Meden School Curriculum Planning							
Subject	Chemistry	**Year Group**	13	**Sequence No.**		**Topic**	3.1.11 Electrode Potentials

Retrieval	Core Knowledge	Student Thinking
What do teachers need to **retrieve** from students before they start teaching **new content**?	What **specific ambitious knowledge** do teachers need to teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to **development of our students thinking, encouraging them to see the inequalities around them** and 'do something about them!'
A level Chemistry 3.1.7 Redox and half-equations	**3.1.11.1 Electrode Potentials and Cells** IUPAC convention for writing half-equations for electrode reactions. The conventional representation of cells. Cells are used to measure electrode potentials by reference to the standard hydrogen electrode. The importance of the conditions when measuring the electrode potential, E (Nernst equation not required). Standard electrode potential, EΘ, refers to conditions of 298 K, 100 kPa and 1.00 mol dm−3 solution of ions. Standard electrode potentials can be listed as an electrochemical series. Students should be able to: • use EΘ values to predict the direction of simple redox reactions • calculate the EMF of a cell • write and apply the conventional representation of a cell. **Required practical 8** Measuring the EMF of an electrochemical cell. Students could make simple cells and use them to measure unknown electrode potentials. Students could be asked to plan and carry out an experiment to investigate the effect of changing conditions, such as concentration or temperature, in a voltaic cell such as Zn|Zn2+||Cu2+|Cu	Electrochemical cells have very important commercial applications as a portable supply of electricity to power electronic devices such as mobile phones, tablets and laptops. On a larger scale, they can provide energy to power a vehicle.

KS3 Fruit batteries and the Voltaic Pile.	Students could use EΘ values to predict the direction of simple redox reactions, then test these predictions by simple test-tube reactions. **3.1.11.2 Commercial Applications of Electrochemical Cells** Electrochemical cells can be used as a commercial source of electrical energy. The simplified electrode reactions in a lithium cell: Positive electrode: Li+ + CoO2 + e– → Li+[CoO2]– Negative electrode: Li → Li+ + e– Cells can be non-rechargeable (irreversible), rechargeable or fuel cells. Fuel cells are used to generate an electric current and do not need to be electrically recharged. The electrode reactions in an alkaline hydrogen–oxygen fuel cell. The benefits and risks to society associated with using these cells. Students should be able to: • use given electrode data to deduce the reactions occurring in non-rechargeable and rechargeable cells • deduce the EMF of a cell • explain how the electrode reactions can be used to generate an electric current.	Research opportunity Students could investigate how knowledge and understanding of electrochemical cells has evolved from the first voltaic battery.