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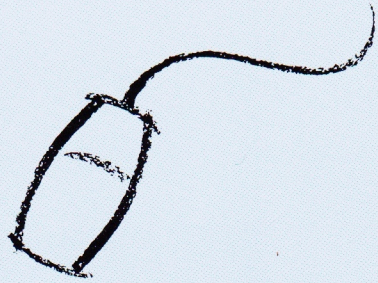

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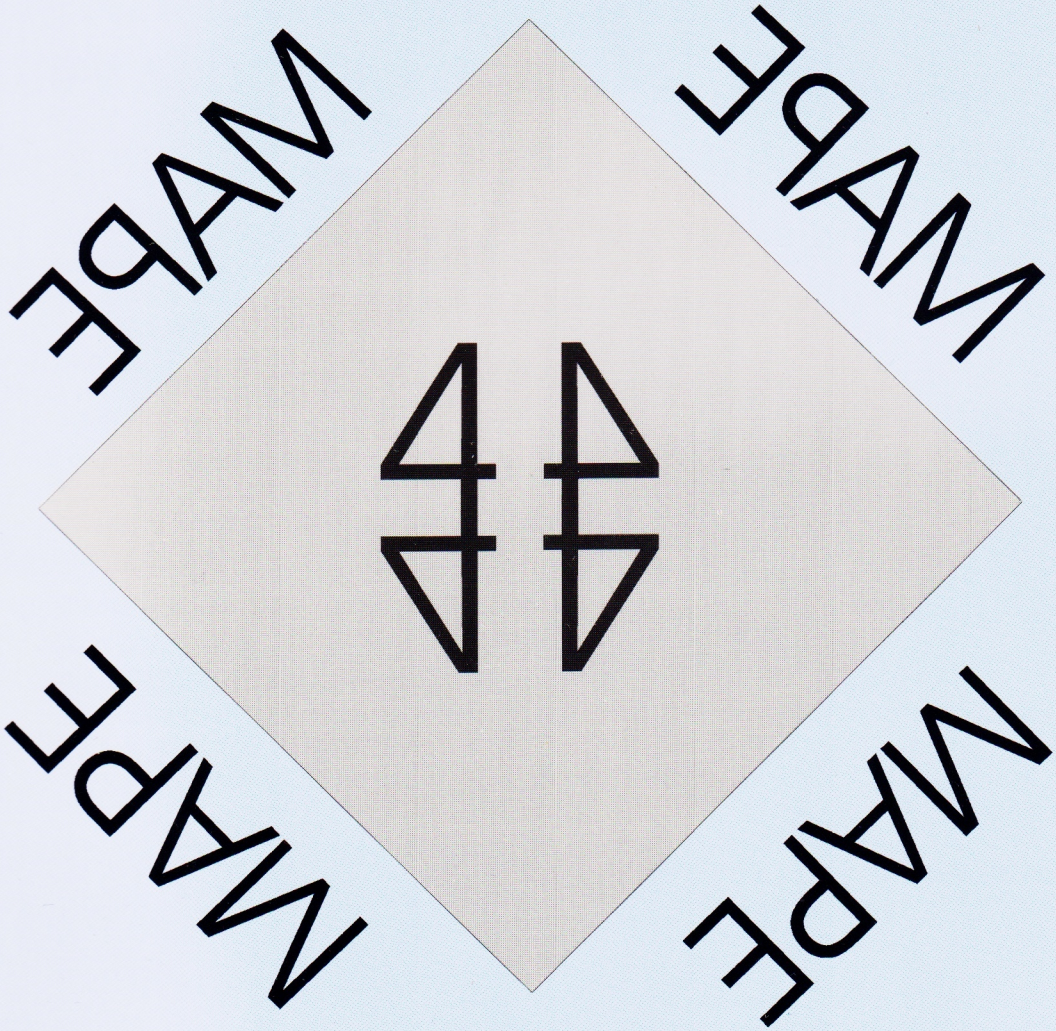

Magazine

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Contents

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Magazine Issue 4

Using ICT to support mathematics in primary schools – an INSET pack

The present government has placed great emphasis on the need not only for teachers to be fully ICT literate to the extent that large sums of lottery money have been made available to fund this training, but also on the importance of using ICT across the curriculum. I find it very surprising, therefore, that schools are not automatically receiving the latest training pack produced by the DfEE to support the National Numeracy Strategy, especially as each is printed:

Status: Recommended

Now I don't know why these packs are not being sent out to all schools, but I do not believe that the NNS team is responsible. After all if you have devoted two years or so to developing quality materials you want to make sure that the information is disseminated as widely as possible.

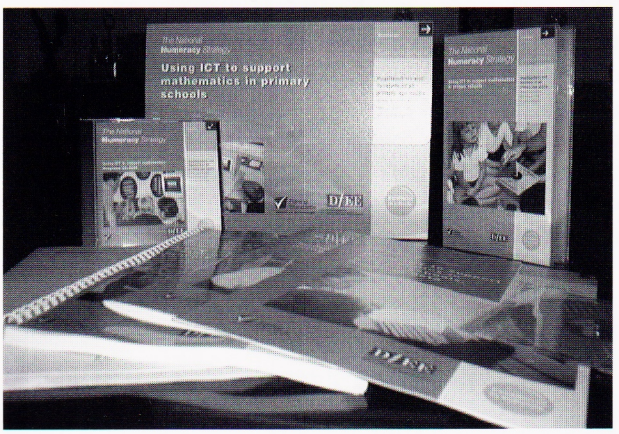

Fig. 1. *The contents of the pack.*

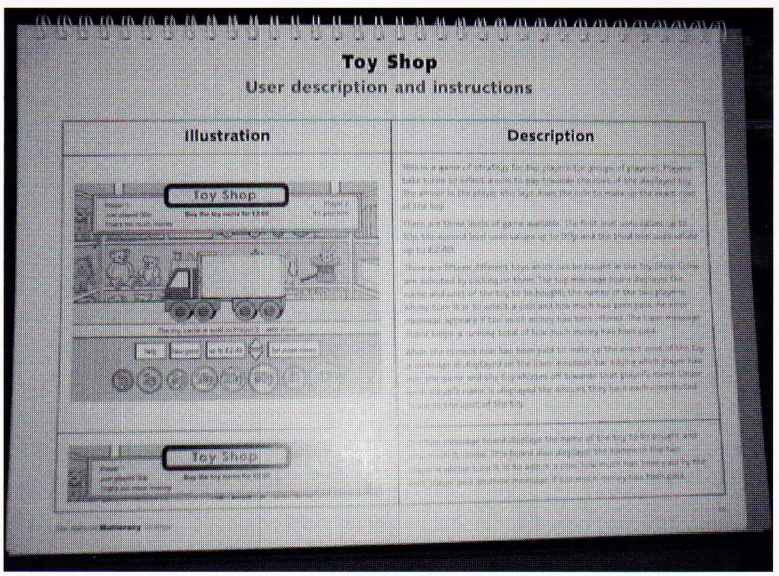

Fig. 2. *Instructions for using the software.*

As I write this in November my copy of *Using ICT to support mathematics in primary schools* has just arrived. Produced by the NNS team in association with BECTa, I know how much effort has gone into the production of this; it will prove to be an excellent resource.

For those who have not yet requested their copy this is what they will find inside:

- A video showing excerpts of lessons using a range of ICT tools
- A CD-ROM containing 17 short but very useful programs.
- A software user guide
- A book of sample lessons using ICT
- A booklet on using ICT to support handling data activities
- OHTs for staff training

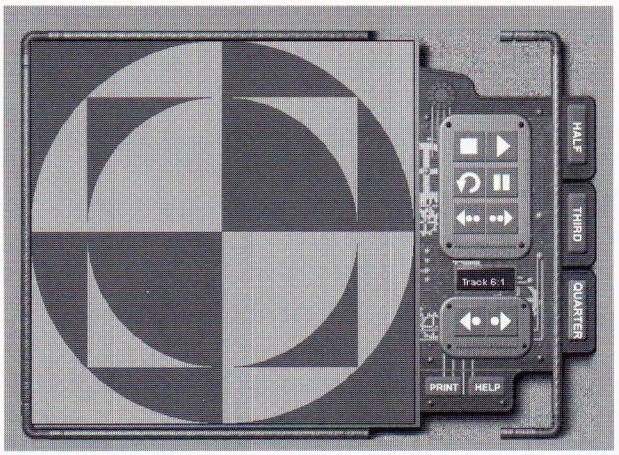

Fig. 3. *Half and half.*

- A CD-ROM of *Powerpoint* presentations as an alternative to the OHTs
- A book of guidance for professional development.

This pack supports schools in two ways. Firstly there is the training material: Maths co-ordinators can make use of the video, in conjunction with the software and OHTs to show colleagues how ICT can support their teaching and children's learning in a meaningful and non-threatening way. Secondly, teachers can use the sample lesson plans in association with the software to deliver quality

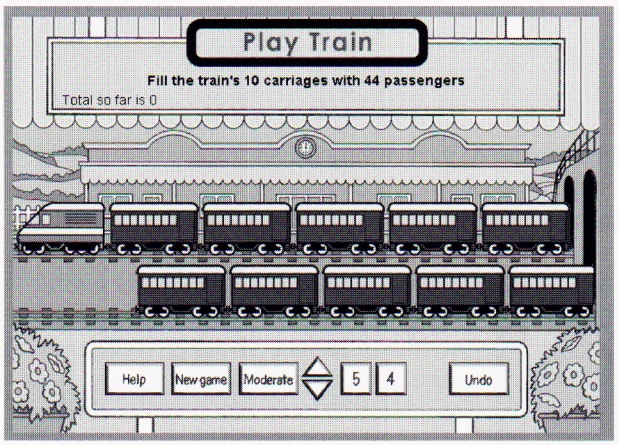

Fig. 4. *Put the passengers in the carriages.*

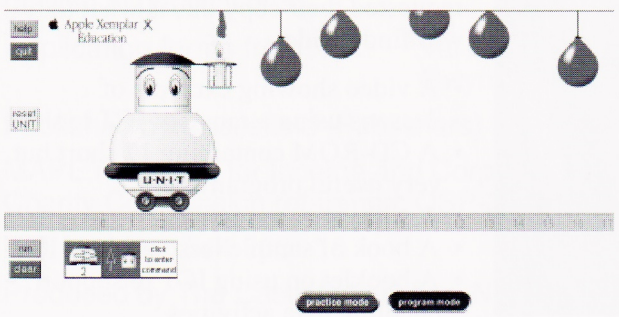

Fig. 5. *Program Unit to burst the balloons.*

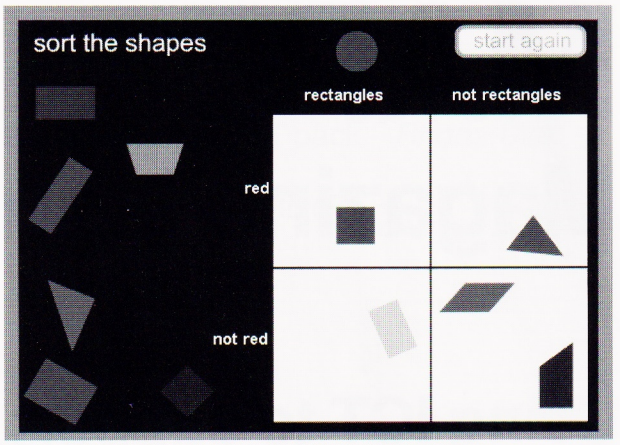

Fig. 6. *Sort the shapes in this Carroll diagram.*

teaching, and as their confidence develops they will be able to use the software provided, and other programs available in their schools to enhance their teaching and pupils' learning.

The software

The software contained in the pack can be used in a range of lessons across the primary phase. *The Strawberry Garden* is particularly suited to the very young learning about direction and movement, while at the top of the primary school able pupils, looking at problem solving, will be challenged by *Bounce.*

The programs can be used either in whole class teaching, making use of large screens (suggestions for ways to achieve this can be found within the pack), or for group work.

The software on the CD-ROM alone makes it worth requesting the pack.

Schools can obtain a copy free of charge by telephoning Prolog, the DfEE suppliers; their number is 0845 60 222 60.

It seems to me that this is well worth the cost of a phone call.

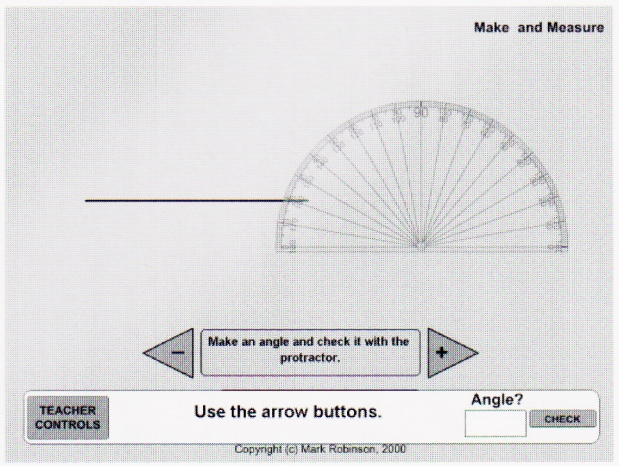

Fig. 7. *Measuring angles.*

The programs are:

Program	Platform	Program	Platform
Counter	PC/Apple	*Play Train*	PC/Apple
Minimax	PC/Apple	*Monty*	PC/Apple
Take Part	PC/Apple	*Toy Shop*	PC/Apple
*Handy Graph**	PC/Apple	*What's my Angle**	PC/Apple
*Function Machine**	PC/Apple	*Carroll Diagram**	PC/Apple
*Venn Diagram**	PC/Apple	*Sorting 2D shapes**	PC/Apple
*Unit the Robot**	PC/Apple	*Bounce*	PC only
Strawberry Garden	PC only	*Multiplication machine*	PC only
VersaTile	PC only		

*FLASH plug-in required

ICT and pupils' learning in the Early Years: is the investment justified?

Alison Hodges
was a Postgraduate student at University of Wales Swansea; now teaching a Year 1 class at Penyrheol Primary School, Gorseinon, Swansea

Introduction

By 2002 the government will have invested over £1 billion in ICT in schools. As a result schools are being positively encouraged to purchase ICT equipment and software and to use ICT as part of their teaching strategy. But is using ICT an effective way of improving teaching and learning in the Early Years[1]? According to Cole (2000), although research into educational ICT is a flourishing business, a lot of this research is product-led or is used for political or educational argument, and there is very little research to help schools justify investing in ICT compared with other forms of interventions.

We live in a time of constant and rapid change and the future will not be about how much you know but your ability to analyse vast amounts of information and know what to do with it (Walker 2000). Additionally, the power of Internet connectivity and the opportunities offered by being on-line gives the power of knowledge at our fingertips – far beyond the knowledge historically available to school children. With reference to the Desirable Outcomes, the Government states that 'by the time they are five, pupils should begin to understand the use of a variety of information sources including information technology.' By Key Stage 1 'pupils should be taught to use ICT equipment and software confidently and purposefully to communicate and handle information, and to support their problem solving, recording and expressive work'. But how does this translate practically into the Early Years classroom?

Pupils' learning in the Early Years centres on the key skills of literacy and numeracy: without these secure foundations it would be impossible to build successfully the skills and knowledge required of other curriculum subjects. This paper outlines pupils' potential learning gains from early introduction of ICT in their education – in particular in numeracy, literacy and life skills, and discusses whether it is actually practical in the Early Years to try to use ICT beneficially, when the reading and writing skills are not in place.

Early Years pupils' learning gains from using ICT

Numeracy

In the nursery and reception classroom, probably the most important aspect of using ICT in numeracy is its ability to represent mathematics *visually*. The Early Years skills of counting, matching, shape, sorting etc. can all be developed in a colourful and interactive environment, where ICT can be used to support, consolidate or extend the mathematical concepts and understanding that are being introduced in the classroom.

One obvious use of ICT in numeracy is supporting data-handling. Children are surrounded by technology that handles information: in shops, traffic signs, at home etc. Many of these can be built into classroom themes or topics with which the children are already familiar, thus encouraging children to use both mathematics and ICT in cross-

curricular work (Farr 1997). Sometimes, manually tabulating and graphing data, however simple, can be laboriously slow for KS1 pupils (and terminally boring), resulting in pupils spending the better part of a lesson struggling to draw straight lines, create keys and plot data. It is important for pupils at some point in their school career to develop all these valuable graphing techniques, but allowing them to use a computerised graph will mean there is time in the lesson to discuss results and assess pupils' understanding (Gulliver 1999a)[1].

Many teachers do not know how to use ICT in a whole class teaching context. An example of how this may be approached is detailed on *www.wbol.co.uk* and uses a numeracy example as a basis for cross-curricular ICT whole class teaching. The handling data strand of the KS1 'Number' curriculum emphasises the need to collect, record and interpret data. However, more often than not, data collection is slow and with young children, drawing graphs may actually be beyond them. But if a simple survey is carried out whilst they sit on the carpet in front of the screen (WBOL uses 'how are your shoes fastened?'), and the teacher sits with the keyboard on her knees entering the data as they respond to the question, the pupils can see the graph build up immediately. The children can instantly see the effects of adding or removing information – the 'power of visualisation'.

Control technology can also be used to extend ICT and numeracy abilities in the Early Years (Smith 1997). By devising various games, shape, measurement, place value, positional language, directional language etc. can all be developed and reinforced within classroom themes. This is in addition to the logical thinking (a fundamental strength of both numeracy and ICT), teamwork, co-operation, communication skills and recall of the 'grammar' or sequence of commands that will be used (Fine and Thornbury 1998).

Literacy

The major benefit of the use of ICT in supporting literacy is in its general ability to offer variable support in reading and writing activities, giving immediate feedback without having to complete lengthy tasks. The impersonality of its use may help children who are not confident with what they have to say. Conversely, perhaps there is a possible danger in losing conversational skills with peers and the class teacher, including body language and eye contact.

However, raised levels of pupil motivation cannot be discounted as it can enhance any Literacy Hour writing task with the ability to move text around and engage children with images and sound. The facility to provide writing frameworks is an added advantage. Of course there is a practical problem with this: during the 20 minute or so 'group-work' slot in the Literacy Hour, groups of six to eight pupils are competing for the use of one or two computers. This is clearly inadequate and is a significant disincentive for teachers to try to build in ICT use in the Literacy hour.

The advantages of ICT are not limited to just helping with imaginative writing. The evolution of word processing skills is positively helpful in encouraging the children's knowledge of the computer and their own developing literacy. Using a word processor, children begin by being able to recognise and locate the majority of the letters of the alphabet on the keyboard. They can begin to 'write' their own name and move on to identifying the first, and sometimes last, letter of a word they wish to use (Monteith 1998). With help, they learn to suggest the letters that may come in between – just as they would when writing phonetically a first draft of a story. Walker (1997) found that some pupils did not have the confidence to spell words on their own when writing by hand, but that when typing, the word processor seemed to liberate them from this dependence on 'correct' spelling. If the emphasis of an activity is on the creative issue and the younger or less confident child finds the sheer number of 'red squiggles' (provided by some word processing packages to highlight mis-spellings) off-putting, then there is an answer: turn off the auto-spell and grammar checks!

Additionally, pupils realise that the finished article looks good printed out, even if their handwriting and spelling are not yet fully developed. This is not to say that this replaces the need for pupils to develop neat and legible handwriting, nor correct spelling. But rather, the computer can free the young pupil from these extra burdens when imaginative writing or writing for a purpose is the focus of the lesson. This has obvious benefits to self-esteem particularly for special needs pupils who can produce a pleasing product, beautifully presented, rendering it indistinguishable from their peers.

Reluctant readers finding difficulty with books can be stimulated to explore text through the use of talking stories. The *Talking Books* series (Crick Software CD-ROM 2000) is one of the better examples. Heinrich (1999) notes that these programmes not only support early readers but do so in a way that helps them interact with the characters: the paper-based books are brought to life. ICT can also be an excellent tool for encouraging exploratory talk using group work. Dawes and Wegerif (1998) suggest that much meaningful discussion can be supported where software provides a sufficient number of choices for the children within a motivating 'story'. If the choices have real consequences then the pupils will be encouraged to discuss as a group the points for and against making any one decision.

Life skills

On the basis that we teach number recognition, phonetics etc. to implant the foundations on which further education and comprehension of the world will stand, it is only right that ICT (a skill in its own right) should be included under the early years 'key learning skills' umbrella, even in the nursery agenda. Watson (1997) appreciates that children need to formulate an appreciation of ICT's worth, to value it without abusing and misusing such a huge and powerful resource which will be a key feature to a great deal of learning and information in their later school and adult life.

Gulliver (1999b) believes that by introducing ICT at an early age, teachers are not just helping to prepare children for the demands of the information age, but they are also assisting in their personal development by fostering their desire to investigate, explore and ask questions. Harel (1998) believes that exploration, self-expression and the ability to exchange information are the most important life skills that can be developed from using ICT in the Early Years classroom. This interactive exchange of ideas using digital media encourages children to be active participants in their learning, in addition to understanding about teamwork and the benefits of collaboration.

Meaningful learning without basic ICT skills: can children still benefit?

Although many skills can be achieved by 'messing about and seeing what happens', Wheeler (1999) states this is neither efficient nor sensible in a school setting where time is of the essence. He also says that 'messing about and seeing what happens' supposes a degree of confidence that many young children do not possess, and that these children need success not baffling failure. He also stresses that technical vocabulary not encountered elsewhere needs to be understood, for example 'keyboard', 'mouse', etc.

In my teaching placement with a Reception class, I made full use of the somewhat limited BBC Acorn computer available. I introduced various programmes (*My World*, *Splosh*, etc.) into the daily activities plan. Ensuring that every child 'had a go', I did not get a single report of a child saying that they didn't know what to do, despite not having used some of the programmes before. Once they had the program in front of them they were all exploring what it could and couldn't do. I deliberately did not spend time explaining to each child how each program worked, because I wanted to see for myself how children of this age cope with computer technology. In fact I saw many examples of pupils supporting each other in their exploration of the features of each program. I believe this is in part due to the fact that the software available is designed with the abilities of various age groups in mind. The more confident pupils enjoyed demonstrating and helping the less confident. Likewise, the less confident enjoyed watching the more confident, and thus a constant learning cycle was formed. As they played they learnt. They may have been 'messing about to see what happens' but the fact that computer language was not in their vocabulary did not stop them working out how to paint, draw, match, count, sort . . . etc.

Conclusion

There are real concerns with the use of ICT in the Early Years classroom but I believe that with careful planning and management they can be overcome. The benefits of ICT (alongside numeracy and literacy) as a fundamental tool and skill on which future knowledge and understanding will be built is indisputable.

I believe that in the way that teachers encourage hands-on experience and seek to make maths and literacy more fun, they must seek to engender enthusiasm and encourage independent interest in the class computer. It is only by making the use of ICT both meaningful and fun that lessons involving ICT will be effective and concerns over its use will be overcome. The provision and management of stimulating resources to support the children's learning is all part of the 'good practice' in Early Years classrooms. ICT, whether computer systems, programmable toys, or calculators, has a valuable contribution to make as a powerful resource to support *all* curriculum subjects in addition to developing young children's ICT capability.

The opportunities that ICT offers will have a positive value for the motivations of many pupils, and especially to encourage them to begin to take responsibility for developing their own skills and learning.

Notes

1. Early Years in this article refers to the range from Nursery to end of KS1.

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A beginner's guide to ILS

This article is a summary of the Research project undertaken by **Rebecca Haden** *of Newman College as part of her degree studies*

What is ILS?

An Integrated Learning System is a computer package which provides interactive activities on different subjects. This research focuses on the RM Maths ILS.

The program decides which activities are appropriate for each child, based upon teacher's initial inputs and pupils' subsequent attainment. Through the teacher's menu it is possible to see how children are using the ILS. These pages give individual information on children, which includes the time spent on the system, problems, progress, position, scores and skills. The teacher's program also provides class details showing where each child is with regards to the National Curriculum levels.

The basics

- Children use the ILS individually for a session of not less than 15 minutes, three times a week.
- Children click on their name in the class list to access their own work. The ILS records the children's responses, their progression through the units and the problems they encounter.
- Children wear headphones when using the ILS and the system gives children audible feedback on their responses, telling them if they are correct or incorrect. The questions are also spoken in case child's reading skills are poorly developed.
- When children complete activities successfully they are moved up to the next level. If children are unable to give a large proportion of correct responses then they are moved down a level.
- Input is mainly by means of the mouse and keyboard.

How to use an ILS

- Enter children's names onto the system.
- Allow children to use the ILS independently.
- Children's progress should be checked regularly.
- Children's problems are highlighted; it is important that these are noted and a time is set when they can be reviewed.
- Younger children (Key Stage 1) may need to more supervision initially but following approximately five sessions less supervision is required.

When to use an ILS

- The ILS is best used as a supplement to Maths teaching and not in place of it. Children will need two or three sessions a week on the ILS.
- Children's sessions will have to be timetabled. It is important that time from ICT *is not* given to ILS because the two are completely separate.

What you need to use an ILS

- In order to use an ILS you will need access to more than one computer and ILS licenses.
- The school will need to decide if ILS is what it wants and if the whole school is prepared to work together in order for successful implementation.

Using ILS with your year group

- The ILS provides activities for all age groups across the Primary phase. There is extensive coverage of the National Curriculum.
- The youngest pupils will have most difficulty with basic ICT skills.
- Key Stage 2 children can use the system independently and with minimal supervision.
- The best way to check if the system is appropriate for your Year Group is to test it.

How does an ILS help the class teacher?

- When children are using the ILS they are constantly monitored. This is useful in identifying any problems children have.
- The ILS equates children's performance to a National Curriculum level, this can be useful for checking your own assessment of children.
- The ILS provides detailed reports on children, which can be adapted and used when the child's yearly report is written.
- Teachers don't have to make lots of work sheets and mark them when children have to practice certain concepts over and over again.

Which aspects of Maths does the ILS address?

This ILS doesn't work with the National Numeracy Strategy with regards to each term's work. Research Machines, who make this ILS, are aware of the fact that the system doesn't correspond with Numeracy teaching; however, they defend this, explaining that topics children will not have covered for some time are kept simmering using ILS. Teachers will need to consider if and how they can make use of ILS within the NNS framework.

Guidance for the optimum use of ILS

Time

- Increased exposure to the ILS is reported to lead to extra benefits.
- Regular and consistent use was said to have a positive impact for all abilities, but requires careful monitoring and appropriate teacher intervention.
- When pupils had minimal weekly exposure to the system they failed to show gains.
- A minimum amount of time on the system is required before obvious gains can be made. Teachers should not expect instant results.
- Teachers need to be aware of how important children's time on the system is.

Supervision

- Pupils need to be supervised.
- The level of supervision of pupils working on the ILS contributes to the success of the ILS.
- The ILS alone can't lead to success; supervision is a key factor.
- When the children are using the ILS they must be focussed on the task. (How can the class teacher ensure this?)

Rotation

- Children are less disrupted by the ILS, when they know when it is their turn, and that they are going to have a go.
- Children are less disrupted by ILS use if they don't miss the introduction to the lesson.

Integration

- Teachers need to use the technology meaningfully, the integration of ILS work into the curriculum is important.
- Schools have to set targets for pupils, which must be high in expectation.
- The ILS is not an additional curriculum that should be kept separate from normal classroom activity but another educational intervention assisting the mainstream curriculum.
- Teachers need to be given training on integrating the ILS into class work.
- Teachers need to use the assessment reports diagnostically.
- The ILS has been noted to be good for revision.
- Scaffolding by the teacher is required in order to achieve transfer of skills. ILS should not be viewed as self contained it needs to be carefully integrated.

Whole-school issues

- 12 or more high-powered computers contribute to success.
- An ILS co-ordinator who reviews the children's individual progress weekly is advisable.
- A large budget needs to be available.
- Senior management need to be supportive.
- A very high level of staff commitment is required to use the ILS properly.

- ILS is a whole school responsibility; a policy may be required.
- Successful implementation was found to be due to the acceptance of the ILS by the whole school, integration into curriculum planning and teacher's training.
- Strong leadership will aid ILS use in school.
- Staff who share vision and goals both contribute to success.
- Focus on achievement is a requirement.
- Enthusiastic teachers enable effective ILS use.

Teacher support

- Ongoing staff support is required.
- Staff will require guidance in record keeping and monitoring.
- Staff development is of value when using the ILS in school. Support and motivation are also valuable.
- Teachers need to be given time within the working week to develop ILS support skills.
- Specific training on the ILS should be given before commencing use of the ILS.
- Following use of the ILS teachers were reported to want further training with the system including how to use the reports and how the ILS can be used alongside class teaching.

Child issues

- Children need to develop basic IT skills in order to use the ILS. The children can appear engaged in the task when they are really confused. Slow learners require support.
- If children are helped in the early stages then they become more independent and confident.
- Children with SEN and ESL may have problems with the language involved in ILS use. Their progress may be hindered as a result. The ILS can help raise confidence and enthusiasm amongst children in Maths.

Role of class teacher

- The class teacher plays the main role in using the ILS.
- If children can't get questions correct this leads to dissatisfaction and distraction.
- Learning may not be fully understood.
- Most systems offer limited help, often simply showing the correct answer leaving the learner confused.
- The ILS is only as effective as the teachers using it.
- Pupils benefit more if teachers get involved.
- Teachers need to maintain an overview of their pupil's progress and understanding and make regular inputs by direct teaching.
- Negative effects are the cost and the fact the ILS isn't exclusively a teaching tool.
- Teachers need to be prepared to learn how to adapt their teaching strategies to make the most of ILS.
- The ILS is most effective when used as a supplement to rather than a replacement for teaching. (Any supplemental instruction is bound to increase results because time on task correlates to increased achievement.)

Suggested phases teachers should follow if considering ILS use

Phase 1
Teachers are introduced to the ILS and given basic training in its use.

Phase 2
Teachers trial their class on the ILS for one or two months, preferably at the start of term, using only the licences that are available. Teachers would have to use any time they can make available for ILS during this trial period. Teachers familiarise themselves with the system.

Phase 3
The teachers decide whether or not to continue with ILS use, considering if they think they can fit it into normal teaching. If the teacher thinks that it won't work with their class or their class isn't making overall progress then ILS use is probably best avoided. If the class teacher decides not to continue with the ILS then children are removed from the system.

If the class teacher does want to continue with ILS use then he/she will need to see which children the ILS is appropriate for. Teachers should review children's progress and any children who haven't made progress should be removed from the ILS. The class teacher will then need to check which teachers are already using ILS and, following a meeting with Senior Management, decide how many licences the school will need to extend ILS use, as appropriate. At this point, having taken the decision to extend ILS use, the school should perhaps discuss the appointment of an ILS co-ordinator and the division of a whole school timetable and whole school policy.

Phase 4
Children return to the ILS; teachers are given further training and specific guidelines to follow.

Phase 5
Review progress of the children after approximately one month; remove any children from the system who aren't making progress. Review any teacher training required.

Questions teachers should consider before embarking upon ILS use

- How am I going to timetable the ILS use? How much time can I make available for it?
- How am I going to select children to use the ILS? Can I trial children by placing all children on the system and then remove children who don't make progress?
- How long will I allow children to make progress before reviewing their performance and removing children who haven't made any progress?
- How will I ensure that I am available if children need my help on the ILS? Is this possible?
- How will I organise the children to use the ILS?
- How will I supervise and manage children who use the ILS? How am I going to use the reports to help children?
- How often should I use the reports the system provides?

Using *MyWorld* across the curriculum

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MyWorld is a 'click to stick/click to unstick' program. Screens, covering many areas of the curriculum, are available to purchase from SEMERC: these cater for the early learner and for children with special needs.

Three of the original screens are called 'Sentences 1, 2, and 3' One of these asks children to match sentence halves while in another they have to unjumble a sentence. Ideas developed along these lines could clearly be of use in the Literacy Hour, as well as other areas of the curriculum.

Creating screens on Acorn machines

Creating screens is not difficult, and once done you have a resource that you can reuse. Text only screens are the simplest.

1. Load *MyWorld* in the usual way.
2. Open the Basis screen.
3. Click on the Notepad using the middle mouse button. If you want to change the font you can do so by selecting 'menu'.
4. Type your sentences.

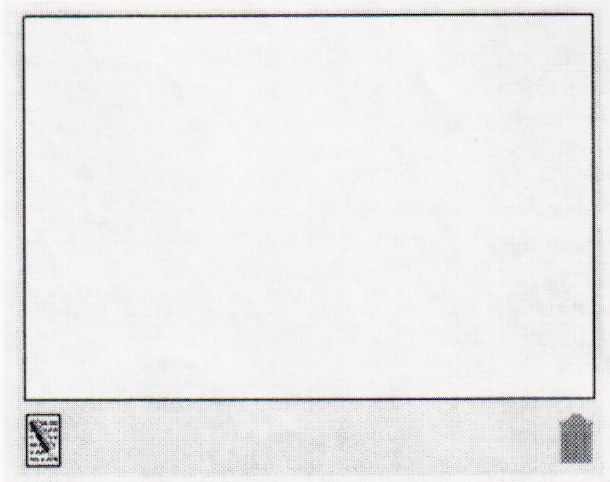


Fig. 1. *Basis screen.*

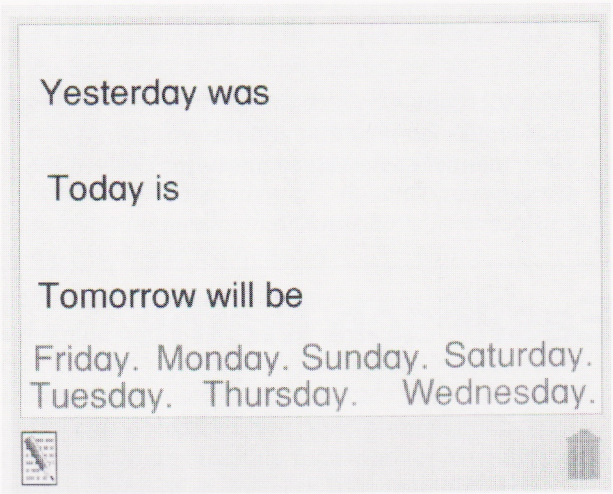


Fig. 2. *Days of the week.*

5. Place these on the screen in the way you wish to present them to the children.
6. Save the screen under a name that you will remember!

Adding images

1. Load *Draw* from the Applications folder on the icon bar.
2. Load the *MyWorld* program. This will generate a warning, but don't panic! It just means that you must be careful with loading work when dragging files into either *Draw* or *MyWorld*.
3. Open a window that contains clipart/pictures/sprites that you want to put into a *MyWorld* screen.

4. Drag the *Basis* screen icon onto the *Draw* application icon on the icon bar.
5. Now drag the image, or images, onto the *Basis* screen which is in *Draw*. You may have to move these and scale them to fit.
6. Save this whole file to the *MyWorld* screens window.

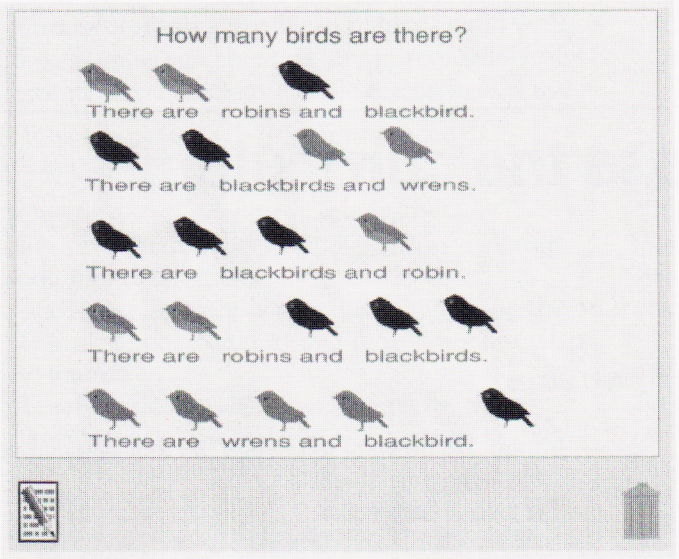


Fig. 3. *Counting.*

7. Drag this same screen onto the *MyWorld* program icon on the icon bar and add the words in the same manner as described above and resave the screen.

Creating screens on PC machines

For PC users, text screens can also be created easily by selecting the notepad and typing the text and changing the font. Note that on the PC you cannot change the font colour, this is inconvenient if you want to highlight certain parts of a sentence or the CVC letters.

PC users will not find it as easy to create screens with graphical images as Acorn users using *Draw*. It can be done if you have an *RM Window Box* with *Oakdraw* loaded in the teachers' accessories.

If you have access to both Acorn and PC machines it is uncomplicated to transfer screens across.

1. Put a PC formatted disc into the Acorn
2. Drag the screens for transfer into the disc window.
3. Change the names of these screens to /MYW which will show on the PC as .MYW files.
4. Put this disc into the PC and use the *MyWorld* menu system to select the network option from which you select the A: drive to see the saved files which can now be used on the PC.

MyWorld has great potential for whole class teaching and group activities in Numeracy Lessons. Several *MyWorld* screens, created by Bob Fox of University College, Worcester are available to download from the **KidsMAPE** section of the website, *www.mape.org.uk.*

Easiteach Maths

Easiteach Maths is a whole-class teaching service to help teachers deliver the Daily Mathematics Lesson. It consists of a teaching tool (software) full of familiar and flexible Maths resources – such as number lines, grids and place-value cards – plus an online collection of teaching activities, each with a detailed set of teachers' notes, for use with the teaching tool.

The teaching tool is designed to be used with a projector and interactive white board, but can also be used with a number of other whole-class teaching technologies (such as Mimio, or a projector, large-screen TV or extra-large monitor along with a graphics tablet or infra-red remote keyboard), or even an ordinary PC. This last solution is not as good, but I'd hate to deter schools from subscribing to the service because they have not yet got an interactive whiteboard. (Make a note to save up for one.)

The teaching tool can be installed on a Windows standalone PC, RM SchoolShare System or peer-to-peer workgroup. I installed it on a standalone PC, a simple process; in fact almost everything about this software is very intuitive, making it an ideal purchase for schools, as it is non-threatening even for the most timid user of technology. The teaching tool comes with a clearly written and clearly illustrated Teachers' Guide taking users through the main points of the teaching tool and simple trouble-shooting points.

The specific maths resources presently within the teaching tool are number grids, number lines, function machines and place value cards. Teachers can customise the number grids and number lines to suit the needs of their classes. In addition there is a

fractions tool, and again teachers can create their own less common ones to reinforce equivalence or to challenge more able pupils. An option to have two functions on the function machine would perhaps have added to its versatility, but that is just a very minor quibble.

In addition to the maths resources there are sets of picture resources that can be placed anywhere on the screen. They include coins, toys, transport, numbers, and shapes that come in a choice of three sizes. Some of the pictures are digitised photographs (money, toys and food), allowing realistic and more appealing activities to be created for pupils. The coins are generally very realistic, although on my screen the £2 coin looks a little small in relation to the others. Teachers can annotate screens using text (added features in here too), numbers, arrows, and highlights in different colours. Thus it is possible to create activities such as a toyshop scenario, giving each toy a price and putting a selection of coins on screen for payment. Rectangles and circles of different sizes can be drawn on screen and are useful for covering other objects, for example masking the function on the function machine.

The online collection of teaching activities (at www.easiteach.com) is designed both to save teachers valuable time during planning and give them access to best-practice methods of teaching particular maths objectives. The activities are written by RM curriculum experts and also by several of the leading maths scheme publishers. Members of the Easiteach Maths service can search the website for suitable whole-class teaching activities, download them and print the teachers' notes as a guide to delivering the lesson.

Each activity can be viewed fully before downloading, and includes the following information in the teachers' notes:

- Full National Numeracy Framework and Scottish Guidelines referencing
- Referencing to paper-based maths schemes, where appropriate
- A view of every page of the activity file
- Educational advice on how to deliver the activity in the lesson
- Effective questions to use with pupils
- Key vocabulary
- Ideas for activity extensions
- Advice on conducting the plenary session

Should teachers wish to use their own creative abilities to produce activities around objectives not yet catered for on the website, the teaching tool allows them to prepare and save their own original activities, up to six pages in length. Each page can be printed out, so that the children's activity sheets match exactly what they have seen on screen, particularly useful for the very young.

A great deal of research and thought has gone into the development of this service, making it suitable for use throughout the primary phase.

This solution positively shrieks 'quality', and offers many hidden benefits: lessons can be fully interactive, generating more enthusiasm and enjoyment for many reluctant mathematicians. There is an increased potential for learning, as lessons integrate the visual, as presented by the technology and the auditory as provided by the teacher.

The annual subscription fee to the service is designed to be flexible, catering for schools' changing needs and also for schools of different sizes. The subscription fee enables:

- Every class in the school to use Easiteach Maths
- Teachers to install it on their computers at home to prepare lessons
- The online activities to be accessed and downloaded

Compare all this with the cost of buying just one CD-ROM for each class and I think you'll agree it is worth every penny. A school with under 200 pupils, for example, can become a member of Easiteach Maths for a year for just £295.

Karen Simeons, Easiteach Product Manager, said:

> *"One of the reasons for choosing a subscription-based model was so that we could evolve the product in dialogue with customers and allow Easiteach Maths users to reap the benefits instantly, without having to save some of the budget, remember to purchase, etc. the latest version of the teaching tool. The same goes for a school expanding their whole-class teaching technology – if a school gets another interactive whiteboard or equivalent, the current subscription model means they don't have to worry about purchasing extra licences."*

RM recognises that Easiteach Maths could be expanded to deliver further aspects of the Maths curriculum, e.g. Shape, Space and Measure. There are also opportunities for Literacy and other aspects of the curriculum. Future development plans for Easiteach Maths include focusing very strongly on the provision of online activities matching NNS learning objectives, so that teachers can find relevant and best-practice activities with ease.

I'll leave the final word to Peter, a Year 3 teacher, not a noticeable technophile, who was happy to embrace this technology saying "I cannot think of a better way of demonstrating this point to my class."

System requirements

Windows 95, Windows 98 or Windows 2000 PC with a Pentium 166 processor, 32 MB RAM and 40MB of free hard disk space.

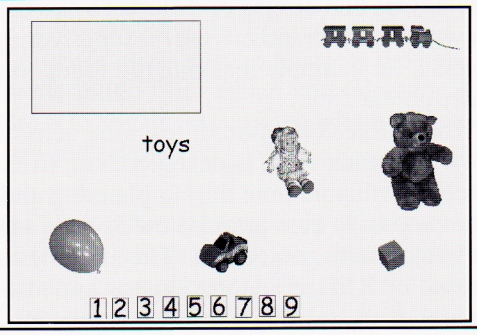
Further information

For more detailed information on prices and how to order, please call the RM Primary Information Line on 0870 908 6969 or e-mail the Sales team at *salesdesk@rm.com.*

Preface to activity ideas

The following activity ideas for Easiteach Maths have been produced by Rhona Dick and Peter Jarrett, to show how teachers can use the teaching tool creatively in their maths lessons. Ready-made Easiteach Maths activities, each accompanied by teachers' notes, can be downloaded by subscribers from *www.easiteach.com* where activities from RM and leading maths scheme publishers are provided on a term-by-term basis to meet Numeracy Framework objectives.

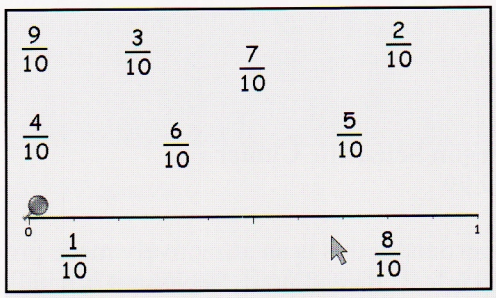
Into the Toy Box

Year group	**Reception**	**Easiteach tool(s)**	**Toys** **Numbers** **Garden** **Cartoons**
Objectives	**Say and use the number names in order in familiar contexts (revise).**		
	Count reliably up to 10 everyday objects. **Recognise numerals 1–9.**		
Key vocabulary	number, one, two . . . ten. how many, count.		
Advance preparation	Set up five pages with different numbers (< 10) and sizes of toys on each, randomly placed. Along the bottom of each screen put the numbers 1–9. In the top left hand corner put a yellow rectangle to represent the 'toy box'. Write 'toys' underneath. Set up page 6 with a pond and several ducks, fish and frogs.		
Resources	Coloured bags or boxes with different numbers of objects in each. Make sure every red bag has the same number of objects, every blue bag has the same number of objects etc. Several sets of cards numbered 1–9. Activity sheets showing bags or boxes. Crayons. Large die marked with numerals.		
Oral and mental work	Sing or say counting rhymes pointing to numbers on a number line as the numbers are said. e.g. One, two, three, four, five, once I caught a fish alive; One, two, three, four, Mary at the cottage door; One, two, buckle my shoe, three, four, knock at the door.		
Main teaching input and children's activities	**Teaching input**	Call up page 1. *'We are going to count the toys'.* Use your finger to 'drag' the toys to the toy box, counting as you do so. *'How many toys are in the toy box?'* If children are not sure, move each one slightly again as you count. Point to the numbers. *'Can someone show me the number of toys there are in the box?'* Ask a volunteer to point to or 'drag' the number in front of the word 'toys'. *'There are six toys in the box.'* Repeat for page 2. Call up page 3 and ask a child to come and count the toys. Repeat for pages 4 and 5.	
	Children's activities	Give each group a set of bags or boxes containing different numbers of objects. Children count out the number of objects in their bag and: 1. Put the matching number card on the bag. 2. Record tally marks or numbers using coloured crayons (to match the bag) on the activity sheet.	
Plenary	Ask for volunteers to bring up a bag (different colour each time). Take out the contents and ask the class to count the objects as the child hands them to you. Call up page 6. Throw the die and ask a child to come and put that number of ducks/frogs/fish on the pond while everyone counts. Clear the pond and repeat. Remind the children of what they have learnt today and make a link to your next lesson, if appropriate.		

Ordering fractions

Year group	**5**	**Easiteach tool(s)**	**Number line** **Fractions**

Objectives	Order a set of fractions and position them on a number line. **Use decimal notation for tenths ...** **Relate fractions to their decimal representations.**
Advance preparation	Page 1. A set of tenths fractions, randomly placed. One number line 0–1 step 0.1, numbers hidden, mark each end of this line. Page 2. As above but include a second number line 0–1 step 0.1 numbers visible. Page 3. A number line as above, numbers hidden, a set of some fractions with denominators of 10 and some with denominators of 100.
Key vocabulary	Fraction, equal parts, mixed number, numerator, denominator, equivalent. One whole, half, quarter, tenth, hundredth. Decimal, decimal point, decimal fraction.
Resources	Sets of fractions cards (differentiated) and number lines one between two, showing decimal equivalents. Crayons Hand held calculators
Oral and mental work	Use this part of the lesson to rehearse and sharpen pupils' skills.
Main teaching input and children's activities	**Teaching input**: Revise what the numerator and denominator of a fraction tell us. Call up page 1. Ask if anyone knows which is the smallest fraction they can see *"How do you know?"* Choose one of the other fractions (not 2/10). *"This must be bigger."* Ask someone to tell you one that comes between them. Begin to arrange the fractions in order. Continue until they are all ordered. Ask a child now to place them on the number line in the correct order. Call up page 2 and ask another child if they can remember where the fractions go on the number line. Replace them then relate the fractions to the decimal equivalents. Call up page 3. Explain that this time the line is divided into more small parts. *"How many do you think there are?"* Point to the different denominators in the fractions. Ask the children if they think 5/10 or 5/100 is bigger and why. Ask the children if they can place the fractions with denominators of 10 on the line. *Can anyone tell me how many little divisions there are between our fractions? So what part of the whole line is each little division?"* Ask the children to position hundredths with multiples of 10 as numerators on the line. Ask if anyone can see anything interesting about the equivalent fractions. Ask a child to position the remaining fractions on the line. Ask which is the biggest, smallest fraction. "Can someone tell me a fraction that will come between them?"
	Children's activities: Children work in twos, playing three in a line. The object of the game is to make three marks on a number line adjacent to each other. Pupils take it in turn to take a fraction card from the pile, say its decimal equivalent, and mark it on the number line. Opponents can challenge the equivalent and check using a calculator. This activity is differentiated by the complexity of the fractions, whether or not mixed or improper fractions are used, and the amount of information given on the number line.
Plenary	Give each child a piece of card or paper and ask half of them to write a fraction, and half a decimal between 0 and 1on it. Mark a numberline on the wall or board, (or tie a piece of string across the room marked in tenths). Ask children in turn to come and position their cards. Ask the remaining children one at a time to put their cards on the line. Remind the children that they have been learning about decimals and their equivalent fractions and if appropriate make a link to the next Mathematics lesson.



Digital cameras from TTS

Reg Eyre

I was recently asked to evaluate some items including the Oregon and JamCam 3.0 cameras. These appear to offer good value for money for schools so I shall share some of the details.

Oregon Scientific Camera
£39.99

Superficially this is an attractively made product which feels nice to hold. Because it is small, the target of the image can easily be off centre, but you only find this out when uploading the captured images. (Since I have similar trouble when rifle shooting, this may be a personal failing!)

There appears to be reasonable battery life but the screwdriver required to release the battery cover is a specialist item which will be supplied on purchase together with cable and software to upload images into the computer.

The quality of the image from the camera is obviously a compromise, (based on cost), but I began to wonder if it is really adequate for class use. My opinion is that it would be fine if used to record the progress of a D&T project but no use for a web page or a desk top published document image.

The software places the captured images in albums, which can be very difficult to find later when you wish to incorporate them in a document. If you are a competent user of a PC then the images can be found in:

C:/programs/arcsoft/photos1/pb_20/photos

This is not the easiest way to retrieve images!

It is possible to use the supplied software to enhance images but, my guess is, you will want to use them in documents or artwork straight away and won't have time to experiment with the package's potential.

JamCam 3.0
£79.95

This is an up-rated version of the JamCam 2.0 which sold for £59.95 until recently. They represented good value and may still be purchased as new 'old stock'. The older camera gave you switchable resolutions called R1, R2 and R3:

Display	Resolution	Picture capacity
R1	640 × 480	8
R2	320 × 240	26
R3	240 × 180	48

The R2 images were acceptable but quality work meant using R3 and only taking 8 images. Nevertheless, this represented value for money.

The new camera has only two display settings as follows:

Display	Resolution	Picture capacity
R1	320 × 240	28
R2	640 × 480	8

Oregon camera

JamCam 2.0 camera

JamCam 3.0 camera

Fuji Film SD-T7 camera

The handbook recommends that the user should normally use the R2 setting and only use the R1 setting for emails, 2" × 3" wallet photos or small web site images. This appears to be an acceptance of the quality of image issue. Note that there are no 240 × 180 pixel images with the new camera.

There is an optional MMC, (Multi Media Card) available that allows more images to be stored in the camera.

The software for the camera is straightforward although not always intuitively obvious; i.e. it pays to read the manual! Images are saved into a folder but can be saved direct to a floppy disc or a named directory on the hard disc.

I compared both the above digital cameras with my own Fuji-Film SD-T7 camera which cost about £350 two years ago. This camera takes 30 images in standard mode (640 × 480 pixels) and 60 in economy mode (320 × 240 pixels). I normally only use standard mode. The major advantage of this

Comparing the Oregon, The Jam Cam 3.0 and Fujifilm DS-T7 cameras

Oregon camera	JamCam 3.0 camera	Fuji Film DS-T7 camera
60 * 100 * 26 mm and very light, 77 g	62 * 106 * 34 mm, fairly light, 180 g	76 * 128 * 46 mm, quite heavy, 240 g
15 colour images 24bit colour	8 (640 x 480 pixels) images	30 (640 x 480 pixels) images using original colour CCDs
One 1.5 volt AA battery giving 3 hours continuous use	One 9 volt 6LR61 battery, unknown life span	4 NiCad rechargeable AA batteries giving 1 hour continuous use
View finder with no indication of number of images taken	View finder indicating number of images left to take, battery level, timer and flash	LCD display of image. Switch on top to view or delete images taken, timer, change mode or upload images to PC. Brightness of LCD display can be adjusted
No flash	Built in switchable flash	Built in switchable flash
No memory extension	Multi Media Card available to add more images into memory	Image Memory card available to add more images into memory
No adjustment for focal length or aperture	No adjustment for focal length or aperture	Switchable focal length and aperture
£39.99	£79.99	£349.99
Small images when inserted into *Word* or *Textease*. These distort on enlargement	Large images when inserted into *Word* or *Textease*. Can be made smaller with little distortion	Large images when inserted into *Word* or *Textease*. Can be made smaller with little distortion
Difficult to manipulate in an art package	Gives a good size image in art packages which is easy to manipulate	Gives a good size image in art packages which is easy to manipulate

camera is that it has an LCD screen instead of a view finder which means that you 'snap' exactly what you see! You can also delete images on play back through the view finder and hence maximise the images taken "in the field".

The Oregon has to have images removed by software and the JamCam can have its memory cleared but it will only clear all the saved images, i.e. you are advised to clear the memory only after all the images have been saved to disc.

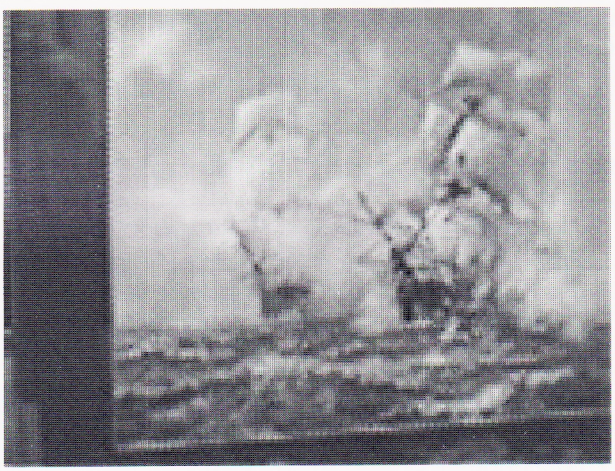
Conclusion

The above seems to show that the more you pay, the better you get. A digital video camera is about £550 and is the bee's knees but beyond the purchasing power of most of us. The Jam Cam 3.0 is really good value for money with a limited number of high quality shots that can be used within any application. The Oregon camera has limitations but would be ideal as a first camera to gain experience or as a dedicated camera for use in the continuous recording of projects or curriculum work. The only other comparison is the use of a scanner, where any materials can be scanned in to the computer, saved and used in documents later. The problem is that the developing and printing time for ordinary photographs delays the process significantly whereas the digital camera images can be used immediately you come back to the classroom.

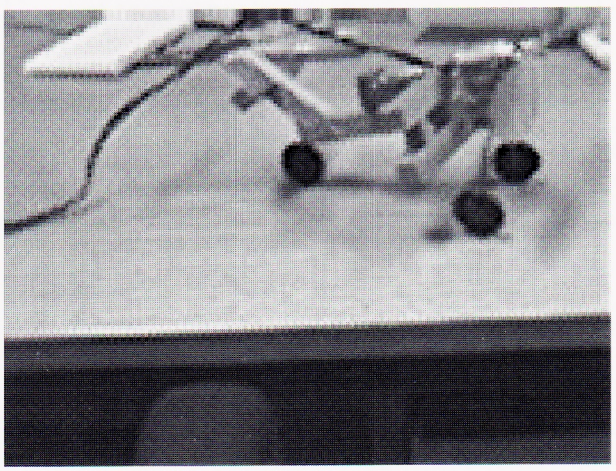
Oregon Digital Camera images

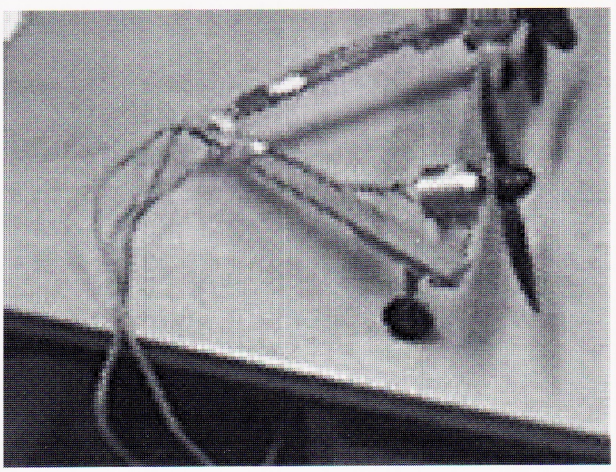
These images have been 'inserted into a Word document straight from the Oregon camera software. The enlarged images lose some of their sharpness:

A plant in my room

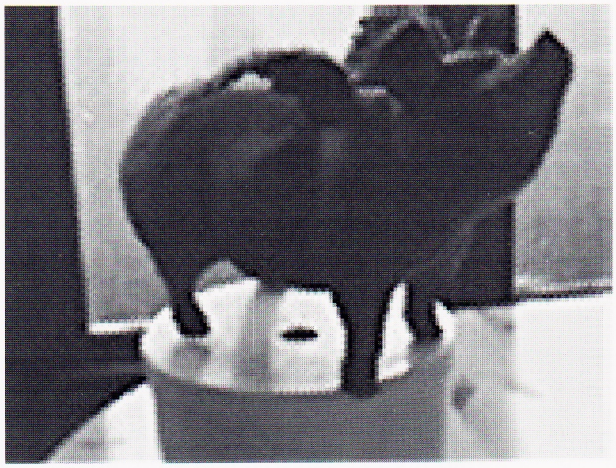


A painting behind a glass frame



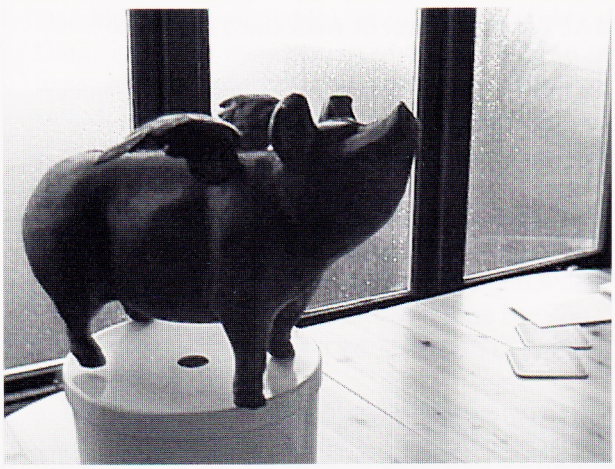
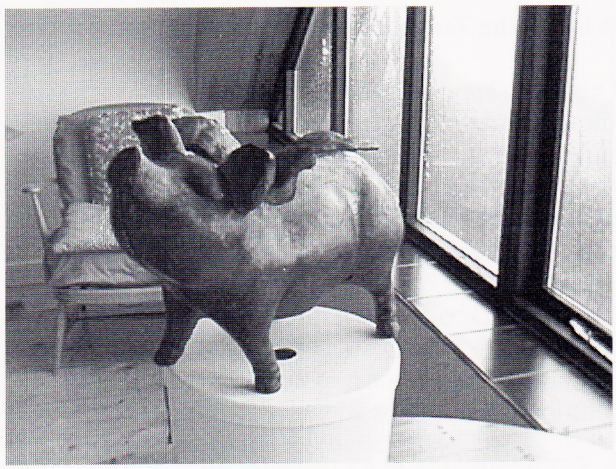


Models made as part of a D&T project

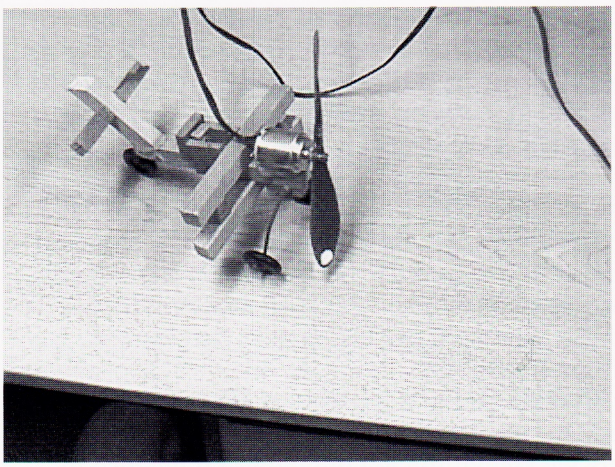



Two views of my 'Flying Pig'

Jam Cam 3.0 Digital Camera images

Two views of my 'Flying Pig' which have had to be reduced to fit side by side. The original images take up the full width of the A4 paper.




Here is the plane from the D&T project and the plant from my room.

Finally, the picture with the reflective glass.

The VTC Teacher Resource Exchange

What is the Teacher Resource Exchange?

The TRE (*http://contribute.bit10.net/*) is designed to allow all those involved in education to share their ideas with other professionals. It is a three tier system; at the first level of entry you can contribute simple ideas, this might be nothing more than a URL, or an activity sheet that you have created for use within your own class, giving some basic information about how it might be used. Other teachers then have the opportunity to comment and add further suggestions; in this way the initial contribution develops and may then be 'promoted' to the second tier. Second tier contributions should include aims, objectives and outcomes, and of course you can always enter your contribution at this level if you believe it meets the criteria.

As more teachers try out these developing ideas in their classrooms and provide feedback on them the moderators may decide that they are sufficiently structured to become a new resource at the top tier.

How do you contribute an idea?

Anyone can browse the database and make use of the material already posted there, but to be able to comment on existing contributions or make a contribution yourself you must first register. This only means filling in your name and email address. You will then be provided, by email, with a randomly generated password. As this is almost impossible to remember unless you have the sort of brain that can process gobbledegook it is fortunate that you can change it to a password of your choice, log in and you're away.

MAPE's involvement with the TRE

Recently MAPE, in common with other subject organisations, was asked to further develop the TRE in two ways:

1. *By organising a working party to make contributions, and develop ideas*
   Several active members of MAPE have expressed an interest in being involved with this, either in person or by e-mail.

2. *By nominating a moderator who would be in part responsible for overseeing the content of the TRE as it applied to their special expertise.*

Thus you can be fairly sure that if you make a contribution that focuses on one aspect of the primary curriculum whist you may receive comments from the whole educational spectrum the moderator involved is almost certainly an experienced primary teacher.

Isn't it great to find teachers sharing ideas now? When I first entered the profession many moons ago ideas were guarded jealously. I could never understand this philosophy; if something works share it! The TRE is an excellent means of disseminating those brilliant ideas that we all have from time to time, or telling other teachers about that little gem of a website you've stumbled across. It can only succeed, however, if as teachers we are willing not only to use it but also to contribute to it. More contributions showing evidence of good practice in the primary class are needed. Make a point of contributing one of your ideas.

Daylength

An investigation linked to Unit 5 of the QCA SoW for Geography and Unit 5E of the QCA SoW for Science

Starter questions How long is a day? Yes, but how much of that is light/dark? Is that true all year? In midsummer? In midwinter? How can we find out? What time did it get light/dark yesterday? Where would we look for published information?	The important issue here is that this is ephemeral data not found in books.
Data collection Datalogging (if available) set to log overnight. Dark/light does not come instantly so children will need to set criteria for establishing a precise time for sunrise/ sunset, e.g. half way point on the graph. Daily data in newspaper or internet. Explore the internet site before using with children – clicking on any part of the globe will re-centre and redraw the image. The index to the left gives data for each country.	www.worldtime.com Tip: if image breaks up click 'refresh' in the edit menu of your browser.
Calculation Calculating daylength from sunrise and sunset times is difficult for most children even in Y6 – and a calculator does not help. Scaffold the calculation by using the table provided (and a clock face for reference).	First count on whole hours and then the extra minutes. Pairs of children can work together checking each other's calculations.
Analysis Get children to record the daylength daily in the table provided and to calculate the change from the previous day.	
The beginnings of an interpretation Do the same changes happen all over the world? Is day length the same all over the world?	Begin by comparing two UK places, e.g. London and Edinburgh.
Formulating a hypothesis On the basis of the UK data, how does daylength vary?	Possible hypotheses: 1 The further south you go the longer/shorter the day (depending on season). 2 The closer to the equator you go the longer/shorter the day.

Testing the hypothesis Use the website to look at other parts of the world.	Hypothesis 1 proves correct.
Explanation The explanation needs teaching and is unlikely to be elicited from children. Demonstrate the tilt of the earth using a globe and show how, as the tilted globe moves round the sun, the northern hemisphere is tilted towards the sun in summer and away from it in winter. Demonstrate the impact of this on daylength by looking especially at the poles, which will have 24 hour day or night.	e.g. at Hammerfest in Northern Norway (70N) the sun sets on November 21st and does not rise again until January 22nd. From 11am till 1pm there is twilight with a turquoise and violet sky. People sleep for 9–12 hours in the winter, some for only 3 hours in the summer.
Other useful information Longest Day (Summer Solstice) = 21 June Shortest day (Winter Solstice) = 22 December Spring Equinox = 20 March Autumn Equinox = 23 September Start/End of Daylight Saving Time(DST) (in UK called British Summer Time – BST) = at 1am on the last Sunday in March/October (Spring Forward, Fall Back is a useful aide memoire for the direction of the change.) Because sunrise and sunset times are calculated on the basis of an ideal circular orbit of the earth around the sun, the equinoxes do not mark the exact dates when the day/night split is exactly 12 hours of each. This will be two to three days away from the equinox, as children will discover if they keep a log around these dates. Another oddity which results from the elliptical orbit is that after the Winter Solstice the days *do* start to get longer but the sun continues to rise later for another few weeks. For this short period the day lengthening is due entirely to the sunset time getting later and not the balanced lengthening at both ends which is apparent throughout the rest of the year.	Another useful website is: http://aa.usno.navy.mil/AA/data/docs/RS_OneDay.html This gives sunrise and sunset times for any location (specified by latitude and longitude) and *for any date.* The site can thus be used to explore seasonal differences.

A record of the changing daylength

Date	Sunrise	Sunset	Daylength	Change

To work out the daylength

Sunrise	Full hours before sunset	Takes us to	Minutes to sunset	Sunset	Daylength

Videoconferencing in the Czech Republic

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The present situation

It is not so easy to describe how ICT is integrated in education in the Czech Republic. There are a lot of good examples showing how teachers use ICT in Primary, Secondary or Higher Schools. Some schools are very well equipped, but in general at the start of 2000 there is no official governmental document that encourages schools and their teachers to integrate ICT across the curriculum.

Some schools appreciate that without ICT literacy our society cannot develop and advance. These schools look for financial support and for teachers who are able to work with ICT in schools. Attracting people to schools who are able to work with computers is a real problem. A lot of young people who are computer literate look for jobs in banks or private companies as it is impossible for them to live only on a teacher's salary; it is too low. There is no system to pay more to teachers with ICT competencies. Therefore there is no incentive for teachers to be trained or to do any more with ICT in Schools.

Fortunately, there are some teachers who are very enthusiastic. They have achieved fantastic results with children using ICT in education:

- Primary School in Liskovec in Moravia – http://www.liskovec.applet.cz,
- Primary School Vrchlickeho in Liberec – http://zsvrchl.lbc.cz,
- Primary School Korunovacni in Prague – http://korunka.gns.cz

The teachers in these schools have spent a lot of time in self-study or writing proposals to enable them to participate in various projects. Some experiences from the Primary School in Korunovacni were presented in the CAL99 conference in London on March 1999.

The Czech government has begun to define a proposal for educating for the information society. The programme is based on a concept of the Czech Governmental Information Policy (http://www.msmt.cz/pdf/kestazeni/KoncSIPV1.rtf). We can hope there will be some changes in technical and financial conditions for education, schools and their teachers and that it will bring progress for the Czech society. But the financial budget to support changes and progressive steps in education by the Czech Government is limited.

Access and use out of school

Czech children are no different from others around the world. The boys in particular spend a lot of free time playing computer games. There are many differences among children in the opportunity to have a computer in home. Some children can use a computer in their parents' offices.

Internet provision

Internet connectivity for Primary Schools is problematic as to how to pay for a connection and tele-communication services (there is a monopoly of the Czech TELECOM Company) and how to supervise their computer systems.

Specialist ICT co-ordinators do not exist in the Czech Republic. In Primary Schools there is a shortage of suitable people who could be technically and who could provide a good role model for teachers and their students.

Only the Ministry of Education can start to change the situation radically. But how can this be if the Minister of Education changes several times in six years?

Non-government support

There are only a few non-governmental organisations that do something for education. For example a group of university teachers founded the Czech-Miranda to support schools in their activities. The CzechMiranda collaborates with MIRANDA in the UK (http://www.mirandanet.com), and this collaboration brings a lot of good results. What is very important is to have teachers trained in ICT and to be able to use ICT effectively in education. The several faculties of education in the Czech Republic do not collaborate very closely in looking for a model of teacher training to develop ICT competencies of teachers that will help to transform education in our country.

European projects

Progress in the implementation of ICT into education in the Czech Republic since 1989 could not have been achieved without the support of many European Projects (TEMPUS, SOCRATES, PHARE, etc.) Such projects help teachers and schools to gain experiences and ideas as to how ICT can be used in education.

For example, the Faculty of Education, Charles University in Prague was involved in four TEMPUS Projects focused on ICT and education. Thanks to those projects the Faculty of Education could equip three computer classrooms and we have installed several servers on a standard level. The technical equipment and software bought with TEMPUS money are used by members of the University and students and also in many activities for Primary and Secondary School teachers. Thanks to the PHARE project we have been able to support and help six pilot Primary Schools in the Czech Republic to become a model of the ways in which ICT can be used in teaching and learning.

Thanks to international collaboration in a form of the TEMPUS Project and to an enthusiasm of a group of the University teachers there was born in 1992 the first POSKOLE seminar (http://hpk.felk.cvut.cz/poskole/). The seminar is organised every year. It serves as a forum for Primary, Secondary and University teachers and computer companies to exchange ideas, to share experiences and to offer services to schools using ICT. In 2000 the main ideas for the POSKOLE seminar are 'Teachers as learning innovators' and 'Education industry partnership'. Many experts have participated in the POSKOLE seminar since 1992 and have presented experiences with ICT in education and results from their countries. There were experts from Spain Belgium, the United Kingdom, Poland, Bulgaria, the Netherlands, USA, Germany and many others.

So you can see at present there is no unified policy on developing the use of ICT in Czech schools. In addition there are many problems that schools must overcome. These include funding to provide equipment and suitably qualified and motivated teachers. However we would like to tell you about some experiences with educational activities via videoconferences that we do together with our students from the Faculty of Education in Prague with students Lower Secondary School in Liberec and with Primary school pupils in Prague.

Videoconferences in teacher training at the Faculty of Education in Prague

At the Faculty of Education we integrate videoconferencing in teacher training to show students – future teachers – the educational potential and to gain some practical experiences with videoconferencing in teaching. The main focus is the communication process among all participants. Our partners in videoconferencing are Lower Secondary School students in Liberec (age 12–16), managed by a teacher, Pavel Knobloch.

Preparation

We begin with a theoretical introduction to give our students basic information about the technical background, the educational applications of videoconferencing and to develop students' skills in working with a videoconferencing system via the Internet.

Theoretical introduction

In the Czech Republic there has been little experience of the educational applications of videoconferencing in teacher training.

We base our theoretical introduction on ideas and materials from seminars and conferences we have organised or have participated in. The greatest influences on our work with students are the experiences of Williams Lawrence (UK), presented at the seminar POSKOLE in 1998 and 1999. We were also inspired by the publications of the Slovak colleagues Ludmila Moravcikova (Bratislava) and Lubomir Snajder (Kosice).

Technical preparation

It is very important that teachers can manage not only the technical system for videoconferencing, but also the software. In our seminars we use Microsoft *NetMeeting*, Internet Explorer 4.0 and a system Video-Blaster WebCAM.

Educational potential

Through videoconferencing we can present information and ideas as well as demonstrate processes and experiments. We can transfer information to videoconferencing partners in documents, sound, and images, in written, oral, visual or in multimedia formats. Videoconference represents an environment for a mutually creative collaboration by sharing software and other tools. Participants can receive immediate feedback. You

can teach, test, discuss, ask questions, solve tasks, and address problems all at a distance.

There is space to develop knowledge and skills and social relationships between participants. Videoconferencing opens a space for teamwork mainly in ICT applications (sharing software you can develop products, solve problems, exchange data, measure values of variables, manage and control robots, etc.)

Educational activities

In our activities we decided to focus on three channels of communication:

- sound
- video
- sharing software

Together with our students we wanted to discover the limitations and advantages of each, and to think more about how to apply them in the best way via videoconferencing.

The videoconference activities ought to develop interactions and collaboration between participants. We try to find activities to underline the motivation to communicate, therefore we use 'games' and competitions. These ideas led us to work with three types of activities: crosswords (see example 1), guess what it is? (see examples 2–3), and guess who I am? (see example 4).

Example 1. *Crosswords*

Students prepare and develop a set of crosswords based on a terminology concerned with education. Students of technical education use terminology from ICT and computer sciences, students of Primary School Education from Sciences and Languages and students of Physical Education from Sports, etc. Crosswords are developed in different software applications (word-processing, graphic editors, spreadsheet, etc.)

Example 2. *Guess what it is? (1)*

The idea for this type of a videoconferencing activity was taken from a very popular TV programme.

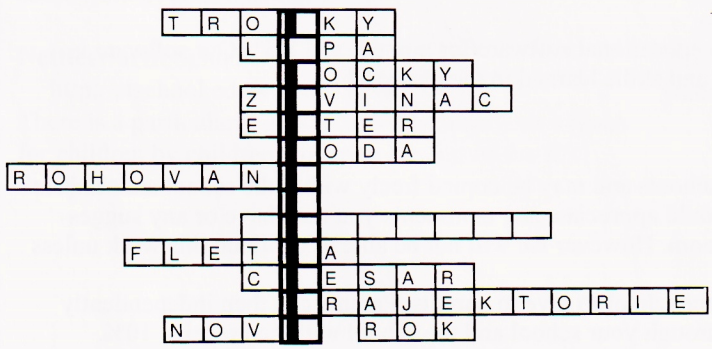
One group presents an object via a video-camera for their partners to guess what it is. Students can ask questions to which the answer can be only 'yes, it is' or 'no, it is not'. If a video-camera cannot give a good image, the object can be taken by a digital camera to digitise a view of the object.

A group of students from the Faculty of Education presents an object (a carburettor, an exposimeter) to students from Liberec.

Example 3. *Guess what it is? (2)*

A dialog when the students from the Faculty of Education had to guess an object presented by the Secondary School Students in Liberec (the object was an element of computer hardware).

Liberec, 'no, it is not from the Universe'
Liberec, 'yes, it concerns a computer'
Liberec, 'there is a help for you – on the object there is written – zwiegform'
Liberec, 'it is black'



Clues for a Crossword prepared by a group of the Liberec Secondary School Students of age 13.

Ruins of a castle in eský Ráj
Czech national tree
American action film about a 'superboxer'
Symbol used in E-MAIL
Very often used key on a keyboard
Liquid to drink (it is not beer)
Original Czech name for a sport
Chemical symbol for phosfor
Chemical product against weed
Musical instrument
Author of the sentence 'Kostky jsou vrzeny'
A shape of a way of a moving body

Crosswords.

Liberec, 'what do you guess?'
Liberec, 'do you want us to tell you what it is?'
Faculty of Education in Prague, 'can you help us?'
Liberec, 'it is very difficult'
Faculty of Education in Prague, 'we do not want you to tell us what it is'
Liberec, 'it joins to CD media'
Faculty of Education in Prague, 'it looks like a photo of a UFO'
Liberec, 'no'
Liberec, 'it would be too small'
Liberec, 'it is impossible to write on it'
Liberec, 'do you want to help'
Liberec, 'it is a very important tool for illegal copying'
Liberec, 'if you guess you are excellent'
. . . etc.

Example 4. *Guess who I am?*

The idea for this videoconference activity was taken from a very popular TV programme.

One group of students represents an important person from history (king, president, queen, philosopher, etc.), from sciences (physicist, chemist, mathematician, technician, medical, etc.) or other VIP.

The videoconference partners can ask questions to which an answer must be 'yes' or 'no'. In one dialog the students from Liberec had to guess the VIP presented by the students from the Faculty of Education in Prague (a famous Czech pedagogue Jan Amos Comenius).

Conclusion

To arrange videoconferences with educational content and learning activities for children as an exercise in teacher training it is necessary to have booked the hour and date and to have a technical system for communication ready. Also the aims of the session must be defined. A lot of unexpected problems during a vodeo-conference meeting can be solved by a mobile telephone or by e-mail.

What about the student reactions?

All students from the Faculty of Education enjoy communicating and working with younger partners via videoconferencing. You could see the happiness on their faces as they concentrated on the communication – they were fully involved in what and how their partners were working.

We would like to integrate other types of activities for videoconferencing into teacher training.

Who's Who in MAPE 2001

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Site Seeing

MAPE

The new-look MAPE website contains a selection of articles from past publications as well as information, news and some children's activities, including Internet Treasure Hunts, quizzes and ideas for using databases.

Schools

Ambleside C of E Primary School
www.ambleside.schoolzone.co.uk/ambleweb/index.htm
There are some excellent activities here, including some for the Literacy Hour, the Daily Maths Lesson, and others devised by the children themselves. Take a look at the Look, Cover, Write and Check.

Sutton-on-Sea County Primary School, Lincolnshire
http://www.sutton.lincs.sch.uk/
This site has a useful weather station. Don't just monitor and record the weather data where you are, submit it to Sutton-on-Sea who will add it to their database. To date 80 records are available including some from overseas schools.

Nettlesworth School
http://atschool.eduweb.co.uk/nettsch
There is a particularly good History section here written for children by children, covering several of the KS2 Study Units.

Maths

Maths Year 2000
www.mathsyear2000.org/
This is a lovely site, very varied in content so there should be something for everyone. It includes information, games, problems and puzzles, and a lovely museum site showing pictures of old mathematical equipment. There are also excellent links to other sites.

Bernard's Bag
http://nrich.maths.org.uk/primary/apr00/bbag.htm
This is such a rich resource it can never be recommended too often.

Star Tower
http://www.apple.com/uk/education/schools/startower/xstartower/startup/finish.htm
This site has some lovely activities including many for younger primary children.

Moving Forward with ICT

a one day course to be held at

Newman College, Birmingham

Saturday 7th April 2001

Workshops

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Control technology
Multimedia
Video cameras and images
Maths and the NNS
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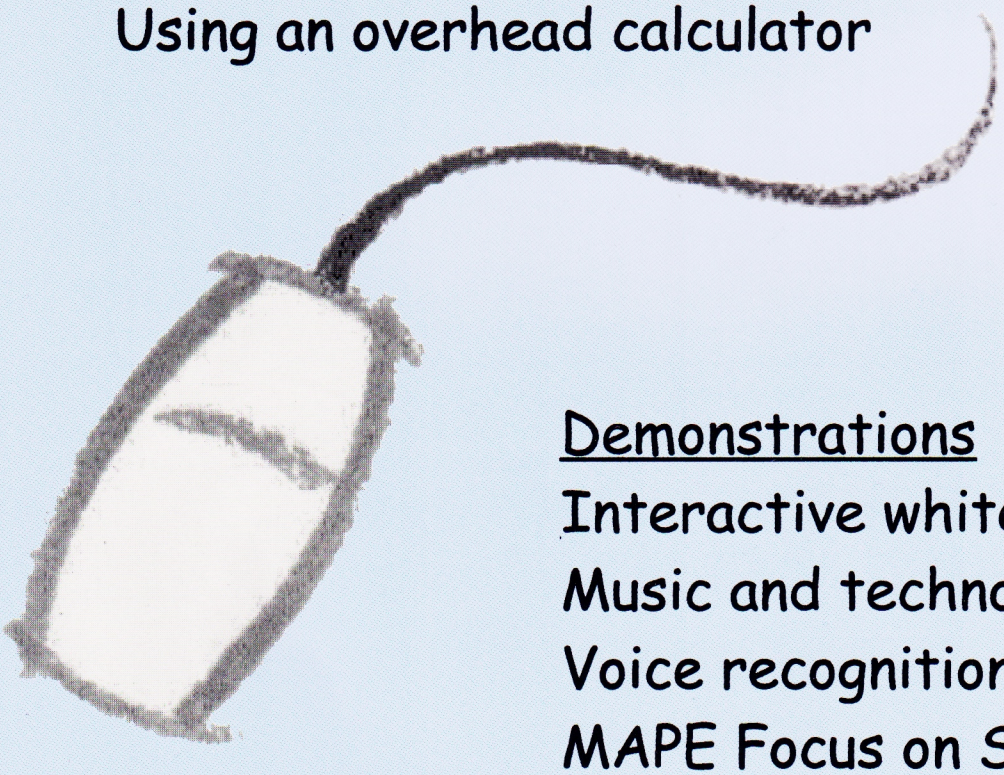

Demonstrations

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MAPE Focus on Science

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