The Great Egg Drop Lesson 1 of 2				SOW: 11 TBCP ADH
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – Egg in a Bottle Starter activity. Pupils have to draw what happens and write observations and explanations in their booklets on page 4. Put a small amount of water in a conical flask and bring it to the boil using a Bunsen Burner. While you are waiting peel a hardboiled egg. When the steam is billowing out turn off the heat and place the egg on the top of the conical flask. The steam in the conical flask will condense making the pressure drop inside, the egg will be pushed in by the pressure of the air outside. Main – Get pupils to turn to page 6 of the pupil booklet where the task is outlined – Pupils have to design protection for an egg that is to be dropped from 2.5m. Stress the fact that they have a limited supply of materials. Get pupils to give their group a name. Plenary – Go from group to group asking what they would consider their best idea for preserving the egg.			
Resources/extras : 1 Hardboiled egg, Conical flask, Bunsen Burner, Tripod, Gauze, Heat Proof Mat. Pupil Booklets. Per group – selection of materials including bubble wrap, A3 paper, A4 paper, Cardboard, string, Sellotape.				

Lesson number **2**	**The Great Egg Drop Lesson 2 of 2**			**SOW: 11 TBCP ADH**
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – The Floating Egg – see sheet – there are different things for the pupils to fill in on page 3 of the pupil booklet. Main – The Egg Drop – Pupils to record the results of the egg drop in the table – you will need to decide as you go along how to grade the level of damage. Make sure that you drop each egg from the correct height onto a newspaper covered drop zone. Main 2 – Treatment of results – get the pupils to put the results in rank order. Then talk them through how to set out the axes on page 8. [They need to divide the x-axis into the number of groups doing the drop and stress the need for each bar to be exactly the same width. The y-axis must be 1-10 in cm spaces. The graph also needs a title and the axes must be clearly labeled. Plenary – Pupils need to fill in the rest of the page – 'Describe what your graph shows'. Get the groups to feedback thoughts about what they have written and what a good scientific answer should be.			
Resources/extras : Tape measure to find 2.5m above ground. Newspaper for drop zone, a bag for the rubbish [don't want rotten egg]				

Lesson number **3**	**<u>The Development of the Chick.</u>**			**SOW: 11 TBCP ADH**
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – Looking inside an egg [the technicians need to have an egg prepared so don't order this one late] Sheet is provided either by technicians or look in the experiments file in this scheme. You basically set the egg up in acid – bubbles appear because the egg shell is made from calcium carbonate which reacts with the acid until all of the outer shell is gone leaving the soft inner shell. This takes a long time so show them what the result will be using the one the technicians give you. Pupil's observations should be written on page 2 of their booklet. Main 1 – PowerPoint – The developing chick – pupils need to allocate the correct day to each of the pieces of information as the presentation progresses – then they have to cut them out and arrange them on a piece of A3 as a timeline in groups. Plenary – Check through timeline answers. Do eggs really breathe experiment – on page 5 of booklet.			Hand out 'Hatching Times' Sheet and ask pupils to produce a bar graph showing incubation times for each type of poultry.
Resources/extras :HCl, Egg and Beaker. Egg with Shell removed by Acid. **A3 Paper, Scissors and Glue Sticks Sheets to accompany PowerPoint.** Egg, Beaker, Hot water, Magnifying glass Graph paper for homework and data sheet [per pupil]				

Lesson number **4**	**Monitoring the growth of an organism**			**SOW: 11 TBCP ADH**
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – Page 9 of the pupil booklet – choosing what to measure. Main – Bring in the chicks and choose which variables to measure. Make sure that you choose Height and Weight plus three others. Main 2 – Pupils have to prepare a rough table to record their measurements and then draw neatly in the space provided on page 10 of their booklets when they have got it right. [make sure that they have a space for the time of the measurement and include units for each dimension] Main 3 – Make first measurements – you will have to demo how to weigh the chicks in a box using the TARE on the balance Plenary – Choose the best examples of results tables and ask the pupils why they are good. Make sure that the chicks are returned well before the end of the lesson to avoid a riot in the corridors. Also make sure every pupil washes hands and work space before leaving.			
Resources/extras : Tape measures, rulers, balances, Soap, Disinfectant, plenty of paper towels, rubbish bag.				

Lesson number **5**	**Dietary Requirements**			**SOW: 11 TBCP ADH**
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – Page 11 of the booklets 'What do you think the chicks would like to eat?' Main –Fill in the food types that you have been supplied with, two have been done for you. Get the pupils to work in groups. They have to make a line of food on the floor, then stand their chick 30cm away, let it go and then record the order in which the chick eats the food [or just which one it eats first depending on what happens] Main 2 – record this lessons measurements of the chicks. Plenary – discuss whether the experiment was 'Valid', as the smell, taste, size and colour of the foods differ. Does this really matter as this is how the chick chooses its food??? Make sure that the chicks are returned well before the end of the lesson to avoid a riot in the corridors. Also make sure every pupil washes hands and work space before leaving.			
Resources/extras : 9 different foods including Grain and Lettuce. Measuring equipment for chicks.				

Lesson number **6**	**Designing a Suitable Environment.**			**SOW: 11 TBCP ADH**
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – What do you think makes a nice place to live for a chicken? Main 1 – read through the sheets 'Design a Suitable Environment', 'Free Range Egg Production' and 'Diseases and Ailments' – Use this information and the space provided on page 12 of the booklet to design a place for the chickens to live in after they leave school. Main 2 – record this lessons measurements of the chicks. Plenary – Identify the best examples [that have actually used the information provided to inform decisions on aspects of their design] and assess/evaluate them as a class Make sure that the chicks are returned well before the end of the lesson to avoid a riot in the corridors. Also make sure every pupil washes hands and work space before leaving.			
Resources/extras : Measuring equipment for chicks.				

Lesson number **7**	**Presentation of Results**			**SOW: 11 TBCP ADH**
Lesson content	**Practical activities and equipment**	**HSW**	**Risk assessment**	**Homework**
	Starter – Recap the choices that were made in the measurements to make on the developing chicks. Decide which ones were good decisions and why, placing emphasis on the fact that there will be an amount of error in any measurement and this will be higher in some than others. Main – presenting results using continuous data – explain that the results could have had any value making them continuous. Explain that when we have data of this type we have to present data in line graphs with a line of best fit. Go through the drawing of one of the graphs step by step modeling the method for choosing scales, plotting points accurately and labeling the axes [with units]. Main 2 – If there is time pupils produce their own graph for one of the other variables. Plenary – What have you learned from 'The Big Chick Project' that you didn't know about or how to do before?			
Resources/extras : Graph paper, Rulers, pencils and colouring pencils.				