Meden School Curriculum Planning							
Subject	Chemistry	**Year Group**	12	**Sequence No.**		**Topic**	3.1.6 Chemical Equilibria

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!'
GCSE AQA Chemistry C6 Rates and Equilibria. GCSE AQA Chemistry C10 The Haber process	3.1.6.1 Chemical Equilibria and Le Chatelier's Principle Many chemical reactions are reversible. In a reversible reaction at equilibrium: • forward and reverse reactions proceed at equal rates • the concentrations of reactants and products remain constant. Le Chatelier's principle= if a change is made to a system at equilibrium then the system will conteract the change to re-instate equilibrium. Le Chatelier's principle can be used to predict the effects of changes in temperature, pressure and concentration on the position of equilibrium in homogeneous reactions. A catalyst does not affect the position of equilibrium. Students should be able to: • use Le Chatelier's principle to predict qualitatively the effect of changes in temperature, pressure and concentration on the position of equilibrium • explain why, for a reversible reaction used in an industrial process, a compromise temperature and pressure may be used. Students could carry out test-tube equilibrium shifts to show the effect of concentration and temperature (eg Cu(H2O)6 with concentrated HCl).	In contrast with kinetics, which is a study of how quickly reactions occur, a study of equilibria indicates how far reactions will go. Le Chatelier's principle can be used to predict the effects of changes in temperature, pressure and concentration on the yield of a reversible reaction. This has important consequences for many industrial processes. The further

	3.1.6.2 Equilibrium Constant Kc for homogeneous systems The equilibrium constant Kc is deduced from the equation for a reversible reaction. The concentration, in mol dm–3, of a species X involved in the expression for Kc is represented by [X] The value of the equilibrium constant is not affected either by changes in concentration or addition of a catalyst. Students should be able to: • construct an expression for Kc for a homogeneous system in equilibrium • calculate a value for Kc from the equilibrium concentrations for a homogeneous system at constant temperature • perform calculations involving Kc • predict the qualitative effects of changes of temperature on the value of Kc Students estimate the effect of changing experimental parameters on a measurable value eg how the value of Kc would change with temperature, given different specified conditions. Students report calculations to an appropriate number of significant figures, given raw data quoted to varying numbers of significant figures. Students understand that calculated results can only be reported to the limits of the least accurate measurement. Students calculate the concentration of a reagent at equilibrium. Students calculate the value of an equilibrium constant Kc Students could determine the equilibrium constant, Kc, for the reaction of ethanol with ethanoic acid in the presence of a strong acid catalyst to ethyl ethanoate.	study of the equilibrium constant, Kc, considers how the mathematical expression for the equilibrium constant enables us to calculate how an equilibrium yield will be influenced by the concentration of reactants and products