Meden School Curriculum Planning							
Subject	D&T	**Year Group**	7	**Sequence No.**	2	**Topic**	Mechanisms

Retrieval	Core Knowledge	Student Thinking
What do teachers need **retrieve** from students before they start teaching **new content**?	What **specific ambitious knowledge** do teachers need 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!'
The following knowledge and understanding should be retrieved: ☐ Whilst our students may have a varied experience from their KS1/2 curriculum the National Curriculum for DT at KS1 states that students should "explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products." ☐ Similarly, from their studies at KS2 the National Curriculum states that they should "understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]" ☐ Once delivery of the module is underway there are retrieval opportunities in relation to the knowledge taught earlier in the module. Examples of this are retrieval of the types of motion (slide 10-14) and in	The following ambitious knowledge needs to be taught: ☐ The four different types of motion, (rotary, linear oscillating and reciprocating) and real-world examples of each. ☐ The three key elements seen in a lever, (Effort, Load and Fulcrum). ☐ The three different classes of lever (class 1, 2 & 3) and the distinctions between each class. Be able to identify real world examples of each. ☐ The meaning of the word 'equilibrium'. ☐ The ability to calculate the effort needed on a particular lever in order to achieve equilibrium. ☐ The design of and applications of various linkages including a reverse motion linkage, a push pull linkage, a bell crank linkage, and a parallel motion linkage. Show real world applications of each. ☐ What a cam and follower is and what it does, (converting rotary motion into another form of motion. ☐ Know the names of, and the effect of a variety of cam shapes. ☐ Know a few real-world situations where cams are used. ☐ Know what a gear is, along with the term's driver gear and driven gear, idler gear, gear train and meshing. ☐ Understanding and being able to calculate gear ratios. ☐ Understanding specialist gears including 'rack and pinion' and bevel gears'. ☐ Know how gears are drawn in Engineering drawings and why this method is used. ☐ Pulleys and belts – their effect on motion, and calculating the different speeds when using pulleys of different sizes.	☐ Watch and discuss the trailers for "The Boy Who Harnessed the Wind" from YouTube. Discuss how mechanisms link with a dynamo/generator to create electricity. ☐ Look at the technology and mechanisms in the 'wind up radio' – students understand the motivation behind the design of the product - To improve health education in third world countries. Info could be presented via radio – but if radios were battery powered the batteries would run out and people would not be able to access/afford replacements. ☐ Look at the designs (see the pdf doc in the curriculum folder) for 'pedal powered electricity generators' to enable students in India to have lighting for doing homework.

identifying the various mechanisms in use in the different card models. ☐ The various opportunities for carrying out calculations will require the retrieval of knowledge from Maths including multiplication, division and simple rearrangement of formula.	☐ Real world applications and why a pully/belt is chosen in some situations and a chain/sprocket in others. ☐ Pulley systems for lifting and the advantages of using them. ☐ Techniques and processes for accurate card modelling including accuracy, tools to use, interpreting drawings and instructions, cutting, scoring and sticking. ☐ Safe use of craft knives with safety rulers and cutting mats. For details of the following see the two knowledge organisers related to the module. ☐ Types of paper and board for modelling and packaging, their characteristics and applications including Mount board, Corrugated Card, Moulded Pulp Board, Foam Board, Carton board and paper in various weights. ☐ The meaning of the terms commonly used to describe the properties of papers and boards including virgin, recycled, laminated, compliant, resistant, stiffness, tough, tension and corrugated. ☐ Methods for 'wasting' papers and boards including using punches, knives, laser cutter and plotter cutter. ☐ Methods for joining (addition of) papers and boards including double sided tape, hot glue, PVA, adhesive Velcro and paper fasteners. ☐ Methods for deforming and reforming papers and boards including using paper fasteners, scoring and folding and press moulding using paper pulp.	