Monitoring and Evaluating Numeracy

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Monitoring and Evaluating
*The Big Picture*

**What**
- From school Development Plans
- Specific Action Plan
- Success criteria
- Monitor success criteria
- Evaluate success criteria
- Set targets for improvement

**Who**
- Principal
- SMT
- Co-ordinator
- Year Group Staff
- Key Stage Staff
- Pupils
- Parents
- Learning Assistants
- Board of Governors
- Community
- Link Officer

**How**
(Monitoring Strategies)
- Staff meetings
- Staff, pupil and parent questionnaires
- Pupils' work
- Planning
- Classroom observation
- Analysis of assessment
- Questioning pupils
- Listening
- Link Officer

**When**
- At planned intervals
- When appropriate

**Monitoring**
Seeing if you are doing what you said you would do (Gathering evidence)

**Note**
- Monitoring procedures should be rigorous, comprehensive and fit for purpose
- All evidence of monitoring should be filed and be easily accessed
- All staff should actively contribute
- Monitoring should inform future work
- It may be linked to PRSD
- You may wish to seek help from ELBs

**Why**
- Self-evaluation should improve:
  - the experiences of the pupils
  - the quality of learning and teaching
  - standards the pupils attain
  - school effectiveness.
  - To summarise all the evidence from monitoring (Self-evaluation report)
  - To embed effective practice
  - To acknowledge success

**Evaluation**
How well you have done in relation to your success criteria

**Note**
The outcomes of self-evaluation should lead to action to achieve improvement to the learning and teaching
The Rationale

“We believe that schools themselves, through honest and open engagement in self-evaluation, using effectively the wide range of data and information available to them, are best placed to identify areas for improvement and to implement changes that can bring about better outcomes for pupils.”

DE, Every School A Good School, School Improvement 2009

Monitoring and evaluating are at the heart of school improvement; it is the ongoing process of clarifying ‘where’ the school is. Asking questions such as:
“How effective is the learning and teaching in the school?”
“How well are our pupils doing when compared to others?”
“How can we develop particular areas of maths…and which areas do we select?”

Monitoring is seeing if you are doing what you said you would do and should be a systematic approach to the overseeing of planning, learning and teaching. It is part of the evaluation process designed to gather information so that judgements can be made and questions answered.

Evaluating is the measurement of success when comparing outcomes with aims and objectives. This may lead to a summative assessment of the current practice within school and should then be used to inform future planning for learning and teaching.

Schools are encouraged to ensure that robust Monitoring and Evaluating procedures are at the heart of their self-evaluation process. Through self-evaluation, school will be able to:

- Reflect upon current practice
- Identify and celebrate the strengths of the school
- Identify and address areas for improvement in work, through the systematic collection of information
- Engage in personal and shared professional development
- Focus upon improving the quality of learning and teaching and the standards of achievement in the school.

Further information/links:
- Every School A Good School – School Improvement Policy
- Count, Read: Succeed. A Strategy to Improve Outcomes in Literacy and Numeracy
- Better Numeracy
- Together Towards Improvement (TTI)
- The Education and Training Inspectorate (ETi)
- National Centre for Excellence in the Teaching of Mathematics (NCETM)
Monitoring the Action Plan

A school’s action plan for Maths/numeracy should form part of the School Development Plan, clearly setting out:
- The school’s current position
- What the school wants to achieve in a defined time span
- How the school intends to bring about these achievements
- The success criteria under which the success of the plan will be measured.

To be most effective, the action plan needs a baseline formed from a consensual view of the school. This view, and whether a target has been met, will be based upon outcomes of monitoring and evaluating procedures. The plan itself should include clear strategies for the monitoring of targets, success criteria and actions.

Monitoring strategies are used to check progress at regular stages in the action planning process. The monitoring strategy used should be appropriate to the target/actions and the type of information being sought.

Evaluating can be seen as the collation of a range of ‘snapshots’ of progress and analysing their combined impact to create an overall assessment of the success of a target/action/success criteria. The evaluation needs to indicate the extent to which targets have been met and the lessons learned from the process (which should inform future practice).
The Role of the Numeracy Co-ordinator

The role of the numeracy co-ordinator is wide and challenging and can vary enormously depending upon the size of school, management structures and ethos.

Some of the major roles of the co-ordinator can be summarised as follows:

- To demonstrate expertise, enthusiasm and vision
- To promote self evaluation in order to enhance the monitoring, evaluation and review processes
- To monitor, evaluate and record progress on the numeracy action plan
- To ensure a regular review and update of the policy with all staff
- To encourage staff to use a range of learning and teaching strategies to best meet the needs of pupils
- To assist teachers avail of numeracy courses to enhance their understanding and teaching of Numeracy
- To organise school-based INSET as required
- To provide guidance in the effective use of comparative performance data, including benchmarking
- To encourage management to offer support for identification, dissemination and implementation of good practice in the learning and teaching of Numeracy
- To undertake on-going monitoring and evaluation at individual, class and whole school level
- To report to principal and Governors about the school’s numeracy development.
Keeping Co-ordinator Records

We strongly recommend that you keep all of your documentation that relates to your role as Numeracy Co-ordinator in a lever arch file so that everything you need is easily accessible. The contents of the file is a matter for individual co-ordinators but the following list gives an indication of some of the documentation that may be included:

- Numeracy Co-ordinators Calendar
- Monthly Task Planner
- Action Plans
- List of INSET Courses attended by Co-ordinator and other staff
- Course feedback from staff
- Agendas and Minutes of Numeracy Meetings
- Record of meetings with individual staff members
- Inventory of Numeracy Equipment / Resources ordered
- Results of Audit
- Results of Questionnaires
- Copies of Numeracy Planning
- Articles and Useful Addresses
- Examples of Monitoring
- Samples of pupils’ work
- Digital Photographs
- Classroom Observation sheets
- Feedback to staff on monitoring
- InCAS and Standardised Test Results and Analysis
- Self-Evaluation Report

It may be that you will find it easier to have separate files for various aspects of Numeracy.

Some co-ordinators have organised their documentation in three files:

- General Numeracy file
- Schemes of work and Planning
- Monitoring and Evaluating
Monitoring Strategies

All strategies for monitoring numeracy should follow school procedures. For this process it is important to consider the most appropriate ways of gathering the relevant information and ensure they are “fit for purpose”. Some questions you could ask are;

• What is our focus?
• What strategies will be used to gather the information for the focus?
• Who will do it?
• What are the time implications?

The answers to these questions will then form part of the numeracy action plan which provides a clear focus, time-bound targets and clearly outlines individual and whole team responsibilities. Monitoring strategies are used to review the progress of numeracy within the school, the progress of individual children and the cohorts of children throughout the school.

Always choose methods that suit your school and know exactly what you are looking for.

Some monitoring strategies are:

• Planning
• Pupils’ work
• Staff meetings – including sharing of effective practice
• Classroom observation
• Analysis of assessment
• Questionnaires
• Other opportunities.

Planning

The analysis of teachers’ plans could help to monitor the following aspects of mathematics:

• Areas of overlap or gaps in what is being covered
• Relevance of planned work to the maths scheme of work
• Appropriate balance between the different attainment targets
• Appropriate progression throughout all the year groups
• Effective use of differentiation (including the more able pupils)
• Cross-curricular links
• Assessment opportunities
• Use of ICT.
Some FAQ’s

1. Are the learning intentions clearly defined?
2. Do the learning intentions reflect the work carried out over the four to six week period?
3. Is there a balanced coverage of all the attainment targets?
4. Is the work pitched at an appropriate level?
5. Are there enough similarities between classes in the same year group?
6. Does it reflect what is written in the long term planning?
7. Are assessment opportunities realistic?
8. Does the content move at a reasonable pace?
9. Does the work in the classroom reflect what is written in the plans?
10. Is the plan a working document?
11. Have appropriate practical activities been planned for?
12. Are evaluations of planners used effectively to inform future plans?

Pupils’ Work

This can be evidenced in jotters, folders, workbooks, portfolios or displays. Monitoring pupils’ work helps to gauge the progress the children have made and the range of mathematical topics covered over a period of time. It may be helpful to look at work from a high, middle and low attainer and view the work over a specified time e.g. the previous three weeks. It is important to have a clear focus when looking at children’s work. A random sample is sufficient and teachers should be encouraged to take note of any significant learning that takes place.

Some FAQ’s

1. Is the standard (for the average child) in line with the NI Curriculum and the schools scheme of work for Mathematics and Numeracy?
2. Is there a variety of work on each topic being covered to consolidate and extend the children’s understanding?
3. Is there a suitable balance for all pupils between consolidation and practice and the more challenging problem solving and investigative activities?
4. Is there a suitable amount of work covered over each week and a period of weeks?
5. Have the children made evident progress?
6. Do the teachers mark the work in an appropriate way so that the children know how to improve?
Staff Meetings
Another effective monitoring strategy is to have focused staff or group meetings directed towards a particular topic. The following are examples of what these meetings could pertain to:

1. An identified topic has been discussed and if carefully organized, staff come to the meeting prepared to answer relevant questions ie. circulate a review sheet on the identified topic before the meeting to help focus the attention on the area being developed.
2. Opportunity to look at children’s work using the “diagonal slice” of the ability within each classroom. The samples of work can be used as a basis for discussion about the quality of teaching and learning throughout the school. Do the samples show appropriate development and progression?
3. Opportunity to come together and share/disseminate practice. Teachers come prepared to a meeting to discuss and go through a particular lesson they have carried out in the classroom. The lesson may focus on an area that has been identified by the school as an area for development e.g. investigative maths.

Record minutes/notes of all meetings held.

Classroom Observation
Another aspect of effective monitoring is the observation of learning and teaching in the classroom. An important question to ask is:

Is your school ready for classroom observation by the numeracy co-ordinator?

You need to remember that classroom observation is only one monitoring strategy and in some cases it may not be possible or appropriate for middle managers to use. The observation of teaching can take many forms and a lot of guidance already exists in PRSD materials.

If appropriate use the table below to find a possible starting point.

<table>
<thead>
<tr>
<th>Strategies used in your school to date</th>
<th>Yes or No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstration lessons by numeracy co-ordinator</td>
<td></td>
</tr>
<tr>
<td>Team Teaching</td>
<td></td>
</tr>
<tr>
<td>Classroom observation by principal</td>
<td></td>
</tr>
<tr>
<td>“Buddy” observation</td>
<td></td>
</tr>
<tr>
<td>Classroom observation by numeracy co-ordinator</td>
<td></td>
</tr>
<tr>
<td>Co-ordinator taking digital photographs of mathematical activities being used in each class</td>
<td></td>
</tr>
</tbody>
</table>
Here are some examples of areas to focus on for initial classroom observation:

- Manageable and effective differentiation
- Good use of mathematical resources
- Well structured lesson and suitable pace
- Oral and mental work
- Effective questioning
- Organisation of group work

As a tool for monitoring mathematics development, classroom observation will be most effective when:

- it is part of a planned monitoring process
- clear focus is agreed and shared
- supportive feedback is provided to individual teachers
- it results in a brief summative report on mathematics development in the school as a whole or key stage
- it leads to action for improvement

**Giving a colleague constructive feedback after a lesson**

Suggestions

- Be tactful - this is a sensitive area.
- Reflect on the lesson observed before you give feedback so that you can be specific. It is important to be evaluative and ask questions about what you saw and heard during the lesson.
- Start by commenting upon examples of effective teaching you have seen. Point out any opportunities the teacher could have exploited to enhance further learning
- If the lesson(s) did not go well, ask the teacher how s/he thought it had gone. Try to work out together what strategies s/he can use in future to improve learning and teaching.

Suggested questions to ask:

1. What do you think went well?
2. What did you notice about…..?
3. Did you expect that to happen in the plenary?
4. How could that be improved?
5. Do you think ……. understood the task/made good progress?
6. Do you think your questions were effective?

**Analysis of Assessment**

Assessment takes place at whole school, class or year group and at individual pupil level. The rigorous analysis of performance data both quantitative and qualitative will help to track progress throughout.

To ensure that this monitoring strategy is effective you need to decide the relevant information to collect, what is the information telling you and what actions are needed as a result of the findings.
This features in one of the indicators of high quality teaching and learning in the school improvement policy

“assessment and other data is used to effectively inform teaching and learning across the school and in the classroom and to promote improvement.”

DE, Every School A Good School, School Improvement 2009.

Some FAQ’s
1. Are standards rising in each class?
2. Are whole school, class and pupil targets being met?
3. Are assessments planned for, and carried out in adherence with school procedures?
4. Are there consistencies between the InCAS, End of Key Stage and standardised tests?
5. How reliable are the standardised test outcomes?
6. Is there consistency in the administration and marking of standardised tests?
7. Is data being used effectively to track progress, diagnose strengths and difficulties?
8. Do the children know what and how they need to improve?
(5-8 are taken from assessment section of Better Numeracy)

Questionnaires
A questionnaire is another way of collating information and is a common tool used to collate more qualitative data with a mixture of closed and open questions. Like all monitoring strategies, focus on the information you require and the types of questions you need to ask. The questionnaire may include the following:
• Yes or no answers
• Tick boxes
• Numbered or word responses
• Questions which require a comment

Try to ensure the questions are clear and explicit as the aim is to “build a true picture” about the topic in question.

Other Opportunities
This could include use of displays or notice boards, talking to pupils or parents, use of photographs or informal/corridor conversations. These “other opportunities” can be used effectively alongside some of the more formal strategies mentioned earlier.
Evaluation
(Including effective use of data and benchmarking)

Self-evaluation should effect improvements in the experiences of the pupils, the quality of learning and teaching and the standards the pupils attain.

As with any process of self-evaluation:

• The procedures used should be developed by schools to meet their needs and should be rigorous, comprehensive and fit for purpose

• All those involved should be aware of the methods to be adopted and of their part in, and contribution to, the process

• The evidence obtained should be both qualitative and quantitative, using external data where appropriate

• Effective use should be made of the SIMS Assessment Manager which can provide a full picture of data available in school

• The outcomes of the evaluation should lead to action to achieve the intended improvements in learning and teaching

• The views of pupils, colleagues, Board of Governors and parents should be taken into consideration

• The process should be ongoing

• Information collected should be treated in a professional manner.
Benchmarking

Benchmarking is the process of comparing a school’s performance data against other schools or critical data. The information allows co-ordinators and school leader to provide a contextual picture of the school’s performance when:

- Compared to national averages
- Compared to ELB averages
- Compared to schools of a similar size
- Compared to schools with a similar % of Free School Meals Entitlement (FSME)

The data most commonly used to benchmark is end of Key Stage results in both Maths and English, though other information such as attendance can also be used.

The DE annually send a circular which contains detailed benchmarking information as an appendix. Every School A Good School indicated that the use of appropriate performance data, benchmarked against similar schools, is an important part of every schools mission to raise standards across Northern Ireland.

The process of benchmarking

- Using the DE benchmarking data, schools have been ranked from highest achieving to lowest achieving, according to the proportion of FSME pupils, but individual schools are not identified.
- The data within each table provides 4 key pieces of information: attainment at the lower quartile, the median, the upper quartile and at the 95th percentile. The information at each of these points are the actual results of a school of a school a quarter of the way up the scale, at the middle of the scale, three-quarters of the way up the scale and 95% of the way up the scale.
- School need to have an accurate figure for their FSME for the year to be benchmarked and data on attainment at end of Key Stage for Maths in that year.

An example of worked benchmarking (taken from DE circular annex 2a) is shown below:

<table>
<thead>
<tr>
<th>Key Stage Two: Percentage of Children achieving level 4 and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools with 10 – 19.99% of children entitled to free school meals (238 schools):--</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>English</td>
</tr>
<tr>
<td>Mathematics</td>
</tr>
</tbody>
</table>

- The school has a result of 78.0% - this places it between the median and lower quartile of results of schools in the same FSM band.
- The median is the middle value when all the results are ranked in ascending order. In this example, the 119th school has a result of 81.8%, higher than the school’s result of 78.0%.
- The top 25% of schools in this FSM band achieve 90.9% or higher - this could form the basis of a target for the school that is currently achieving 78.0%.
Drawing up the Report for Self-Evaluation

A written report effectively captures the work and improvements carried out over a period of time and it is useful to inform a wider audience. The report should summarise the evidence you have collected. Details of the methods of monitoring should be available as a reference in a monitoring file.

- Keep the report clear and concise.
- Include appendices for action plan and other relevant documentation.
- The report should focus specifically on the success criteria identified in your action plan.
- For each success criterion list the evidence you have gathered. Remember you want to convince the reader that you know what has happened and you have seen firm evidence.
- For each success criterion state your conclusions and say if it has been achieved, partly achieved or not achieved.
- Indicate your general recommendations as to what you would like to see continuing or improving for next year.
- Mention how you will continue the process of self-evaluation.
- Comment on any changes noticed during this process with staff, pupils or through the analysis of pupil performance data.
- Include other sections you may find relevant to indicate the work done and achievement e.g. changes in the classroom and in teaching, improvements noticed in pupil learning, support or help obtained, sources of evidence or how the evidence was gathered.
- Try to make the report look as professional as possible with a front cover, school name, title, date and author.

Have you indicated the good practice that has gone on in your school? It is important to recognise and celebrate success.

Is the information readily available in the report?

Ask a 'critical friend' to read and comment.
Pro-formas

Pro-formas are a very effective means of giving structure to monitoring. Careful consideration should be given to the purpose of using the pro-forma, as information collected will need to be acted upon. They should be adapted to suit the needs and circumstances of the school and filed in an appropriate place when completed. Copies of blank pro-formas could be stored in the co-ordinator’s file, ready to use when required. Where possible, pro-formas of a similar format should be used consistently throughout the school. Examples of pro-formas may include:

- Audits
- Meetings
- Observations
- Planning
- Pupils’ work
- Questionnaires