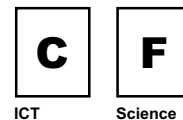


ICT ACTIVITY 22
Using the Virtual Science
 Department for independent learning.

Year Group: 7



Resources

Absorb Chemistry software.
<http://virtualscience.lgfl.net>

Context (Pupils' prior experience)

Within Unit 7G "Particle model of solids liquids and gases"

This was a revision activity at the start of this unit, building on prior learning in KS2.

The teacher prepared a web page containing animations found on Absorb Chemistry and set differentiated questions (these can be found on the virtual science department web site: <http://virtualscience.lgfl.net> Year 7 Unit 7G).

Task Description

Following teacher led discussion, groups of pupils arranged themselves to simulate particles in a solid, a liquid and a gas; then as part of a set of different activities, the task was to consolidate learning by using the on-line animation to answer the questions from the page in their books. The extension activity was to use the more able students to lead the plenary discussion with correct answers and demonstrations using the animations. Differentiation was through increased difficulty of the questions.

Learning Intentions

Science: Knowledge and Understanding	ICT: Skills, Knowledge and Understanding	ICT Level		
		KS1	KS2	KS3
How materials can be characterised by melting point, boiling point and density.	Pupils use ICT to save information and to find and use appropriate stored information, following straightforward lines of enquiry.	w/1	2/3	4/5
As above and how the particle theory of matter can be used to explain the properties of solids, liquids and gases, including changes of state, gas pressure and diffusion.	Pupils understand the need for care in framing questions when collecting, finding and interrogating information.	1/2	3/4	5/6
Pupils use their knowledge of materials to explain how matter changes state in different conditions.	Pupils select the information they need for different purposes, check its accuracy and organise it in a form suitable for processing.	2/3	4/5	6/7
Science POS Related to task: Sc3 - 1a, 1b.	ICT POS related to task: Finding things out 1a, 1b, 1c, 4d.			

Teaching Approach

After initial teacher led discussion students were formed into groups and spent some of their time using the 3 computers in the classroom. They developed their own independent learning skills by answering the questions individually. A full description can be found in the on-line lesson plans on <http://ecs.lewisham.gov.uk/intict>

Links with other curriculum areas

Literacy - skills were developed, for example, reading, comprehension and accurate writing skills.

Subject Learning Gains (Science)

There was greater scientific understanding of the nature of particles through the 3-Dimensional animations.

What a state!

Complete this table of the differences between solids, liquids and gases. You are interpreting the information. Use the information sheet to help you if you are stuck!

	Gases	Liquids	Solids
Diagram			
Shape and Volume		They have a definite volume but not a definite shape.	
The distance between particles	The particles are far apart		
The movement of particles			The particles can only move by vibrating next to each other
The forces between particles	There are no forces between the particles		
Your own ideas			

Changing state

- To revise the states of matter.
- To be able to describe how matter changes state in terms of energy.
- To interpret the ethanoic acid cooling curve.

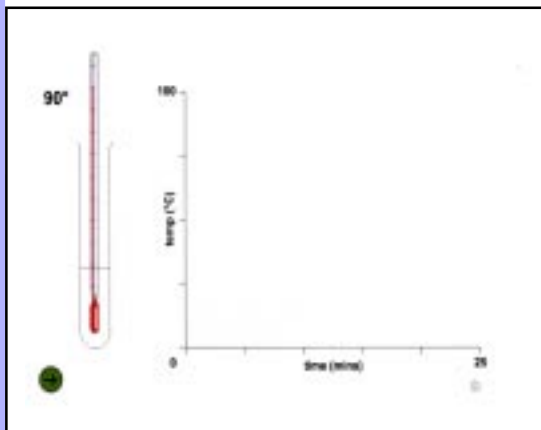
Use your knowledge and the information on this page to answer the following questions.

(Write the questions and answers in your book)

- Write down the three states of matter.
- Try to write as many words you can think of to describe matter changing state.
- To change a solid into a liquid do you have to add energy or take energy away?
- When heating a solid do the particles start moving more or less?
- Play the animation of ethanoic acid cooling down. Try to describe the curve of the graph.

Four of the words used for changing state are in the diagram below.

Look at the animation of particles changing from a solid to a liquid. They move more in a liquid and to make them move more energy must have been given to the solid. This could be from a burner/burner, a gas hob in your kitchen or your oven. The energy moves into the solid particles and they move around more when they have enough energy and their movement increases enough they have changed state and become a liquid.



This pupil showed a good understanding of how matter changes its state in different conditions. She used the on-line material independently to answer her questions

This pupil is working at ICT Level 4.

Teachers' Assessment

ICT TEACHER EVALUATION

Date of Activity April 2003 Class 7

How did the ICT activity help to achieve the subject related objectives?
Greater understanding through computer animation of the 3D nature of particles

Was it a suitable task for the pupils' age/abilities?

Yes

In what ways was it successful? - Did the children learn what you expected?

The pupils responded well to the questions because they could see a more visual and accurate representation of particles this led to increased motivation, and there was greater understanding of the scientific principles.

Were there any unexpected learning outcomes?

I found the pupils were willing to make a greater use of ICT in their work.

How will you use the assessments of the pupils' progress and achievement in the subject to inform your planning?

Higher ability students could use Absorb chemistry software (which is aimed at KS4) immediately to increase their learning potential. I will be using this approach more in the future.

How do you think the activity supported the learning of the curriculum subject (eg. Literacy, Numeracy, science etc)?

The pupils developed comprehension and literacy skills, and a greater understanding of particles.

Teacher Confidence and Competence

What was your own level of ICT confidence before the activity? Do you feel you have gained in confidence and why?

I already had a high level of confidence, and will continue to develop on-line resources more in the future.

Reflecting on the classroom organisation, what factors do you think were important in doing the ICT activity?

There are 3 computers in the room which were used on a rotational basis by a group of pupils.

What would you do differently next time you carry out the task with a class?

This activity would work best if all students could have access to computers at the same time.

In what ways did you use ICT to improve your own professional efficiency related to the activity?

The web pages were developed specifically for this task.

Hardware and Software Issues

Did the software used give any feedback to the pupil? If so, how was this feedback recorded and used by you and the pupil?

This activity did not give feedback to the pupil. This is a development planned for the future.

What hardware or software problems did you experience?

None

Comments

The animations developed from Absorb are very accurate and avoid the common misconceptions associated with 2-dimensional particle diagrams found in books.

Key stage 3

Computer Diary

Name _____ Date _____

➤ What task did you complete?

First I had to answer questions on the different states of matter. But I didn't understand it the first time so I had to read it again, and look at the animations, before I understood it. When we had a test I looked at the questions again and used them to revise for it.

➤ What software did you use?

I had to use the school network and the Internet, and I looked at the web pages my teacher had prepared for us. There were further questions and information on the software "Absorb Physics" which was on the network.

➤ How did you complete the task?

I had a worksheet with some questions on, and the answers were found on a web page which I could open from the network in school, and from home. I wrote the answers on the sheet I was given, but I could have answered them using a word processor.

➤ Describe any difficulties you had completing the task

The main difficulty I had was to understand the ideas, but as I got into it I understood it better.

➤ What features of the software did you find helpful? Why?

I liked the way the diagrams of the different states of solids, liquids and gases were moving - it helped me to understand it better. I could also get to the pages from home and use them again at a later time.

➤ What did you learn?

I learned why a solid is so hard to break and why you cannot touch gas.

Pupils' Evaluation

Teachers' Evaluation