

## **P.42 Can digital microscopes promote learning in Literacy lessons?**

Claire Price      Hunwick Primary School

### **Background**

This research was inspired following an earlier study into digital microscopes and their effect on learning in science lessons. I found that digital microscopes improved the confidence of children with special educational needs (SEN). These children had an improved understanding of scientific concepts being investigated *but they also had the opportunity to train other children in the class on using the microscope, and through the use of the microscopes the language skills of the children also improved.* Those children who struggled to find the words to express their findings were becoming increasingly confident to discuss what they had seen. The use of the microscopes in science lessons also changed the style of learning within the class. Lessons that involved the use of microscopes were becoming increasingly child led, with the children investigating a range of resources in response to an initial question posed by the teacher. *However, the most significant impact that the microscopes had on the lessons was the confidence and willingness to 'find out more' from all of the children. This was displayed through the children's eagerness to share their findings with other adults and the rest of the class and the development of the vocabulary that came with this confidence.*

I believe that microscopes enrich learning in the Year 3 classroom in many different ways.

#### a)                      Visual learning

They are suited to a range of different learning styles but they are also useful learning aides to children who are visual learners. The bold images, which can be displayed on an interactive whiteboard or a computer screen, aid their learning. The pictures often promote discussion about what they can see. The constant image, which can be recorded in a snapshot or a video clip and viewed many times, provides the visual learner with the tools to support their learning and understanding.

#### b)                      Kinaesthetic learning

The kinaesthetic learner is able to manipulate the view of the object by controlling the lighting, focus and the recording of the images. They have the ability to control what they themselves, and others see. The 'hands on' quality of the microscopes means that children who respond well to practical activities are also catered for.

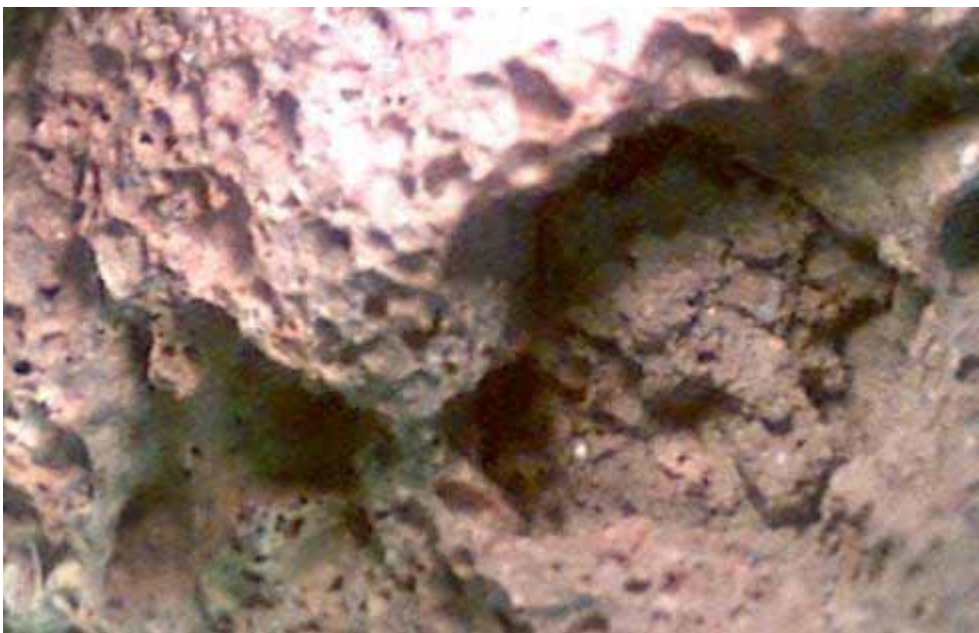
#### c)                      Improved speaking and listening

In my previous piece of research into digital microscopes demonstrated that they are powerful in promoting speaking and listening. Microscopes are used in both whole class and group work. When children work in groups, the microscopes are connected to laptops. The team work involved in using the microscope as part of group work automatically promotes good speaking and listening skills, however the children's discussions about the images displayed develops the speaking and listening skills even further. I have also used microscopes as part of an introduction to a lesson as a whole-class teaching aid. The image, which is projected onto an interactive whiteboard, allows the whole class to discuss what they can see. I have found in science lessons that the discussions about the images seen are usually more technical, with the children wanting to use the correct scientific vocabulary to really explain their findings. The other children listen carefully and the passion for 'powerful words' is adopted by a wide range of children – including those with SEN who would normally struggle with the language and word finding skills.

## Developing the research

Seeing this improvement in vocabulary and a new enthusiasm for detailed descriptions has led me to investigate whether these developments in language may also be transferred into creative writing with children of a lower ability. I decided that I would use the microscopes at the beginning of a unit which focused on descriptive writing. I used the microscopes to begin a discussion about life on another planet. I took several snapshots of a piece of rock and exported the image into a PowerPoint presentation. I added headlines and text so that it appeared to be from a website. I told the children that I had found this website whilst checking my e-mails that morning, and explained to them that this was a photograph taken by a passing satellite of a strange piece of rock found orbiting Saturn. This led to a great deal of discussion about what it would be like on that piece of rock. Many children said it was like a moon and it led to descriptions of what it would be like to be there. "I think it will be hot in the day but really cold at night and if you were living there it would be so hot you'd have to hide in a cave". "I can see caves, I bet there are monsters down there". Discussions like these led to detailed written work with powerful descriptions. Children used the images provided as an initial stimulus and then began to think more creatively about the alien planet (as it later became).

Later in the week the children were given a selection of rock samples. They were told about the piece of descriptive writing which they were going to be doing the following day and were asked to use the microscopes to look at different areas of the rocks. The children were given a period of ten minutes to explore the different areas of the rock samples and choose the snapshot that they would use. They changed the magnification of the microscope, but tended to keep the same rock sample. When the children had selected the snapshot which they wanted to use the children sat in their groups and began to develop a range of ideas about what they could see on their alien planet. Children moved away from their original descriptions and instead they began to use their imaginations to describe who lived on the planet, and what it would be like to live there. "There are caves. Those dark spaces are deep caves and inside there are strange creatures which look like slimy worms. They are green. They have to stay down in the holes because it is too hot outside."



(Alien Planet taken by Jordan and Matthew.)

## Findings from the research

I found that this visual stimulus helped all of the children, however the children who would normally have struggled to find the vocabulary to make a powerful and detailed description

now had the support and ideas to do so. All of the children produced good, detailed work which was very descriptive and really painted a picture of the planet.

Boys were particularly engaged with this piece of writing and produced work of an improved quality to that which they may have produced without the support of the microscopes. The time which the children spent exploring the rock samples in detail, discussing them with their group, gave the children the opportunity to share good ideas and language. This language was developed by the clear images of the magnified rock samples. The children were able to see things which they normally wouldn't have been and some became very passionate about their descriptions – continually improving their ideas, adding or improving the vocabulary which they used and building a better picture. The use of the microscopes clearly acted as a scaffold to the learning and the renewed confidence in language which took place.

Speaking and listening skills clearly improved. Having the bold, clear images provided the support for those children who may have lacked confidence in the past. Now children could simply describe what they saw on the screen. For the children with SEN linked to literacy these images provided the necessary support. As described earlier, the visual nature of the activity also supported and stimulated the boys learning.

Girls in the class enjoyed the task and the use of the microscopes certainly provided support and stimulus for some, however many girls in the class were high achievers and although the microscopes were used, for many it only provided an initial starting point. Many of the girls had already demonstrated powerful imaginations and enjoyed using detailed descriptions in their writing. In order for those girls and other more able children to progress further they required support from staff to provide the tools to move on. As a teacher, using the microscopes enabled me to provide that support. Whilst I was working with the children of a higher ability, the SEN children and those of a lower ability were supported in working in their groups using the microscopes as a scaffold and a prop which helped them to work independently. The children were confident in using these microscopes and therefore could be left unsupervised, and this would not have worked as well if the children did not have the experience of using the software as they did.

## **Conclusions**

a) Improved confidence, responsibility and independence of SEN children.

The use of the microscopes in a literacy lesson had a clear impact on the quality of the work produced by the children in the class with SEN. The visual nature of the activity using the microscopes provided the children with the support necessary to produce a clear and detailed description of the planet. The group work and discussion that stemmed from the images provided ideas for the activity. The images provided by the microscopes meant that the children were able to work independently as the software provided the stimulus that they may have needed otherwise. Therefore, working independently boosted the children's sense of responsibility and confidence in their own ability. They did however need support when recording their ideas on paper. They lacked confidence in their ability to record their findings on paper as powerfully as they could communicate through speech.

b) Boys' improved descriptive vocabulary

Many of the boys within the class found producing a detailed description purely from their imagination very difficult. When using the microscope however images which they found and selected provided the initial stimulus which they needed. It thus seems important that they could control the tools which provided this stimulus for their achievement. They no longer had to picture 'what it could be like' and instead they could describe the image before them so they only had to concentrate on improving their vocabulary. The discussions that developed when selecting the image to be used meant that the boys were instantly using powerful descriptions of what they could see in order to persuade their friends that their choice was the best. Therefore their language skills and ideas were developing instantly. Also the use of the microscopes made the activity fun and instantly appealing to boys.

c) More able and talented children.

The children of a higher ability and those who could be classed as being "more able and talented" enjoyed the activity; however those children did not need the support provided by the microscopes. They already had the ability to imagine and describe landscapes using powerful and technical vocabulary. The microscopes provided those children with a stimulus but it did not provide a scaffold with which they could develop their language skills further. However, as the microscopes did support other children who may normally have required additional support it allowed additional time to be spent by the teacher with those more able children. The teacher could therefore spend that time helping the more able children to develop further.

d) Usability. The flexibility of the resource

The use of microscopes as part of a literacy lesson does have many good points. It offers opportunities for many different types of learner as well as teachers. However I am unsure of how many different ways the software could be manipulated so that it aids the learning process and supports the children in a significant way. It certainly can be used in some areas of the literacy curriculum such as instructional texts, report writing and as used here in elements of descriptive writing. But the ICT must be used to support and enhance the learning in literacy and it could easily become more of an ICT lesson. When the link between the use of the microscopes and literacy is strong then the use is justified however there are many literacy areas where the software and the topic would not be appropriate.

Undoubtedly the use of microscopes was very appropriate worked in the lessons discussed here. They provided support for many and a scaffold with which others could use to achieve. It allowed teachers to support different groups and it allowed others to work independently. Language and communication skills did improve with many children, especially boys within the class and the children enjoyed the practical element of the task