

CREATIVITY & ENJOYMENT

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figure 1



figure 2



figure 3

Young children need to have numerous opportunities to explore, rehearse, talk about, reformulate and rehearse again their early experiences and emergent understandings. In the context of mathematics teaching, early years practitioners have the challenging task of providing a multitude of engaging starting points and playful contexts not only to introduce children to key mathematical ideas, skills and vocabulary but also, to provide the opportunities to practise and practise yet again, fundamental skills and ways of thinking in order 'to help children to see themselves as mathematicians, and develop positive attitudes and dispositions towards their learning.' [1]

Designing and producing 'story sacks' for mathematics is one very effective way of resourcing a myriad of imaginative and motivating opportunities for counting, calculating, talking about shapes and space, measuring, asking 'what if?' and applying mathematical reasoning. Mathematical story sacks can follow the principles and excellent practical guidance outlined by Neil Griffiths [2] creator of the original storysacks designed to support children's reading, writing and listening skills.

Story sacks, aimed at developing and consolidating children's mathematical potential, contain a range of activities, games and role-play suggestions for use in the classroom and at home with parents. The 'centre point' [3] of the sack is a picture book or fiction text which acts as the inspiration for the design of the accompanying materials which can include, amongst many others, board or card games, calculator activities, selected web materials, puppets and soft toys either re-cycled or newly constructed.

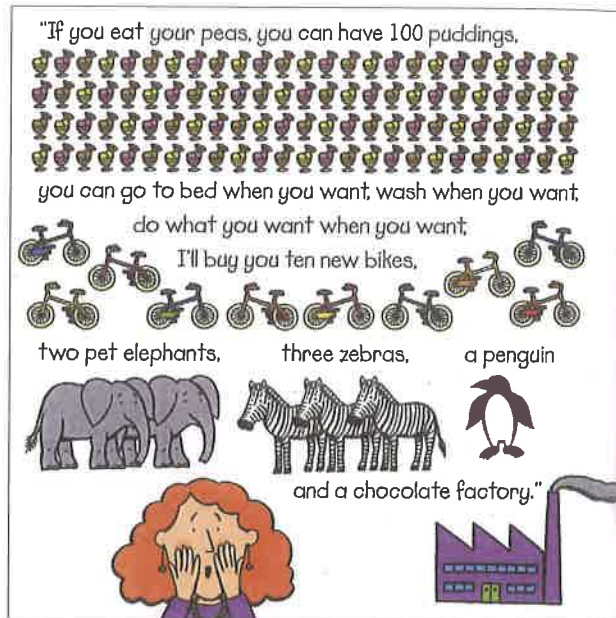


figure 5

For example, the enticing cakes, the different size pigs, the different length and width bandages in the *Goodnight Piggy Wiggy* [4] sack (figure 1) or the alien flip game and alien bingo in the *Here Come the Aliens* [5] sack (figures 2 and 3).

Increasingly, many children's authors and illustrators interweave mathematical ideas and themes into their texts and so we are spoiled for choice. Kes Gray and Nick Sharratt's *Eat Your Peas* [6] (Figure 4) is one example of a text brimming over with starting points for practising key skills such as counting and calculating. Just take a look inside the front cover at that wonderful double page spread of all those peas – now that's a challenging counting task! And surely it's no coincidence that mum's necklace is made of green beads, so how about exploring partitioning with strings of necklaces or by using a paper plate and partitioning Daisy's peas in as many different ways as possible.

The text can also be used as a way in to teaching children some 'good work habits' [7] for solving problems, for example, being systematic, asking questions, persisting with challenges. Like all good stories, this particular text has universal appeal to children and adults alike as Daisy's mum tries to get her to eat her peas – children's attention will immediately be captured. The teacher's role is to encourage as many creative responses to selected pages as possible without losing the pure pleasure of reading and enjoying the text of course!

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Let the imagination flow ...

And so, let's explore *figure 5*, *If you eat your peas, you can have 100 puddings*. The ice-cream illustration alone positively 'demands' some serious attention in the realms of pattern spotting and counting:

1 row = 25 ice creams 1 column = 4 ice-creams
 1 diagonal = ? ice-creams
 4 rows of 25 = 100 $4 \times 25 = 100$
 25 columns of 4 = 100 $25 \times 4 = 100$

Can you count in 25s to 100? Is it trickier to count in 4s to 100? If you had a choice would you count in 25s or 4s ... why? Let's use these cards (multiples of 4) to count up to 100.

Counting and calculating: let's take a look at the rows:

Row 1: 9 yellow ice-creams	Row 2: 8 yellow
8 brown ice-creams	8 brown
? pink ice-creams	? pink
Row 3: 8 yellow	Row 4: 9 yellow
? brown	? brown
8 pink	8 pink

What do you notice? Can you total each row? Why can't there be equal numbers of yellow, brown and pink ice-creams? How many different ways can you count and calculate each colour? What if we looked at the diagonals?

To total the yellow ice-creams :

2 diagonal rows with 1 yellow ice-cream → 2
 8 diagonal rows with 4 yellow ice-creams → 32
 Total 34

More counting: What's the total number of pink diagonal rows? brown? yellow?

Plentiful scope for doubles: each ice-cream has two scoops!

1 row = 50 scoops
 2 rows = 100 scoops
 4 rows = ? scoops

Scope for double wheels on bikes or doubling the animals on the page (...what a strange order those animals are in: two elephants, three zebras, one penguin ...)

Time: there is a whole host of discussion and mental calculations to be practised in relation to the bed-time theme which develops throughout the text as part of Mum's negotiations with Daisy;

"If you eat your peas you can ... and stay up for an extra half hour"

The clock in the illustration reads half past seven and so what time should Daisy's bedtime have been? What is your bedtime?



figure 4

"...stay up really late ..."

What does that mean? How many minutes later? What's the difference between staying up half an hour later and staying up really late? Is it the same for your friend or family members?

"...stay up past midnight ..."

What time would that be? How far away from your bedtime would that be?

"...go to bed when you want ..."

When would that be and why? Would it be nearly getting up time?

Creating additional materials

Once the text pages themselves have been fully enjoyed and explored it is then possible to take an image from the story line and develop further avenues of enquiry by designing additional games or activities or collecting together particular sets of materials and providing a supporting 'script' or prompt card. For example, Mum says she will buy Daisy a chocolate factory hence the imagination can take flight in gathering together a range of chocolate 'materials': chocolate bar wrappers (the Cadbury's Dairy Milk Biggest Bar Ever at 1.25 kg is a must); chocolate boxes (wonderful shapes) and chocolate cake recipes. By comparing and contrasting even just two items, a whole new range of practice and investigation work can open up: measuring, role-play shopping, calculating with money, surveys of favourite chocolate and so on.

Story sacks for mathematics have enormous potential for focusing on individual children's learning [8], enhancing teachers' subject knowledge, providing a bridge from Foundation to KS1 and more besides. But more importantly, the sacks give teachers permission to be creative in their teaching and for children and parents to enjoy learning together.

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References

- 1 QCA: *Curriculum guidance for the foundation stage*, London: QCA, 2000
- 2 N. Griffiths: *Storysacks*, Reading: Reading and Language Information Centre, The University of Reading, 2001
Storystick Ltd is a good commercial source of storystick with some sacks suitable for mathematics work: www.storystick.com
- 3 N. Pratt: *Mathematics as Thinking in MT181*, December 2002
- 4 Crisyan and Diane Fox: *Goodnight Piggy Wiggy*, Little Tiger Press, London. Reproduced by permission of Little Tiger Press, 2000
- 5 Extract from *'Here Come the Aliens!'* by Colin McNaughton, © 1995 Colin McNaughton, Reproduced by permission of Walker Books Ltd, London SE11 5HJ
- 6 Kes Gray: *'Eat Your Peas'*, illustrated by Nick Sharratt, published by Red Fox (2001 edition). Used by permission of The Random House Group
- 7 HMI: *Mathematics from 5 to 16*, London: HMSO, 1985
- 8 DfES: *Excellence and enjoyment: a strategy for primary schools*, Nottingham: DfES, 2003