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Reflect on your (and colleagues’) own mathematics and the value of ‘getting stuck’ in the first part of the NCETM Early Years CPD Module together.

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Editor’s Entrée

We’ve already reached Issue 20 of the Early Years magazine and, as always, it’s packed with exciting and informative features to support you in your school or setting. From recent publications, to ideas for the children, to innovative school practice – it should certainly get you talking in the staff room!

Are you aware of the recently formed Early Education Co-Production Group? The DfE has invited a group of Early Years representatives to look specifically at free early education and its funding. The group will be co-chaired by Neil Leitch (Chief Executive of the Pre-School Learning Alliance) and Eva Lloyd (Cass School of Education, University of East London). The group will be considering how best to streamline current guidance, contribute to the debate on schools and early years funding reform planned for the summer, as well as inform the development of the new early education entitlement for disadvantaged two-year-olds by 2013. The DfE website will continue to be updated as work develops.

In March 2009 the Government published evidence on the link between disadvantage and low achievement. This was followed in 2010 by Breaking the link between disadvantage and low achievement in the Early Years: Everyone’s business. The document promotes the importance of narrowing the achievement gap in the Early Years and provides some practical examples for what to do next for leaders of Early Years settings. Definitely worth a look.

Do you know how your Early Years data compares to that locally or nationally? The DfE and the Department for Business Innovation and Skills (BIS) released the latest statistics on Early Years provision on 22 June 2011. Key points include statistics relating to the number of pupils taking up early years places around the country. Earlier data releases provide information on EYFSP achievement by gender, ethnicity, eligibility for free school meals, special educational needs and English as a first language.

It seems that both parents and teachers alike are fairly regularly criticised for the growth of what is known as the ‘cotton-wool culture’ (Daily Telegraph, Daily Mail) amongst young people. It is said that children are prevented from participating in activities that might be associated with a certain amount of risk, and thus their ability to assess situations for risks and make their own reasoned judgements is poor. We love the idea of the Tinkering School where Gever Tulley lets children’s imaginations and problem solving skills dictate their activities… all accompanied by wood, nails, sticks and yes… real tools!

Have you checked out the latest issue of the Primary Magazine? Your young children will love the dinosaur-inspired activities (there’s even a mathematical dino-song!), and ‘Maths to Share’ encourages teachers and practitioners to reflect on the grouping they use for pupils in their care and consider its implications for learning and social development.
Focus on…child-initiated learning

Many practitioners are confused about child-initiated learning. Some feel that they cannot actually teach very often, because that would shift the balance towards adult-initiated activities. The very first case study in the Early Years magazine featured Lakenham Primary School. Examples of adult-led mathematics activities quoted in the article include calculating the number of children present, how many hot and packed lunches and finding the matching number from a display, as well as activities based around snack times. These are probably staple mathematics activities in most settings. But what about mathematics through child-initiated activities? The same article comments that the adults in this setting circulate and pick up on child-initiated activities, giving the following examples:

“After planting their seeds, two children talk about how tall they are and compare themselves to an adult. The adult ‘joins in’ and a great deal of comparing takes place, accompanied by some rich mathematical language...Elsewhere in the room, shapes are noticed and talked about.”

When Ofsted visited the school, the report included the comment that, “The teaching of basic numeracy skills is firmly based on practical tasks that children enjoy and these enable them to make good progress.” The children clearly need to be interested enough in the topic and the equipment provided to initiate their own activities. The key then, seems to be having adults who notice and join in without dominating.

‘Joining in’ echoes what Professor Chris Pascal calls ‘partner in play’. To explain the term, she writes about giving the children “meaningful choices in an enabling environment and time to explore through active involvement.” Although the child takes the initiative, the adult must also be active in supporting the child in their choice, really listening to understand what a child already knows so that they can use that knowledge to extend the child’s learning. This could be by being a role model, for example by using correct mathematical vocabulary or by writing numbers or representing quantities for real reasons and talking about what they are doing. But they could also ask questions, pose problems, suggest resources and introduce new ideas through sensitive interactions. As Kathy Goouch (2010) says: “To accompany children in their play is a sophisticated role that can be achieved only by those who know and understand children, who are able to allow the sometimes complex intentions of children at play to take precedence and who will demonstrate respect for such intentionality.” The adults should be neither passive nor take over, but neither are the children entirely in control. The skill of the practitioner is to support and extend within the child’s chosen framework.

Helen Williams is on the same wavelength when she says that “describing play or activity as ‘child initiated’ or ‘adult initiated’ is a red herring. What matters, is who ‘directs’ the play/activity after it has been initiated.” She explores this idea further in her NCETM Teacher Enquiry Funded Project, Investigating how children’s play can enrich the early mathematical experience. She suggests that linking planned mathematical activities to the role play area and having longer, planned role-play sessions helps to enrich child-initiated activities and free play. Activities such as the threading, described in this month’s Games feature, are adult-initiated ‘seeding’ activities. However, what the child does with the resources is up to them. Is that what Helen means? The NRICH team have released some trial EYFS activities and have added an EYFS button to the header. After carrying out the Paths EYFS activity, children may well decide to create paths with other equipment. Again, the adult-initiated activity would have acted as a ‘seeding activity’.
Children bring a rich, informal knowledge of mathematics with them every day. They are likely to have experienced counting, numbers in the environment, sharing (particularly if they have siblings) and much more. Janet Moyles comments that, “Child-initiated experiences rely on the child being competent and knowledgeable about their own needs and choices.” (Moyles, 2008: 33). Even if this is the case, the adults need to really listen, observe free play to identify children’s interests and provide resources to help prompt mathematical exploration. Is basic mathematical equipment such as large dice, tape measures, numerals, numeral labels, 2D and 3D shapes etc as well as hoops, cones and beanbags provided outdoors for the children to use to support their mathematical thinking? Much of this type of equipment tends to stay indoors. Mark-making materials (blackboards and chalk, paper and whiteboards and pens) should always be available too.

Dame Clare Tickell (The Tickell Review of the Early Years Foundation Stage) believes that it is not possible to separate out child-initiated from adult-guided or directed learning and recommends setting out what playful adult-directed learning looks like. She believes that exchanges between adults and children should be fluid, moving interchangeably between activities initiated by children and adult responses to help build the child’s learning and understanding. She further comments that it is the interactions between practitioners and children, talking to them and playing with them, that helps promote the rich learning environment the EYFS is seeking to create, not spending considerable time writing things down because practitioners think this is needed to guide child development. If Dame Clare’s proposals are accepted and what is meant by playful adult-directed learning is clarified and exemplified, then perhaps just what is meant by child-initiated learning will become clearer too.

**References**


**The Tickell Review of the Early Years Foundation Stage**

**Further reading**

EPPE – Effective Provision of Pre School Education Project

Child-initiated Learning by Sally Featherstone, Ros Bayley.

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R4U – School readiness

In February of this year, Professor Chris Pascal OBE, Director of the Centre for Research in Early Childhood, Birmingham, compiled a report on school readiness, drawn from dialogue between the Early Education Group. This group of 13 Early Years researchers and practitioners are at the forefront of Early Years education development.

According to the report, evidence shows that when children enter school ready to learn, they achieve more academically and experience improved health, social and economic outcomes. The report considers that there are three aspects of school readiness, as defined by Pamela C. High of the American Academy of Pediatrics – readiness of the child, the school’s readiness for the child and the ability of the family and community to support the child’s development.

The readiness of an individual child is defined by their physical, social and emotional development as well as the child’s approach to learning, their language development and general knowledge. The ability to reason and express their own emotions, as well as curiosity and enthusiasm are also important.

Schools demonstrate their readiness by ensuring continuity between providers and through an awareness of the needs of each child. Strong leadership, good relationships and high quality teaching are also key parts of the whole. A section on teaching reminds us that children need to feel secure and have a warm relationship with the relevant adults in order take on new challenges. The responsibility of the teacher to devise interactions and experiences to facilitate learning is further explored through Vygotsky’s zone of proximal development and Bruner’s scaffolding. The importance of adult-child interactions is emphasised, particularly when working together to solve a problem. This sustained shared thinking helps to develop and extend children’s understanding. The teacher has three aspects to their teaching – observer; partner in play and initiator. All of these aspects contribute to successful teaching and learning.

Families and communities contribute to school readiness by ensuring that both mothers and children receive comprehensive health care. All children should also have access to high quality preschool experiences, including those provided by the parents themselves, as the child’s first teachers.

The report concludes that children need to be ‘life ready’ since ‘school ready’ is too narrow. It lists four key domains for children to be effective life-long learners – language development and communication skills; attitudes and dispositions; social competence and self esteem, and emotional well-being. Emotional well-being is suggested to be the most important. These four key domains are expanded in the report. The author believes that all four should be established by the end of the Foundation Stage since they are extremely difficult to instil later.

The eight-page report is a straightforward read, though as one does so, one cannot help but begin to relate personal local provision to the various checklists. You can download the full report from the Bishop Grosseteste University College website.

Early Education Group
Professor Tony Bertram, Director, Centre for Research in Early Childhood Education, Birmingham
Laura Brodie, Head, Adderley Children’s Centre and Nursery School
Professor Tina Bruce, CBE, Roehampton University
Marion Dowling, Early Years Consultant

A Department for Education initiative to enhance professional development across mathematics teaching
Jan Dubiel, Early Excellence
Bernadette Duffy OBE, Head, Thomas Coram Children’s Centre
Sue Owen, Director of the Early Childhood Unit, National Children’s Bureau
Professor Chris Pascal OBE, Director, Centre for Research in Early Childhood, Birmingham
Dame Gillian Pugh OBE, Visiting Professor, Institute of Education
Professor Iram Siraj-Blatchford, Institute of Education
Jenny Spratt, Head of Local Authority Early Years and Childcare
Lesley Staggs, Early Childhood Consultant
Professor Kathy Sylva, University of Oxford.
Games

Threading beads

Threading is an old favourite in many settings. These particular activities focus on threading beads. It doesn’t matter what shape or size your beads are, these activities can be adapted to whatever you have.

Although the beads shown are all spheres, there is still plenty you can do with them. If interest has tailed off, revive it by putting your beads in an interesting basket, with a second basket for laces and everything else. Baskets with handles are ideal, especially for the outdoors. The children are bound to want to move them somewhere else, so it is best not to have the baskets too full!

To encourage the children to think about what they are doing, prepare some pattern cards for them to copy. These are straightforward to do using the shapes on a word processing programme, though having spheres alone makes it even easier. The pattern cards featured here focus on repeating patterns of colours. There may be one, two or three of any particular colour. This is useful for counting, matching and patterning. Your pattern cards might focus on particular shapes as well as colours. If the idea of making the cards is daunting, then encourage colleagues to each make a pattern or two by threading beads on a string or lace and then photograph the results. You could add the name of the person who made it, to help adults to develop their conversation. For example, “Mrs Smith made this one while she was drinking her coffee. Would you like to copy her pattern?” Or, “Mr Brown made this one. How is yours the same/different?” You could also photograph a particular selection of beads and ask the children to use just those beads to make a necklace.

Children could choose to create their own patterns, photos of which can also be included in the set of cards which can then be a useful focus for discussion. Children can be asked how their pattern is the same (or different) to that shown on a particular card or photograph.

With beads of different shapes as well as colours, there is the opportunity to ask questions about the names and properties of the shapes used. Children could also be asked which bead they are using next and why. An adult could make a pattern alongside a child (or children) and would then have the opportunity to ask the child which bead comes next in their pattern or to ask the child to pass a green cube for example, for the adult to thread next.

Once completed, most children will want to wear their threading as a necklace for a while, giving other adults and children the opportunity to ask about their pattern and perhaps inspire them to make one for themselves. The photographs and a brief comment or two from the conversation could make an interesting display as well as a useful addition to a learning journey.
Case Study

Developing Maths through story in the Early Years Foundation Stage

Teachers from four schools in Lancashire wanted to support the development of their creative curriculum by exploring the effects of using stories in maths. Their main aims were to motivate pupils in their learning alongside developing pupils’ use of mathematical language.

Originally inspired by local training and the National Strategies resource *Numbers and Patterns: Laying Foundations in Mathematics*, teachers became interested in the potential of stories to inspire children’s mathematics and ‘breathe life into the early years curriculum’. The group made use of the NCETM Regional Project Programme funding and began planning units of work with mathematics at the very centre, focusing on core skills in early mathematical learning. Team members grew in confidence, both with the planning and observational assessments as they continued to develop resources and observed each other’s classroom practice. The children responded with great enthusiasm because the mathematics was embedded in the familiar stories and they were able to use their innate story-telling abilities to practise their mathematical learning.

A full report of this project, with copies of many of the resources used is available. How often do you start mathematics with a story? Issue 3 of the Primary Magazine included a Mathematical Stories booklist which might provide a good starting point. Join in the discussion in the Early Years Forum and share your ideas.
Maths to share - CPD for you and your colleagues

For last month we introduced you to the new Early Years CPD Modules, added to the portal in April. This month we take a closer look at the introductory module.

As with all the modules, the first thing users see are the sections explaining what they will do in the module and the progress that will be made by the time it is complete. Words such as ‘reflect’, ‘examine’ and ‘develop’ give a flavour of how the module operates.

The introductory module helps you to reflect upon your own mathematics and to consider the nature of mathematics and why it is important. Your own experiences, both positive and negative, are likely to have had a profound effect on your attitude to mathematics. One of the things you will be asked to consider will be what it feels like to be ‘stuck’ on a piece of mathematics. Being stuck is usually an indication that you are pushing the boundaries of your learning and that you are trying to learn something new. This leads on to thinking about the strategies you use to become ‘unstuck’. An extract from Success with Mathematics (2002) by Heather Cooke suggests:

“The way to make being stuck a more positive experience is to notice not only what helped to get you going again, but also what led you to getting stuck in the first place. This ‘learning from experience’ is then available to you for use in future situations.”

So what is mathematics? After reading a few quotes from some names you might recognise and watching an amazing YouTube video, you’ll probably want to rethink your initial ideas about what mathematics is.

You may well find yourself surprised and challenged by what you read and the activities you undertake. Make sure you click on the ‘+’ boxes to reveal additional text. Clicking on them again will collapse the text so that you can focus on the activities and your reflections. The third activity in the introductory module focuses on children’s imagination. Most children clearly have a vivid imagination, but do we utilise that in mathematics? How could you encourage them to do so? Are you intrigued enough to make a start on the Early Years CPD Modules? You could work alone but you will probably get more form the modules if you work through them with colleagues. If that is not possible, then you might like to use the Early Years Forum to enable you to discuss the key ideas. Just click the red New Topic button, type in your question or comments and wait for the responses to roll in!