges worked with by each of the three delivery regions (a minimum of seven per region).

The explanatory text of the survey included the following:

"As a recipient of some or all of activities and events delivered by the MMG Project, we are asking for your organisations' perceptions of what has taken place and what your organisation has taken away from these activities. Please answer in a way that reflects the views of your organisation relating to the impact that the project has had on the way that you deliver mathematical science subjects."

Note: The evaluators have worked with numerous schools over the last 10 years, and are fully aware of the problems involved in persuading teachers (and as a consequence their students) to spend time completing evaluations during their busy time of year, when they are already overloaded with examinations. The Project Officers should be congratulated on getting so many surveys (both partner and student) completed. This success reflects the good relationships that the regions have with their schools.

Responses To The Three MMG Themes

It should be noted that the responders were specifically asked to answer the sections that were relevant to the areas of the project that their organisation had been involved with. The list below indicates how many of the responders undertook each of the different activities under the three main project themes. The analysis in Annex 1 contains graphical representation of these responses.

1. Careers Theme (refer 2.4.2)

Activities	No of responses (out of 26)	Percentage Number responses
Careers materials	22	86%
Careers website	12	46%
Careers Fairs	12	46%

Careers workshops and employer talks	8	31%
--------------------------------------	---	-----

2. Subject Theme (refer 2.4.3)

Activities	No of responses (out of 26)	Percentage Number responses
Maths events and activities	18	78%
Visits to universities	14	54%
Ambassador schemes	12	46%
Further maths study	9	35%

3. Teachers Theme (refer 2.4.4)

Activities	No of responses (out of 26)	Percentage Number responses
Support	22	85%
Enrichment to students	22	85%
Raising student aspirations	21	81%
Raising student attainment	25	96%

4. Benefits (refer 2.4.5)

	No of responses (out of 26)	Percentage Number responses
Benefits - Organisational	26	100%
Benefits - Students	25	96%

2.4.2 Careers Using Maths (Careers Theme)

Responders were asked whether their organisation / students had been in receipt of or used careers materials, used the careers website, attended careers fairs and attended careers workshops and employers talks. If the response was 'yes', they were asked to consider how appropriate they were to their needs.

a. Careers Materials

22 (85%) said yes, that they were in receipt of copies of materials about careers in maths such as posters, brochures, leaflets and guides made available by the MMG Project to the organisation and their students. Of these, 50% considered them very appropriate, 41% appropriate and 9% OK.

b. Careers Website

12 (46%) said yes, that they had used the information made available on the maths careers website (www.mathscareers.org.uk) telling them or their students about potential careers, using maths. Of these, 50% considered them very appropriate, 42% appropriate and 8% OK.

c. Careers Fairs

12 (46%) said yes, that careers information had been made available first hand through careers fairs, talks and exhibits and been used by their students. Of these, 50% considered the information provided very appropriate, and 50% appropriate.

d. Careers Workshops and Employers Talks.

8 (31%) said yes, that their students had attended careers workshops and talks by employers about the importance of maths in the workplace. Of these 62.5%

considered that the workshops and activities were appropriate to the needs of their students, 25% appropriate, and 12.5% OK.

e. Comments (careers)

The following are a sample of the comments made by the responders about the careers activities and events that they went through with the MMG Project:

"The 'My Dream Job' video was enjoyed by all" Plashet School, London

"Students who attended the WB Milne Lecture gained useful information as a result and learned about the varying careers available to them as a result of being motivated by Maths and being qualified in this subject area" Grange Technology College, Yorkshire and Humberside

"Very valuable resources, which, although we've not been able to make full use of, we will in the future." Sidney Stringer School, West Midlands

2.4.3 Learning About the Subject of Maths (Subject Theme)

Responders were asked whether their organisation / students had been in receipt MMG maths activities for their students, in addition to their normal lessons. If the response was 'yes', they were asked to consider how appropriate they were to their needs.

a. Maths Events and Activities in Schools

18 (78%) said yes, that they had attended maths workshops, and other programmes, activities and events. Of these, 78% considered them very appropriate and 22% appropriate.

b. Visits to Universities

14 (54%) said yes, that they had attended visits to universities designed to provide information about higher maths and others subjects. Of these, 50% considered the visits appropriate to the needs of their students, 43% appropriate and 7% OK.

c. Ambassador Schemes

12 (46%) said yes, their students had had access to student ambassadors who supported the maths activities in workshops or in the classroom. 75% considered the Ambassadors support very appropriate and 25% appropriate.

d. Further Maths Study

9 (35%) said yes, that information had been provided about studying Further Maths at A and AS level. Of the ones who said yes, that their students had received this information, 44.5% considered it very appropriate, 44.5% appropriate and 11% OK.

Comments (subject)

The following are a sample of the comments made by the responders about the learning about the subject of maths activities and events that they went through with the MMG Project:

"The Fun Roadshow in the school hall was excellent, as were the classroom based visits on mathematical trickery + paper imagination" Bruntcliffe School, Yorkshire and Humberside

"Year 9 students at our school received an hour long presentation by the MMG project on the importance of mathematics in our lives and how it can improve chances of getting jobs for them in today's competitive world. The presentation enthused pupils to aim for a better grade in Mathematics in GCSE and thus chose Mathematics as a core subject in A level. They

spoke highly of the presentation and liked it very much” Loxford School of Science and Technology, London

“Ambassadors in school have been extremely useful and helpful in classrooms, whilst also enabling them to gain experience of the school environment. They have also made a contribution to assisting students in understanding the place of mathematics in university studies and beyond.” Sidney Stringer School, West Midlands

2.4.4 Supporting Maths Teachers (Teacher Theme)

Responders were asked to consider the potential impacts that the MMG Project may have had on their maths teachers and their work with their students, and whether these impacts had been achieved.

a. Support to Teachers

Responders were asked to say whether the activities of the MMG Project had contributed to the development of their teacher’s enjoyment, confidence and knowledge of mathematics and its application, so that they could help stimulate interest in further study of mathematics in their students. 22 out of the 26 (85%) responded. 11 (50%) strongly agreed with the statement, 9 (41%) agreed and 2 (9%) gave a neutral response.

b. Enrichment and Enhancement for Students

Responders were asked to say whether the resources provided by MMG have helped to enrich, enhance and support the work of their teachers with their students, in maths related disciplines. 22 out of the 26 (85%) responded. 9 (41%) strongly agreed, 11 (50%) agreed and 2 (9%) gave a neutral response.

c. Raising Student Aspirations

Responders were asked to say whether the MMG maths initiatives had helped their teachers raise student aspirations relating to mathematical sciences. 21 out of 26 (81%) responded. 7 (33%) strongly agreed, 11 (53%) agreed, and 3 (14%) gave a neutral response.

d. Raising Attainment Levels

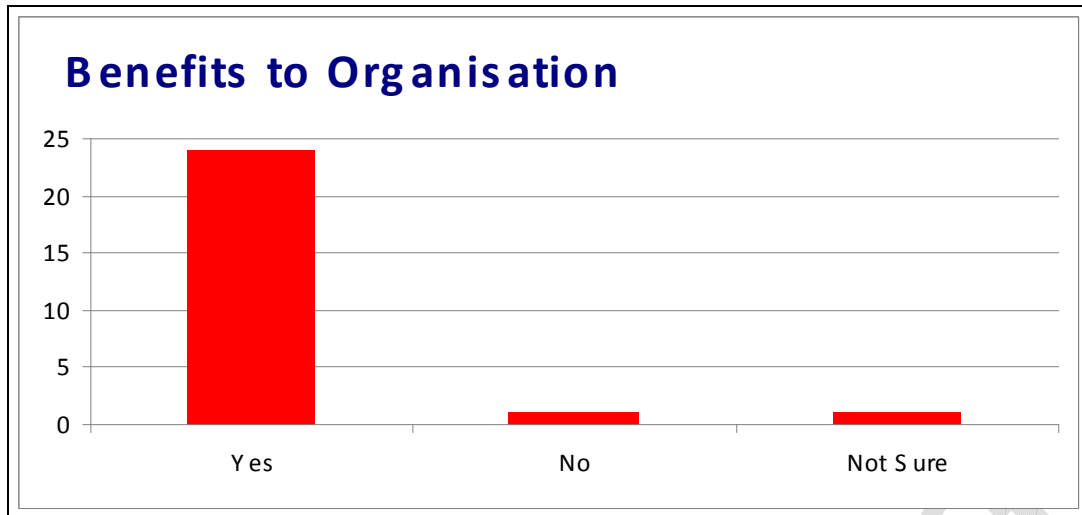
Responders were asked to say whether the MMG maths initiatives had helped your teachers raise attainment levels in mathematical sciences. 25 out of 26 (96%) responded. 4 (16%) strongly agreed, 14 (56%) agreed, and 7 (28%) gave a neutral response.

Comments (teachers)

“My learners are much more motivated than before the project. They also now understand the thinking of the government and employers for the future. My colleagues and I want the initiative again by June or early September because this is making a positive impact on my learners” Brook House Sixth Form College, London

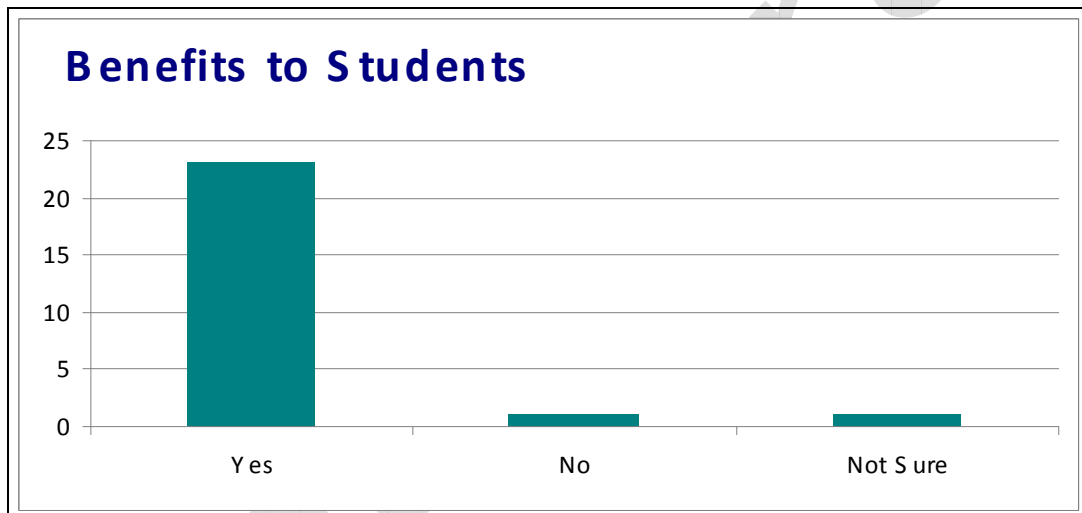
2.4.5 Benefits to the Organisation

Responders were asked whether they considered that their **organisation** had benefited from activities, events and programmes provided by the More Maths Grads Project. All 26 (100%) responded. 24 (92%) said yes, 1 (4%) said no and 1 (4%) said not sure.



2.4.6 Benefits to their Students

Responders were asked whether they considered that their **students** had benefited from activities, events and programmes undertaken with the More Maths Grads Project. 25 (96%) responded. 23 (92%) said yes, 1 (4%) said no and 1 (4%) said not sure.



Comments (overall)

"We were very grateful to have been involved in the programme and hope we may continue to benefit in the future" Plashet School, London

"I have been impressed by the range of activities planned and the enthusiastic nature of the staff based at Leeds University. Also the support and information provided to students during each activity" Grange Technology College, Yorkshire and Humberside

".....On a more personal note, having the opportunity to team teach with one of the MMG Co-ordinators has certainly helped me to appreciate the importance of using of sharing the appropriate language of maths and not limiting myself to just the Curriculum at any stage – it has helped me as a teacher to ensure that my students continue to get to see how that maths all 'joins up'." President Kennedy School, West Midlands

2.5 Student Survey Analysis

2.5.1 Introduction to the Survey

An online survey was made available on the Maths Careers website from March – mid June 2009. This target for this survey was students who had undertaken activities with the three MMG regions during this time.

The MMG Project Officers were asked to get a minimum of **25%** of the students that they had been working with to complete the survey either online or by paper. The paper versions were subsequently inputted onto the online survey.

The three regions worked with **2142** students during this time and a total of **668** students responded to the survey. This gave a response rate of **31%**.

Full analysis of the survey can be found in **Annex 2**.

The focus of the survey was to provide the evaluators the opportunity to consider the impact of the MMG Project on the students who had been provided with activities, events and programmes. This is a sample of the overall number of students who have undertaken MMG maths activities during March – mid June 2009. The survey is intended to stand for students who have had time to reflect on what they have done.

Numbers of responders (by region)

- West Midlands provided **233** responders, **35%** of the total responders and **25.8%** of the **900** students that they had worked with during this period
- Yorkshire and Humberside provided **235** responders, **35%** of the total responders and **23.4%** of the **1005** students that they had worked with during this period
- London provided **200** responders, **30%** of the total responders and **84.3%** of the **237** students that they had worked with during this period

2.5.2 Information About The Responders

School Year:

Year 7 = 31%

Year 8 = 14.5%

Year 9 = 36%

Year 10 = 11.5%

Year 11 = .5%

Year 12 = 2%

Year 13 = 3%

Adult Returner = 1%

Gender

Male = 44%

Female = 56%

Ethnicity

The paper version of the student survey was restricted to 2 sides of A4. This meant that there was insufficient room to include an ethnicity list for this question. The table found with **Annex 2** section 5 is a good indication of the wide range of ethnic

backgrounds that have been the focus of this project. It also indicates that there is some confusion about how ethnicity is formally categorised amongst the responders.

Qualifications currently studied

The majority of the responders were studying GCSE's, with a small number studying A and AS Level. 38% said that they were not studying any maths qualifications. Most of those saying they were not studying a maths qualification were in years 7 & 8.

2.5.3 Maths Activities

Maths Activities And The Responders:-

a. Did the maths activities, events and programmes that you did, change your views about maths in a positive way?

Yes = 43%

No = 18%

Not sure = 39%

331 responded with comments. The top five were:-

1. Fun x 73

"Because it was weird, but showed the fun in maths."

"I enjoyed the problems that we had to solve, it shows that maths can also be kind of fun!"

2. Learned more and understand about uses for maths x 35

"Learned that maths can be used for more things than I thought"

"maths is important, not geeky"

3. Helped with maths x 25

"Helped me to be patient in problem solving"

4. Interesting x 15

"There are a lot of interesting things in maths."

5. Always liked or think positively about maths x 13

"It was enjoyable, but I liked maths to start with!"

b. Did the maths activities, events and programmes help you to make decisions about your future study of maths subjects?

Yes = 27%

No = 31%

Not sure = 42%

260 responded with comments. There were a number of negative or not sure responses, and many just listed what activities they had done rather than respond directly to the statement. Most of those attending the activities were from years 7 – 9, so for many of them, their future is currently focused on GCSE's and not beyond that particular stage in their education.

Positive Responses

1. Already know what they want to do x 23

"I already had in mind what I wanted to do, but it didn't change me."

"I was definitely going to do maths anyway"

2. Considering studying maths further x 10

"I want to find out more about studying maths or engineering"

"It made me want to go further in maths education."

3. Want to be a Doctor x 3

Negative or Not Sure

1. Don't know what they want to do or not sure what they want to do in the future
x 36

"My future is still a long way away."

"Not sure to be honest."

2. Didn't help to make a decision x 10

c. Are you going to continue studying maths or maths related subjects past your current level of study (e.g AS or A Level or degree?)

Yes = 44%

No = 15%

Not sure = 41%

Responders were asked if, yes, what will you do?

- A Level x 53
- GCSE x 40
- Degree x 17
- AS Level x 14
- A Level and Degree x 8
- GCSE, AS and A Level maths x 5
- Architecture x 3
- AS and A levels x 3
- What it takes to be a Teacher x 2
- AS Level Further Maths x 1
- What it takes to be a Doctor x 1

d. Would you have been doing this without taking part in the activities, events and programmes you have done?

Yes = 25%

No = 24%

Not sure = 51%

2.5.4 Helped With My Maths

a. I learned some new and useful things about maths

Strongly agree = 15%

Agree = 47%

Neutral = 28%

Disagree = 6%

Strongly disagree = 4%

b. I have gained new maths skills because of the activities

Strongly agree = 13%

Agree = 36%

Neutral = 34%

Disagree = 13%

Strongly disagree = 4%

c. I know more about maths than I did before

Strongly agree = 15%

Agree = 37%

Neutral = 34%
 Disagree = 10%
 Strongly disagree = 4%

2.5.5 Changed How I Think About Maths

a. I understand maths better than I did

Strongly agree = 11%
 Agree = 35%
 Neutral = 37%
 Disagree = 13%
 Strongly disagree = 4%

b. I now enjoy maths more than I used to

Strongly agree = 12%
 Agree = 25%
 Neutral = 38%
 Disagree = 17%
 Strongly disagree = 8%

c. I am more interested in maths than I used to be

Strongly agree = 10%
 Agree = 26%
 Neutral = 40%
 Disagree = 18%
 Strongly disagree = 6%

2.5.5 Understanding Maths Is Useful

a. I understand more about the maths related careers that are available

Strongly agree = 10%
 Agree = 27%
 Neutral = 43%
 Disagree = 15%
 Strongly disagree = 5%

b. I am now more interested in studying maths or a maths related subject to a higher level

Strongly agree = 14%
 Agree = 32%
 Neutral = 45%
 Disagree = 6%
 Strongly disagree = 3%

c. I now have a better understanding about why maths will be useful to me in the future

Strongly agree = 14%
 Agree = 32%
 Neutral = 45%
 Disagree = 6%
 Strongly disagree = 3%

Note: The above statement (11c) was in a slightly different format on the paper version to the other statements, and there was some concern amongst the Project Officers that this set of responses may not accurately reflect the views of all students.

d. I am thinking seriously about taking a maths degree at university

Strongly agree = 11%
 Agree = 20%
 Neutral = 43%
 Disagree = 17%
 Strongly disagree = 9%

2.5.6 Most Useful Maths Activity

433 responders made comments. The 5 main areas that provided consistency in the responses are listed below.

Positive Responses

Making 3 D shapes and cubes x 60

"The cube because it made me think a lot about the angles and what to put where."

Magic cards and Magic number squares x 50

Learning about new areas x 30

"Learning about maths in music technology."

"When we were told about the cancer cells and how maths is related to them."

Extra help on revision and support x 23

"The lecture was very useful and it helped me understand a lot about maths and how we can use in later in life."

Algebra x 17

"The algebra and the translation, rotation, reflection."

"The algebra formulas - how they work with any number."

Negative Responses

Don't know or didn't do anything x 14

Not sure x 14

None x 13

"None - the maths was terrible."

Nothing x 11

Can't remember x 7

2.5.7 Repeat Activities?

Are there any of these activities that you would like to do again?

Yes = 47%

No = 53%

271 responders made comments. The items listed below are the **5** most significant ones.

- Making 3 D shapes, cubes etc x 62
- Card tricks and maths trickery x 38
- Learning about shapes and boxes x 34
- Algebra x 16
- Helping out, explaining and support x 12

Positive Responses

All of it or everything x 27

Negative Responses

'None' x 51

Didn't do any – don't know x 18

Not sure x 13

Can't remember x 7

2.5.8 Learned Something Important

Tell us about something important that you learned from the extra maths activities that you did (if anything)

278 responded to this statement. A disappointingly high proportion just listed what they had done rather than provide information about what they had learned. This may reflect the fact that the majority of respondents were years 7 -9, and therefore unlikely to be able to take a more thoughtful approach to what they have been doing. The sections below reflect the main areas of comment. Those with a * came up a number of times.

Positive Responses

Understanding how to do maths

"I learned not to just rush into things, but take time to look at them methodically."

"It is easier to look at maths when you break it down e.g. algebra."

"Rotation, translation and reflection questions. ""*

Maths in the real world

"About the job opportunities using maths."

"That maths is used everywhere""*

"About how maths is used for hustling."

Personal effect on individuals of doing the activities

"It has boosted my confidence"

"That maths is more interesting than I used to think."

"Everything wooooh, Thankyou!"

How maths is useful

*"How maths can link into science, and have cures for illnesses such as cancer."**

"It confirmed Maths can be useful to solve practical problems."

Problem Solving

"Becoming more open to different methods of solving a problem, not just with Maths."

"Learned to be more patient at problem solving. ""*

Negative Responses

Nothing x 19

"Nothing important, it put me off maths."

Can't remember x 2

3. Conclusions

The More Maths Project has undertaken two full academic years of activities with partner schools and colleges. The two impact surveys with partners (User Perception Survey) and students (online Student Survey) were designed to assess the impact of the project after the event and at a point when responders had had an opportunity to reflect on what had taken place.

The executive summary indicates the breakdown of responses under the three main themes of the project: careers, subject and teachers.

The partners provided a positive response relating to **careers** materials, maths careers website, the careers fairs and the careers workshops (with employers).

"The activities were real life that motivated my learners to take maths seriously. For example, making travel decisions from financial perspectives, applying maths to government projects to ensure safety of citizens, to health sciences and research for cure of diseases, to religious activities, various employments and government plans for the future. My learners were able to recheck their views regarding use of maths for their future career and job prospects." Brook House Sixth Form College, London

44% of students considered that they understood more about maths related careers, and 46% that they have a better understanding about why maths will be more useful to them in the future. 27% considered what they did with MMG helped them make decisions about their future study of maths subjects.

"Learned that maths can be used for more things than I thought" Student

"Maths can lead to endless possibilities" Student

The partners also provided a positive response to the maths (or **student**) events and activities provided to their organisations and their students, as well as attendance at universities, support from the ambassador scheme and information regarding further maths.

"All events very well-organised and pitched at the right levels by the facilitators" Grange Technology College, Yorkshire and Humberside

43% of students considered that the maths events and programmes had changed their views about maths in a positive way. 73 out of 331 who commented said that maths was fun, 35 that they had learned more and understood about uses for maths and 25 that they had been helped with their maths.

"I enjoyed the problems that we had to solve, it shows that maths can also be kind of fun!" Student

"Because it was weird, but showed the fun in maths." Student

"Maths is important, not geeky" Student

"Helped me to be patient in problem solving" Student

44% were planning to study maths or maths related subjects past their current level of study although 25% of these they would have been studying them anyway.

"I was definitely going to do maths anyway" Student

"It made me want to go further in maths education." Student

"My future is still a long way away." Student

62% considered they had learned new and useful things about maths. 60 out of 433 who commented mentioned making 3 D shapes and cubes, 50 mentioned magic cards and magic number squares, and 30 about learning about new areas where maths is important (cancer research was mentioned several times).

49% considered that they had gained new skills and 52% that they knew more about maths than before. 46% considered that they understood maths better than they did, 37% that they now enjoyed maths more than they used to, and 36% that they are more interested in maths than they used to be.

"It has made me think it's interesting." Student

"It showed me that maths can be fun and that it can be enjoyed." Student

The students were asked to consider something important that they had learned from the extra maths activities that they had done. The highest number of responses related to:

- Understanding how to do maths
- Maths in the real world
- Personal effect on individuals of doing the activities
- How maths is useful
- Problem solving

"I learned not to just rush into things, but take time to look at them methodically." Student

"About the job opportunities using maths." Student

"It has boosted my confidence" Student

"How maths can link into science, and have cures for illnesses such as cancer." Student

"Learned to be more patient at problem solving. " Student

The partners all provided a positive response that their **teachers** were supported by the project, that the resources had helped enrich and enhance their students in maths related disciplines, that the maths initiatives had helped raise student aspirations as well as raising attainment levels in mathematical sciences.

In summary, the partners provided very positive responses to all three themes for this project: careers, subject and teachers.

The students' responses in some ways were less positive. It is clear from the internal evaluation summaries provided by the Project Officers, that the activities undertaken by the students were well received at the time of undertaking them. The purpose of this survey was to ask the students to reflect on what impact the activities had had on them. Looking at the age and school year range of responders (46% years 7 & 8) it is possible to infer that some of them were too early in the education cycle to have made clear decisions about their future and their continued study of maths related subjects.

On a positive note, the project activities have helped many of them with their maths; they have learned new and useful things (62%) gained new maths skills (49%) and know more about maths than they did before (52%). They have gained new skills (49%), and understand maths better than they did before. Some now enjoy maths more than they used to (37%) and are more interested in maths than they used to be (36%).

"Initiatives taken by the MMG project are creative, informative and helpful for Mathematics teaching in real life context. The project surely inspires young minds to look at Mathematics as a very interesting subject. Loxford School of Science and Technology, London

"The work of the project has been beneficial to Warwickshire. It has provided the impetus for a number of different initiatives which are helping to benefit current students, and should help to create a virtuous circle where improved teaching and events that inspire students to study and teach maths should create yet further improvements in the future. The project should certainly continue, and be expanded to cover more areas of the country." Warwickshire Local Authority, West Midlands

MORE MATHS GRADS

A Project funded by the Higher Education
Funding Council (HEFCE)

ANNEXES TO THE INTERIM 5 EVALUATION REPORT

IMPACT

Prepared by Carol Flavin
Flavin Project Innovations Ltd



flavin project innovations ltd
managing innovation, management services
research, development and evaluation

June - July 2009

Contents

Annex 1 - Responses to the User Perception Survey

Annex 2 – Responses to the Student Survey Analysis

Annex 3- Regional Internal Evaluation Reports

Annex 1

Responses to the User Perception Survey with MMG Partner Schools and Colleges

	Name	School	Role	Region
--	------	--------	------	--------

YORKSHIRE AND HUMBERSIDE				
1	Richard Clough	Bruntcliffe School	Head of Maths	Yorkshire & Humberside
2	Stephen Hetherington	Grange Technology College	Gifted and Talented Mentor	Yorkshire & Humberside
3	Darren Adkin	Wakefield City High School	Teacher of Mathematics	Yorkshire & Humberside
4	Hilary Sugden	Lawnswood School	Teacher (I.C G&T) Maths Dept	Yorkshire & Humberside
5	Brendon Fletcher	New College	Head of Mathematics	Yorkshire & Humberside
6	Nicola Parker	W Leeds High School	Teacher	Yorkshire & Humberside
7	Lesley Long	W Leeds High School	KS3 Lead Teacher and Intervention	Yorkshire & Humberside
8	Mrs E Willett	Featherstone College	HOD (Maths)	Yorkshire & Humberside

WEST MIDLANDS				
1	Dr S Jones	Cauldon Castle School	A-Level Maths Coordinator	West Midlands
2	Eddy Pryce	Barr's Hill School	Head of Mathematics	West Midlands
3	Gillian Jones	Grace Academy Coventry	Acting Head of Mathematics	West Midlands
4	Ian Rye	Coventry LA	Senior Advisor	West Midlands
5	Marc Jones	President Kennedy School	Joint Head of Maths	West Midlands
6	Saeed Vakilpour	City College, Coventry	A Level Maths Course Organiser	West Midlands
7	Paul Hoverd	Whitley Abbey School	Head of Mathematics	West Midlands
8	David Bristow	Warwickshire Local Authority School	School Inspector Mathematics and Performance Data	West Midlands

		Performance		
9	Greg Thomas	Warwickshire Local Authority	Secondary Strategy Maths Advisor	West Midlands
10	Steve Edwards	Sydney Stringer School	Head of Mathematics	West Midlands

LONDON				
1	Tasnuva Ansari	Loxford School of Science and Technology	Teacher of Mathematics	London
2	Abdul Halim	Lewisham College	Lecturer	London
3	Georgina Nwoke	Brooke House 6 th Form College	Main Grade Lecturer – GCSE Mathematics and Adult Numeracy	London
4	Iain Lawson	Oaklands School	Head of Maths	London
5	Mrs R Mouhssine	Central Foundation Girls School	Maths Teacher i/c Raising Achievement at KS4	London
6	John Byrne	Stepney Green Maths & Computing College	Deputy Head Teacher	London
7	Marion Tuplin	Plashet School	Curriculum Manager	London

Region where your organisation is located	West Midlands	10
	Yorkshire and Humberside	8
	London	8



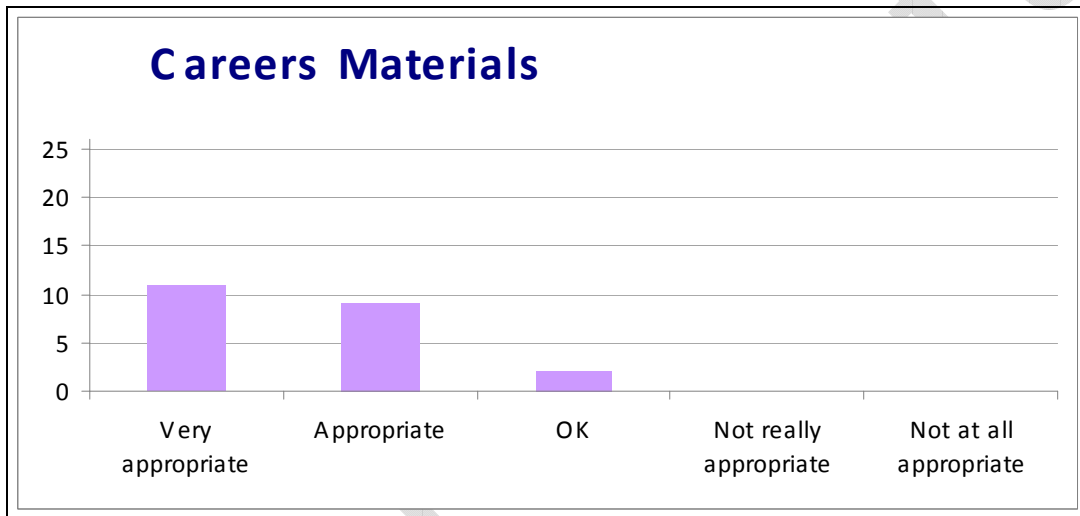
2. CAREERS USING MATHS

Listed here are maths related careers activities your students may have done or used. Please indicate whether your organisation was in receipt of these, and if so, were they appropriate to your needs.

2a Careers materials:

Copies of materials about careers in maths such as posters, brochures, leaflets and guides made available by the MMG Project to you and your students.

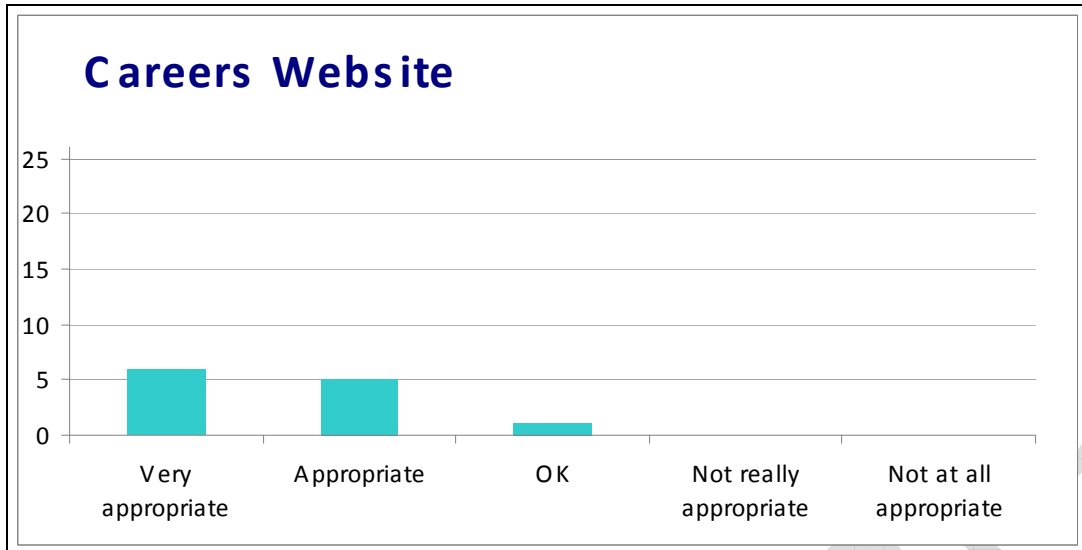
Was your organisation in receipt of the above? Please click the box for 'yes' and leave blank for 'no' and move onto the next section				22	85%
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, how appropriate were they? Please tick one box only	11	9	2	0	0
	50%	41%	9%	0%	0%



2b: Careers website:

Information made available on the maths careers website (www.mathscareers.org.uk) telling you or your students about potential careers, using maths?

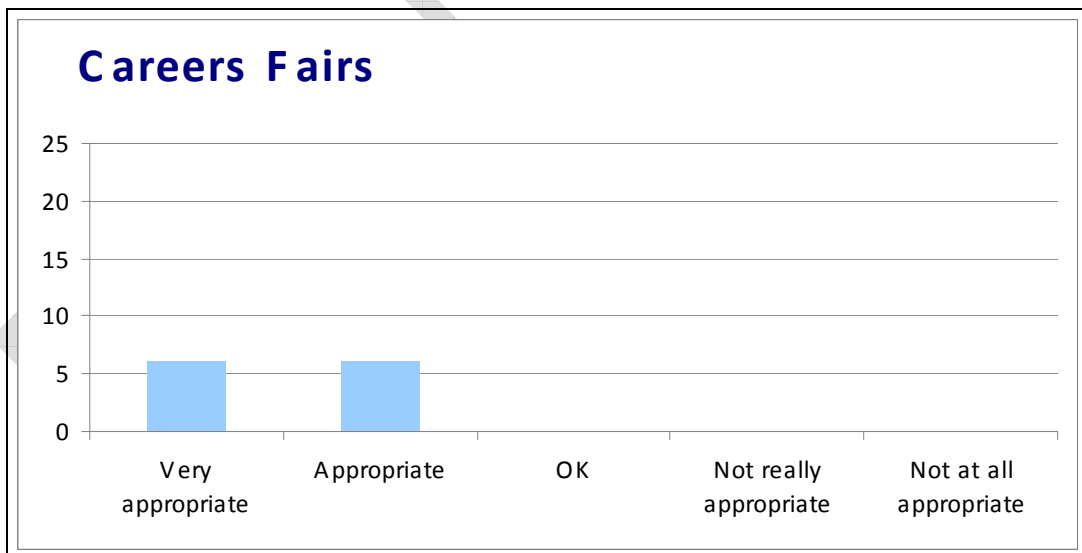
Did your organisation or students use the above? Please click the box for 'yes' and leave blank for 'no' and move onto the next section				12	46%
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, was the information appropriate? Please tick one box only	6	5	1	0	0
	50%	42%	8%	0%	0%



2c: Careers Fairs:

Careers information made available first hand through careers fairs, talks and exhibits.

Did your students use the above? Please click the box for 'yes' and leave blank for 'no' and move onto the next section	12		46%		
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, was the information appropriate? Please tick one box only	6	6	0	0	0
	50%	50%	0%	0%	0%

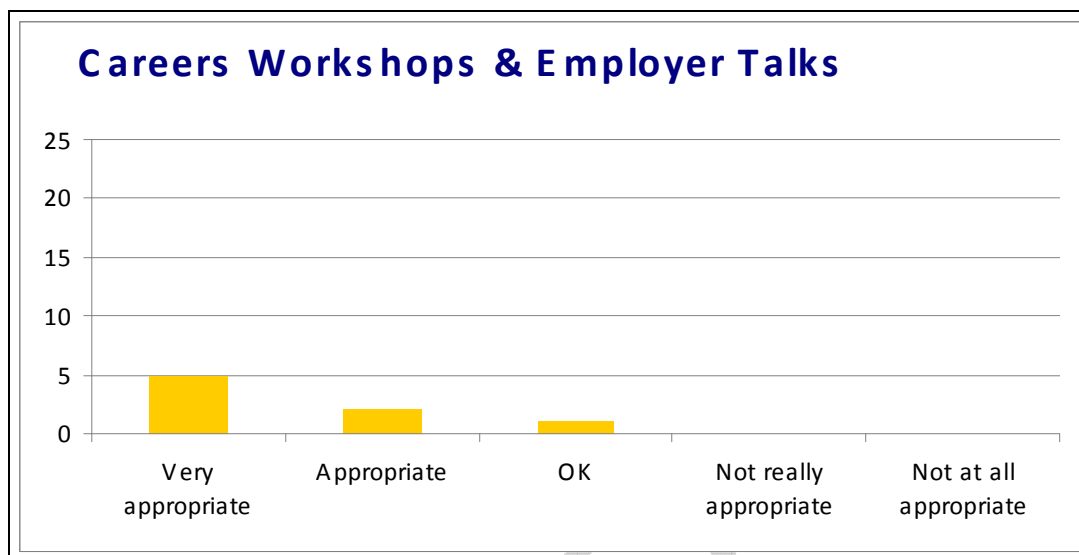


2d: Careers Workshops and Employer Talks:

Attendance at careers workshops and talks by employers about careers and the importance of maths in the workplace.

Did your students attend any of the above? Please click the box for 'yes' and leave	8		31%		
---	---	--	-----	--	--

blank for 'no' and move onto the next section					
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, were the workshops and activities appropriate for the needs of your students? Please tick one box only	5	2	1	0	0
	62.5%	25%	12.5%	0%	0%



Careers Comments:

If you have any comments about the careers activities and events that you went through with the More Maths Grads Project, please use the box below:

"The 'My Dream Job' video was enjoyed by all" Plashet School, London

"We did not have any careers input but a programme for school visits to talk to pupils e.g. in a year 10 maths lesson may be useful" Oaklands School London

"The activities were real life that motivated my learners to take maths seriously. For example, making travel decisions from financial perspectives, applying maths to government projects to ensure safety of citizens, to health sciences and research for cure of diseases, to religious activities, various employments and government plans for the future. My learners were able to recheck their views regarding use of maths for their future career and job prospects." Brook House Sixth Form College, London

"Ewan came to school to talk to top sets" Grace Academy, Coventry

"The talk by James from ACCA on 02/02/2009 was very good. 8th July some Y12 students are attending the Maths at Work Day" Bruntcliffe School, Yorkshire and Humberside

"Students who attended the WB Milne Lecture gained useful information as a result and learned about the varying careers available to them as a result of being motivated by Maths and being qualified in this subject area" Grange Technology College, Yorkshire and Humberside

"Very valuable resources, which, although we've not been able to make full use of, we will in the future." Sidney Stringer School, West Midlands

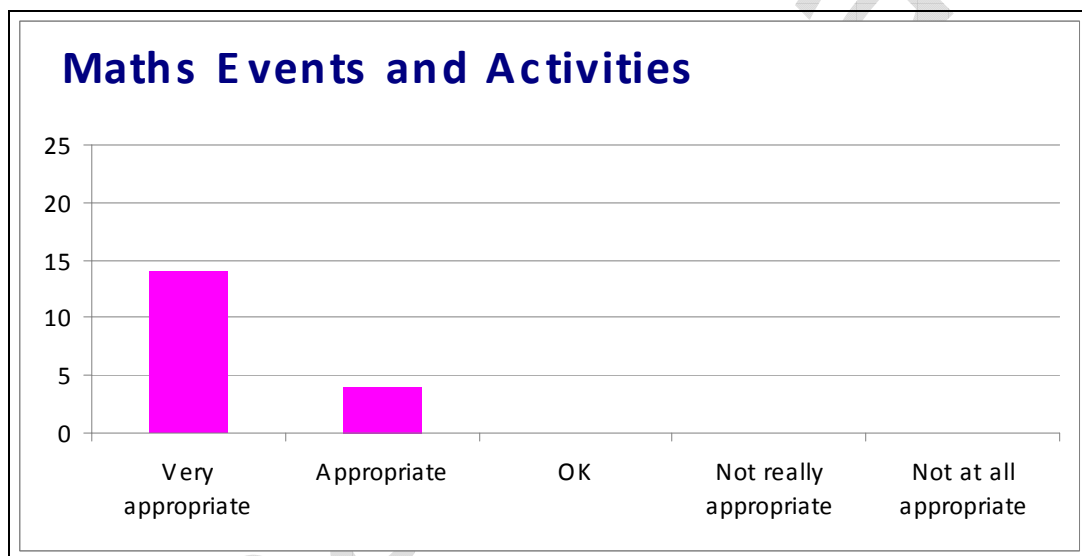
3. LEARNING ABOUT THE SUBJECT OF MATHS

This section is about all the MMG maths activities that your students have done in addition to their normal lessons. Please indicate whether your organisation was in receipt of these, and if so, were they appropriate to your needs.

3a. Maths events and activities in schools or colleges:

Attendance at maths workshops and other activities, programmes and events

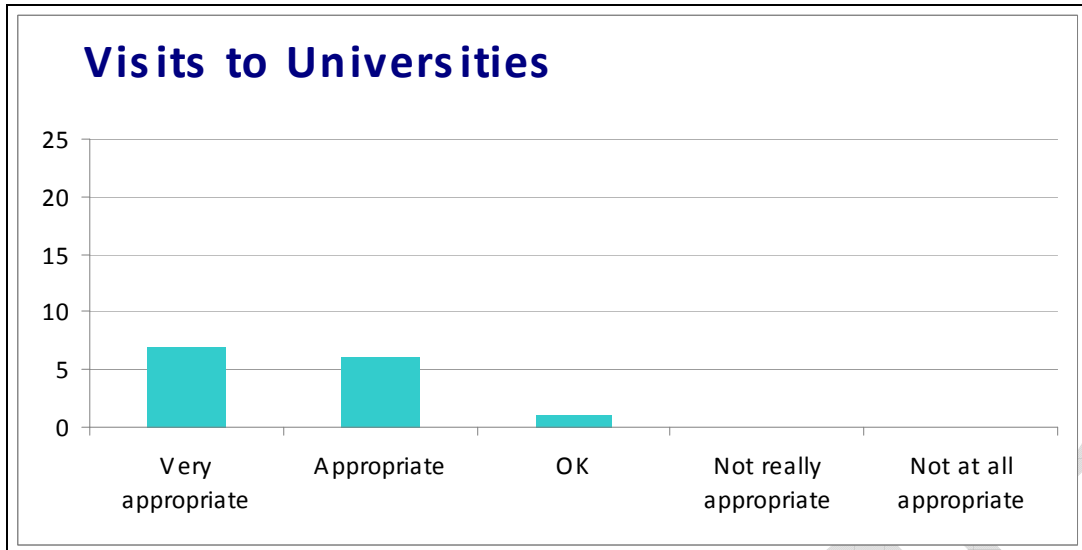
Was your organisation in receipt of the above? Please click the box for 'yes' and leave blank for 'no' and move onto the next section			18	78%	
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, how appropriate did you find them? Please tick one box only	14	4	0	0	0
	78%	22%	0%	0%	0%



3b: Visits to Universities:

Visits to universities designed to provide information about higher maths, and other subjects

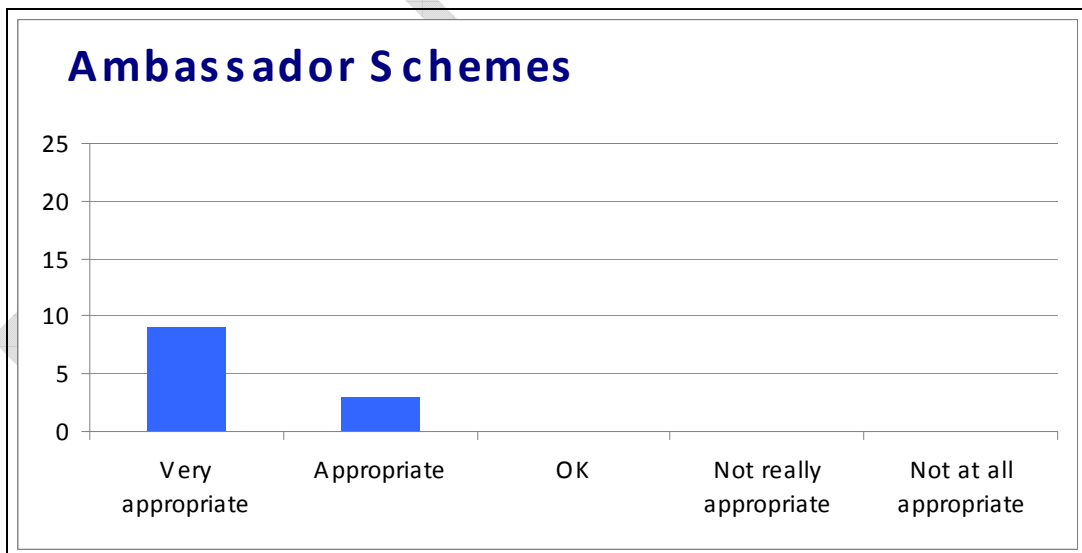
Did your students attend the above? Please click the box for 'yes' and leave blank for 'no' and move onto the next section			14	54%	
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, were the university visits appropriate to the needs of your students? Please tick one box only	7	6	1	0	0
	50%	43%	7%	0%	0%



3c: Ambassador Schemes:

Undergraduate student ambassadors who supported the MMG maths activities in workshops or in the classroom?

Did your students have access to the above? Please tick box for 'yes' and leave blank for 'no' and move onto the next section	12	46%			
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, was the ambassadors' support appropriate? Please click on one box only	9	3	0	0	0
	75%	25%	0%	0%	0%

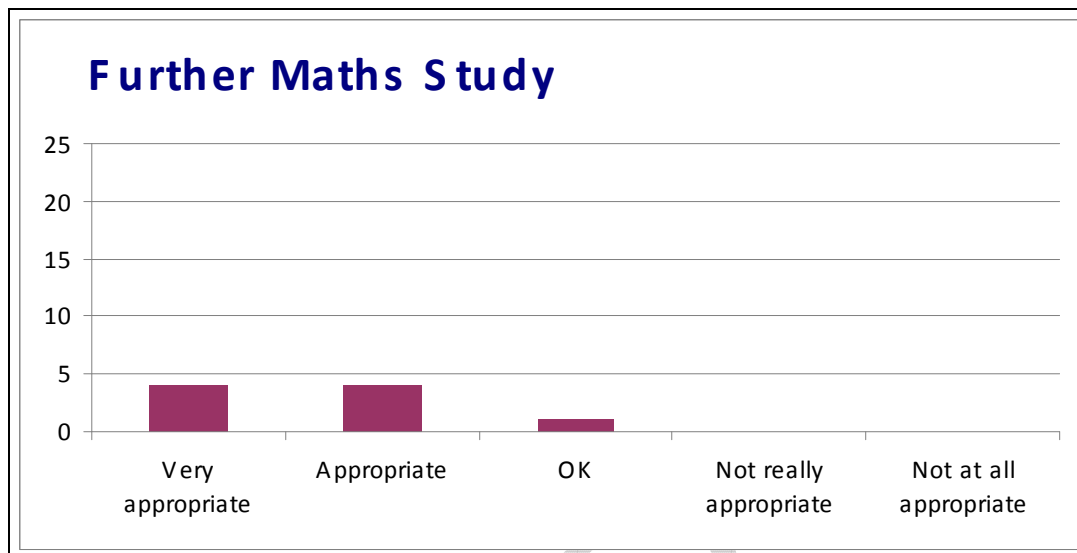


3d: Further Maths Study:

Provision of information about studying Further Maths at A & AS Level?

Did your students receive any of the above? Please click on the box for 'yes' and	9	35%
---	---	-----

leave blank for 'no' and move onto the next section					
	Very appropriate	Appropriate	OK	Not really appropriate	Not at all appropriate
If yes, was the information appropriate for the needs of your students? Please click on one box only	4	4	1	0	0
	44.5%	44.5%	11%	0%	0%



Maths Subject Comments:

If you have any comments about the maths subject based activities, events and programmes that you went through with the More Maths Grads Project, please use the box below:

"We went through some topics such as Transformation and trial and improvement. These were related to real life uses and processes and steps for answering questions were discussed to ensure my learners follow the appropriate steps in solving maths problems." Brook House Sixth Form College, London

"We had a student on a 10 day placement, he helped in the classroom" Grace Academy, Coventry

"The Fun Roadshow in the school hall was excellent, as were the classroom based visits on mathematical trickery + paper imagination" Bruntcliffe School, Yorkshire and Humberside

"All events very well-organised and pitched at the right levels by the facilitators" Grange Technology College, Yorkshire and Humberside

"Year 9 students at our school received an hour long presentation by the MMG project on the importance of mathematics in our lives and how it can improve chances of getting jobs for them in today's competitive world. The presentation enthused pupils to aim for a better grade in Mathematics in GCSE and thus chose Mathematics as a core subject in A level. They spoke highly of the presentation and liked it very much" Loxford School of Science and Technology, London

"Lawnswood has been involved in several of the activities and events with MMG. We have found ALL very well prepared and beneficial." Lawnswood School, Yorkshire and Humberside

"Thoroughly enjoyable, students fully engaged and also enjoyed the session" Featherstone Technology College, Yorkshire and Humberside

"Because of the nature of my role, I do not have first hand experience of using materials with

students, but I have been very pleased with the work done by the project and believe that it has been beneficial." Warwickshire Local Authority, West Midlands

"Ambassadors in school have been extremely useful and helpful in classrooms, whilst also enabling them to gain experience of the school environment. They have also made a contribution to assisting students in understanding the place of mathematics in university studies and beyond." Sidney Stringer School, West Midlands

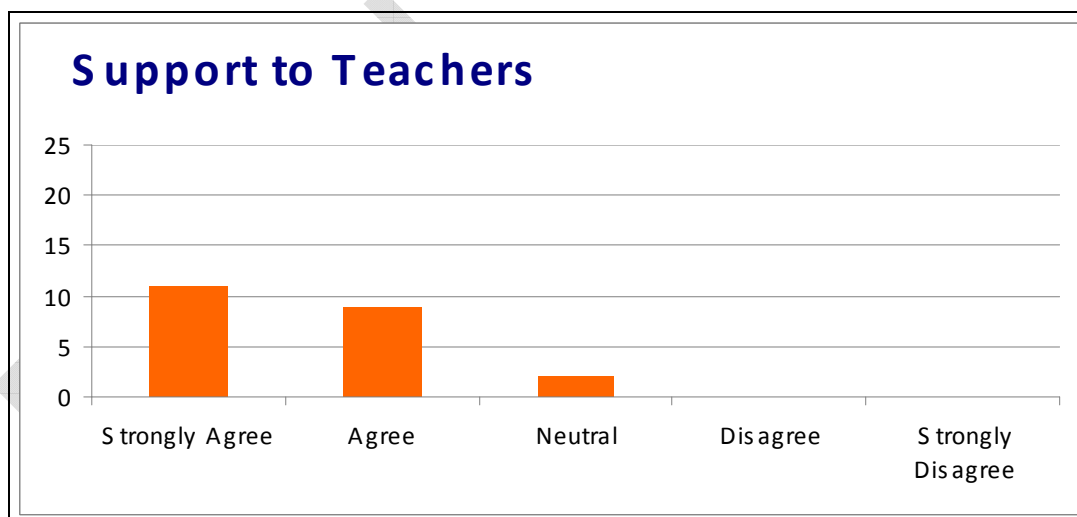
4. SUPPORTING YOUR MATHS TEACHERS

Listed here are the potential impacts that the activities of the MMG Project may have had on your maths teachers. Please indicate whether your organisation considers that these impacts have been achieved.

4a Support to teachers:

The activities of the MMG Project have contributed to the development of your teacher's enjoyment, confidence and knowledge of mathematics and its application, so that they can help stimulate interest in further study of mathematics in their students.

				No of responders				
				22	85%			
				Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Please click on one box only				11	9	2	0	0
				50%	41%	9%	0%	0%

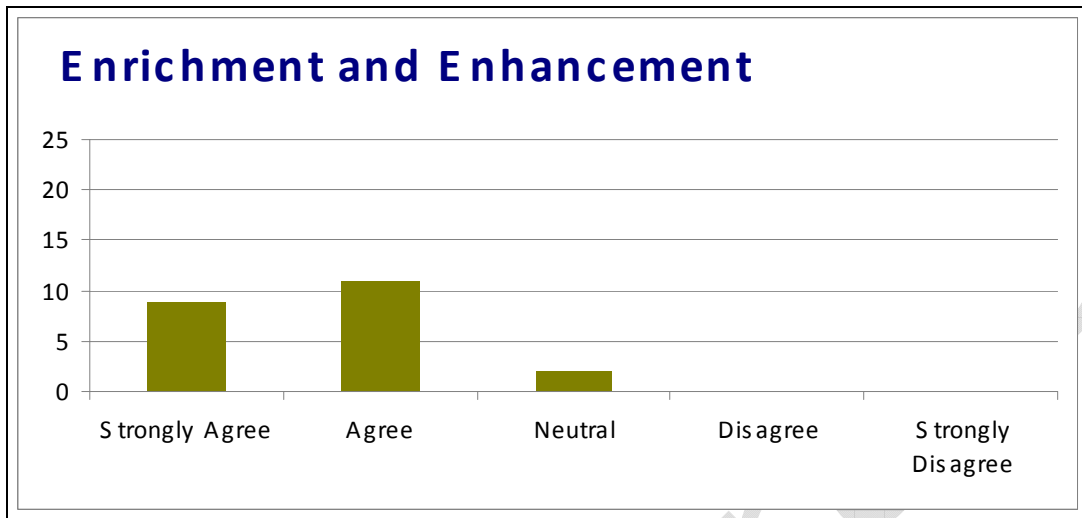


4b Enrichment and enhancement for students:

The resources provided by MMG have helped to enrich, enhance and support the work of your teachers with your students, in maths related disciplines

				No of responders				
				22	85%			
				Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Please click on one box only								

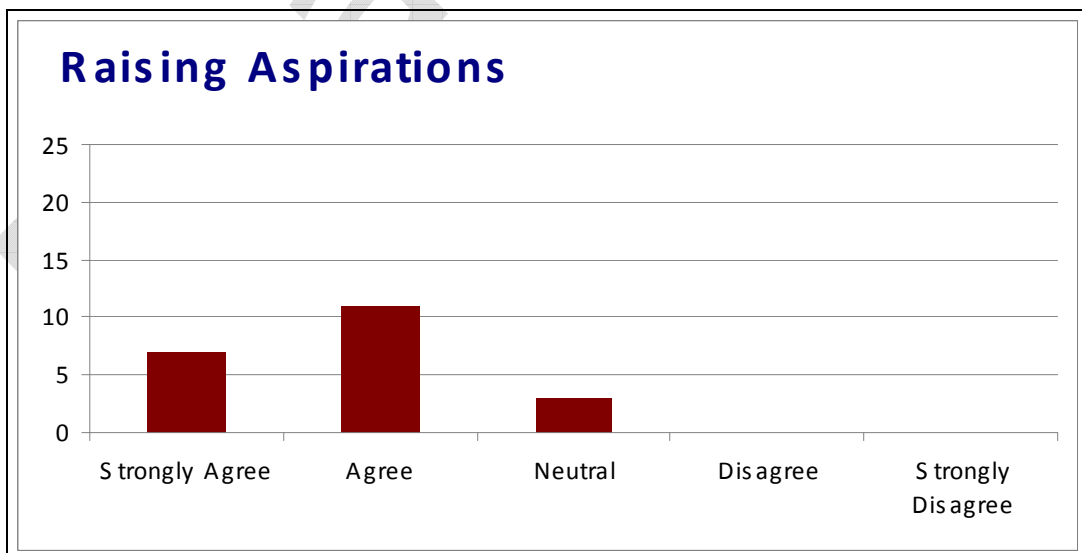
	9	11	2	0	0
	41%	50%	9%	0%	0%



4c Raising student aspirations:

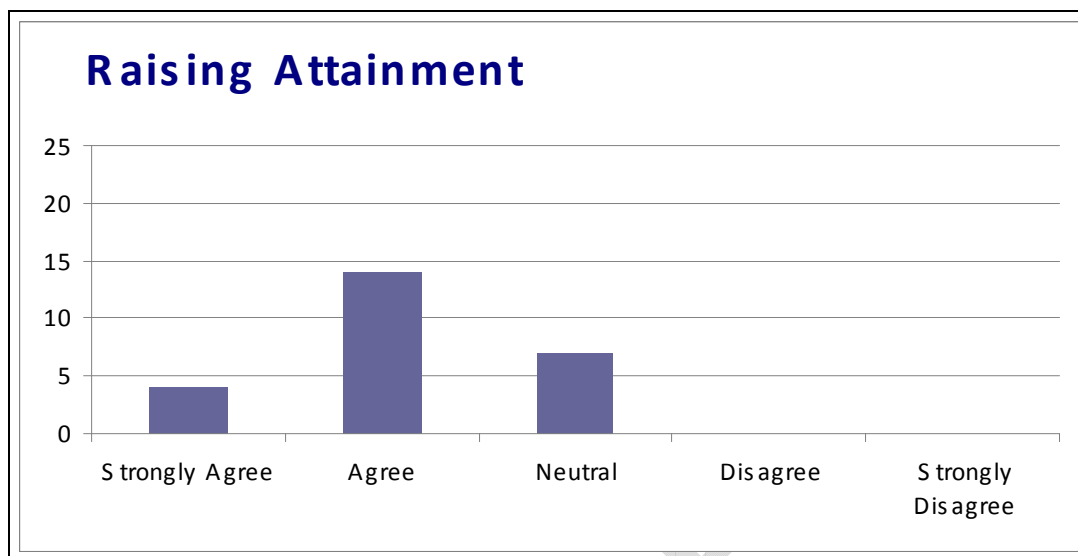
The MMG maths initiatives have helped your teachers raise student aspirations relating to mathematical sciences.

	No of responders			21	81%
Please click on one box only	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
	7	11	3	0	0
	33%	53%	14%	0%	0%



4d Raising attainment levels:

The MMG maths initiatives have helped your teachers raise attainment levels in mathematical sciences.						
				No of responders	25	96%
Please click on one box only	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
	4	14	7	0	0	
	16%	56%	28%	0%	0%	



Supporting Maths Teachers Comments:

If you have any comments about the support to maths teachers from the More Maths Grads Project, please use the box below:

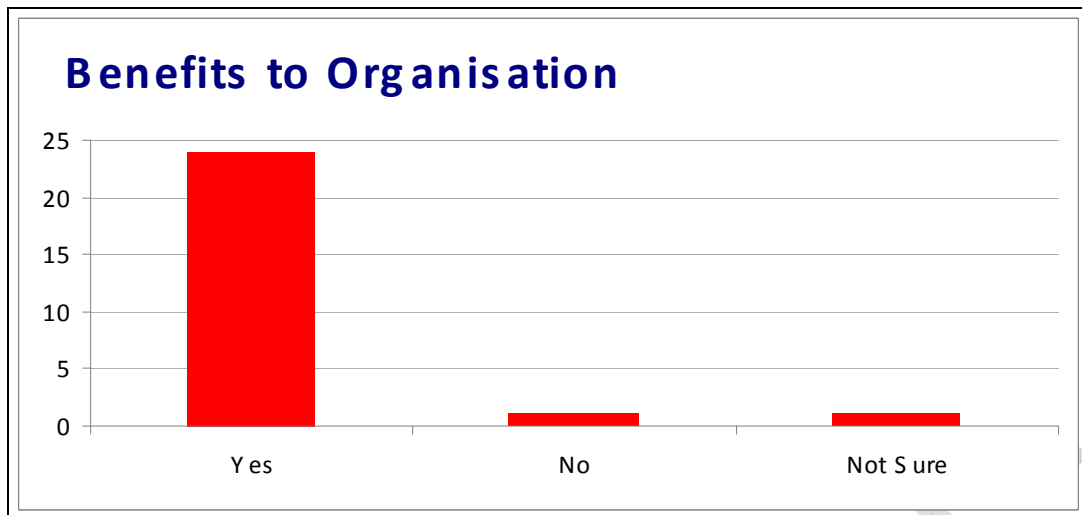
"Both staff and students found the events inspiring" Plashet School, London

"My learners are much more motivated than before the project. They also now understand the thinking of the government and employers for the future. My colleagues and I want the initiative again by June or early September because this is making a positive impact on my learners" Brook House Sixth Form College, London

"Rebeka Simmonds was extremely helpful and helped immensely by delivering revision classes and being extremely helpful in the classroom. Humayan has been supporting pupils and extremely helpful within the department." Whitley Abbey School, West Midlands

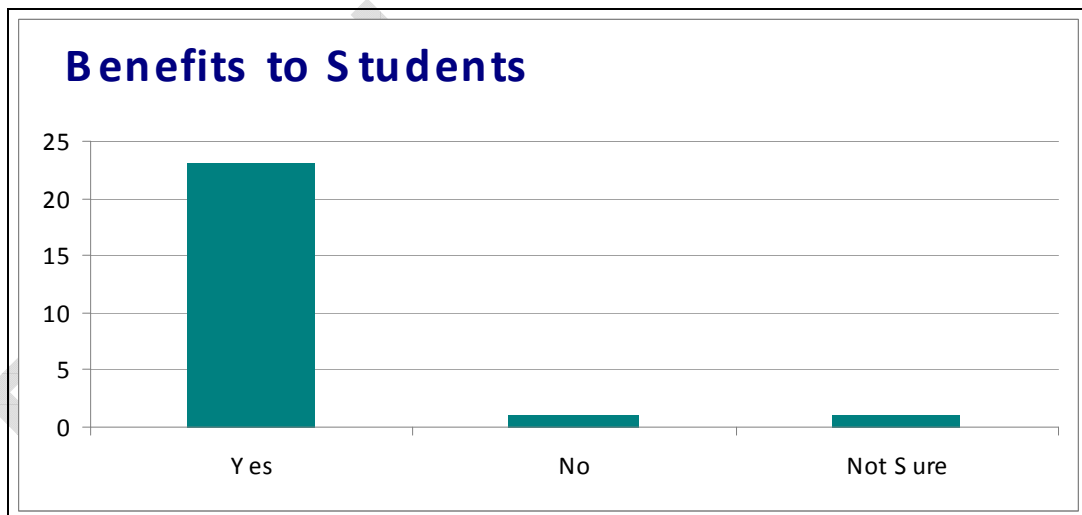
5. Benefits your organisation:	26	100%
---------------------------------------	----	------

	Yes	No	Not Sure
Do you consider that your organisation has benefited from activities, events and programmes provided by the More Maths Grads Project?	24	1	1
	92%	4%	4%



5. Benefits your students:	25	96%
-----------------------------------	----	-----

	Yes	No	Not Sure
Do you consider that your organisation has benefited from activities, events and programmes provided by the More Maths Grads Project?	23	1	1
	92%	4%	4%



7. Comments:
If you have any comments about the activities, events and programmes that you went through with the More Maths Grads Project, please use the box below:

"We were very grateful to have been involved in the programme and hope we may continue to benefit in the future" Plashet School, London

"I feel that we have not really utilized the support on offer from MMG but would like to make more use in future. I would be more likely to do this if I was emailed clear, BRIEF details of what is on offer"

(a link to a website with more info could be included).. I get so many pieces of paper as Head of Maths that very few make an impact." Oaklands School London

"My department and organisation want more of the maths project for all our learners and teachers as well including non-maths teachers" Brook House Sixth Form College, London

"Not sure if I have remembered all the things MMG have been doing" Grace Academy, Coventry

"I would be delighted to maintain links with the MMG next year" Bruntcliffe School, Yorkshire and Humberside

"I have been impressed by the range of activities planned and the enthusiastic nature of the staff based at Leeds University. Also the support and information provided to students during each activity" Grange Technology College, Yorkshire and Humberside

"Initiatives taken by the MMG project are creative, informative and helpful for Mathematics teaching in real life context. The project surely inspires young minds to look at Mathematics as a very interesting subject." Loxford School of Science and Technology, London

"Being involved with MMG has helped in a lot of ways. Some of our students took advantage of the Nuffield Bursary scheme on offer last year and this has helped them in choosing an appropriate mathematical career option. Our team of learning assistants have appreciated greatly (along with students of all levels in KS3 and 4) from the additional support given through the student ambassador program. On a more personal note, having the opportunity to team teach with one of the MMG Co-ordinators has certainly helped me to appreciate the importance of using of sharing the appropriate language of maths and not limiting myself to just the Curriculum at any stage - it has helped me as a teacher to ensure that my students continue to get to see how that maths all 'joins up'." President Kennedy School, West Midlands

"Sessions were very well organised, and pupils benefited from investigative tasks and have developed very good skills for open ended tasks and group work." Mulberry School for Girls, London

"We enjoy involvement with More Maths Grads, and we find this very helpful. Many thanks. City College, Coventry

"The work of the project has been beneficial to Warwickshire. It has provided the impetus for a number of different initiatives which are helping to benefit current students, and should help to create a virtuous circle where improved teaching and events that inspire students to study and teach maths should create yet further improvements in the future. The project should certainly continue, and be expanded to cover more areas of the country." Warwickshire Local Authority, West Midlands

Annex 2

More Maths Grads Project Student Survey Analysis

An online survey was made available on the Maths Careers website from March – mid June 2009.

Text from the survey is as follows:

"More Maths Grads (MMG) has been helping you to enjoy and learn more about maths by providing extra maths activities in your school or college. Please fill out this survey as your views are important to us."

The MMG Project Officers were asked to get a minimum of **25%** of the students that they had been working with during March – mid June to complete the survey either online or by paper. The paper versions were subsequently inputted onto the online survey.

- **Total number of responses = 668**
- **Total number of students worked with during March – mid June 2009 (period of the survey) = 2142**
- **Response rate of survey = 31%**
- **35 organisations represented**

Leeds University (Yorkshire and Humberside Region)

235 responses were received from Leeds University, who worked with **1005** students during March – mid-June 2009 (the period of the survey). This was a **23.4%** response rate.

Coventry University (West Midlands Region)

233 responses were received from Coventry University, who worked with **900** students during March – mid-June 2009 (the period of the survey). This was a **25.8%** response rate.

Queen Mary - University of London (London Region)

200 responses were received from Queen Mary, who worked with **237** students during March – mid-June 2009 (the period of the survey). This was a **84.3%** response rate.

1. Your School or College name:
LEEDS

Allerton High School	Yorkshire & Humberside	1
Barlby High Sports College	Yorkshire & Humberside	1
Beckfoot School	Yorkshire & Humberside	1
Boston Spa School	Yorkshire & Humberside	2
Boston Spa School	Yorkshire & Humberside	1
Brayton College	Yorkshire & Humberside	1
Featherstone Technology College	Yorkshire & Humberside	69
Gateways School	Yorkshire & Humberside	1
Grange Technolgy College	Yorkshire & Humberside	27
Lawnswood High School	Yorkshire & Humberside	34
Loreto	Yorkshire & Humberside	1
North Halifax Grammar	Yorkshire & Humberside	1
Open University	Yorkshire & Humberside	1
Richmond School	Yorkshire & Humberside	1
Ryburn Valley High School	Yorkshire & Humberside	1
St. Gabriels RC High	Yorkshire & Humberside	1
West Leeds High School	Yorkshire & Humberside	91
TOTAL NO OF RESPONSES		235
NO OF ORGANISATIONS		17

COVENTRY

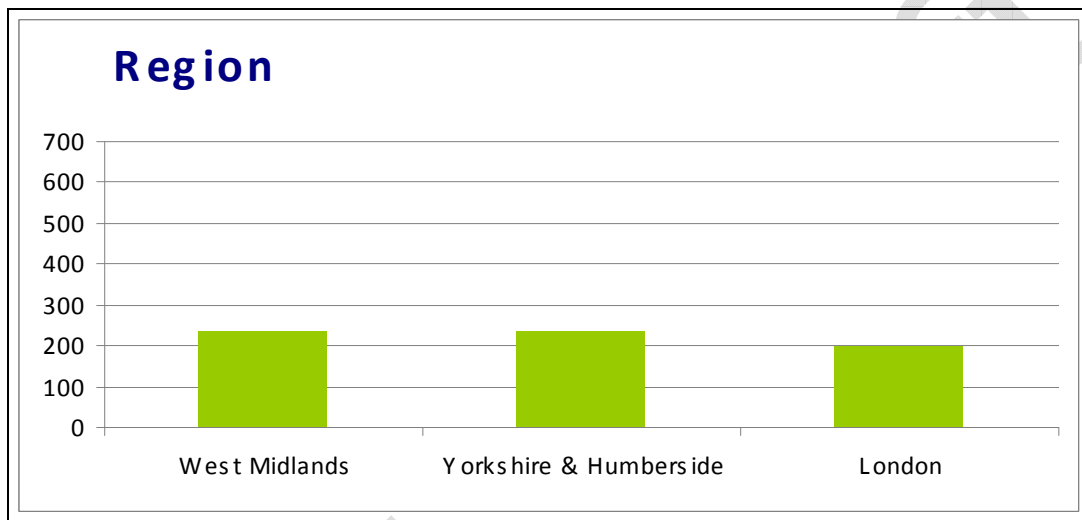
Archbishop Ilsleys	West Midlands	1
Barrs Hill School	West Midlands	102
Caludon Castle	West Midlands	20
Coventry University	West Midlands	1
Cowbridge Comprehensive	West Midlands	1
Grace Academy	West Midlands	9
Livingston	West Midlands	1
Maiden Erlegh School	West Midlands	1
President Kennedy School	West Midlands	27
Sydney Stringer School	West Midlands	47
Whitley Abbey	West Midlands	22
Whitmore Park School	West Midlands	1
TOTAL NO OF RESPONSES		233
NO OF ORGANISATIONS		12

LONDON

Brooke House Sixth Form College	London	32
Central Foundation Girls School	London	6
Jo Richardson Community School	London	56
Plasht School	London	79

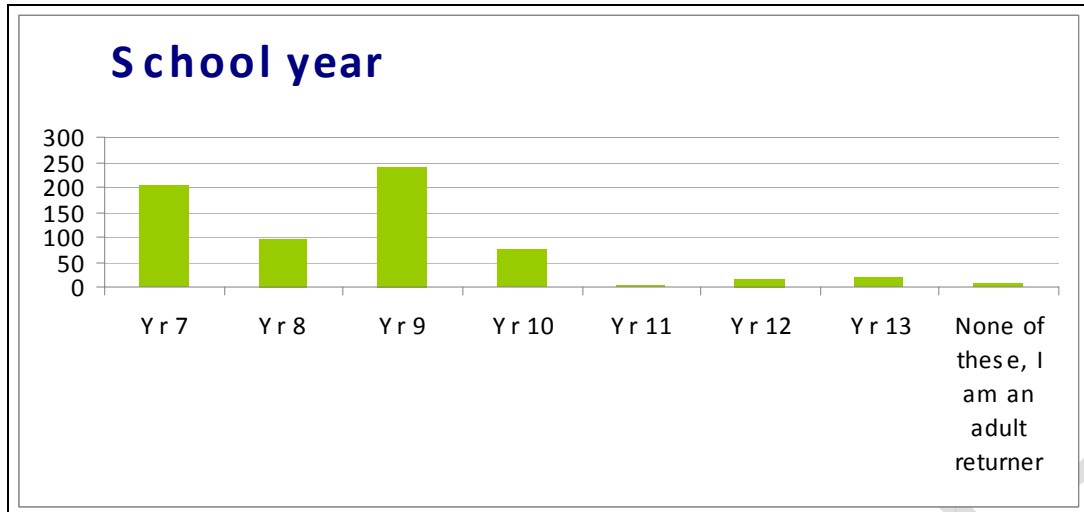
Stepney Green Maths & Computing College	London	22
Woodhouse College	London	5
TOTAL NO OF RESPONSES		200
NO OF ORGANISATIONS		6

2. Where is your School or College?	West Midlands	233	35%
	Yorkshire and Humberside	235	35%
	London	200	30%



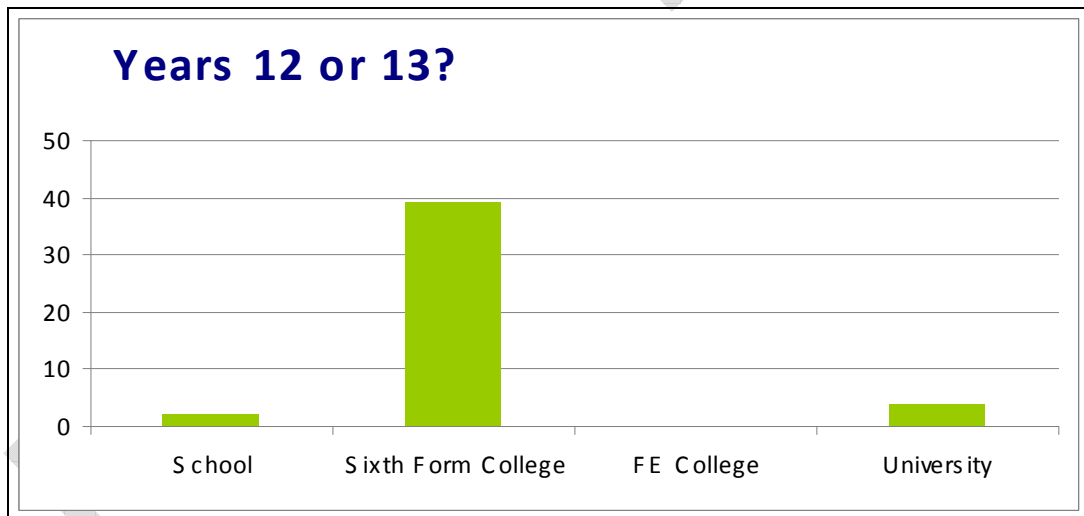
3. If you are at school what is your school year or education stage?

Yr 7	31%
Yr 8	14.5%
Yr 9	36%
Yr 10	11.5%
Yr 11	.5%
Yr 12	2%
Yr 13	3%
None of these as I am an adult returner	1%

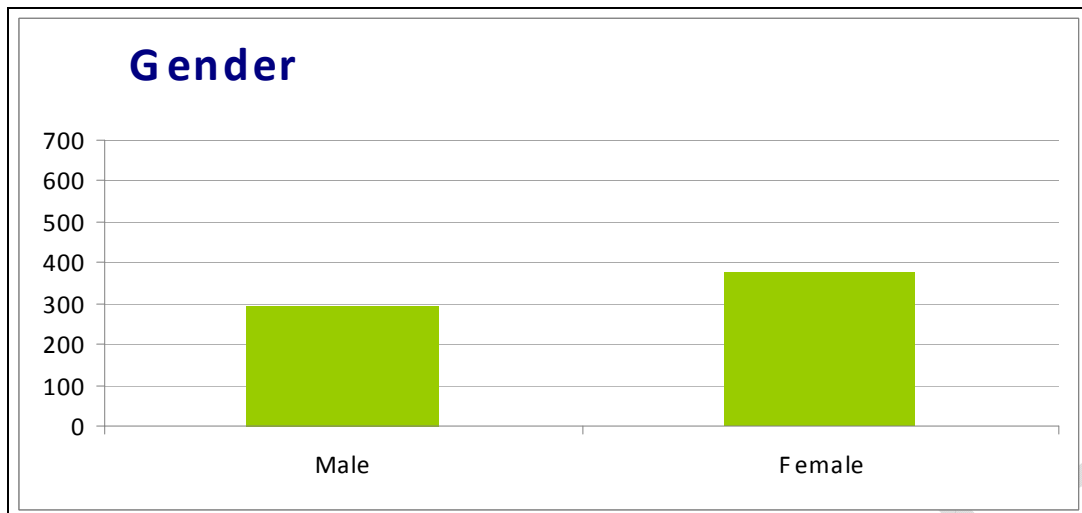


3a. If in Yrs 12 or 13, are you at?	School	4%
	Sixth form college	87%
	FE College	0%
	University	9%

45 out of a total of 668 student responders



4. Gender	Male	44%	Female	56%
------------------	-------------	-----	---------------	-----



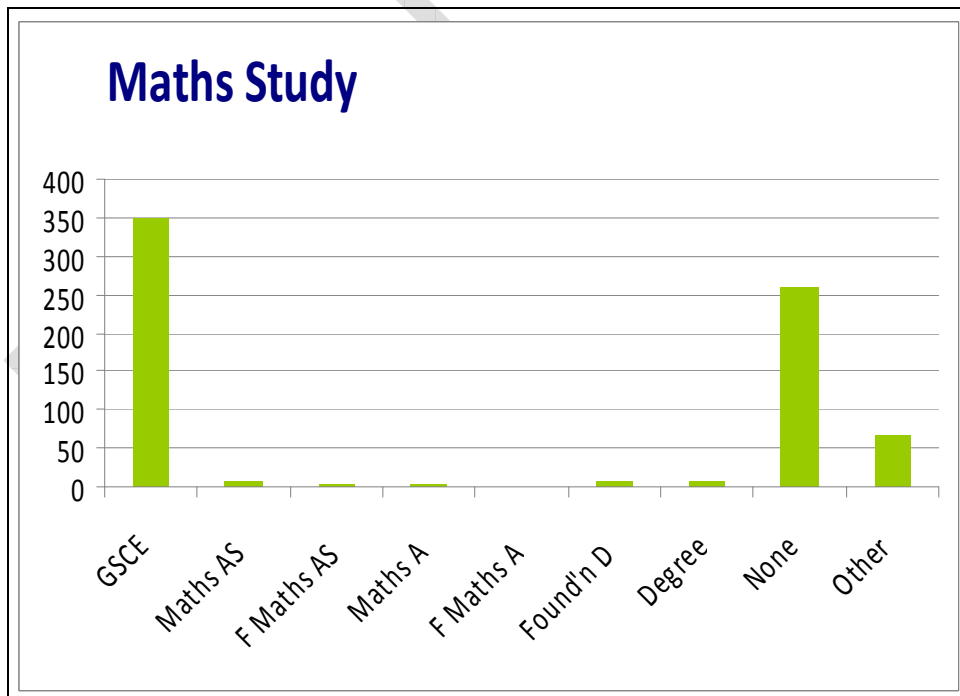
5. What is your ethnic background?

Note: The paper version of the student survey was restricted to 2 sides of A4. This meant that there was insufficient room to include an ethnicity list for this question. The table below is a good indication of the wide range of ethnic backgrounds that have been the focus of this project. It also indicates that there is some confusion about how ethnicity is formally categorised amongst the responders.

Afghanistan x 2	Dutch / African
African x 7	English x 40
Afro-Caribbean	English (Asian)
Arabian	English / Irish
Asian x 22	English White x 6
Asian /Bangladeshi	Ethiopian
Asian /Indian	French
Asian Indian	Ghaunain
Asian Pakistani	Gujarati
Asian/Bangladeshi	Half Scottish
Asian/British	Hindu
Asian/British Bangladeshi	Indian x 24
Asian/British Bangladeshi	Indian /African Indian
Asian/British Bangladeshi	Indian British x2
Asian/Pakistani	Iranian
Bangladeshi x 28	Iraq
Bangladeshi /British x 3	Irish & English
Bengali x 4	Italian/English
Bengali/Asian	Jamaican/English
Black	Lithuanian
Black & White African	Malay Asian
Black & White Caribbean	Middle Eastern
Black African x 14	Mixed x 2
Black and White African	Mixed - English & African
Black British x10	Muslim x 2
black british (african)	Muslim British
Black Caribbean x 4	Nigerian - Black African
Black Caribbean & White British x 2	Pakistani x 35
Black European x 2	Polish
Brazilian	Rashmiri

British x 45 British - Black African British - White British Asian x 11 British Asian/ Indian British Asian/ Pakistani x 2 British Asian/Bangladeshi British Bangladeshi x 6 British Bengali x 3 British Carribean British Citizen British Muslim British Pakistani x 8 British White x 10 British/ Bangladeshi British/ Carribean British/ Indian British/ Pakistani British/ Pakistani British/Indian British/Pakistani British/Philippino British-Asian Caribbean Caucasion x 4 Denmark Dutch	Romania Russian Somali/Dutch Somalia (born in Norway) Somalian x 9 Somalian/ Black African Sri Lankan x 3 Sri Lankan/Asian Sri Lankan/British Turkish x 2 Uganda White x 60 White - English x 5 White / British White and Black Afro Caribbean x 4 White Asian x 2 White British x 100 White caucasian White caucasian White Danish White English x 13 White European x 2 White other White UK White UK White, British x 4
--	---

6. Which of these maths qualifications are you studying at the moment?

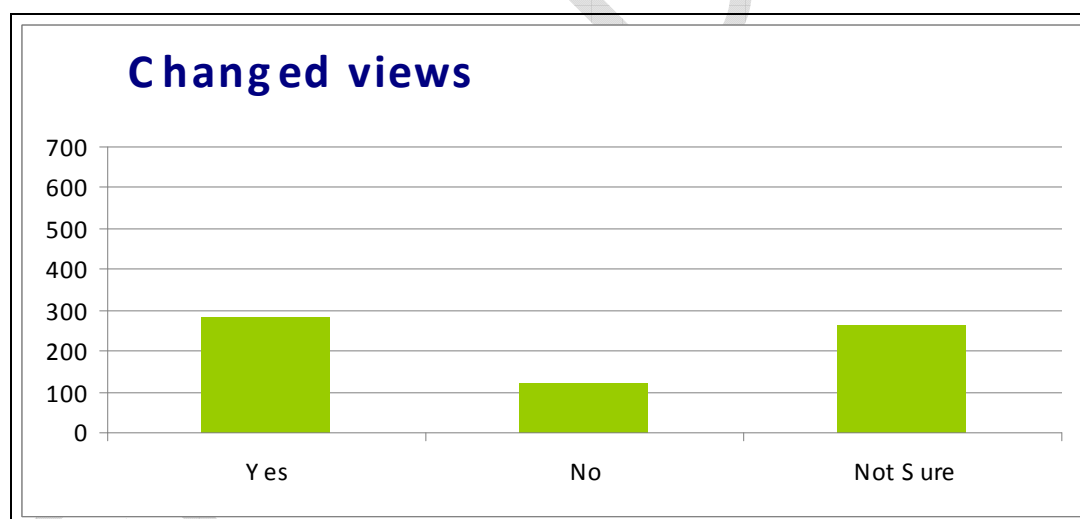


Percentage Response

GSCE	51.93%
Maths AS	1.19%
F Maths AS	0.74%
Maths A	0.74%
F Maths A	0.15%
Found'n D	0.89%
Degree	0.89%
None	38.39%
Other	9.82%

Note: The 'none' response largely relates to the number of students in years 7 & 8 (35%). No additional information was provided for 'other'.

7. MATHS ACTIVITIES AND YOU	Yes	No	Not sure
7a. Did the maths activities, events and programmes that you did, change your views about maths in a positive way?	43%	18%	39%



7b. Please explain your answer

Changed Views?

Note: **331** responded with comments. The main areas that provided consistency in the responses are listed below.

Positive Responses

Fun x 73

"Because it was weird, but showed the fun in maths."

"Educational but fun at the same time"

"I enjoyed the problems that we had to solve, it shows that maths can also be kind of fun!"

"It can be fun and a challenge"

"It showed me that maths can be fun."

Learned more and understand about uses for maths x 35

"Learned that maths can be used for more things than I thought"

"Maths can be used in every subject."

"Maths can help in a wide range of things."

"Maths can lead to endless possibilities"

"Maths can play a part in tricks."

"maths is clearer to understand."

"maths is important, not geeky"

"Because now I know how maths can help"

Helped with maths x 25

"Helped my to be patient in problem solving"

"It helps on a day to day basis"

"It shows that its very helpful for different things."

Interesting x 15

"I find maths more interesting."

"It has made me think it's interesting."

"It has showed me how interesting maths can be."

"There are a lot of interesting things in maths."

Always liked or think positively about maths x 13

"I dont really know if it changed my view coz I always liked maths"

"I like it better than before."

"It was enjoyable, but I liked maths to start with!"

Understand more about maths x 12

"I understand more stuff now"

"It helped me understand maths more."

"Maths is clearer to understand."

Enjoyed maths more x 8

" It made it feel more enjoyable."

"It showed me that maths can be fun and that it can be enjoyed."

Negative Responses

Didn't change my views x 20

"I dont know because it didnt change the way I felt about maths"

"I dont think they helped a great deal"

Don't like maths or find it enjoyable x 6

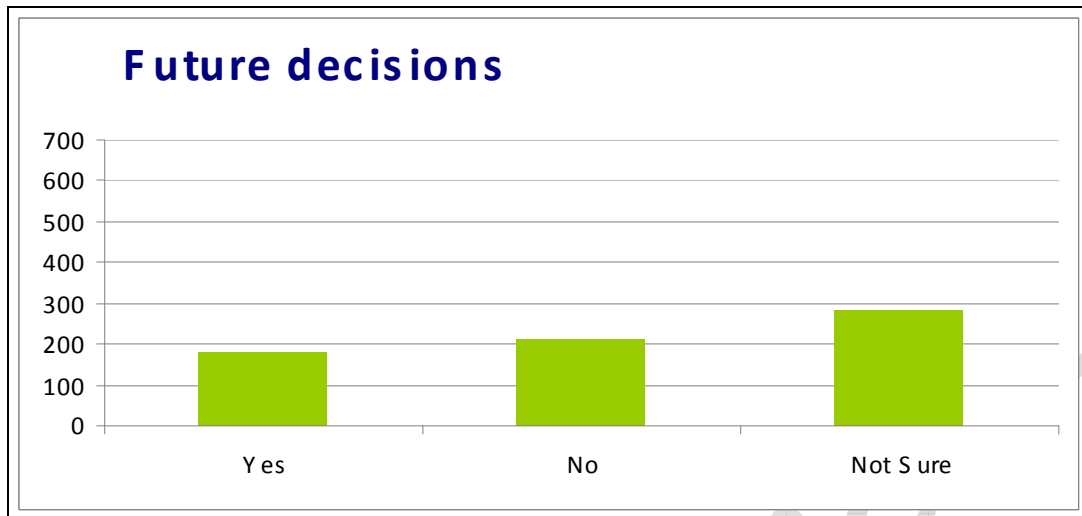
"I just don't like maths"

Confusing x 3

"Because I didn't get everything"

	Yes	No	Not sure
7c. Did the maths activities, events and programmes help you to make decisions about your future study of maths	27%	31%	42%

subjects?			
------------------	--	--	--



7d. Please tell us about your answer

Note: **260** responders provided comments. There were a number of negative or not sure responses, and many just listed what activities they had done rather than respond directly to the statement. Most of those attending the activities were from years 7 – 9, so for many of them, their future is currently focused on GCSE's and not beyond that particular stage in their education.

Future Decisions?

Positive Responses

Already know what they want to do x 23

"I already had in mind what I wanted to do, but it didn't change me."

"Not really because I already know what I want to do."

"I have been interested for a long time."

"I was definitely going to do maths anyway"

"I was going to do maths before."

Considering studying maths further x 10

"Considering maths past GCSE Level."

"I want to find out more about studying maths or engineering"

"It made me want to go further in maths education."

Want to be a Doctor x 3

Negative or Not Sure

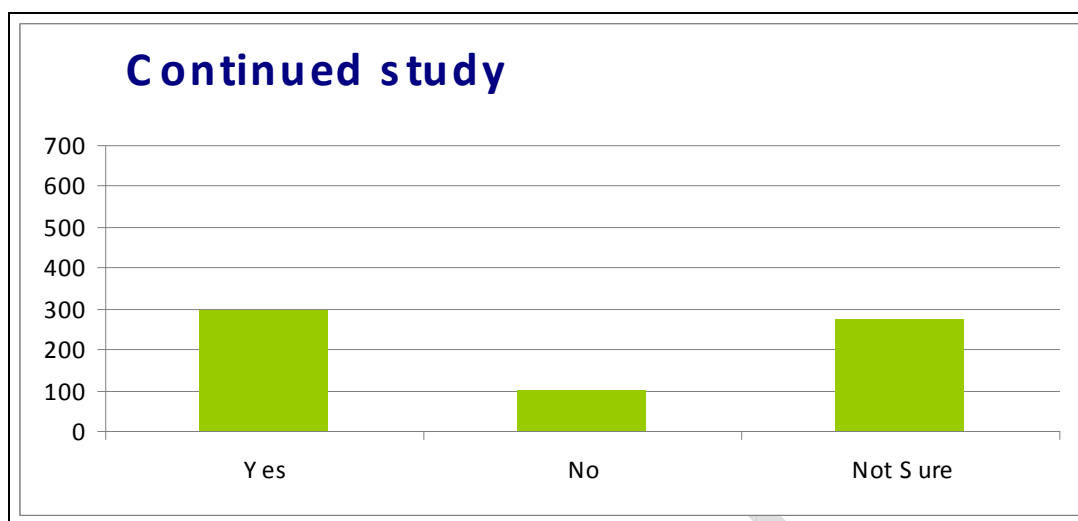
Don't know what they want to do or not sure what they want to do in the future x 36

"My future is still a long way away."

"Not sure to be honest."

Didn't help to make a decision x 10

8. CONTINUING WITH MATHS	Yes	No	Not sure
8a Are you going to continue studying maths or maths related subjects past your current level of study (e.g AS or A Level or degree?)	44%	15%	41%



8b. If yes, what will you do?

There was a limited response to this section. As in section 7d, most of those attending the activities were from years 7 – 9, so for many of them, their future is currently focused on GCSE's and not beyond that particular stage in their education.

Continued Maths Study

A Level x 53

GCSE x 40

Degree x 17

AS Level x 14

A Level and Degree x 8

GCSE, AS and A Level maths x 5

Architecture x 3

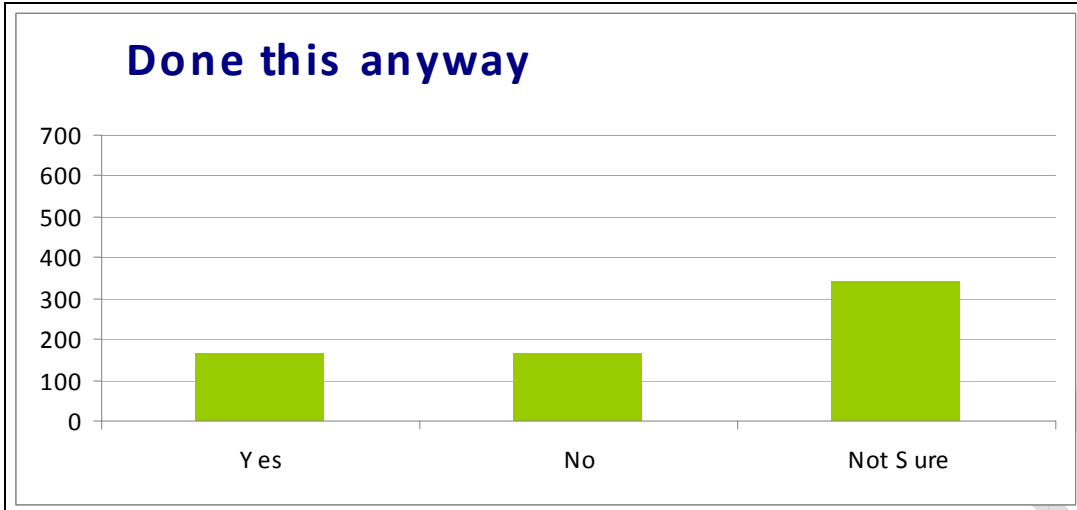
AS and A levels x 3

What it takes to be a Teacher x 2

AS Level Further Maths x 1

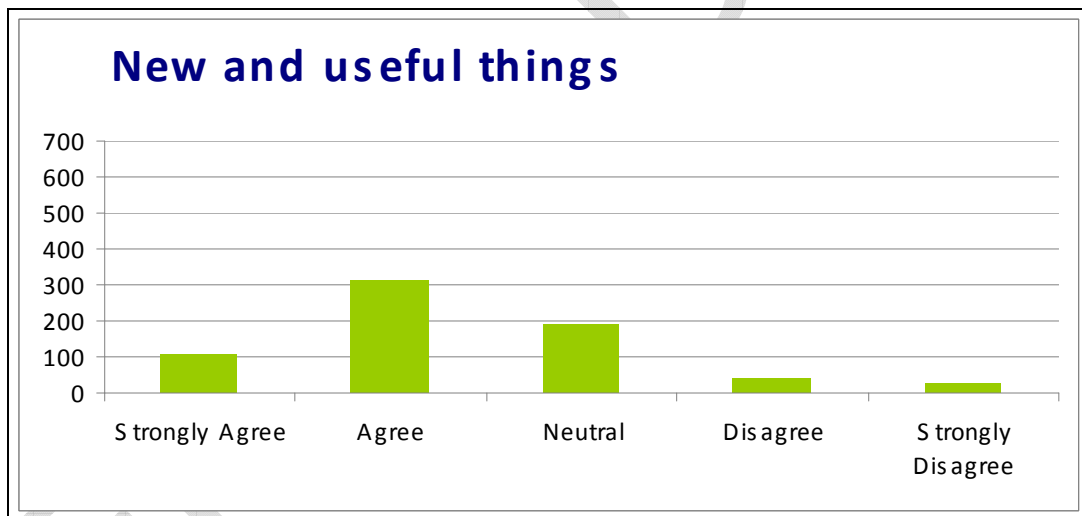
What it takes to be a Doctor x 1

	Yes	No	Not sure
8c. Would you have been doing this without taking part in the activities, events and programmes you have done?	25%	24%	51%

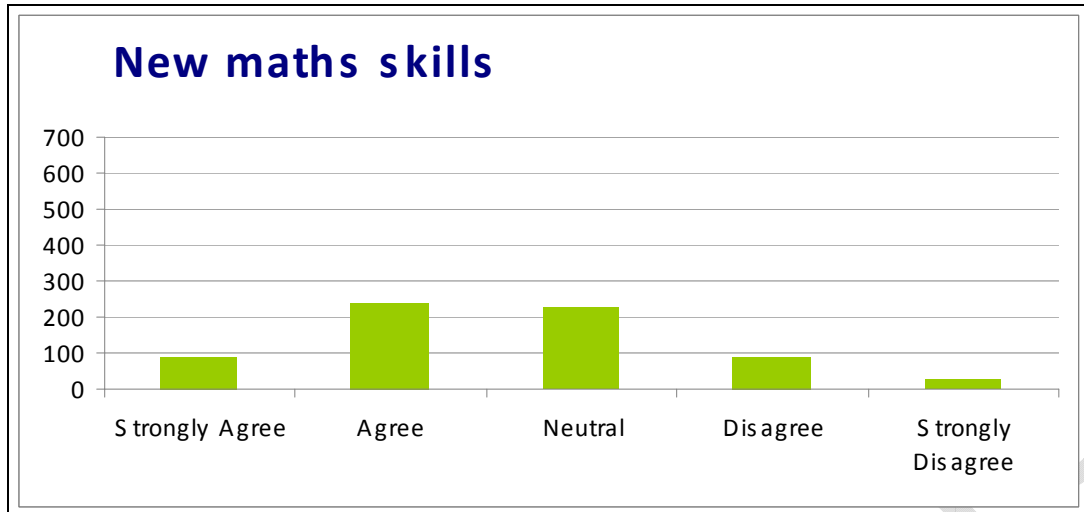


PLEASE THINK ABOUT THE MATHS ACTIVITIES:

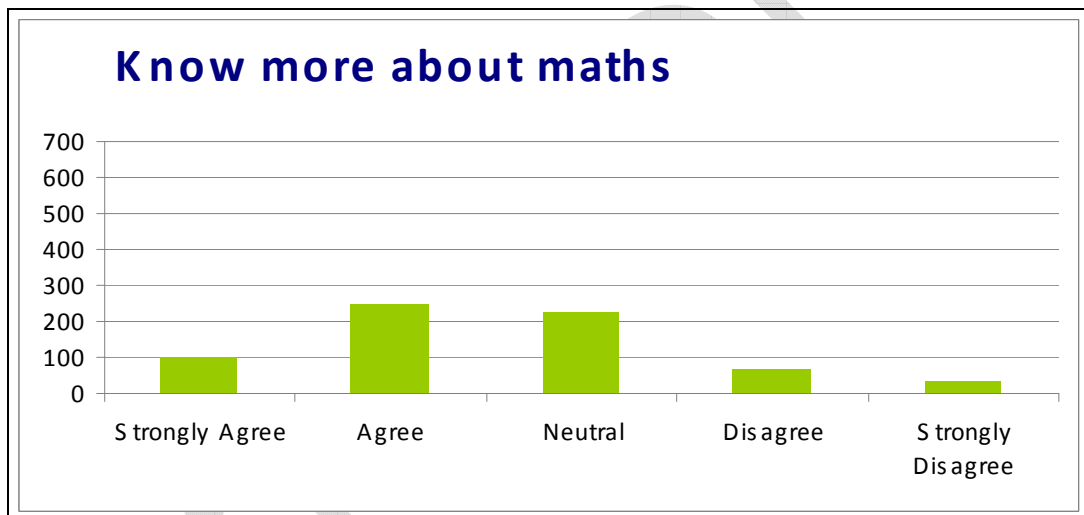
9. HELPED ME WITH MY MATHS	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
9a. I learned some new and useful things about maths	15%	47%	28%	6%	4%



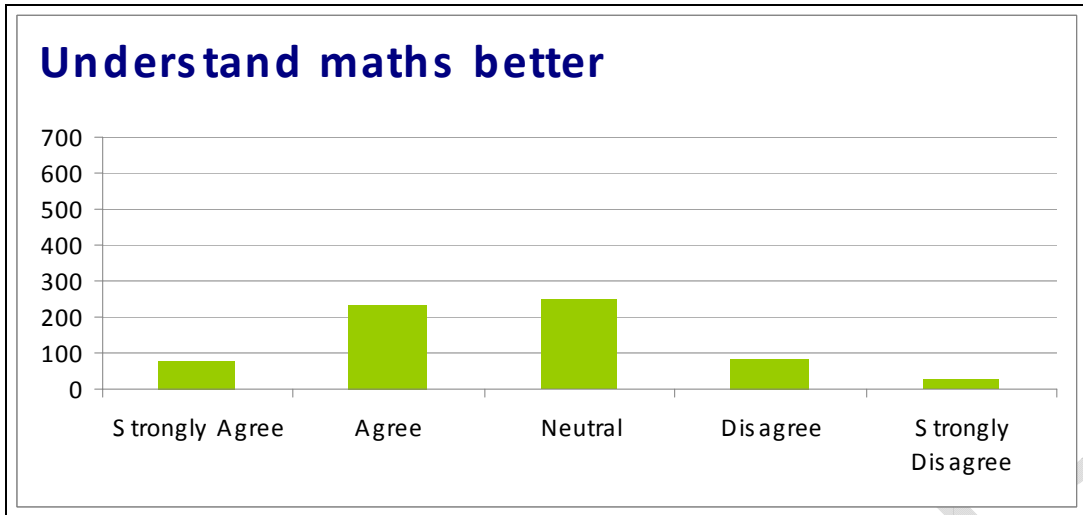
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
9b. I have gained new maths skills because of the activities	13%	36%	34%	13%	4%



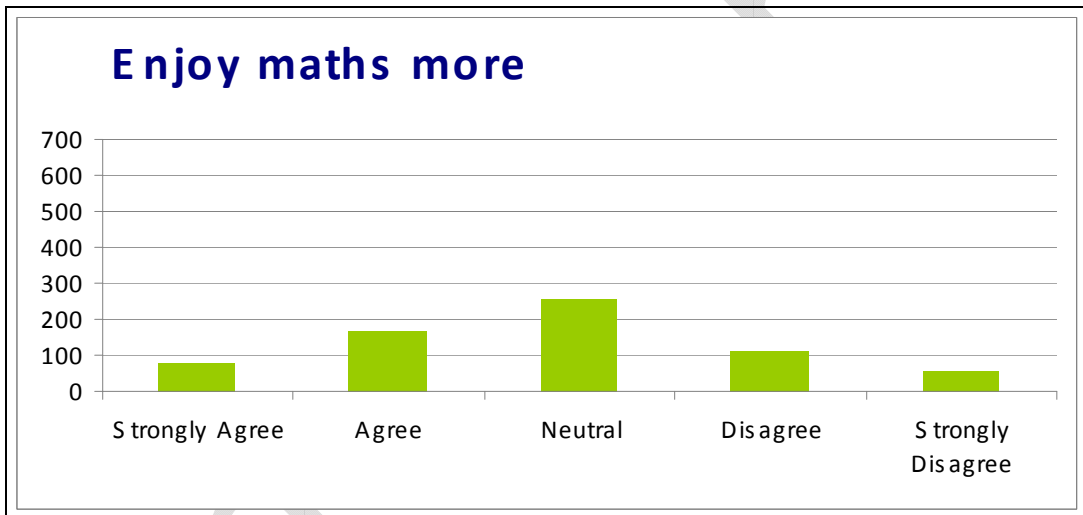
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
9c. I know more about maths than I did before	15%	37%	34%	10%	4%



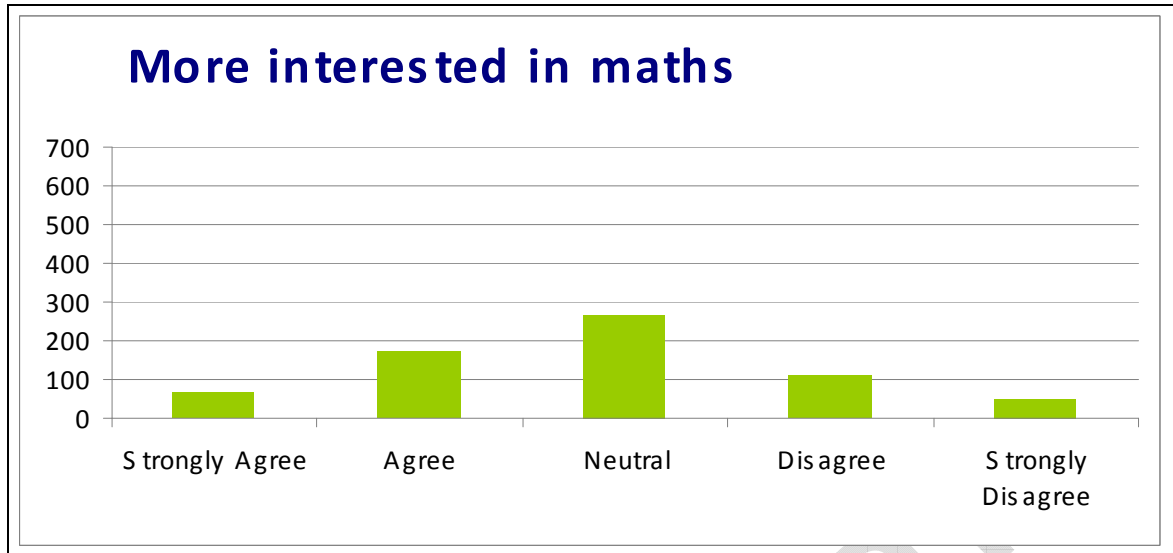
10. CHANGED HOW I THINK ABOUT MATHS	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
10a. I understand maths better than I did	11%	35%	37%	13%	4%



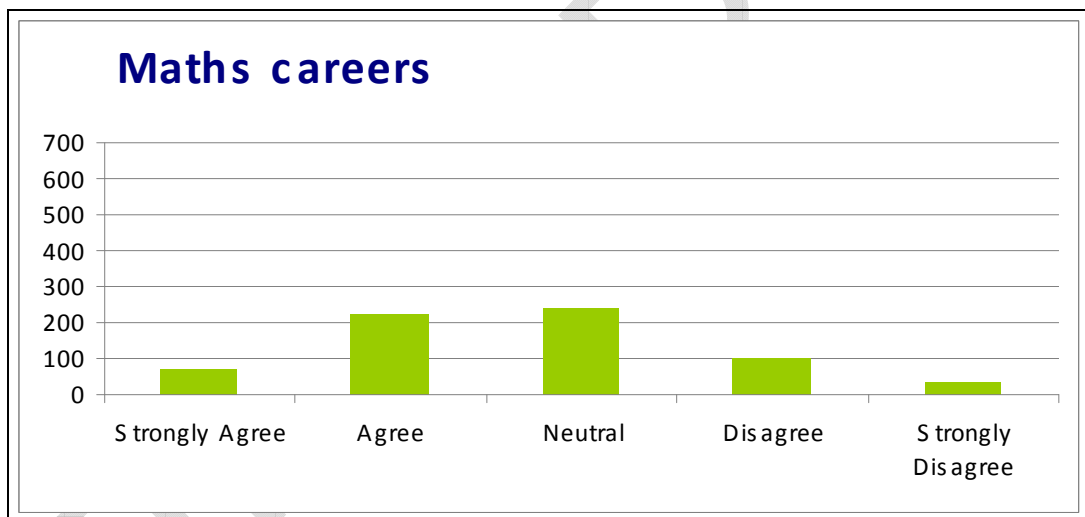
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
10b. I now enjoy maths more than I used to	12%	25%	38%	17%	8%



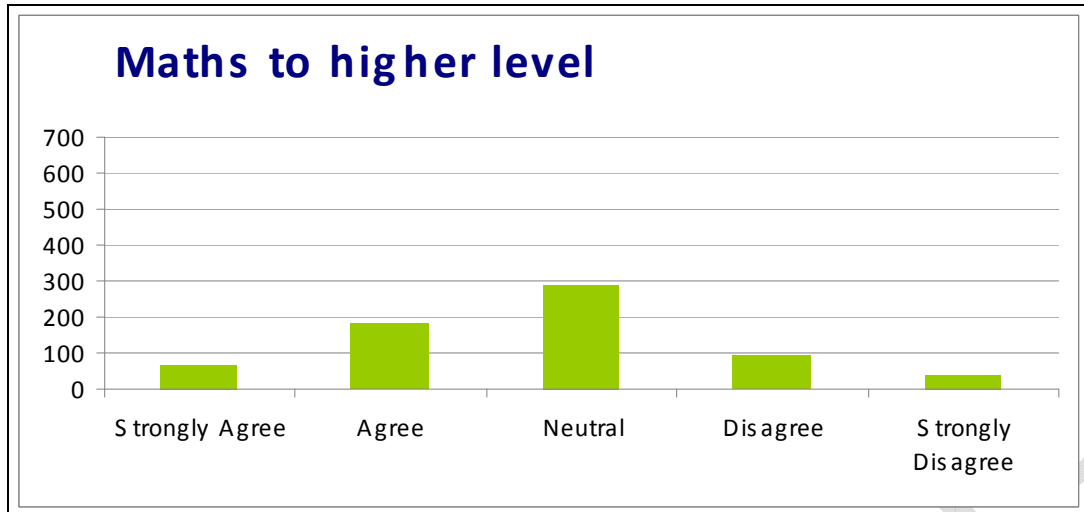
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
10c. I am more interested in maths than I used to be	10%	26%	40%	18%	6%



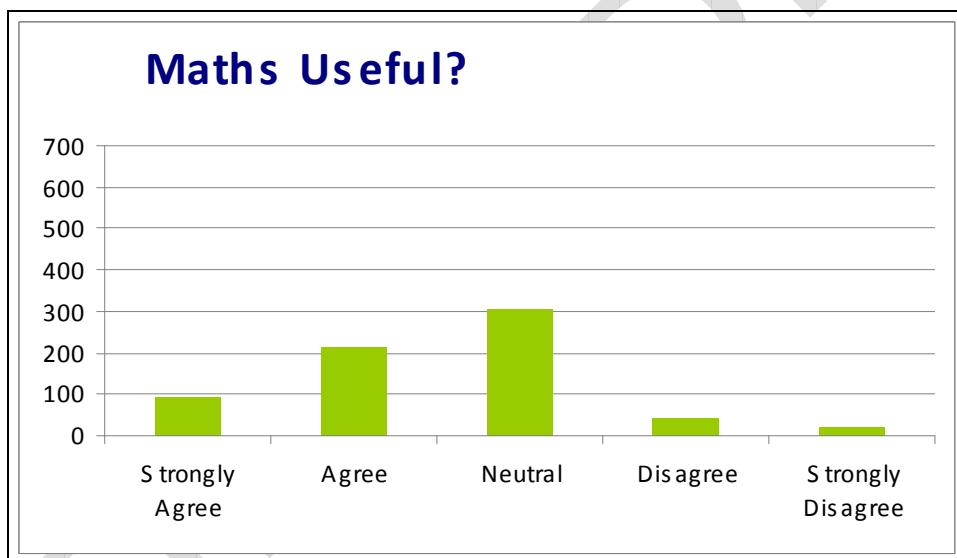
11. UNDERSTANDING - MATHS IS USEFUL	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
11a. I understand more about the maths related careers that are available	11%	33%	36%	15%	5%



	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
11b. I am now more interested in studying maths or a maths related subject to a higher level	10%	27%	43%	14%	6%

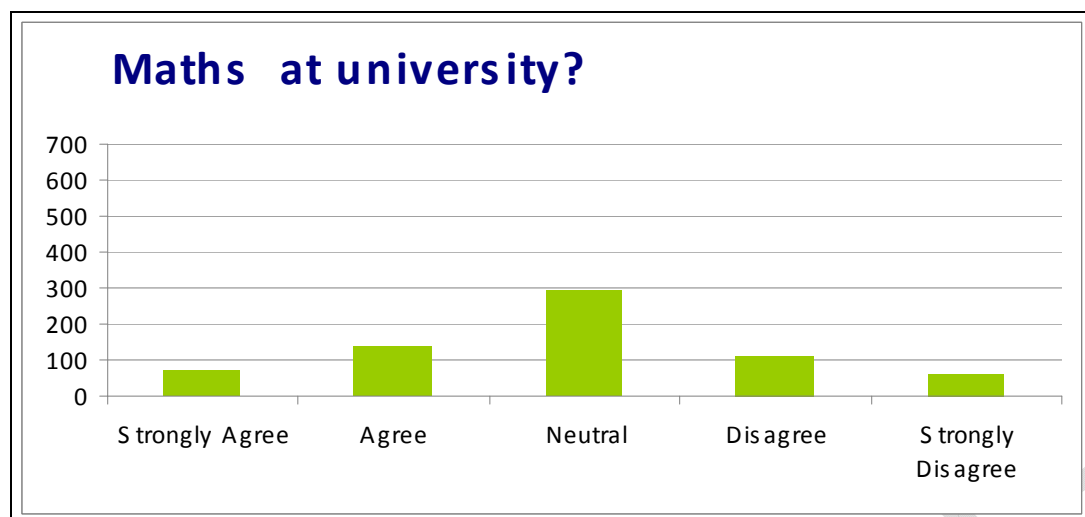


	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
11c. I now have a better understanding about why maths will be useful to me in the future	14%	32%	45%	6%	3%



Note: The above statement (11c) was in a slightly different format on the paper version to the other statements, and there was some concern amongst the Project Officers that this set of responses may not accurately reflect the views of all students.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
11d. I am thinking seriously about taking a maths degree at university	11%	20%	43%	17%	9%



12. What was the most useful maths activity or part of an activity that you did?

Most Useful Maths Activity

433 responders made comments. The main areas that provided consistency in the responses are listed below.

Positive Responses

Making 3 D shapes and cubes x 60

"The cube because it made me think a lot about the angles and what to put where."

Magic cards and Magic number squares x 50

Learning about new areas x 30

"Learning about how maths is used in cancer research"

"Learning about maths in music technology."

"When we were told about the cancer cells and how maths is related to them."

Extra help on revision and support x 23

"The lecture was very useful and it helped me understand a lot about maths and how we can use in later in life."

Algebra x 17

"The algebra and the translation, rotation, reflection."

"The Algebra cards & travel expenses."

"The algebra formulas - how they work with any number."

Everything x 7

Binary Code and Form x 6

Bridge Building x 5

Careers information x 5

The birthday trick x 4

Dominos x 4

Chessboard x 3

Problem solving x 3

Probability x 2
 Fractions x 2

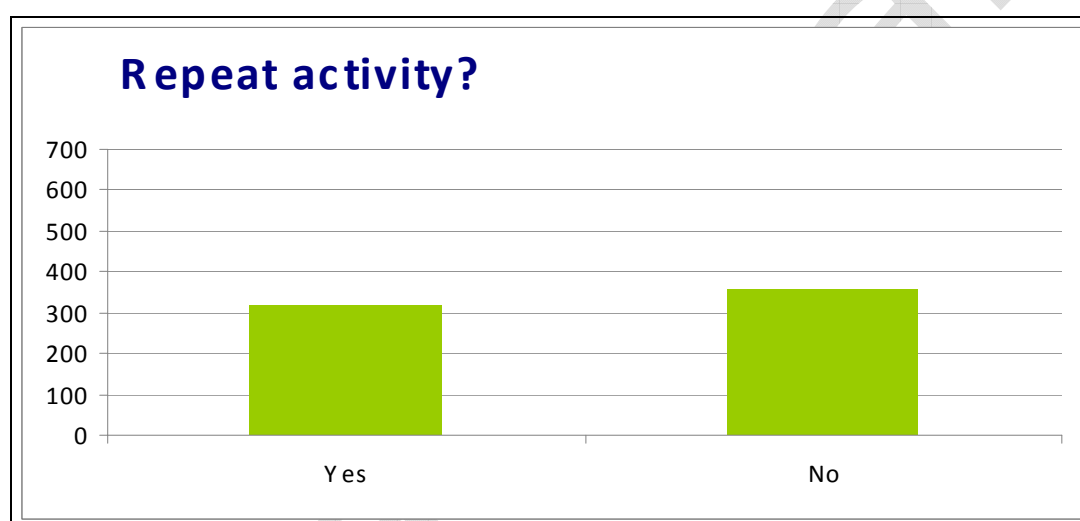
Negative Responses

Don't know or didn't do anything x 14
 Not sure x 14

None x 13
"None - the maths was terrible."

Nothing x 11
 Can't remember x 7

	Yes	No
13. Are there any of these activities that you would like to do again?	47%	53%



If yes, what?

Note: **271** responders made comments. The items listed below are the ones that were included twice or more

List 'to do again' by number of responses

Making 3 D shapes, cubes etc x 62
 Card tricks and maths trickery x 38
 Learning about shapes and boxes x 34
 Algebra x 16
 Helping out, explaining and support x 12
 Birthday trick x 9
 Bridge building x 9
 Binary code and form x 7
 Magic cards and matrix x 6
 Problem solving x 6
 Careers information x 5
 Extra revision and support in class x 5

Magic square x 5
 Dominos x 4
 Maths Challenge x 4
 Maths Games x 4
 Maths Quiz x 4
 Matrix x 4
 Mazes x 4
 Solving maths problems x 3
 Chess Board x 3
 Code breaking x 3
 Drawing line graphs x 3
 Around the world with maths x 2
 Barrels of honey x 2
 Fractions and decimals x 2
 Histograms x 2
 Probability x 2
 Puzzle solving x 2
 Transformation x 2
 Trial and improvement x 2
 Using Equations x 2

Positive Responses

All of it or everything x 27

Negative Responses

'None' x 51

Didn't do any – don't know x 18

Not sure x 13

Can't remember x 7

14. Tell us about something important that you learned from the extra maths activities that you did (if anything)

Note: **278** responded to this comment. A disappointingly high proportion just listed what they had done rather than provide information about what they had learned. This may reflect the fact that the majority of respondents were years 7 - 9, and therefore unlikely to be able to take a more thoughtful approach to what they have been doing.

The sections below reflect the main areas of comment. Those with a * came up a number of times.

Positive Responses

Understanding how to do maths

"Doing Trial & Error calculations is useful."

"Expanding my knowledge on algebra and geometry."

"Fractals was something I didn't know about before."

"I learned not to just rush into things, but take time to look at them methodically."

"It is easier to look at maths when you break it down e.g. algebra."

"Rotation, translation and reflection questions. "
"Maths can be more than just adding and taking."*

Maths in the real world

*"About the job opportunities using maths."
"Maths is everywhere"
"That maths is used everywhere"*.
"Finding out cheaper ways to fly with Air Miles"
"About how maths is used for hustling."
"About how maths is used in a lot of scams."*

Effect on individuals

*"It has boosted my confidence"
"It has given me a better understanding of maths."
"Not sure just that it was fun"
"Really good stuff."
"That is requires a lot of perseverance and determination"
"That maths is more interesting than I used to think."
"Everything wooooh, Thankyou!"*

How maths is useful

"How maths can link into science, and have cures for illnesses such as cancer."
"It confirmed Maths can be useful to solve practical problems."
"Teamwork is a good thing, it's easy and simple"*

Problem Solving

*"Becoming more open to different methods of solving a problem, not just with Maths."
"Give yourself thinking time to solve a problem"
"Learned to be more patient at problem solving. "**

Negative Responses

Nothing x 19

"Nothing important, it put me off maths."

Can't remember x 2

Annex 3

Internal Evaluation Reports

1. Yorkshire and Humberside

Internal Evaluation of the More Maths Grads Project

In Yorkshire and the Humber we are constantly assessing the various events and activities we hold. Our evaluations help us to make decisions about how to proceed.

After each activity we read through the internal evaluations to give us an overview of how both the pupils and teachers have found the sessions.

Some of our events use resources that were developed elsewhere – such as the FunMaths Roadshow. Both the comments and summaries from these events have been very positive and this has led to our continued use of these resources – sometimes as an event in themselves and at other times as one session during a longer day of activities.

Many of our workshops we have developed ourselves and the feedback has been used in a constructive way to improve resources and material. In particular, the first few times we run a workshop, modifications are often undertaken. Our initial code-breaking workshop “Codes and Ciphers” received positive feedback about much of the content but students suggested making it “more lively” by including an aspect of “competition”. We acted on these suggestions and the workshop became “Cryptic Challenge” where each round teams compete to crack a different sort of code. This revised format has been very popular.

Our newest session is “Mystery at the University – a Maths Whodunnit”. In an early run of this workshop we found an error in one round through one of the students queries during the activity. This has enabled us to improve our resources.

Data summaries have been of most use when analyzing our larger events such as Maths at Work. It is helpful to have an overview, because sometimes one or two comments from particular pupils can give a certain impression, whereas the data shows that the vast majority of pupils thought something different.

After our Maths at Work Days (one hundred pupils) we have used the feedback in producing reports for our presenters who are employers from different companies.

This feedback has been useful for the presenters, as this is often a completely new style of activity for them. It has helped them to develop and improve their sessions for the second time which they present. For example a comment which repeatedly came back was that pupils wanted the sessions to have more practical time and less time listening. Subsequently this has helped several presenters adjust their sessions.

The employers also provide some feedback about the events which we use to try to improve subsequent Maths at Work days. One employer commented after the second event 'It was good to see the comments made on last event feedback forms were taken forward. Air conditioning was great!'

We ended up changing the structure of last year's year 12 Maths at Work day as some schools had to pull out at the last minute so each employer only did half a day of workshops. Some employers commented about how this worked well for them so this year we have recruited five employers so that two of the companies only need run two workshops during the day.

The initial decision to run Maths at Work days was taken after consultation with people who had been involved in Careers Fairs and found that the students did not gain much benefit from these brief encounters. The idea of holding a Maths at Work day was considered and the careers officer went to Nottingham to see a similar event run by the Further Maths Network. The feedback from the Maths at Work days we subsequently held have encouraged us to continue with this event, even holding one at a school as one teacher who attended a Maths at Work day at the university commented that he thought it was such a good idea that his school would like to host one.

Many different employers came to our "What's the Point of Maths?" development day for maths teachers and careers advisors to talk to the delegates about the sort of maths they use at work. The evaluation showed that this session was a favourite of the delegates and should we have opportunity to repeat this day the employer session would be a main feature.

Feedback from teachers about the careers posters has been very positive and this encouraged us to mail out posters to all the schools in Yorkshire and the Humber for which we have contact addresses. We now see our posters on the walls of most of the schools we visit which demonstrates how appropriate the teachers have found them. Discussions with teachers have also influenced our decision to make more posters showing the use of maths in different subjects.

We have also assessed events that occur outside of our region – such as the Challenge Competitions in Merseyside. We looked at the competitions and discussed whether it would be a good event to hold in Yorkshire and the Humber with members of our steering committee and local teachers. The subject officer also made a trip to Liverpool to find out more and to witness the celebration evening. The event was looked on very favourably and so we took the decision to run both the Challenge and Senior Challenge competitions in our region this year. We subsequently had over 900 entries and a celebration evening for about 50 winners and their families.

Finally, we have also been involved in producing “Maths in Work” video clips in collaboration with NCETM. This decision was made after talking to teachers about how useful this sort of resource would be. We have disseminated this material at various conferences, including the Leeds Teacher Conference in 2008. The feedback from teachers was positive and so we have continued our involvement in this project.

2. London

Internal Evaluation of the More Maths Grads Project

- **Throughout the process of internal evaluation, a key focus was building on the delivery of events that proved to be suitable for all audiences – we quickly established a few of our activities were in more demand than others on offer in our original menu of activities**
 - **the general information providing nature of ‘Maths in your career... a career in maths’**
 - **Air Miles – because of its suitability across a wide range of abilities and year groups as well as the competitive nature of the activity**
 - **Supporting the NRIC programme of delivery to year 8 pupils in Tower Hamlets**
 - **The need for activities and resources that use language and content proportional to the level of student experience. We were often asked to work not only with gifted and talented pupils, but also those from ‘average’ mathematical abilities. Consequently the ‘Why study A Level Maths’ and ‘Maths in your career... a career in maths’ were refined to include content from popular culture/ everyday experience**
- **A range of materials have been developed or sourced in London. The key ones have been:**
 - **All activities adapted into standard template and included on ‘What’s the point of ... Maths?’ DVD**
 - **Valuable CPD material has been developed including materials and presentations for CRAC resource pack and for HEFCE’s life long learning networks (www.selln.org)**
 - **The original series of ‘What’s the point of...’ leaflets was written and developed in London. It began in direct response to a pupil’s request at a school in Barking & Dagenham, where the pupil wanted to know what the point of studying integration was.**
 - **The GCSE Maths DVD (What’s the point of... Maths?) has been developed to embody a holistic approach to teaching mathematics. It includes careers videos from different industry sectors and links in to various mathematical topics that are included on the Higher Tier syllabus – however it is appropriate for a range of learners across year groups and importantly across different disciplines.**
 - **A complex picture emerges of the interaction with industry and employers in London. It has been difficult**

to embed employer engagement alongside the micro activities we have been undertaking. In recognition of this we began to work with the London SEA (Science and Engineering Ambassadors) programme and have used their help in school visits and with larger 'Maths at Work' days - often as part of a speed dating routine which has gone down really well.

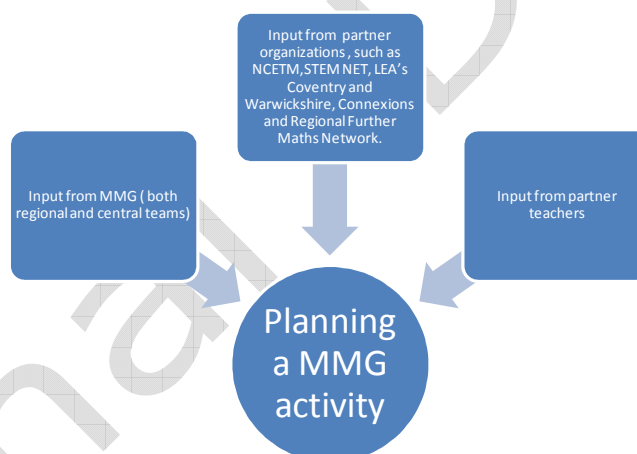
- **We have also used video footage of employers and industry as a more readily accessible route and with the link to actual maths work have found this to be an effective way to engage students – in particular on Weather Mapping and Bridge Building (both included on the DVD) where we have used footage from the BBC and the Walsh Group Plc respectively.**
- **The work done in conjunction with the Ocean Maths Project has highlighted the positive support that parents and guardians can play in influencing learners. With this in mind – we have strived to maintain a cultural balance that will appeal to our audiences. For example, the relationship between fractals and crowd safety during Hajj pilgrimage or evacuating Canary Wharf has captured people's attention.**
- **Another area we have refined practice has been targeted messaging – for example when looking at popular figures who have a mathematical background we looked at Bollywood actors and actresses in certain Tower Hamlets schools (where there is an overwhelmingly Bangladeshi student population). Whereas in Barking & Dagenham or Hackney we have picked popular icons such as Will Smith or football players.**
- **In the initial phase of the project, activities were often more didactic, but with feedback response we have changed the nature of activities where possible. All activities include an interactive element (unless working with whole year groups or large audiences)**

3. West Midlands

more maths grads West Midlands Internal Evaluation Strategy and Lessons Learned

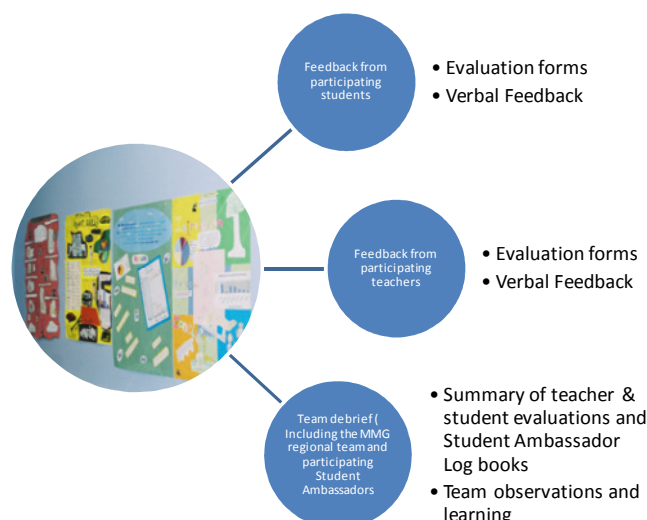
Planning of MMG activities

The planning of more maths grads West Midlands is done very carefully according to the requirements of the region and participating schools and organizations. The following chart summarizes the planning phase of MMG West Midland activities;



Evaluation Strategy:

After the activity has been undertaken the internal evaluation process is summarized below;



Activities and Learning Outcomes

The activities undertaken and the examples of how we incorporated the feedback to improve our activities are listed below;

1. Student Ambassador Placement:

Undergraduate students of Coventry and Warwick University are placed for 10 weeks in Schools of Coventry and Warwickshire. The students work within the Maths department to enrich lessons, as well as offering individual support.

- Student Ambassador Placements----Feedback from participating teacher”

“The increase in number of resources can never be done by the school alone as well as the expertise acquired by the partnership. An extended, continuous and structured scheme of work targeting a specific group of pupils is required so that pupils can develop relationships and raise their subject attainment”.

Actions taken: After completion of the first 10 week placement by student ambassadors at schools we contacted Mentor teachers and offered the possibility of extending the placement further if they found the initial 10 weeks beneficial. This enabled the students to build up relationships with ambassadors, which significantly improved their attainment.

2.Enrichment Activities:

As part of the Enrichment activities Employer led sessions, Maths fun day, Raising Aspiration Day, Every Day Wonders of Mathematics , Knex Technology Challenge, Maths experience day, Real Context Problem Solving Challenge, Making the grade, Maths Revision days and Careers 4 U have been done at local Schools and at Coventry University.

- Maths Fun day ---feedback from students
- ✚ *"Make the activities more harder & challenging"*
- ✚ *"Thing that mean something in the real world"*
- ✚ *"By having more individual help for people"*
- ✚ *"More Quizzes and stuff to win prizes"*

Actions taken: We try to make our activities hands on, interactive and incorporate lots of examples from real world applications. The activity is organized in the form of a competition and prizes are given to the winning team. The student ambassadors are employed to help in the session with a ratio of 1: 8 with students.

3.more maths grads- Nuffield Placements:

More maths grads jointly organized placements in summer 2008 & 2009 for 16 yr 12 students in various organizations. Some of the organizations which took part in this were Rolls Royce, Qinetiq, Unipart, NHS, National Grid and Warwick Castle.

This was highly praised by Nuffield Foundation as more maths grads have introduced this scheme to widening participation students. In previous years only one or two mathematics placements were undertaken in the whole UK , whereas more maths grads organized 16 placements per year.

- Feedback from Head of Maths at Blue Coat School;

" I had not heard about the scheme before, but thought it was a fantastic opportunity which could give my students an insight which they would not get in any other way. I was invited to participate in the scheme by more maths grads team. We were really grateful, we managed to get three placements. Two of our

students went to Rolls Royce – there is no better place to give students experience of real mathematics. As Staff we can lose touch sometimes with the applications of the subject. Being aware of the jobs out there is crucial for us.”

Mr. Martyn Rice , Head of Mathematics Coventry Blue Coat Church of England School and Music College

Feedback from a participating student;

“The Nuffield – more maths grads mathematics placement at NHS Arden Cancer Centre gave me an insight of how Maths can be applied in the real world. A lot of people question why they have to learn Maths and think they are never going to use it again. Here I have seen how Maths can be applied to very important and everyday situations.”

Chandni Mistry, Yr 12 Student at President Kennedy School and Community College , Coventry

Action taken: After the huge success of more maths grads – Nuffield placements in 2008 we committed to partnership in 2009 for our region on the same organizational model.

4.Career Profiles and Leaflets :

The wet midlands MMG team sought out interesting Mathematicians and Statisticians from all over UK to interview for Career Profiles. The Career Profiles are hosted on the Maths Career website. A careers leaflet based on these profiles was also produced, which is being widely circulated.

- Feedback from Viv Maginnis , Deputy Head of Finham Park School;

“I would like to see this leaflet circulated to all of my Yr11 students”

Our peers suggested that the leaflet should be made more interactive and less text rich.

Actions taken:

We will be developing a new leaflet incorporating all these suggestions.

5. Teacher Workshops and Conferences:

The regional more maths grads team is working closely with the LEAs of Coventry & Warwickshire in organizing workshops and professional development events. The team is also on the steering group of "Improving A-level standards in Mathematics". A number of workshops were organized and presented. The team was also successful in securing funding from Ogden Trust for the Residential conference 2008.

- Feedback on the residential conference;

"Can this happen every year?"

Actions Taken

Funding has been secured for Residential Conference 2009, scheduled to take place in Nov.

6. Adult Learners:

In the initial stages of the project we did not manage to interact significantly with adult learners.

Actions Taken:

- Contacts established with Open University and have discussed the opportunities for collaboration.
- Career Fair for adult learners organized by NIACE at Cosford

7. Career Fairs :

The team have been doing a number of career fairs with Skills West Midlands and Connexions.

- Feedback from a participating student;

"Hi, my names Catherine Bowering, and I'm currently in year 10 at Rugby High school.

I was walking around the careers event at the Benn Hall, and was really interested by the idea of more maths grads. I really enjoy maths and am interested in taking it further. Before I went i was sort of worried about taking it further because I didnt want it to ruin my enjoyment of it if i did something to do with it as a job. But after talking to you, the ideas really starting to appeal. The way you were so passionate

about it really engaged me, and has really encouraged me to think seriously about taking maths as a further option, so thank you. “

Comments from a participating parent;

“I just knew that with Maths you can do finance and teaching jobs.”

Actions Taken:

The team is developing more interactive resources for career awareness to be used. The focus of these resources will be on the wide range of career opportunities available to Maths graduates.

8. Public Talks:

To increase the awareness of the general public about Maths careers , we have been hosting a number of public talks and events at Coventry University.

- Feedback on the National science week Talk, “The Maths of Sport Stadiums”

✚ “Smashing event, very interesting, good content, well presented with humour, stimulating and engaging.”

✚ “More practical demonstrations.”

✚ “Similar lectures about the practical application of mathematics in the real world.”

✚ “Have PowerPoint available for distribution especially for schools!”

✚ “More advertising of presentations and easier to get hold of people before presentation starts.”

✚ “Entranced by speaker, would like a copy of his presentation for possible use at school.”

Actions Taken:

We are organizing more public talks from inspirational mathematics speakers.

9. Career Awareness Workshop:

Feedback was collected from mathematics teachers, connexions advisors and other relevant organizations about the requirement of careers awareness material for the region. On the basis of the feedback received, we planned the Careers from Maths workshop and hosted it jointly with CRAC. The workshop was a huge success and was attended by about 70 participants from all over the West Midlands. The delegates included professionals from industry, local Maths teaches, Coventry & Warwickshire LEAs and Connexions advisors.

- Feedback from participants;

- ✚ *"Significance of 'some processes' etc., for utilisation of mathematical techniques."*
- ✚ *"Will do a display about careers; get Rolls Royce in."*
- ✚ *"Useful to gain an insight into the context of maths based careers and how maths could be used."*
- ✚ *"It made me aware of the variety of careers available."*
- ✚ *"Next step – communicate my enthusiasm to colleagues and students."*
- ✚ *"Helps my understanding of the flexible nature of maths..."*
- ✚ *"Need more links with people in industry to give inspirational talks in school."*
- ✚ *Maths is crucial to a multitude of careers that use maths related subjects.*
- ✚ *Maths is so transferable and employers are looking for this*
- ✚ *The range of careers that a degree in maths opens up is much broader than realised*
- ✚ *A few useful websites and scenarios that can be referred to in the classroom i.e. why maths is so important.*

Actions Taken:

We are organizing more employer engagement sessions for teachers and students.

10. Continuation of activities post MMG:

There is concern from various quarters about the continuation- "Post MMG" of the useful activities which MMG has introduced to the region.

Actions Taken:

For the activities to be continued post MMG;

- Closely collaborating with organizations like STEMNET, LEAs Coventry & Warwickshire, Further Maths Network,

NCETM, Maths Inspiration, Nuffield foundation and Ogden Trust

- Reporting Key findings in conferences and research papers.

Final Draft