Top Science Teacher notes

Introduction
Top Science is an easy-to-play card game which, in its simplest form, introduces pupils to different cells, tissues and organs. It can also be used to promote understanding of levels of cell organisation and how function determines the specialised structure of cells. All pupils in the range of KS3 age and ability should be able to use Top Science. It also provides KS4 pupils with a starting point for cell study at GCSE.

Running the activity
Pupils play Top Science in pairs. Cards need to be printed and laminated prior to use. Cards are shuffled and dealt face down. Pupils should not change the order of their cards. They take it in turn to nominate a category that their card scores highly in. If their value beats their opponent's, they win the card. This continues for each successive card until one player has won all the cards and hence the game. In some cases a category is not applicable for a card. The player should then select an alternative category.

The game consists of 30 cards drawn from, or in line with, the National Curriculum. An additional card describes the categories for pupils.

Game cards: Chloroplast, cell wall, cell membrane, cytoplasm, nucleus, ciliated epithelium cell, nerve cell, muscle cell, sperm cell, ovum, root hair cell, biceps, salivary gland, stomach, small intestine, large intestine, kidney, liver, heart, diaphragm, lung, alveolus, brain, uterus, ovary, testis, red blood cell, white blood cell, leaf, skeleton.

Safety
Not applicable.

More ideas

- One card can be selected for more detailed research.
- Pupils can extend their understanding by drawing a concept map linking as many of the terms they encounter on the cards as they can.
- Vulnerability to the organism has been given an arbitrary rating, as this is a very difficult value to quantify. Pupils may disagree with some of the ratings, and could be asked to discuss their relative importance. This discussion could take the form of a balloon debate.
- Provide pupils with a list of cells, tissues and organs that are not on the cards. Ask them to produce cards of their own. Forward these to the ASE Science Year team. We will select the most creative and well-researched card, and produce it to the same specification as the pack.
- Year 9 pupils can use the game pre-SATS to review cell types they studied earlier in KS3.

Learning outcomes
- A clearer understanding of the distinction between cell, tissue and organ, a commonly misunderstood concept.
- The functions of chloroplasts and cell walls in plant cells and the functions of the cell membrane, cytoplasm and nucleus in both plant and animal cells.
- Understanding of function for specialised cells and the ways in which some cells, including ciliated epithelial cells, sperm, ova, and root hair cells, are adapted to their functions.
- The role of root hairs in absorbing water and minerals from the soil.

Prior learning
A basic appreciation of animal and plant cell structure.

Where the activity fits in
QCA Unit 7A Cells

Skills
Communication

Careers
All the major activities on the CDROM have a Careers document with them. Printed out these could be used as a growing wall display during Science Year.