

Framework for the Evaluation of the More Maths Grads Project

A project based at the University of
Birmingham and funded by HEFCE.

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flavin project innovations ltd

managing innovation, management services
research, development and evaluation

Evaluation Framework provided by Flavin Project Innovations Ltd

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Section 1: The Evaluation Processes

1.1. Brief Introduction to the Project

The aims of the More Maths Grads Project are 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 science graduates in England so that the demands of industry, commerce and education might be better met.

The project is based at the University of Birmingham, alongside the Higher Education Academy MSOR Network, and is being piloted in three regions: West Midlands, Yorkshire and the Humber and London. This pilot project will be working with HEI's, 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 sciences disciplines.

The project is funded by the Higher Education Funding Council for England as part of the Strategic Development Fund and is part of the widening participation agenda.

1.2. Introduction to the Evaluation

Carol Flavin, of Flavin Project Innovations Ltd (FPI Ltd) will act as the Lead Evaluator for Independent Project Evaluation, supported by Bridget Pottinger, (research, analysis and administration). Statistical Analysis will be undertaken by a Chartered Statistician, who will work closely with the evaluators.

FPI Ltd will undertake liaison and support with the Project Manager of the More Maths Grads Project. The approach taken by the evaluators will be to identify and focus on key issues faced by the collaborative partnership and the activities undertaken within the three regional projects. This approach will be flexible, whilst maintaining a clear differentiation between evaluation and supporting the project, the partners, the people who work on the project and the beneficiaries of the project activities.

The evaluation will be a structured process, which will allow the projects' activities to be assessed and understood. It will involve analysing and interpreting data about the project in order to identify the achievements as well as areas that need strengthening. We prefer to work alongside a project rather than undertaking a 'post mortem' type of evaluation. The interim (monitoring) and summative evaluations will focus on the processes, performance and impact of the project as well as activities

matched against the aims, objectives, outcomes and outputs of the project. We also look at successes and achievements, issues and challenges as well as impacts and benefits.

Evaluation will be an ongoing assessment, and the reporting process is intended to enable project management, partners, funders and beneficiaries to learn from the project experiences and ascertain impact. It is designed to be an integral part of the drive for continuous improvement and adopting or developing best practice.

1.3. Aims of the Evaluation

The aims of the evaluation are to:-

- Provide the necessary independent evidence of external evaluation required by More Maths Grads in order to meet the HEFCE funding rules.
- Support the development and implementation of the More Maths Grads Project, supporting on-going improvements by providing feedback, and identifying unexpected outcomes
- Support the delivery and development process in order to draw out lessons to enhance future activity and record all tested and observed outcomes
- Support the project in developing the evidence base needed to help protect against audit.

1.4. Objectives of the Evaluation

The objectives of the evaluation are to:-

- Review the impact of the overall programme including the three regional projects, and the four strands of activity or themes
- Analyse and place particular emphasis on user / beneficiary requirements and achievements, mainstream provision, gaps in provision and new opportunities
- Evaluate the activities of the project, allowing the analysed information to play an important role in improvement and best practice development and dissemination of the project
- Evaluate the long term impact of the project and contribute to the forward strategy
- Contribute to the dissemination and sustainability strategy of the project

1.5 Evaluation Methodology

The methodology for researching, analysing and evaluating the aims and required outcomes for this evaluation brief will take place utilising the following stages:-

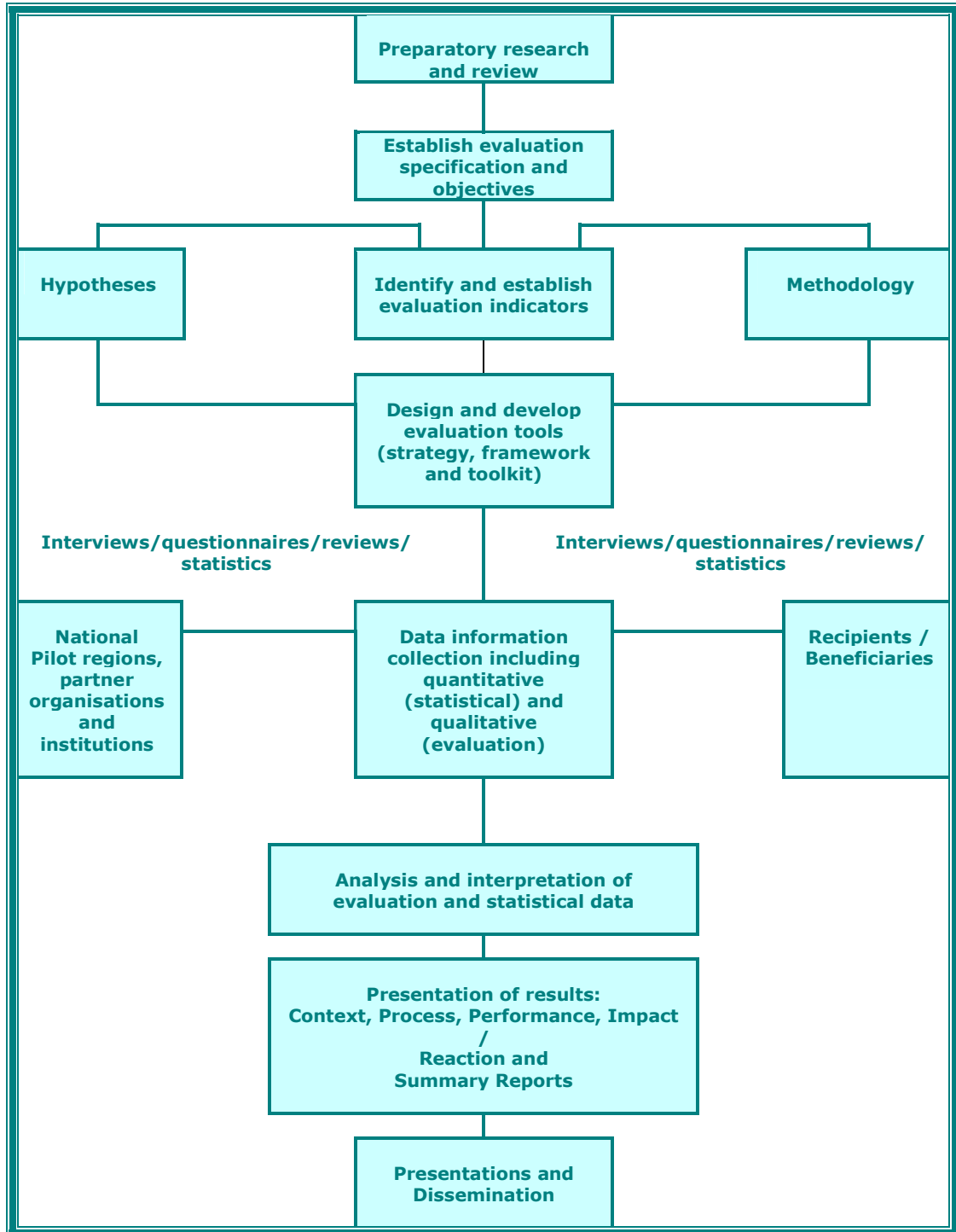
Table 1: Evaluation Stages (refer to Timescales in Section 5)

Stage 1:	Preparatory research, base-lining and review. Review of all relevant documentation in relation to the More Maths Grads Project activities and requirements
Stage 2:	Establishment of evaluation objectives and framework focusing particularly on the requirements of the evaluation brief
Stage 3:	<p>Identification and development of the evaluation indicators:</p> <ul style="list-style-type: none"> ○ Operational requirements ○ Objectives ○ Success criteria ○ Required outputs and outcomes ○ Evaluation results ○ Potential long term impact of the outcomes of the project on the beneficiaries ○ Potential long term impact of the outcomes of the evaluation on the organisations, partners and institutions involved
Stage 4:	Finalisation of the evaluation tools. These to include data collection techniques, on-line, web-based surveys, email or paper-based questionnaires, statistical analysis methods, face-to-face interviews, direct observation and sampling of activities and development of case studies. These to take place with key organisations to establish success criteria for the project. The project is designed to improve performance, increase attainment, change perception and widen participation in maths and mathematical sciences
Stage 5:	Provision of the Evaluation Strategy, Framework and Toolkits to the Project Manager and Project Steering Committee (by July 07)
Stage 6:	<p>Five interim monitoring reports to include context, process, performance, impact and reaction.</p> <p>Reviewing operational requirements, objectives, success criteria, project outputs and results. Monitoring progress against objectives, outputs and outcomes. Reports to incorporate: qualitative and quantitative reviews including assessing successes, achievements, issues and challenges within the regions (using on-line surveys, email or Word -based questionnaires, face-to-face interviews, focus groups, observation and sampling and assessing attainment, widened participation as well as data information collection of educational data relating to maths and mathematical sciences across the regions involved</p>
Stage 7:	Five six-monthly Interim Reports and information presented to Project Manager and the Executive Project Group and the Advisory Group (June & Dec 07 and 08, June 09)

Stage 8:	Evaluation and Statistical data collection, analysis and interpretation of data. This will include the provision of the baseline data on the national statistics, pilot regions and individual organisations. Data collection will take place when examination and other relevant data is available (late 2007 for the 2006 – 2007 baseline data and annually until late 2009 to facilitate comparison)
Stage 9:	Final or Summative Report to incorporate results, final assessments and interpretation, the impact and outcomes of the More Maths Grads Project, as well as the lessons / conclusions to be drawn. It will cover performance against declared objectives and targets, performance against key funding criteria, assessment of impact, statements of good transferable practice, case studies conclusions and potential recommendations for the future (Dec 09 – Jan 2010)
Stage 10:	Presentations and Dissemination (where appropriate)

The diagram overleaf illustrates the evaluation and design procedures to be undertaken by the evaluators.

Diagram 1: Evaluation Methodology



1.6 Evaluation Processes

For this evaluation activity, the evaluators will be undertaking on-going formative and summative evaluation, working with the MMG Project Manager, the Manager of the MSOR Network, the Advisory Group, the Executive Group, the Impact Assessment Group, the MMG Project Delivery Teams, the partners in the pilot regions (HEI's, schools and colleges) the users or recipients of the services provided by the MMG Project, relevant employers, the Funders (HEFCE), and the representatives of professional bodies and organisations representing and covering different aspects of the mathematical sciences disciplines.

The evaluators will work with, and support, the project management in meeting the aims and objectives of the project by undertaking on-going evaluation and feedback of the project activities, which will include attendance at steering group / partner meetings, review meetings, liaison activities and project management support.

The evaluation process will be undertaken using the following methods:

- Preparatory research and review
- Review of all relevant project documentation in relation to the project activities and expected outputs
- Regular meetings with the Project Management and Delivery Teams
- Attendance at Steering Group Meetings
- Assessment of the control environment, monitoring, performance and progress reviews,
- Establishment of evaluation objectives and evaluation framework focusing particularly on the HEFCE requirements
- Identification and development of the project evaluation indicators:
 - Operational requirements
 - Objectives
 - Success criteria
 - Project outputs
 - Project results
 - Long term impact of the Project
- Finalisation of the evaluation tools based on:-
 - Qualitative: such as review of the activities of the project and the effectiveness of the activity development relating to content, methodology, delivery and attainment.
 - Quantitative: such as successful delivery of project aims, objectives, outputs and outcomes
- Online, email or paper-based surveys or questionnaires with a wide range of project participants (delivery teams, partners, students, teachers, steering groups etc)
- Statistical analysis

- Internal project evaluation
- Analysis of project data (number and nature of events, dissemination activities etc)
- Focus Groups (where appropriate)
- Face-to-face interviews (where appropriate)
- Observation and Sampling (where appropriate)
- Report writing

Five interim evaluations will evaluate the methodologies undertaken by the project team, and effectiveness of the approaches taken by the delivery teams to deliver the requirements of the MMG project. These interim evaluations will also assess contractual outcomes / outputs against objectives. The focus of the evaluations will be on processes used to deliver the project requirements, the activities, the performance of the project, and the reactions of the users and the impact that the project has had on their studies and their views on continuing mathematical science related activities.

The summative evaluation will incorporate final assessments and interpretation of all data. The summary report will look at the results, the impact and outcomes of the project, successes and achievements, issues and challenges, impacts, benefits as well as the lessons / conclusions to be drawn. This report will be linked to ongoing assessment of the innovative actions of the project in relation to the impact on participants.

1.7 Evaluation Questions posed by the Evaluators

FPI Ltd posed a series of questions in the evaluation proposal to the MMG project. These incorporate the evaluation indicators. These questions are integral to the evaluation and information from all of the tools we have devised will be used in order to answer these questions before the end of the evaluation process. The information generated by both the statistical analysis of relevant data, and by FPI Ltd's impact evaluations, will help Project Management to inform decisions on the effectiveness of activities and programmes within the More Maths Grads Project.

There are a number of key indicators that will indicate whether the impact of the 'More Maths Grads' interventions has been successful and these are posed in the following questions:

- 1 Has the programme delivered all the contractual outputs and outcomes?
- 2 Has the programme achieved what it was intended to achieve, by

- meeting the aims and objectives?
- 3 Has the programme made a real and significant difference to the people involved or served by it?
 - 4 To what extent has the programme caused the desired changes in the intended audience. This involves assessing the outcomes and the short – medium term developmental changes resulting from the intervention
 - 5 Has the programme achieved the intended goals?
 - 6 How effective have each of the four main interventions been (the themes of Careers, Student, Teaching and HE Curriculum)?
 - 7 Which of the themes has played the most significant role, (if any)?
 - 8 Have the outcomes been satisfactory in number and sufficiently high in quality?
 - 9 Have the programme impacts varied across different groups of intended beneficiaries (including gender and ethnicity) over time?
 - 10 Can the changes in outcomes be explained by the program, or are they the result of some other factors occurring simultaneously?
 - 11 Are there any unintended effects of the program, either positive or negative?
 - 12 How effective is the program in comparison with alternative interventions?
 - 13 Is the programme worth the resources it costs?
 - 14 Has the money been spent wisely?

Section 2 overleaf, contains the evaluation indicator matrix that matches the tools designed to evaluate the project with the questions posed above.

SECTION 2: Evaluation Indicator Matrix for the More Maths Grads Project

EVALUATION QUESTION		EVALUATION TOOLKIT (Key available overleaf)															
		1*	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Control Environment	Monitoring and Review	Performance & Progress Reviews	Partner Quests	Project Team Quests	Student Beneficiary Reviews	Steering Groups Quests	Teacher Survey	Review of current situation	Face-to-Face int.	Stats Analysis	Observe & sampling	Focus Groups	Case Studies	Dissemination Events	Meeting attend
1	Has the programme delivered all the contractual outputs and outcomes	X	X	X		X											X
2	Has the programme achieved what it was intended to achieve, by meeting the aims and objectives?	X	X	X	X	X	X	X	X						X	X	X
3	Has the programme made a real and significant difference to the people involved or served by it?			X	X		X	X	X		X		X		X	X	X
4	To what extent has the programme caused the desired changes in the intended audience. This involves assessing the outcomes and the short – medium term developmental changes resulting from the intervention	X		X	X		X	X	X		X	X	X	X		X	X
5	Has the programme achieved the intended goals?	X	X	X	X	X	X					X				X	X
6	How effective have each of the four main interventions been (the themes of Careers, Student, Teaching and HE Curriculum)?	X	X	X		X	X	X	X		X					X	
7	Which of the themes has played the most significant role, (if any)?			X		X	X	X	X		X			X		X	
8	Have the outcomes been satisfactory in number and sufficiently high in quality?		X	X	X	X	X	X	X			X		X			X
9	Have the programme impacts varied across different groups of intended beneficiaries (including gender and ethnicity) over time?	X	X	X	X	X	X	X	X				X		X		X
10	Can the changes in outcomes be explained by the program, or are they the result of some other factors occurring simultaneously?							X	X	X						X	
11	Are there any unintended effects of the program, either positive or negative?		X		X	X	X					X		X		X	
12	How effective is the program in comparison with alternative interventions?						X	X	X			X				X	
13	Is the programme worth the resources it costs?	X	X		X	X		X		X		X					X
14	Has the money been spent wisely?	X	X	X	X						X					X	X

*** Key to Toolkits used:**

- Toolkit 1: Control Environment and Risk Assessment
- Toolkit 2: Monitoring and Review Process and Checklist
- Toolkit 3: Performance and Progress Reviews
- Toolkit 4: Partner Questionnaires (schools, colleges and HEI's)
- Toolkit 5: Project Team Questionnaires
- Toolkit 6: Student or Beneficiary Reviews
- Toolkit 7: Steering Groups Questionnaires
- Toolkit 8: Teacher User Perception Survey
- Toolkit 9: Ongoing review of alternative activities relating to uptake of mathematical sciences
- Toolkit 10: Face-to-Face Interviews
- Toolkit 11: Statistical Analysis (to be determined)
- Toolkit 12: Observation and Sampling
- Toolkit 13: Focus Groups
- Toolkit 14: Case Studies
- Toolkit 15: Evaluation of progress via Dissemination Events
- Toolkit 16: Attendance at meetings and review of documents and evidence

SECTION 3: Interim Evaluations and Reporting

Five interim monitoring reports will be produced and the evaluations will be undertaken with:

- Project Management
- Steering Groups (Executive, Advisory, Regional)
- Operational and management groups (Project Design, Regional and Impact Assessment)
- Project Delivery Teams (careers, subject, teacher and HE curriculum development)
- Funders (where appropriate)
- The partners (HEI's) and delivery and provider organisations (including the seven schools or FE colleges within each region)
- Appropriate institutions
- Relevant employers
- Beneficiaries and recipients

It is our standard practice to agree the structure and the main messages of the report before final writing; we also provide a draft for discussion and comment before publication. All reports will be presented in digital format (a Word draft and an Adobe PDF final version).

Diagram 2: Interim Monitoring and Evaluation



3.1 Control Environment Evaluation - Interim Evaluation 1

Dates: May – June 2007

Evaluation Theme: Control Environment developed within the project in order to meet the stated objectives.

The theme for this interim evaluation of the MMG Project will be to evaluate the processes undertaken by the project to date in meeting the stated objectives. The report will summarise progress to date, and will be designed to establish that the control environment of the project is appropriate for the successful delivery of the MMG project. The report, and is also designed to identify issues for corrective action, as well as providing early indications of potential lessons for the future

Evaluation Activity:

This first interim evaluation will evaluate the methodologies undertaken by the project team to deliver the MMG Project, and the effectiveness of the planning and development processes. The interim evaluation begins the process of assessing contractual outcomes and outputs against objectives.

Evaluation Methods:

The evaluation process will be undertaken using the following methods:

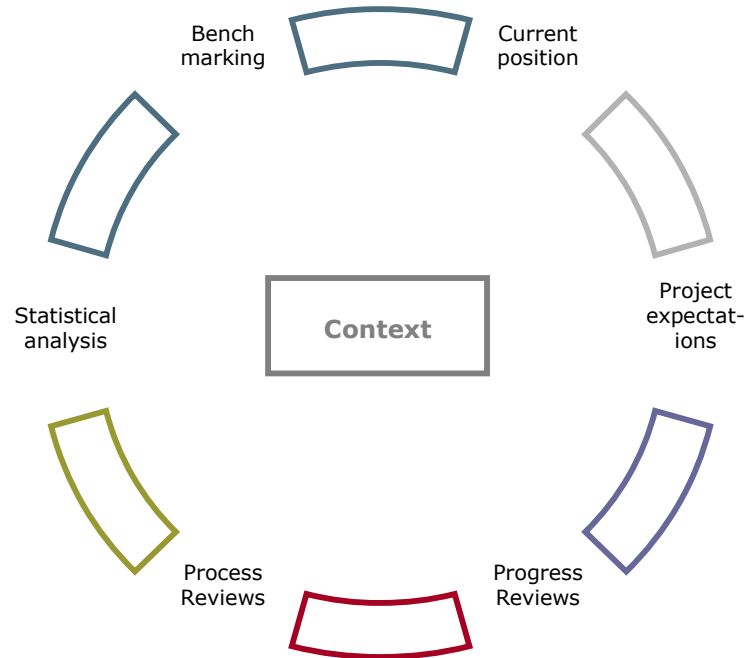
- Preparatory research and review
- Review of all relevant project documentation in relation to the project activities and expected outputs and outcomes (Toolkit 1 & 2)
- Monitoring and review processes including a detailed discussion document sent to the Project Manager (Toolkit 1 & 2)
- Attendance at meetings
- Discussions with key project team members
- Internal Project evaluation reflected

3.2 Context Evaluation – Interim Evaluation 2

Dates: July – December 2007

Evaluation Theme: Processes undertaken by the project in order to meet stated objectives. This to include the statistical benchmarking exercise and analysis of the current position within mathematical sciences.

Diagram 3 – Context Evaluation



Evaluation activity: This Interim Report 2 will include preparatory research to establish the current position in the field of mathematics and mathematical sciences using available information. Statistical data analysis and collection will be undertaken in order to establish a baseline by which the project successes can be measured. This will provide information that will allow those associated with the project (managers, deliverers and decision making groups) to better understand the current national, regional and organisational situation with regard to the mathematical sciences in terms of current student numbers, study patterns, recruitment (to HE and within schools and colleges) and the nature and range of qualifications studied.

This evaluation will also incorporate evaluation of the processes used in the design, development and delivery of the project, in order to establish the effectiveness of the project to meet the stated aims and objectives, partnership requirements, user requirements as well as those of the funding body. The stakeholders will be asked to provide information that will establish the expectations for the project.

Evaluation methods:

- Statistical analysis of baseline data. This will provide data at a national, pilot region and organisational (schools, colleges and

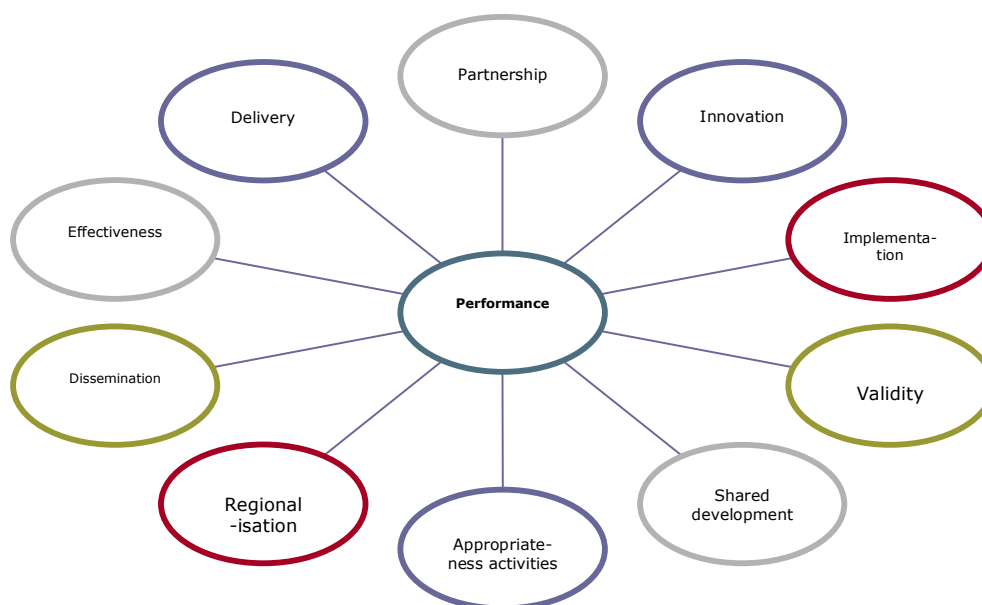
- universities) level for 2006 – 2007. This will also incorporate data relating to examination results from summer 2007 for the partner schools, the FE Colleges and relevant HE information from the universities within the pilot regions, as well as the national data (Toolkit 11).
- Research establishing the current position in the field of mathematics and mathematical sciences (Toolkit 9)
 - Establishment of expectations from the project from key stakeholders (Toolkit 7)
 - Review of processes instigated by the project to deliver the contractual requirements (Toolkit 3)
 - Review of strategic plans and the use of action or work plans (Toolkit 3)
 - Monitoring of the projects' processes against the goals and objectives (Toolkit 2)
 - Internal Project evaluation reflected

3.3 Performance Evaluation – Interim Evaluation 3

Dates: January – June 2008

Evaluation Theme: Performance of the project in meeting its stated objectives

Diagram 4: Performance Review



Evaluation activity: This Interim Report will focus on the performance of the project to date. This relates to outputs and the outcomes of the project matched against the goals and objectives from the contract and established by the Steering Groups. Focus will be on overall achievements, the impact of the project on partners and users, key issues and challenges faced by the project, problems associated with the development and delivery of the project and the lessons learned from these, as well as conclusions and recommendations as to the way forward.

Evaluation methods:

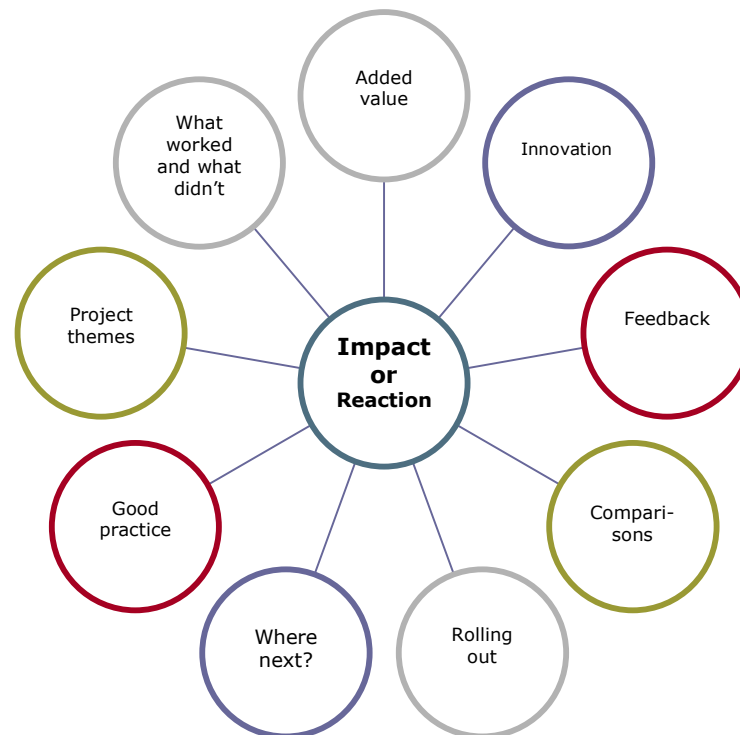
- Review of progress to date relating to the goals and objectives (Toolkit 3)
- Monitoring the project against the goals and objectives (Toolkit 2)
- Review of performance including activity and event development matched against objectives and action plans (Toolkit 3)
- Internal evaluation of progress of delivery mechanisms to date (Toolkit 3)
- Comparison of the strategic and operational plans against progress to start the process of assessing impact (Toolkit 3)
- Questionnaire with project delivery teams focusing on achievements and problems to-date, issues/challenges and actions needed (Toolkit 5a)
- Student survey used online (Toolkit 6)
- Face-to-face interviews (Toolkit 10)
- Observation and sampling (Toolkit 12)
- Focus Groups (Toolkit 13)
- Attendance at Annual Dissemination Event (Toolkit 15)
- Meeting attendance and regular updates
- Internal Project evaluation reflected

3.4 Impact or Reaction Evaluation – Interim Evaluations 4 & 5

Dates: Interim Evaluation 4: July – December 2008. Interim Evaluation 5: January – June 2009

Evaluation Theme: Impact of, and Reaction to, the More Maths Grads Project.

Diagram 5: Impact Review



Evaluation activity: These two interim evaluations will assess the impact of the project on the recipients of the activities of the four themes of the MMG Project (careers, student, teacher and HE curriculum). The evaluations will focus on the impact of outcomes and outputs of the project as well as the benefits. These aspects of the evaluation will focus on feedback from target groups, target sectors and recipients. The impact and reaction evaluations will be undertaken using a range of methods including on-line tools, as well as 'face-to-face' interviews, surveys and questionnaires. Sampling of activities, focus groups and observation techniques will also be used. The evaluator will review the outcomes of monitoring visits undertaken by project management and analyse project statistics. The tools used to undertake the evaluation will provide both quantitative and qualitative data for analysis purposes, although the emphasis is on qualitative feedback. The evaluations will be targeted at participants or users and institutions and organisations involved in delivering, trialling or assessing all aspects of the project.

Statistical data will be incorporated in the impact assessment (Interim Evaluation 4 in December 2008). The statistician will provide data

relating to the project outcomes as well as supporting the evaluators in sampling the interventions, supporting the analysis of the evaluation information, and drawing conclusions based on statistical processes.

Evaluation methods:

- Feedback (Toolkits 6, 6a & 8). Use of surveys and feedback mechanisms from target groups (Student Surveys – initial and follow-up survey will be online)
- Statistical analysis of data. This will provide data at a national, pilot region and organisational (schools, colleges and universities) level for 2007 – 2008. This will also incorporate data relating to examination results from summer 2008 for the partner schools, the FE Colleges and relevant HE information from the universities within the pilot regions, as well as the national data (Toolkit 11).
- Face-to-face interview (Toolkit 10)
- Observation and sampling (Toolkit 12)
- Focus Groups (Toolkit 13)
- Attendance at Annual Dissemination Event (Toolkit 15)
- Meeting attendance and regular updates
- Analysis, monitoring and support (Toolkits 2 & 3)
- Internal Project evaluation reflected

SECTION 4: Summative Evaluation and Reporting

Dates: July – December 2009

The final or summative evaluation incorporates the final assessments, interpretation, benchmarking and the preparation of the draft final report.

Diagram 6: Summative Evaluation



The summary report analyses the results, the impact and the outcomes of the More Maths Grads Project, as well as the lessons / conclusions to be drawn. This report will be linked to ongoing assessment of the innovative actions of the project in relation to design, development and delivery, and the impact on learners and users within target groups and sectors, relating particularly to the use of the development and support provided.

The report will focus on satisfying the objectives of the evaluation. It will contain an overall assessment of the framework and activities of the project and their contribution to the objectives of the project. It will also cover performance against declared objectives and targets, performance against key funding criteria, assessment of impact, statements of good transferable practice and potential recommendations for the future. The data analysis and collection will be used to provide the evidence that a coordinated and structured approach (as detailed in the More Maths Grads proposal) has led to an increased flow of students into the mathematical sciences and other courses with a strong mathematical component.

Evaluation methods:

- Review of activities of the overall project relating to the goals, objectives, outputs and outcomes stated in the contract (Toolkits 2 & 3)
- Review of development matched against objectives and action plans (Toolkit 3)
- Realisation of expectations from Steering Groups, project delivery teams and partners and other stake holders for all project themes (Toolkits 4, 5b,& 7)
- Reaction from, and impact on, students or beneficiaries (Toolkit 6a)
- Final statistical analysis (Toolkit 11)
- Internal Project evaluation reflected

Table 2: Toolkit Usage in the Evaluation Reports

Evaluation	Title	Toolkit No	Toolkit Name
Interim Evaluation 1 June 2007	Control Environment	1	Control Environment Assessment
		2	Monitoring and Review Checklist
		16	Meeting Attendance (and regular updates)
Interim Evaluation 2 December 2007	Context Review	2	Monitoring and Review
		3	Performance and Progress Review
		7	Steering Group Questionnaires
		9	Ongoing Research and Review
		11	Statistical Analysis
		16	Meeting Attendance (and regular updates)
Interim Evaluation 3 June 2008	Performance Review	2	Monitoring and Review
		3	Performance and Progress Review
		5a	Project Delivery Team Questionnaires
		6a	Student / Beneficiary Survey (initial) - online
		10	Face-to-Face Interviews
		12	Observation and Sampling
		13	Focus groups

		15	Dissemination Events
		16	Meeting Attendance (and regular updates)
Interim Evaluation 4 December 2008	Impact Review	2	Monitoring and Review
		3	Performance and Progress Review
		6b	Student / Beneficiary Review (follow-up) online
		11	Statistical Analysis
		12	Observation and Sampling
		13	Focus groups
		15	Dissemination Events
		16	Meeting Attendance (and regular updates)
Interim Evaluation 5 June 2009	Reaction Review	3	Performance and Progress Review
		6a	Student / Beneficiary Review (initial) online
		8	Teacher Questionnaire (Teacher Theme)
		12	Observation and Sampling
		13	Focus groups
		14	Case Studies
		15	Dissemination Events
		16	Meeting Attendance (and regular updates)
Final Evaluation December 2009	Summative Report	2	Monitoring and Review Checklist
		3	Performance and Progress Review
		4	Partner Questionnaire (all themes)
		5b	Project Delivery Team Questionnaires
		6b	Student / Beneficiary Reviews (follow-up) online
		7	Steering Group Questionnaires
		11	Statistical Analysis
		16	Meeting Attendance (and regular updates)

SECTION 6: Evaluation Toolkits

6.1 Outline of the Evaluation Tools

This section outlines the draft tools designed by FPI Ltd to evaluate the More Maths Grads Project throughout the lifetime of the project. It should be noted that evaluation is an organic process, and that these tools may undergo change or modification before being used. These changes will reflect the evaluators continuing knowledge of the project and their ongoing assessment (and understanding) of the evaluation requirements.

Toolkit 1 – Control Environment Assessment

This tool will be issued to the Project Management in the first month of the evaluation as a discussion document. Review of documentation and discussions will provide the information for the first Interim Evaluation of the Project on the Control Environment and whether it is set up to deliver the requirements of the project bid and the expectations of the funding body (HEFCE).

This discussion document will be used in the first months of the evaluation to provide the information for Interim Evaluation 1 in June 2007.

Toolkit 2 – Monitoring and Review Checklist

This checklist will be used with the Project Management to ascertain the status of the project to date in relation to the delivery of the project objectives, outputs and outcomes. The checklist will be revisited on a regular basis and extended or expanded where necessary.

This checklist will be used in the first months of the evaluation to provide the information for Interim Evaluation 1 in June 2007. It will be re-visited on a regular basis.

Toolkit 3 – Performance and Progress Reviews

These reviews will take place on a regular basis to coincide with the evaluators reports (June and December). The reviews will use the measures outlined on p48 – 52 of the MMG Project bid and Appendix 1: Outputs from the Strategic Plan provided by the Project Manager.

Reviews will be undertaken through attendance at meetings, discussions with the Project Manager and Project Delivery Teams and reviews of project documentation and evidence. This evidence will include internal evaluation outcomes. The reviews will cover all four project themes and include attendance at the annual Dissemination Events (refer to Toolkit 15).

Performance and Progress Reviews will take place on an ongoing basis and will be an integral part the evaluation reporting processes (June and December).

Toolkit 4 – Partner Questionnaire (Schools, Colleges, HEI’s)

This questionnaire will be used with partner organisations that are in receipt of the activities of the project on behalf of their students (beneficiaries of the project). This will focus in particular on the Career and Student themes (detailed in the project bid and contract with HEFCE).

This questionnaire will be used in the final six months of the project to consider the views of the partners as to whether the project has succeeded in delivering activities and events that matched the needs of their students.

The questionnaire will be completed by ALL partners (100% response expected)

Note: All questionnaires will be provided as a Word Document (locked form) and sent to the recipients and returned via email to the evaluators. They will also be located on the MMG project website and the evaluators’ website for ease of access.

Toolkit 5 – Project Delivery Team Questionnaires

Two questionnaires will be undertaken with all of the members of the project delivery teams. These questionnaires will focus on the planning processes, the activities, the successes and achievements, the issues and challenges as well as the problems in delivering the expectations and requirements of the funding body (HEFCE) throughout the lifetime of the project. These will cover all four project themes (career, subject, teaching and HE curriculum).

The first questionnaire will take place within six months of the start of the delivery of the project, once the delivery teams are in place (from autumn 2007 onwards). This will look at the project delivery teams' expectations for what they will achieve and how they will deliver the project requirements. This will be used in Interim Evaluation 3. The second will take place in the final six months of the project and will ask them to assess the realisation of their original expectations. This will be used in the Final or Summative Evaluation.

The questionnaires will be completed by ALL members of the project delivery teams (100% response expected)

Note: All questionnaires will be provided as a Word Document (locked form) and sent to the recipients and returned via email to the evaluators. They will also be located on the MMG project website and the evaluators' website for ease of access.

Toolkit 6 and 6a – Student or Beneficiary Reviews (initial and follow-up)

Two student reviews or surveys will be used.

The first initial survey will take place in May 08 & 09 when students have been in receipt of the activities and events provided by the MMG Project. They will provide the opportunity for the students to assess which of the activities (project themes) have been the most beneficial, and whether they have influenced their decision making processes regarding additional or continuing maths study.

The second follow-up survey will take place in November 08 & 09 and will act as a follow-up survey to look at the longer term impact of the project activities. This will (where possible) take place with the students who completed the initial survey.

The initial and follow-up student reviews will be made available in an online web-based format and located on both the MMG Project website and the evaluators' website. Students should be encouraged to complete these surveys online where possible. They can be issued in paper format, if necessary, and returned to the evaluators for input onto the web-based survey.

The initial student surveys will be analysed twice. One analysis will take place to coincide with one year's activities of the project (anticipated as May 08). The information from the first survey will form part of the Performance Interim Evaluation 3.

The survey will then be modified, if required, and used to assess the second full year of activities (anticipated as May 09). Responses to this second survey will be used in the Reaction Evaluation Report (5). Information from the analysis of both surveys will be used to facilitate decisions by the project management about the successes and achievements of the delivery activities and events (as well as the issues and challenges).

The follow-up surveys will be used in 08 & 09 (anticipated as Nov) and will form part of the Impact Evaluation (4) and Final Report.

Each partner organisation (schools and colleges) to ensure a minimum of 25% evaluation completions across all activities, project themes and all appropriate age ranges.

A 25% sample will also be taken from the 'control' school to facilitate comparison.

Toolkit 7 - Steering Groups Questionnaires

Two questionnaires will take place with all of the Project Steering Groups (the Advisory and Executive Group, as well as the Regional Project Groups). The first questionnaire will take the form of an Expectation Survey and the second will be a Realisation Survey where these key individuals will be asked to assess whether they consider the project has matched their own (and the funding body's) expectations.

The Expectation Survey will be used as part of Interim Evaluation 2 and will be sent out in autumn 2007. The Realisation Survey will take place during the final months of the project and will form part of the Final or Summative Report.

The questionnaires will be completed by ALL members of the project steering groups (100% response expected)

Note: All questionnaires will be provided as a Word Document (locked form) and sent to the recipients and returned via email to the

evaluators. They will also be located on the MMG project website and the evaluators' website for ease of access.

Toolkit 8 - User Perception Survey with Teachers

This survey will take place with teachers who have been in receipt of the activities of the 'teachers theme'. It will provide the opportunity for the teachers to assess whether the activities and facilities provided through this theme have been beneficial, and whether they have supported their activities with their students regarding additional or continuing maths study.

This survey will be sent out to coincide with the Interim Evaluation 5 in Spring 09.

Target will be 25% of those engaged in project activities.

Note: All surveys or questionnaires will be provided as a Word Document (locked form) and sent to the recipients and returned via email to the evaluators. They will also be located on the MMG project website and the evaluators' website for ease of access.

Toolkit 9 – Review of Current Situation

A literature review will be undertaken by the evaluators, using available information in order to establish the current position in the field of mathematics and mathematical sciences. This will complement the statistical data analysis (refer to Toolkit 11) and form an integral part of the baselining of the project. This element of the evaluation is being undertaken in Interim Evaluation 2, as the data on examination results for June 07 will not be available until autumn 07.

The statistical data analysis and collection will be undertaken in order to establish a baseline by which the project successes can be measured. This will provide information that will allow those associated with the project (managers, deliverers and decision making groups) to better understand the current national, regional and organisational situation with regard to the mathematical sciences in terms of current student numbers, study patterns, recruitment (to HE and within schools and colleges) and the nature and range of qualifications studied.

The review and baseline data will form the basis of Interim Evaluation 2.

Toolkit 10 – Face-to-Face Interviews

Interviews will be used to supplement the information found via the qualitative evaluations and to support the validation and reliability of information provided. The interviews will to be undertaken with representatives from the partner schools and colleges (focusing on the career, subject and teacher themes), teachers in receipt of the teacher theme activities and the HEI's participating in the HEI Curriculum Development theme. They will also take place with businesses actively involved in the delivery of the project. Interviews will also be undertaken with business partners of the project.

The interviews are supplementary to the other evaluations and will be used to extract additional information as well as for validation and reliability assessments. These will take place as and when the evaluators consider it appropriate, and will be dependent on availability of the potential participants. The face-to-face interviews will take place over the lifetime of the project, and will be arranged by the evaluators in conjunction with the Project Manager and the Project Delivery Teams.

Toolkit 11 – Statistical Analysis

At the time of writing this evaluation framework and toolkit the statistician had only just been appointed. The data and information requirements for this project to enable statistical analysis will be detailed in a separate document that will be appended to the final version of this evaluation framework and toolkit.

The evaluators will work closely with the statistician, and the reports from the statistician will provide quantitative data to support the qualitative evaluations undertaken by the evaluators.

The baseline statistical analysis will provide data at a national, pilot region and organisational (schools, colleges and universities) level for 2006 – 2007. This will incorporate data relating to examination results from summer 2007 for the partner schools, the FE Colleges and relevant HE information from the universities within the pilot regions, as well as the national data. This statistical data and information will

therefore relate to a year where no 'More Maths Grads' interventions have taken place. A regular cycle can then be instituted annually.

Data analysis and collection towards the end of the project will be used to provide the evidence that a coordinated and structured approach (as detailed in the More Maths Grads proposal) has led to an increased flow of students into the mathematical sciences and other courses with a strong mathematical component. This process of collecting of data, and analysis of the data into evaluation information, will provide evidence to support the activities and progress of the project in relation to the four key objectives of the MMG Project.

Statistical analysis of the baseline data for the project will be undertaken in November – December 2007 and used in Interim Evaluation 2. Further analysis will take place in late 08 (for Interim Evaluation 4) and 09 (for the Final or Summative Evaluation) to facilitate comparison with the baseline data.

Toolkit 12 – Observation and Sampling

Observation and sampling will be undertaken in an informal way, in order to supplement other types of qualitative evaluation used with the MMG Project. A simple form will be used by the evaluators to record what they have seen.

Observation and sampling will take place at activities and events within each of the regions. The evaluators will be guided by the Project Delivery Teams and will attend when and what is considered appropriate. These visits are supplementary to the other evaluations and will take place as and when the evaluators consider it suitable and also when they are available. Minimum of one visit per region annually (to more than one activity or event each visit).

Toolkit 13 – Focus Groups

The evaluators will undertake focus group activities with the 'control' group school and also a minimum of one of partner schools and colleges involved in the regional activities of the project per year.

The focus groups will concentrate on information relating to the careers and subject themes.

Focus Group activities will take place with a minimum of one of the schools and colleges participating in the MMG project per region per year. They will take place with all relevant age groups seen separately.

Toolkit 14 – Case Studies

Case studies will be developed with the Project Delivery Teams to reflect student and teacher changing attitudes towards mathematics, increased awareness of applications of and careers in mathematics and other key areas relevant to the delivery of the MMG Project.

Case studies will be used to illustrate the progress and performance of the MMG Project within the text of the evaluation reports.

Toolkit 15 – Dissemination Events

The yearly Dissemination Events will provide a valuable insight to the evaluators of the annual progress of the MMG Project.

Attendance at annual Project Dissemination Events will contribute to the Process and Performance Reviews.

Toolkit 16 – Meeting Attendance (regular updates)

Regular attendance at meetings is an integral part of the evaluation process. This provides regular updates to the evaluators on progress within the project and an opportunity for the evaluators to provide information to stakeholders on the progress of the evaluation.

Attendance will be undertaken where appropriate. These are anticipated to be all the Advisory Group Meetings, the Impact Assessment Group Meetings, relevant Executive Group Meetings and occasionally at the Regional Advisory Group and Project Delivery Team meetings.

Regular meetings will be undertaken with the Project Manager.

Table 3: Toolkit Delivery Timetable

Toolkit no.	Title	Method of delivery	Who with?	When?	% ?
Toolkit 1	Control Environment Assessment	Discussion Document Review of project documentation	Project Manager Manager of MSOR Network	Late May 07 Used in Interim Report 1 in June 07	N/A
Toolkit 2	Monitoring and Review Checklist	Status of delivery of objectives, outputs and outcomes	Project Manager	Late May 07 Used in Interim Report 1 in June 07	N/A
Toolkit 3	Performance and Progress Review	Attendance at meetings and discussions Review of documentation and evidence	Project Manager Project Delivery Teams	Six-monthly to coincide with evaluation reports in June and December	N/A
Toolkit 4	Partner Questionnaire (all themes)	Questionnaire by email Also located on project and evaluators website	Schools Colleges HEI's	Final six months of project Used in Final or Summative Report	100%
Toolkit 5	Project Delivery Team Questionnaires	Questionnaire by email Also located on project and evaluators website	Members of Project Delivery Teams	Twice (May 08 & 09): 1 st within six months of appointment of delivery teams (expectation) Used in Interim Evaluation 3 2 nd in final six months of project (realisation) Used in Final or Summative Evaluation	100%
Toolkit 6	Student or Beneficiary Review (initial)	Online web-based format on project and / or evaluators website Can be completed on paper and inputted into system	Students in receipt of activities and events provided by MMG Project	Twice: 1 st to coincide with one year's activities. Information to be included in Performance Evaluation 3 2 nd used to	25% from ALL partners (schools and colleges) across all activities and age ranges

				assess second full years activities. Information to be included in Used in Reaction Evaluation (5).	
Toolkit 6a	Student or Beneficiary Review (follow-up)	Online web-based format on project and / or evaluators website Can be completed on paper and inputted into system	Students in receipt of activities and events provided by MMG Project	Twice: 1 st in Nov 08 to assess longer term impact of the project. To be used in Impact Evaluation (4) 2 nd used in Nov 09 to assess longer term impact of the project. To be used in. To be used in Final or Summative Report	Target is the students who completed 6 above if possible. 25% from ALL partners (schools and colleges) across all activities and age ranges
Toolkit 7	Steering Group Questionnaires	Questionnaire by email Also located on project and evaluators website	Members of all the MMG Project Steering Groups: Executive Group Advisory Group Regional Project Groups	Twice: Expectation Survey in autumn 07 (for Interim Evaluation 2) Realisation Survey in final six months of project for use in Final Report	100%
Toolkit 8	Teacher User perception Survey (Teacher Theme)	Sent by email Also located on project and evaluators website	Teachers in receipt of activities from 'teachers theme'	Sent out spring 09 Information will be used in Interim Evaluation 5.	Minimum 25% of those engaged
Toolkit 9	Ongoing Research and Review	Relevant research and review of current situation in relation to mathematical sciences	Evaluators Statistician	Ongoing. Initial review to be part of Interim Evaluation 2	N/A
Toolkit 10	Face-to-Face Interviews	Interviews to extract additional information and for reliability and validity purposes	Evaluators with partners (schools and colleges), Project Delivery Teams, HEI Curriculum Developers	Ongoing when required	N/A

			and Teachers		
Toolkit 11	Statistical Analysis	Provision of baseline and comparative data	Statistician	Reporting annually (07, 08, & 09)	N/A
Toolkit 12	Observation and Sampling	Informal supplementary evaluation using simple recording methods	All three regions by invitation from Project Delivery Teams	Ongoing	Where appropriate but minimum of one visit per region annually
Toolkit 13	Focus Groups	Activity base method of delivering focus groups to range of ages participating	All three regions with control school and all relevant age groups from partner schools and colleges	Ongoing	One of partner schools and colleges + control school per year
Toolkit 14	Case Studies	Used to illustrate the progress and performance of the project	Across all three regions. Supported by Project Delivery Teams	Ongoing, but likely to be towards the end of the project Incorporated in evaluation reports	Where appropriate
Toolkit 15	Dissemination Events	Progress updates	Annual	Integral part of the ongoing evaluation of the project	N/A
Toolkit 16	Meeting Attendance	Regular updates from and to the project stakeholders	Appropriate meetings	Integral part of the ongoing evaluation of the project	N/A