

# Sharing good practice

9/2/08

Working  
together

*This week we have two articles which describe effective cooperation. Alison Lydon tells us how she has used Bee-Bots in the nursery and her lovely photos show how effectively children have worked and played together. At the other end of the primary age spectrum Tom Barrett has been using Google Docs with his 10 year old children to share data between classes in real time.*

*Finally we have some more problems, puzzles and posers from our Janice.*

## Robots in Early Education

Alison Lydon



*Are we doing bees today?* was how I was greeted by a nursery child.

She was not referring to a mini-beasts topic, but to control technology and the use of our new swarm of Bee-Bots. Control is an area of ICT which causes many educational professionals to start talking about batteries, cupboards and equipment not working! Children are in daily contact with an ever increasing number of machines such as microwaves, televisions, video recorders, washing machines and DVD players. All of these they will need to control. We have found our nursery children have improved their problem solving, thinking, numeracy and literacy skills whilst using robots and whilst having FUN!



For the last 17 years, Roamers, Pips and Pixies have been used in primary classrooms (with children aged 5-11) and on occasions they have found their way into the nursery (children aged 3-5). Previous research has shown that with careful planning Roamer can enhance learning with young children. Until now we have used Roamers in our nursery, but we have found we needed an adult working with a small group of children which is a luxury we cannot always staff. It also gave children the message that they weren't able to control the technology without a watchful adult on hand, and sometimes this put children off an activity. So although we believed in the educational value of robots, the practicalities made it difficult.

Then the Bee-Bots arrived and this situation changed. Advantages over the Roamer were easy to see immediately... it is smaller, lighter, more appealing to look at and has fewer buttons. The keys are raised so the children can feel the button has been pressed. It pauses between instructions when it is performing them and has audio cues too.

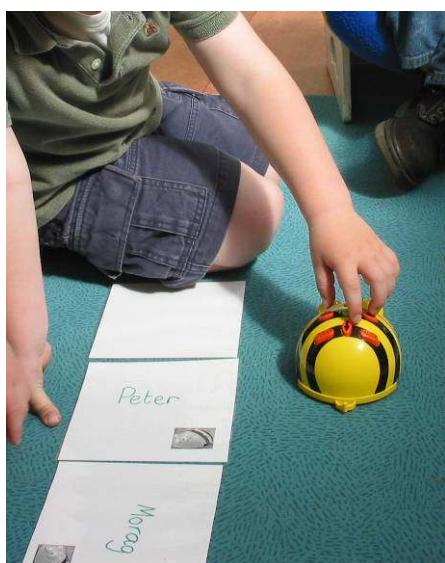
I was keen to introduce the children in our Nursery to the Bee-Bot so I worked with children in groups of four, completing the class in a couple of hours.

My initial objectives were to find out if the Bee-Bot engaged the children, how quickly the children learned to program it and if they were able to achieve success in the activities. I was also keen to see if there were any unforeseen advantages or disadvantages in using the Bee-Bot.



The children had great fun. No-one was reluctant to use the Bee-Bot or had to be persuaded, and most returned for an 'extra' activity. I was also pleasantly surprised by the concentration levels and length of attention span shown by the majority of the children. They waited really patiently for their turn and were actively engaged in the activity even when it wasn't their turn. Often children kept popping into the area from other activities, keen just to sit and watch or to find out when it would be their turn. Initially I thought this was due to the novelty factor, and indeed that did play a part, but on the whole the children are keen to 'play' with Bee-Bot.

All children learnt how to use Bee-Bot about as quickly as I expected, but they gained independence faster than I anticipated. Twelve children out of the 28 were able to use the Bee-Bot without any adult help after the initial instructions. An additional 9 only needed small prompts such as 'remember to use the Clear button', the last 7 needed more substantial guidance to succeed in the task. Often this help came from peers. I would not have expected so many children to work independently with Roamer as quickly as they did with the Bee-Bot. One child commented to a friend, ***You have to make it go to different places...it's quite easy really.***



Overall I found there to be several significant advantages of Bee-Bot over other robots. First, the buttons depress, eyes flash and Bee-Bot makes a noise every time you press a button, so children can tell they have given an instruction. This reduces the number of errors the children make and this fact coupled with fewer buttons to press and shorter sequences needed, meant that the Bee-Bot accomplished more 'missions' than Roamer would have in the same time.

I also love the smaller, lighter dimensions. It is easy to hide Bee-Bot in a bag and suddenly produce it. I can ask a child to pick it up and move it without fear for the safety of the child or the robot and I can take a box with several into another room - in one trip! Storage is so much easier too. The smaller supplementary resources also make it easier to make my own and to work in a smaller space, such as a table top, which in itself sometimes changes the dynamic of the task.

The shells clip onto Bee-Bot rather than slipping on as they did with Roamer. They are also so much cheaper and smaller to customise.

One big bonus is that no digit recognition is needed. Younger children, who did not yet know their numbers were therefore able to use the Bee-Bot. Once they had grasped the concept that the more times they pressed the arrow buttons, the further the robot moved, they were away, or rather the Bee-Bot was!



Activities based on colour and shapes were great fun for the younger children, as were counting rhymes.

Bee-Bot pauses between each move and this allows children to count each step on the journey and also helps the children understand the relationship between the instructions that they have given and the end result - a feature not available with Roamer.

The Bee-Bots certainly caused a buzz in our nursery. Roamer is not quite ready to retire yet though. He will move back to the Primary 1 and 2 class rooms (ages 5 and 6), where he is more able to extend number work and provide a progression of control and direction skills. Meanwhile, we are busy sending Bee-Bots on 'Gruffalo' finding missions, sequencing activities, matching games and other activities to enhance the learning in all areas of our nursery curriculum.

### *Author Notes*

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## Using Google Docs in the classroom

Tom Barrett



**Where's Andrew?** It was Ashley from the other Year 5 class, he seemed a little disgruntled.

**Mr. Barrett how is it possible that Andrew's resting pulse is 256 beats per minute?!** (A good question.)

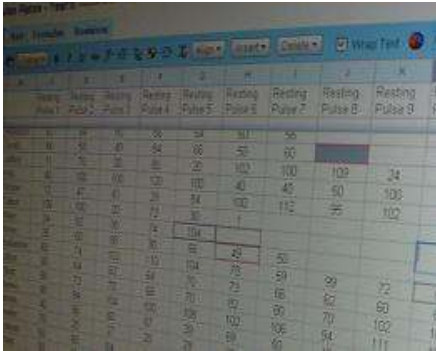
Ashley continued, ***I wanted to see if he was sprinting around the classroom because that data just doesn't seem right!***

Wow, this impromptu interruption to my afternoon proved to me the immense power of sharing simple data between classes or groups of children. In this article I outline how I have used Google Spreadsheets (part of Google Docs) in my classroom.

My class was exploring resting pulse rates and we were using an online spreadsheet to share our results. I decided to use a Google spreadsheet as I have

been using the Google Docs application for a while - but I could have easily used EditGrid as an alternative.

I set the spreadsheet up so that all of the children's names from both classes were present in the first column. Then 10 other columns were labelled, Resting Pulse 1, Resting Pulse 2... and so on. It was in these columns that the children were to add their own resting pulse measurements (taken by counting their pulse for 30 seconds and doubling).



I then accessed the same spreadsheet through my Google login on all 16 laptops (8 per class) - so in effect I logged in 16 times to the same document from different locations (plus my PC and SMARTBoard, so 17 logins in total).

We talked a little about how to find our pulse and I then asked the children to record 10 readings of their resting rate into the spreadsheet.

It was great! With the live update feature we were able to see individual results popping up all over the place - even from next door where Rick's class were doing the same task at the same time. Google Spreadsheets has an Auto Save option which makes life much easier and gives you the opportunity to see the live data. Not only did the hardware hold out fine, but accessing the spreadsheet was excellent - even with 17 simultaneous users on a single login. The children really enjoyed seeing each other's work and it gave them a great overview, not only of the year group working together, but also of the sorts of data people were adding. With the IWB on I could see at a glance who was adding data and what was going on in different groups. Children from the other class were nipping across the corridor and questioning the validity of results from children in my class.

Resting Pulse 1	Resting Pulse 2	Resting Pulse 3	Resting Pulse 4	Resting Pulse 5	Resting Pulse 6	Resting Pulse 7	Resting Pulse 8	Resting Pulse 9	Resting Pulse 10	Average
190	208	102	97	90	41	43	71	87	99	102.8
70	28	27	20	29	30	24	21	45	103	39.7
60										60
70	56	46	46	72	60	74	52	64	64	59.4
44	54	48	66	66	52	50	44	46	42	51.2
60	40	70	60	121	64	100	88	22	40	66.5
64	68	64	64	68	60	32	62	60	60	60.2
52	64	50	56	54	60	56	56	48	54	55
44	58	49	64	66	50	60	56	63	64	57.4
11	70	30	80	20	102	100	109	24	29	57.5
40	100	100	120	100	40	40	50	100	50	74
12	47	61	29	84	100	112	95	102		71.333333
100	100	20	72	30	1	40	60	20	18	51.111111
34	92	90	74	104	20	60	20	12	23	52.9
25	60	80	30	56	114	50	82	68	81	64.6
60	74	102	110	104	78	59	99	72	68	82.6
80	64	62	64	70	73	66	62	60	68	66.9
80	72	70	58	70	82	80	70	102	108	79.2
80	94	104	100	108	102	106	94	111	102	100.1
40	56	60	67	38	69	50	45	57	30	51.3
60	50	64	44	30	108	146	126	106	144	87.8
50	58	50	30	59	62	72	51	42	91	56.5

Within the space of about 40 minutes, perhaps less, we collected approximately 600 individual results all in one file. With so much data compiled so quickly we were then able to examine and manipulate the results in the same lesson, working out averages of the whole year group, for example. I would highly recommend doing this if you have the reliable kit in your classroom – my colleague and I have already agreed that it will be an excellent data entry method for our maths lessons on data handling.

## *Further Steps - beyond our classroom, beyond our school*

The sharing functionality was proven in this activity and the next step for our year group is to share a similar data pooling task with other schools. With this success very much in my mind I woke on a recent Saturday morning to find an email from a teacher in a British school in Muscat, Oman. He had seen a past post on my blog about using EditGrid to share science investigation data. I emailed back and before long he had created a Google spreadsheet with my EditGrid work in it. I received an email from him inviting me to collaborate and soon I was sipping my second cup of coffee whilst chatting and live-editing a spreadsheet for our classes to work with!

From email and eye rubbing to collaboration - less than 10 minutes. I had never met, spoken to or emailed this teacher before but here we were 2000 miles from each other editing a spreadsheet together.

***Are you any good at graphs?*** he asked.

***I am OK,*** I said clicking away. ***How is that?***

***Great! Do we want the graph on the same page as the data so the children can see it all updating at the same time?***

Sharing and working collaboratively has never been so easy. Google spreadsheets has a discuss/chat window allowing for a simple dialogue, as you see above. This will be excellent for children to use to communicate as they work.

Along with a third school in Scotland we will be collaborating on a simple exercise/pulse rate investigation using the spreadsheet. I am in no doubt that the children will be better able to understand how multiple sets of data can improve accuracy when we share our work and I am hopeful that they will continue to question what they discover.

The walls of the classroom tumble much easier these days. However I don't think Ashley can just nip across the corridor to the school in Oman to see what is happening!

(This article is taken from my blog - <http://tbarrett.edublogs.org> - see Sharing a Google Spreadsheet in Class, September 2007.)

### *Author Notes*

Tom Barrett is ICT Subject Leader & Assistant Headteacher at Priestsic Primary and Nursery School <http://tbarrett.edublogs.org>

### *Links*

Google Docs - <http://www.google.com/google-d-s/tour1.html>

EditGrid - <http://www.editgrid.com>

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## More Problems, Puzzles and Posers

Janice Staines

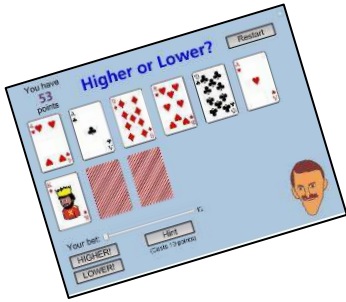


### *Editor's note*

In issue 10 of SGP we published an article by Janice which looked at the value of including problems, puzzles and posers in the curriculum. There was not room for all the examples so here are the rest.

## Higher/Lower (7 - 11)

<http://www.mathsnet.net/flash/higherlower.html>

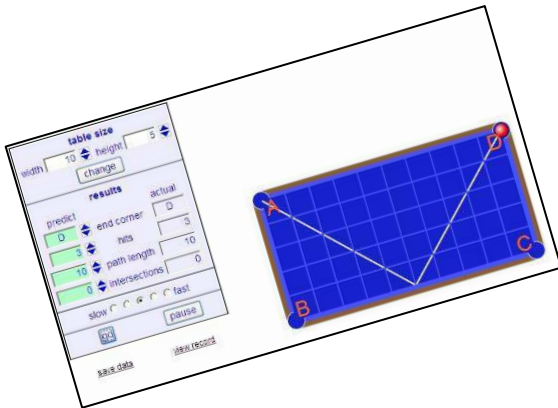


Based on the TV quiz game 'Play your cards right', this game requires the children to use their knowledge of probability to decide whether the following card is likely to be higher or lower than the one before. The number of cards to guess can be adjusted from 3 to 11, making this a game suitable for children of a wide range of ages and abilities.

## Bounce (9 - 11)

<http://www.mape.org.uk/activities/index.htm#Bounce>

Bounce is an old favourite and is about problem solving, relationships between numbers, factors and ratios (through the metaphor of a snooker table).



Children can work in pairs or small groups. This will enable them to share ideas and to make the recording of different attempts more reliable.

Explain what the program does. A snooker ball is struck at 45 degrees from the top left hand corner and continues on its way until it drops down into one of the pockets (note: there are no side pockets). The children count the number of bounces, but add 1 for the pocket the ball leaves from and one for the pocket

it drops down. Hence on a table measuring 3 x 6, the number of bounces is 3 (even on a square table the number of bounces will be 2!)

The object of the activity is to predict the number of bounces that the ball makes before it drops down a pocket. There is one rule that applies to all circumstances. Children tend to develop a rule that is true in some circumstances and not in others. For example, children might suggest that if both table dimensions are odd then the number of bounces is the sum of the two numbers. This is true for 5 and 7, and for 7 and 11. The role of the teacher is to suggest circumstances where they might like to reconsider their rule. What if they try 5 and 15?

Children often have difficulty in working systematically with problem solving, puzzles and investigations and they need to be encouraged to do so. They are then more likely to discover the patterns, rules or most effective strategies to help them. Hence the teacher's role should be in helping pupils to structure their work, simulations or investigations and to record, save and review their results regularly so that they are more likely to reach a successful outcome.

## Author Notes

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