**The mathematical language of problem solving, reasoning and fluency led by NRICH in Tower Hamlets**

**Day 5 Tuesday 2 April**

*The following observations were collated in response to reflections on leading a staff meeting back at school*

**Beforehand**

* Decide what you want your takeaway message to be for staff
* Prepare any handouts/notes that support your takeaway message
* Select tasks to use with staff that support your takeaway message
* Familiarise yourself with the curriculum maps so as to be able to signpost these for staff
* Identify any existing challenges, to acknowledge and have planned responses
* Pick at least one NRICH activity suitable for each Key Stage
* Invite staff to bring laptops/tablets to practise navigating the site and use interactivities during the meeting
* Highlight areas of the NRICH site (as suits staff experience and your takeaway message): Teachers’ Resources, Solutions, Features (including the individual aims of Problem Solving, Reasoning and Fluency) Articles
* Include what you’ve taken from the programme so far examples include developing: resilience, progression of reasoning, vocabulary, oracy, use of sentence starters, problem solving and reasoning in every lesson
* Share what the children have enjoyed and learned from the activities, examples include: excitement, development of skills, collaboration opportunities, the opportunity to communicate their understanding to peers/different year groups/a wider world audience via the NRICH website
* Plan how you will take feedback and address what is said
* Offer wider reading or research e.g. books/websites/articles that have been referenced

**During**

* Use your planning, but be prepared to take questions
* Do the maths together. Perhaps in groups and then take time for feedback
* Use more than one activity
* Discuss what reasoning looks like in specific cases
* Use Low Threshold, High Ceiling tasks to model differentiation by outcome rather than task
* Ask staff to share good practice from their own lessons using rich activities
* Involve staff, encourage discussion of what responses might be expected within each class, in different Key Stages
* Use the progression of reasoning labels to focus on questioning that could move learners thinking and reasoning on
* Introduce activity, let teachers have a go; gather thoughts, discuss statements and how this could be applied; discuss how children may develop solutions, discuss where activity could be incorporated into units of plans
* Encourage staff to challenge each other, as they would encourage their children to do
* Link sentence starters to English progression and make other cross curricular links
* Discuss what comes up to share enthusiasms and barriers to be overcome
* Identify and plan opportunities for problem solving and reasoning in all maths lessons
* Enact the maths. Examples given of playing games, being the butterflies and flowers in Butterfly Flowers, encouraging a choice of models/manipulatives to make sense of a task or communicate it differently to someone else
* Relate/link it to existing schools initiatives to build opportunity and links for staff and students e.g. sentence starters, voice21, PSHCE etc.

**Afterwards**

* Teachers took their handouts/notes to use, adapt and build on
* Planned another follow up meeting where teachers shared their experiences and additions/amendments to any handouts/notes that had been shared originally
* Staff have created reasoning displays in their classrooms with prompts for children
* Observations of lessons have focused on problem solving skills
* A shared staff folder has been created for NRICH resources and support materials
* We plan to follow up with teachers to ask how the children tackled the tasks and discuss their recordings
* Staff felt more confident about using the activities for a range of year groups
* Staff are continuing to share their experiences of problem solving in the classroom
* Setting up further opportunities for different year groups/classes to work collaboratively on NRICH tasks
* Feedback shared with whole school to develop and refine practice