



Activity type	classroom <input checked="" type="checkbox"/> homework <input checked="" type="checkbox"/> independent learning <input checked="" type="checkbox"/> other <input type="checkbox"/>		
Activity objectives(s)	At the end of this topic, students should be able to state that: <ul style="list-style-type: none"> • The enthalpy change for a reaction has a negative value for exothermic reactions and a positive value for endothermic reactions. • The activated complex is an unstable arrangement of atoms formed at the maximum of the potential energy barrier, during a reaction. • The activation energy is the energy required by colliding particles to form an activated complex. • Activation energy can be calculated from potential energy diagrams. • A catalyst provides an alternative reaction pathway with a lower activation energy. • A potential energy diagram can be used to show the effect of a catalyst on activation energy. 		
Activity resources(s)	Students will need access to the internet and their SCHOLAR login details. Students may wish to use calculator for the calculation based questions.		
Delivery mode	teacher led <input checked="" type="checkbox"/> student led <input checked="" type="checkbox"/>	Collaboration type	individual <input checked="" type="checkbox"/> pairs <input type="checkbox"/> groups <input checked="" type="checkbox"/>



SCHOLAR Lesson Outline

Task description

Computer task

Get pupils to navigate to the correct topic - Higher (CfE) Chemistry Unit 1 Topic 1.3 - reaction pathways - Catalysis. Navigate through the topic and complete the end of topic test for homework.

A large number of experiments are available to demonstrate the action of catalysts including:

- a demonstration of the catalytic decomposition of hydrogen peroxide
- a practical problem solving exercise based on the catalytic decomposition of hydrogen peroxide
- a visually attractive and colourful reaction between sodium thiosulfate and hydrogen peroxide in the presence of universal indicator
- the attention-grabbing classic cannon fire experiment

A common misconception is that 'catalysts speed up reactions without taking part'. An experiment which could help to address this issue is the Rochelle salt/sodium tartrate reaction in which the cobalt compound used as the catalyst changes colour during reaction, but returns to its original colour when the reaction is over. A video of this reaction can be found in section 3.4.1.

Focus on definitions of "Catalyst", "Adsorption", "Active Site" and "Activated Complex", "Enthalpy Change", "Potential Energy Diagram", "Exothermic" and "Endothermic".

Pupils should be able to give at least one example of catalysts being used in industry. (Section 3.4)

Whole class

You may wish to give feedback to students on their progress.
Display a report of the exercise.

Move onto some text book practice of interpreting reaction profiles where catalysts have been used.

Card sorts can be a good way of checking students understanding of the concepts covered in this topic.



SCHOLAR Lesson Outline

Differentiation (Alternative use)	<p>With an able group of students, you may wish to set this as a homework task to review the topic when you have completed it. In particular, the end of unit test has a variety of questions to ensure that students can interpret reaction profiles involving catalysis.</p> <p>With weaker students, you may wish to carry this out as an in class activity so you can answer any questions they may have as they attempt the exercise.</p>
Hints & Tips	<p>This task is best done in pairs or individually.</p> <p>Students are often reluctant to write down any working when given a computer-based task. It is a good idea to get students to copy the example calculations in the materials into their notes so that they can refer to them while attempting the exercise. Emphasize the need for working.</p> <p>Go round the class and get students to explain their answers.</p> <p>It is a good idea to get students to show you their score when they finish the exercise. If they do not get full marks you can send them back to have another try while the rest of the class finish off.</p> <p>Some teachers like to generate a report while students are logged in so that they can be shown what the teacher can see. This will highlight progress and any pupils who are just clicking reveal, as full marks can only be achieved by entering correct answers.</p> <p>There is online training available to help you learn how to do this. When you are logged in you will see a course called Succeed with SCHOLAR. Unit 1 Topic 7 introduces you to the reporting system.</p> <p>Choose some questions for students to try from the textbook in advance so faster pupils can move onto these.</p> <p>Questions in the end of topic test give extra practice.</p>
Notes	<p>Pupils will need a calculator for this topic.</p> <p>The SCHOLAR section of this material should take approx 20 minutes.</p>