An Investigation of How Teachers Can Help Children Become Originators and Creators Rather than Passive Users of ICT Systems

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> Aim

To see whether selected teaching strategies can promote creative work from children using ICT systems for the production of visual imagery.

> Dimensions of this Case Study

Three children from Year 2, three children from Year 3, one child with moderate learning difficulties from Year 4 and four children from Year 6 each took part in two taught sessions.

> Summary of Findings for this Case Study

- All children showed a gain in the production of creative work as a result of the selected teaching strategies.

- Classroom observation confirmed that there were:

  - a number of clear requisites established for teachers, including skill and understanding in the appropriate software application; and knowledge and awareness of pupils' technical and creative abilities; and

  - common elements which made up the effective teaching strategy including the importance of direct modelling of skills and techniques; and the provision of a relevant and enjoyable stimulus.

- All children showed clear gains in technical proficiency.

- Children's creative ability was hindered when they lacked certain skills and techniques.

- Teaching specific ICT skills had a direct impact on pupils' creative abilities as their creative ability was hindered when they lacked certain skills and techniques.

Background

Smith & Blunkett (NACCCE 1999) stated that the Government 'are committed to giving children all the skills they need to make the most of their lives. Certainly they need to be able to read, write and use a computer. But they also need the skills to express themselves and develop their individual talents'.

This study started from the premise that the computer as a creative tool needs to be investigated further. Whilst taking on the challenge of using the computer as a creative tool, consideration needs to be given to how children can achieve computer literacy through their artistic investigations and experiences. Conversely the computer can provide a means for children and teachers to increase their visual perception and aesthetic awareness, not to mention scientific and mathematical understanding. ICT systems, if used purposefully, can provide an abundance of opportunities for creative problem solving in relation to the visual arts in addition to other areas.

The aim of this work was to establish whether and how a pattern of teaching strategies could help children to use the computer as a creative tool.

Project Outline

This project investigated how the creative potential for the production of visual imagery using ICT systems could be developed by selected teaching strategies.

- The researcher undertook three mini case studies. These involved three pupils from Year 2 and three pupils from Year 3; one child with Moderate Learning Difficulties (MLD) from Year 4; and four pupils from Year 6. Each case study took place over two sessions.

- At the start of the project the researcher gathered work from pupil portfolios and held discussions with class teachers to establish a baseline measurement of each child's technical proficiency in relation to art software packages.

- All children were familiar with the art software package Dazzle (SEMERC Software).

- The research process was documented at various stages, with a particular focus on the teaching strategies and learning outcomes, by observation of:

  - children using the computer to generate images, to establish a baseline profile for the sequential development of computer imagery;

  - each child's capacity to acquire new skills and techniques over a number of sessions;

  - how each pupil was able to apply various skills and techniques in order to modify and execute the desired outcome.

- Finally, the completed work was discussed with each child and his/her responses noted.

- The project demonstrated the achievement of creative potential when children were taught to use ICT systematically through direct teaching strategies.

Data Collection

Classroom observation was the key strategy used for data collection. The researcher used a comprehensive tick list that included:

- all the tools and technical skills relating to the relevant software package, e.g. double-clicking, selection of paint brushes and fill colours;

- a record of teacher intervention strategies, e.g. modelling the use of the resize option for the whole class; and

- teacher observations of pupils' progress and reactions.

Pupils' work was assessed using defined criteria.

Overall Findings

Teaching Strategies

From the analysis it appears that it is possible to devise teaching strategies that enable children to use ICT to produce creative visual imagery. Classroom observation showed that across all the pupil groupings, the common features of the successful teaching strategies were when the teacher:

- created an appropriate working environment, where the atmosphere was calm and supportive, the teacher had prior knowledge of the children and was technically able to support and develop the needs of each individual pupil;

- selected clear objectives related to current experience, e.g. the literacy hour;

- provided a relevant and engaging stimulus - a challenging and creative task targeted at the appropriate level for the children involved;

- directly modelled the relevant computer skills, e.g. use of the colour tool, to help pupils achieve their artistic goals;

- monitored and corrected pupils' skills, using a variety of techniques, to develop their creativity and imagination linked to the stimulus; and

- developed pupils' creativity by

  - keeping them focused on their objective through discussion and questioning;

  - encouraging their use of technical vocabulary; and

  - joint assessment with the children to refine and reorder their creative goals.

These points formed the basis for the teaching strategies of the investigation and offered an insight into effective teaching of ICT in relation to visual imagery at all levels.

Prerequisites for effective teaching

From the analysis it was possible to identify a number of prerequisites for effective teaching in this context:

- knowledge of developmental stages appropriate to computer artwork in relation to primary school children;

- skill in using the computer to generate visual imagery;

- awareness of children's prior learning experiences in using the computer to generate computer imagery and sensitive accommodation to the children's learning needs;

- ability to establish a suitable learning environment;

- skills in ICT to adapt ICT equipment and choose appropriate computer software.

It was important that the needs of the children formed the foundation for the preparation and structure of the stimulus. The stimuli used during all the sessions had links to other areas of the curriculum, e.g. generating a fantasy character to illustrate a piece of writing in literacy or creating a visual picture of a Viking journey in history.

An extensive technical understanding also played an important role in the development of the children's skills and awareness. Before the researcher could engage in a lesson to develop the children's creative visual skills she needed a full knowledge of relevant art software packages.

The software packages selected were not dominated by special effects but provided the researcher and children with a tool that allowed sequential adaptation in relation to the development of children's computer imagery. The computer desktop could be simplified in order to accommodate the needs of each individual. Having a more complex software package ensured the extension and further development of skills and techniques.

Pupils' learning gain

Analysis of pupils' final images showed a gain in the production of creative work as a result of the selected teaching strategies.

The criteria used for the analysis were:

- originality;

- fluency;

- abstraction;

- elaboration;

- openness; and

- 'valuable and new'.

These criteria were derived from relevant literature (see Slabbert, 1994) and, taken together, represent a consensus of what counts as creative work.

- All children gradually demonstrated an increased level of technical awareness over the two sessions when using the art software.

- The children became more focused on the creative stimulus as they became more proficient users of the tools and techniques.

- All children over the two sessions used more tools, techniques and functions on the computer software.

- During the second session the majority of the children set themselves higher visual targets.

- As the children became more effective users of the software they were able to elaborate their original ideas fluently, as can be demonstrated by the work of one pupil in Year 6.
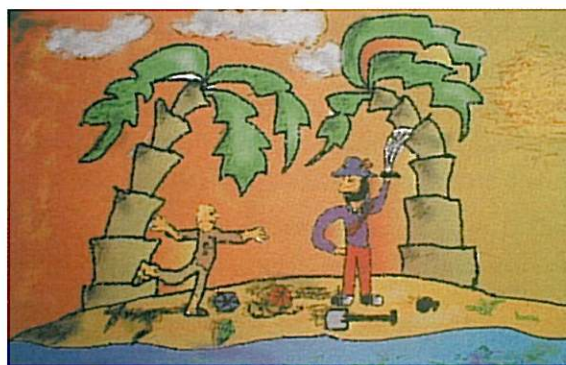
Year 6 case study

In session 1 the Year 6 pupils were asked to create an image of a Monster Party, in keeping with the literacy hour focus of humorous poetry. Image 1 shows the work of a child who selected the Loch Ness Monster, being the only one he knew of, and did not develop this idea further. The image was technically sound and the application of colour complex but it did not reflect the child's capacity for creativity.
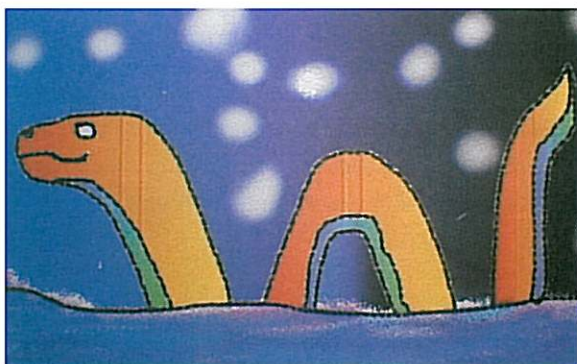
Year six child Image 1

In session 2 the pupils illustrated the setting and character from a play the children had written and the children's scripts were used as a focus. Image 2 shows the work of the same pupil, who, with the support of the teacher and the group, set his own targets. The image is of a very high quality for an eleven year-old child. He paid careful attention to detail, totally relating everything to the stimulus and evaluated his own figures.

Year six child Image 2

Year 4 case study

In the following images the stimulus to the Year 4 child with MLD was a Viking Voyage, where the child has drawn a Viking ship on the sea (Image 1) and Still Life, showing flowers (Image 2). During the creation of Image 2 the child stayed focused and aware of the stimulus. The quality of the image was very good and demonstrated clear form for the first time.

Year four child with moderate learning difficulties Image 1

Year four child with moderate learning difficulties Image 2

Choice of appropriate software

The process for selecting appropriate software packages for the project followed specific criteria. The software had to be versatile in order to accommodate the various needs of the children involved in the project. The researcher looked at a number of characteristics including:

- interface set up;
- tool bar options;
- icon options;
- availability of functions and techniques e.g. cut and paste; and
- colour palettes.

After creative use by the researcher two packages were chosen. 'Dazzle' by SEMERC Software for the Year 3/4 and MLD children in addition to 'Art Dabbler' by Meta-Creations for the Year 6 pupils. The latter provided numerous extensions of the facilities and functions available in 'Dazzle'.

Impact on Current Practice in School

This investigation has proved fruitful for the teacher researcher involved and has shaped the policy for the development of visual artwork using the computer in this school.

Teaching a young child or indeed an adult to use a computer to produce visual art imagery is analogous to the teaching of a musical instrument perhaps particularly the electronic keyboard. Before any individual can engage in using such an instrument at a basic level, s/he need to have acquired a basic understanding of how it works, or what actions are needed to achieve some level of outcome. The teaching of basic skills in ICT needs to be aimed at the level of the child/person using the computer, as this study has shown. This could have implications for training programmes for the use of ICT in visual art.

Conclusion

Primary ICT and Art co-ordinators need a high level of skill and understanding in order to be able to teach effectively. Co-ordinators also need to be able to support, advise and train their colleagues who may lack the majority of skills at the required level. In order to teach children or teachers how to use the computer effectively as a creative tool one needs to have used it as a creative tool oneself.

Implications for Further Research

The research was undertaken by a teacher/researcher who was already competent in using the computer and the appropriate software packages, and also a practising computer artist. It was conducted in a school where the climate was favourable to ICT work and where appropriate equipment was readily available. This will have to be taken into consideration by other teachers wishing to try out the strategies.

The immediate priority is to replicate the investigation in other schools with other teacher/researchers. Further work could be undertaken with reference to the use of other computer software packages as these are developed.

An initial survey in relation to the compilation of a sequence of developmental stages in computer artwork was undertaken as an adjunct to this investigation. This work could be further developed as a research project in its own right.

The teaching strategies used in this investigation could be tried out as a means of training ICT co-ordinators and Art co-ordinators to develop their own work in developing children's artwork using the computer.

Further Reading

National Advisory Committee on Creative and Cultural Education (1999) *'All Our Futures: Creativity, Culture and Education'* Report to the Secretary of State for Education and Employment and the Secretary of State for Culture, Media and Sport May 1999

Slabbert, J.A. (1994) *Creativity in Education Revisited : Reflection in Aid of Progression.* Journal of Creative Behaviour Vol. 28 No. 1 First Quarter.

Torrance & Ball (1984) *Creativity in Education Revisited : Reflection in Aid of Progression.* Journal of Creative Behaviour Vol. 28 No. 1 First Quarter.

Teacher Training Agency (1999) *Ways forward with ICT: Effective Pedagogy using ICT in Literacy and Numeracy in Primary School.* A research project by the University of Newcastle sponsored by the TTA.

Acknowledgements

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