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‘Oh! - is that how you do it!’ Learning from cross-phase collaborative work in the Years 5-8 Continuity project

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We report on work of the Years 5-8 Continuity project, which runs across England in Maths Hubs, led by the National Centre for Excellence in the Teaching of Mathematics (NCETM). The aim of this project is to strengthen primary to secondary transition by focusing on curriculum and pedagogical continuity in mathematics over Years 5 to 8. Promotion of cross-phase teacher collaboration is central. The vehicle for teacher development is the Work Group, whereby groups of teachers led by an experienced colleague work collaboratively over a period of time. In 2021-22 a small research team began to explore the impact of this project on teachers’ pedagogical practice and school policy/approaches. We discuss findings from internal evaluation, and from small scale case studies carried out by this team. Early findings indicate that cross-phase engagement with colleagues through focused and sustained professional activity is having a positive impact on practice and school/departmental approaches.

Keywords: Primary-secondary transition; curriculum; professional development; Work Group

Background

The Years 5-8 Continuity project began in 2017-18 and runs across the Maths Hubs network in England, with the aim of strengthening the transition from primary to secondary school by focussing on curriculum and pedagogical continuity in mathematics across Years 5 to 8. Central to the project is the promotion of cross phase communication between teachers to address issues of mathematics knowledge and learning transition, and to develop common understanding and consistent teaching approaches of core areas of the mathematics curriculum. Teachers do this at local level through participation in a Work Group.

The Work Group – an approach to collaborative teacher development

A Work Group, as articulated by the NCETM, comprises a group of schools working together on an agreed focus, normally over a large part of a school year, typically with one or two teachers from each school acting as lead participants. The group is led by a teacher or former teacher, expert both in the relevant area of mathematics education and in leading teacher professional development. NCETM/Maths Hubs Work Groups are normally part of a Network Collaborative Project, which supports the Work Group Leads and seeks to ensure that learning is garnered from around the country (NCETM, 2023).

Schools in every NCETM Work Group work towards outcomes linked to teachers' professional learning, practice development, pupil learning, and school/departmental approaches. They maintain a focus on the classroom, often planning, observing and refining lessons together. They evaluate the outcomes of the Work Group's activity, with collated findings being used to inform future work.

Research emphasises the importance of subject specific CPD and the relative paucity of this provision in the UK (Cordingley et al., 2018). The work of the NCETM and the Maths Hubs network plays a major role in meeting this need. The interplay of local initiative and central steering results in an approach to teacher PD that is school-led and responsive to local needs, while at the same time focused and coordinated through an expert body. The Work Group model offers opportunities to all teachers of mathematics, as recommended by The Advisory Committee on Mathematics Education (ACME) (2016, p.5):

All those who teach mathematics should have the opportunity to continually work on their mathematics-specific knowledge and practice in collaborative settings throughout their career. Collaborative learning groups should be subject to external support and challenge.

Rationale for the Years 5-8 Continuity project

Historically the transition from primary to secondary school has led to a drop or plateau in attainment for many students in mathematics (Ofsted, 2015, Prendergast et al., 2019). Henderson et al., (2017, p.7) highlight the need for a focus on continuity at transition from primary to secondary phase (key stages 2 to 3 in England). Recommendations include improving teachers' knowledge and understanding of pedagogy and curriculum in the 'other' key stage: "Primary and secondary schools should develop shared understandings of curriculum, teaching and learning". It is common practice for schools to have well-established procedures for pastoral (i.e. social/emotional) transition. Ofsted (2015, p.8) recommends a clear focus on academic transition and on cross-phase partnership:

ensure that transition from Key Stage 2 to 3 focuses as much on pupils' academic needs as it does on their pastoral needs...create better cross-phase partnerships with primary schools to ensure that Key Stage 3 teachers build on pupils' prior knowledge, understanding and skills.

In recognising and responding to the challenges around primary-secondary transition, the NCETM initiated a project to support primary and secondary teachers in all regions of England to work collaboratively cross-phase to consider ways to improve curriculum and pedagogic continuity between their schools. The post-pandemic context has added an urgency to this work and has highlighted even more starkly the need for cross-phase continuity, and the need for effective approaches to student learning to make productive use of classroom time (Hodgen et al., 2020).

Scale and context

The project has grown considerably since its inception in 2017-18. Initially 292 schools were involved. Engagement rose steadily over the following 3 years. 2021 saw growth of the project in response to the need for post-pandemic education recovery. In 2021-22 there were 152 Work Groups, involving teachers from 719 distinct schools. A total of around 2,500 schools have been involved so far.

A feature of the project has been the use and development of classroom materials informed by current research. Multiplicative Reasoning materials from the

Realistic Mathematics Education (RME) project are used. Algebraic Thinking materials have been developed with expert input, using similar approaches to those in Algeburble (Kuchemann, 2021). These were trialled in a small number of Work Groups before being used more widely across the project, simultaneously as classroom resources and as vehicles for professional development. A parallel development was the creation of Checkpoints materials (NCETM, 2023). These diagnostic mathematics activities are designed to help teachers develop their assessment of students' prior learning for key stage 3 and are therefore ideally placed for use within the Years 5-8 Continuity project.

Findings from internal evaluation and research project

Internal evaluation 2021-22: participant survey data

A Lead Evaluator (LE) was attached to the project, with the role to act as a 'critical friend', monitoring progress and supporting Work Group Leads in gathering evidence of impact of the project. An end-of-year survey was distributed centrally to all participants. 387 participants completed this. An evaluation report was compiled by the LE. Key findings were:

Professional practice: 90.5% of participants agree that they have changed something in their professional practice. Collaborative planning and observations of the adjacent phase has led to a shift in thinking and teaching methods, with a resultant consistency of methods and explanations that lead to deeper thinking across the transition from KS2 to KS3. 90.0% of participants agree that participating in this Work Group has changed the way they work and learn with colleagues.

School/departmental approaches: 75.3% of participants agree that their department or school is developing new collaborative ways of working. Opportunities to collaborate were valued. 61.2% of participants agree that their department/school has changed its approach towards transition. They reported that the Work Group created a culture of being able to visit partner or feeder schools. An understanding of what students should know from KS2 and how this will be reviewed again at KS3 has allowed for better use of time in both key stages.

The research project

In 2021-22 a small team was convened to explore: (Research Question 1) How has the classroom practice of participating teachers - and (Research Question 2) How have school/departmental approaches – been impacted by involvement in the Y5-8 Continuity workgroups? Appropriate ethics protocols were followed. The team comprised members of the project coordination team and four Work Group Leads (WGLs). In addition to taking part in standard internal evaluation processes, two of these WGLs undertook a more detailed inquiry by collecting case study data, and three were interviewed by the research project lead.

Themes drawn from Work Group Lead reports 2020-21

Towards the end of each academic year cycle, WGLs complete a report on the impact of the activity carried out by participants in their own Work Group. 40 of the 54 WGL reports were reviewed. Six key themes relating to professional practice and school/departmental approaches emerged from the reports, as follows:

1. More consistency in use of language and of mathematical representations
2. Greater collaboration between participants
3. Curriculum development
4. New understandings of what successful transition entails
5. Positive impact of project in pandemic context/impact reduced due to pandemic
6. Greater impact where ‘families’ of schools worked collaboratively

Themes drawn from Work Group Lead reports 2021-22

40 of the 146 WGL reports were reviewed. Again, six key themes emerged. These are given below, with some illustrative quotes.

1. Importance of paying attention to use of language

Evidence from use of tasks such as Checkpoints, Multiplicative Reasoning and Algebraic Thinking tasks in classrooms show that these allow language and depth of thinking to be developed with pupils making more conjectures, attempting to prove mathematically, and explain their understanding clearer.

Participants consistently reported improvements in areas of professional practice, such as the use of consistent language and the use of representation.

2. The value of observing and collaborating across phase in developing teachers’ awareness of pupils’ needs at the KS2-3 transition

KS2 and KS3 teachers were able to review resources and activities and compare their utility and adaptation for primary and secondary students. ‘Mastery’ approaches at different schools were discussed and the textbook materials and manipulatives used. There was continuous ongoing dialogue.

3. Greater insight into curriculum and pedagogy of adjacent phase

By looking at the whole learning sequence it is easier to see where they have been and where they are going.

An effective vehicle to discuss effective pedagogical approaches linked to lesson design, use of representations and manipulatives, language... It was agreed there were changes to be made within both key stages, such as revisiting scheme of learning to adapt pitch, include greater opportunity for problem solving activities.

4. Secondary teachers learning about high expectations in primary

KS3 teachers were surprised at the level of content covered in KS2 and noted often that they had a significant number of children in KS3 as well as some in KS4 who could not access that level of learning. This made them really rethink their practice in terms of expectations and tracking back to prior learning.

5. Importance of engagement with interim tasks in achieving impact

The group feel there has been real benefit of this WG. [They see that] ‘having more than one session of PD is definitely needed, it can not just be one-off sessions’, the opportunities to ‘trial ideas, reflect on impact collaboratively, make changes and trial again is definitely something we will be doing as a future PD model for school.

6. Face-to-face work had greater impact than online

Organising the remaining sessions to be face to face in a primary and then secondary setting really brought the Work Group to life. Having a focus on the materials that they then saw in use in the classrooms allowed for deeper discussion and opened up questions between phases about key areas of practice.

In both sets of reports, Themes 1-3 highlight language, collaboration and curriculum. Theme 4 concerns growth of insight and awareness. Themes 5 and 6 concern structural or practical arrangements. Space prevents us from providing quotes here for both sets of reports; however, it is interesting to note the similarity in themes.

Work Group Lead case studies

Three WGLs, all experienced teachers, were interviewed in 2022. Brief extracts are below.

‘Ria’ has led several Years 5-8 Continuity Work Groups. She comments on ways of working that this project supports:

A secondary maths teacher works a day a week in my school and I go in to Y7 to work with children & teachers.

I like using Checkpoints - there is lots of talk and lots of listening to the children.

Why would I not bring extra people into the lesson?

She comments on her own professional development “I’m always learning something new”, as well as the responses of teachers in her Work Group when they compare pedagogical approaches to areas of the mathematics curriculum “Oh! This is the same as...”. She also reflects upon the impact of engagement in cross-phase visits: “We can talk about it, but until we actually get teachers into other schools to see, it’s not really meaningful”.

Teachers seeing the similarity in each other’s lessons: the same approach, the discussion, the building on answers...this gave them confidence in content and approaches: ‘I can do this in my school’.

‘Jill’ has led Years 5-8 Continuity Work Groups for three years. In 2021-22 she co- led the group with a primary colleague, which had a “huge impact” on her thinking. She comments on the growing expertise of the WGLs, and the ‘one in, one out’ rolling model of WGL pairs. She reflects on her own understanding and practice:

I ‘knew’ KS2 linked together with KS3, but now realise it is imperative to work closely if we are to get deep and connected understanding... We can’t just treat Y7 as if they’ve never seen maths before...

She also comments on the practice development and school approaches of teachers in her Work Group:

[Before the project] the schools had a relationship, but they weren’t talking about pedagogy.

Awareness of the need for coherence in agreed pedagogical approaches. Not ‘pick and mix’.

Common approaches, consistent representations: ‘Oh! It does matter that children see something through!’

Finally, she reflects on the Work Group model for professional development: “Protected time, space, to talk to colleagues – this is what work groups do”.

‘Sally’ has been involved in the project since it began. Her Hub ran several Years 5-8 Continuity Work Groups each year. Each was co-led by a secondary and a primary teacher, with less experienced WGLs paired with those more experienced so that new leads were regularly inducted into the role. Sally’s work had developed over time, and she was leading other WGLs and supporting their co-planning. She discusses this

structure as a model for building capacity and sustainability in professional development leadership. She reflects on the growing impact on school approaches:

Curriculum development, changes to schemes of work and to calculation policies

Some changes have filtered back to the whole Trust.

If participants were head of department, things were much more likely to happen.

She discusses changes to teachers' practice:

Primary [teachers] are now signposting forward and secondary [teachers] are able to look back. But you can't write that into a scheme of work! Need to gain knowledge and experience.

Teachers are more comfortable asking more open questions and asking children to explain their thinking.

Finally, she reflects on the success of the project in her Hub:

Huge enthusiasm generated. Once people have been through the Work Group, they are keen to lead, take a bigger role. I can see this journey happening. It's got its own momentum now.

Concluding remarks

We have seen evidence over some time of growth of teacher knowledge and cross-phase awareness. In this study we find that cross-phase engagement with colleagues through focused and sustained professional activity is having an impact that goes beyond this, to reach teachers' pedagogical practice and school/departmental approaches. We recognise the need for more research in this area and we hope to continue to contribute to this.

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