

Anon Secondary School Developmental Review October 2015

The purpose of the review

To work with the mathematics subject leader and senior team to ensure that:

- The school will have an accurate view of current strengths and areas for development in mathematics.
- Clear priorities for development are identified, especially in relation to improving progression.
- Practical actions to address improvements are identified.

Activities which informed the findings

Throughout the two days there was regular discussion with the subject leader (SL), including feedback on observations of lessons (strengths and development points) and sharing ideas about emerging issues and possible actions.

- The four maths teachers were all co-observed either with the SL or a member of the senior team. All teachers received feedback and were keen to discuss points for improvement. A further 3 learning walks were conducted so that pace and challenge across all Y7, Y9 and Y11 groups could be compared.
- A book scrutiny was undertaken including in discussion with pupils, looking particularly for pitch of work and regularity and quality of marking including opportunities for pupil follow-up.
- Two groups of pupils were interviewed to follow through emerging issues.
- The departmental data analysis and line management minutes were used as stimulus for discussions about next steps.

Strengths on which to build

- The subject leader was well-informed, she showed insight into the issues and determination to take action. To date she has not had a sufficient breadth of experience or development support to enable her to take effective action.
- The leadership team are aware of the need to support the SL and the maths team as much as possible.
- Judgements on strengths and weaknesses for teaching, drawn from lessons observed and learning walks were aligned.
- All teachers showed that they care about the attainment of pupils and are working hard to support this. The team is cohesive and relationships are good. Teachers are keen to try out strategies which will improve progress and this offers great potential for more joint working.
- Some teachers demonstrated strategies which are worth developing across the team e.g. some good questioning with a focus on mathematical vocabulary.
- Pupils showed pride in their books which were well organised and marked regularly. Some show good examples of pupils following up improvement points.

Emerging issues

These issues acted as barriers to better pupil progress

- Teachers tended to start from too low a level and did not use effective strategies to pick up who needed more challenge. This was verified by discussion with Y7 pupils who described most work as “about the same as Y6”. One described their experience as follows, “You just need to be patient then eventually the teacher will see that you can already do it.”
- Some of the planning and teaching focused on quick ways of finding answers rather than the underlying mathematics e.g. the ‘butterfly method’ of ranking fractions.
- Pupils were not sufficiently precise in their use of mathematical language; they did not speak loudly and clearly or offer extended answers or compose responses into sentences. Teachers did not have sufficiently high expectations in this regard.
- Teachers’ explanations often did not include sufficient pupil input and, as a result, the start of lessons did not connect this lesson to other learning. Many lessons involved lengthy teacher introduction followed by pupil copying so that time for pupils’ mathematical thinking was reduced.
- Pupils relied on teachers for too much of the lesson time. This meant that they often waited for teacher attention. There were no established routines of peer support or self-checking and so independence was not being developed.

Recommended actions

Teaching could result in improved learning in every lesson by:

- Supporting the team to raise expectations of what pupils can do.
 - Adapt the scheme of work (see below)
 - Visit lessons in partner primary schools to get a sense of what pupils can do in Y6.
 - At the start of each topic use more effective strategies to reveal what the pupils can do.
- Increasing the use of mathematical language in all lessons.
 - Teachers should plan questions to probe understanding. They should question in ways which involve sequences of suggestions from several pupils until they are confident that the collaborative response has reached a sufficiently high level.
- Establishing a greater focus on teaching for conceptual understanding.
 - Focus mathematical exercises on a small number of interesting examples which are compared and discussed in depth rather than skimming the surface of many similar questions.
- Confining the teaching of tricks, tips and shortcuts to final stage intervention in Y11 only.
 - Not all students need these but, for some, a few last minute tricks and tips are helpful e.g. the formula triangle for speed distance time. They have no place in teaching which aims to support longer term mathematical understanding and connections.
- Reducing time dedicated to ‘teacher only’ introduction, pupil copying and over-elaborate presentation.
 - Whole class episodes need to involve pupils much more. In this way teachers and pupils will connect the new topic to maths that the pupils already know and will find out who needs support and who needs challenge. Reducing the extent to which pupils spend time copying will enable the pace of learning is accelerated. Reducing excessive use of colour in books will enable the routine of marking and improvement become more evident.

The impact of assessment could be improved by:

- Helping teachers to appreciate that accuracy of tracking is crucial to supporting progress. They should be supported to be honest in their tracking entries even where this might be lower than targets in KS4.
- Ensuring that assessment items are determined strategically and tied closely to the pace and high expectations of the scheme of work (SoW). Guard against modifications to reflect lack of pace in some groups. Ensure test papers allow for achievement beyond the target level so that pupils are challenged.
- Analysing after key assessment points so that appropriate actions can be taken as a result.
 - Pupil by pupil. Who needs extra support and how can this be provided in the next teaching sequences?
 - Topic by topic. Which topics are resulting in good progress and which need improving in the SoW? Are different resources and approaches needed? Could better use of IT and dynamic visuals help?
 - Teacher by teacher. Who is getting great results and what can we learn from them? Who needs support to improve progress rates?
- Organising assessment folders for all groups and using these strategically for pupils and teachers to monitor progress and plan for improvement.
- Moderating samples of assessment items at team meetings.
 - Each teacher could bring a couple of papers from pupils who have done less well than expected. Pairs of teachers could analyse the responses to diagnose misconceptions and plan next steps.
 - Each teachers could bring a sample of ‘hard to mark’ questions e.g. involving giving reasons or justifying a response. All could discuss and agree what would warrant marks and why.

Strategic actions by leadership

- Establish a programme of development time with pairs and groups of teachers during protected non-contact time. Include opportunities to plan together, teach together and review impact together. Be creative e.g. combine small groups for some lessons, swop plenaries or use video.
- Visit other schools to gather information on successful strategies e.g. assessment of prior learning, tracking and intervention routines. You have local contacts and I have approached Hindehouse on your behalf.
- Map out a timeline for scheme of work developments so that all year groups incorporate 'assessment, review and intervention' as part of the regular routine.
 - **Year 7:** Use an adapted version of current Y8 SoW. Incorporate planned opportunities for regular problem solving focus. Draw from the collection of guidance around 15 problems to develop mathematics process and application that has already been emailed.
 - **Year 8:** Use an adapted version of current Y9 SoW. Incorporate planned opportunities for regular problem solving focus, see above.
 - **Year 9:** Using AQA 3 year scheme. Guard against 'starting from scratch' on each topic. Establish strategies to find out what pupils can already do. Default mode must be challenge not support.
 - **Year 10:** Provide students with a simple fact sheet on new GCSE. Show confidence about new GCSE by focusing on the maths and reduce student uncertainty and worries. Include in the scheme of work sample assessment materials from all exam boards and high level questions from KS3 Testbase. Use these to focus attention on mathematical reasoning.
 - **Year 11:** Undertake a clear analysis of exactly which aspects of new teaching are required for each group. Plan and teach a systematic tailored programme of intervention in regular lessons. Start this as soon as possible. Include a focus on non-typical exam questions, some which connect more than one mathematical topic and some which require interpretation of language to access the maths.
- Produce and display a departmental calendar