

Teachers' notes

Mountains, Rivers & Lakes

Suggested activities

Learning outcomes

By the end of the unit students should be able to:

- investigate how physical processes operate to create distinct and diverse environments
- identify the main mountains, rivers and lakes in Northern Ireland
- locate the different mountain ranges in Northern Ireland
- know the meaning of the terms igneous, metamorphic and sedimentary
- identify major rock types found in Northern Ireland
- understand the basic processes that helped form some of the mountain ranges in Northern Ireland
- identify the processes of erosion, transportation and deposition in relation to river processes
- know the main features of a river at upper, middle and lower stages
- understand the major stages of the water cycle.

Students will develop an understanding of issues relating to mountains, rivers & lakes in Northern Ireland - ie:

- identify some of the ways in which people use mountain resources [*Key Elements: Economic Awareness, Cultural Understanding*]
- identify some of the key economic activities associated with water and mountain resources [*Key Elements: Economic Awareness, Cultural Understanding*]
- investigate the conflict between human and environmental needs [*Key Elements: Education for Sustainable Development*]
- understand the environmental impact of human activity on mountain, lake and river resources [*Key Elements: Education for Sustainable Development, Personal Health*]
- recognise how the global climate changes will affect rivers and lakes in Northern Ireland [*Key Elements: Education for Sustainable Development*]
- appreciate that physical environments must be sensitively managed in order to protect them [*Key Elements: Education for Sustainable Development, Personal Health, Cultural Understanding*].

Section/resource	Learning outcome	Activities to achieve learning outcome
Clip 1: The Mourne Mountains	<ul style="list-style-type: none"> • Identify the main mountains, rivers and lakes in Northern Ireland • Locate the different mountain ranges in Northern Ireland • Understand the basic processes that helped form some of the mountain ranges in Northern Ireland • Identify major rock types found in Northern Ireland • Know the meaning of the terms igneous, metamorphic and sedimentary • Identify some of the ways in which people use mountain resources 	<ul style="list-style-type: none"> • The main economic use of the Mournes is tourism. Draw a poster for the Tourist Board highlighting the benefits of the Mournes • Investigate the current uses of granite and the reasons why granite quarrying in the Mournes has ceased <p>Related resources:</p> <ul style="list-style-type: none"> • <i>Batholith activity</i> • <i>News Clip: Mourne National Park</i>

<p>Clip 2: The Antrim Hills</p>	<ul style="list-style-type: none"> Identify the main mountains, rivers and lakes in Northern Ireland Locate the different mountain ranges in Northern Ireland Understand the basic processes that helped form some of the mountain ranges in Northern Ireland Know the meaning of the terms igneous, metamorphic and sedimentary Identify major rock types found in Northern Ireland Identify some of the ways in which people use mountain resources 	<ul style="list-style-type: none"> Garron Plateau has been designated a special area of conservation. Investigate the purpose of the designation and reasons why the Garron Plateau has been preserved. Investigate possible effects on economic activity in the area. The EHSNI provides some information: http://www.ehsni.gov.uk <p>Related resources:</p> <ul style="list-style-type: none"> <i>Ecosystems: Cuilcagh Mountain clip</i> <i>News clip: Ballynahone Bog 1,2</i> <i>News clip: Cuilcagh National Park</i> <i>Water cycle animation</i>
<p>Clip 3: Sperrin Mountains</p>	<ul style="list-style-type: none"> Identify the main mountains, rivers and lakes in Northern Ireland Locate the different mountain ranges in Northern Ireland Understand the basic processes that helped form some of the mountain ranges in Northern Ireland Know the meaning of the terms igneous, metamorphic and sedimentary Identify major rock types found in Northern Ireland Identify some of the ways in which people use mountain resources 	<ul style="list-style-type: none"> Forestry is a common economic activity in mountainous regions. The Forest Stewardship Council http://www.fsc-uk.org/ enables the public to purchase timber products from sustainable sources. Find out the difference between sustainable and unsustainable forests and the importance of buying products with the FSC symbol <p>Related resources:</p> <ul style="list-style-type: none"> <i>Ecosystems: Cuilcagh Mountain clip</i> <i>News clip: Ballynahone Bog 1,2</i> <i>News clip: Cuilcagh National Park</i> <i>Water cycle animation</i>
<p>Clip 4: Rivers: upper course</p>	<ul style="list-style-type: none"> Identify the main mountains, rivers and lakes in Northern Ireland Identify the processes of erosion, transportation and deposition in relation to river processes Know the main features of a river at upper, middle and lower stages Identify some of the key economic activities associated with water and mountain resources 	<ul style="list-style-type: none"> Ask pupils to describe in text and diagrams the process of the formation of v-shaped valleys Find the location of the source of the following rivers: Lagan, Bann, Strule, Bush, Glendunn, Glenelly, Blackwater, Roe <p>Related resources:</p> <ul style="list-style-type: none"> <i>Watercycle animation</i> <i>News clip: Larne landfill pollution</i> <i>News clip: Climate change</i> <i>News clip: Slurry pollution</i>
<p>Clip 5: Rivers: middle and lower courses</p>	<ul style="list-style-type: none"> Identify the main mountains, rivers and lakes in Northern Ireland Identify the processes of erosion, transportation and deposition in relation to river processes Know the main features of a river at upper, middle and lower stages Identify some of the key economic activities associated with water and mountain resources 	<ul style="list-style-type: none"> Flood plains contain fertile land that is often used for farming and settlement. This land is often subject to flooding. Using the internet, compile a list of five towns that have suffered from flooding and the effects this has had on the local economy and population <p>Related resources:</p> <ul style="list-style-type: none"> <i>Meanders and erosion animation</i> <i>News clip: Larne landfill pollution</i> <i>News clip: Slurry pollution</i> <i>News clip: Severe weather</i> <i>News clip: River Strule floods</i>

<p>Clip 6: Meanders / Related erosion animation</p>	<ul style="list-style-type: none"> Identify the main mountains, rivers and lakes in Northern Ireland Identify the processes of erosion, transportation and deposition in relation to river processes Know the main features of a river at upper, middle and lower stages 	<ul style="list-style-type: none"> Ask pupils to draw an aerial view and a cross-section of the meander and label areas of erosion, deposition, and slower and faster water flow <p>Related resources:</p> <ul style="list-style-type: none"> <i>News clip: Larne landfill pollution</i> <i>News clip: Slurry pollution</i> <i>News clip: Climate change</i> <i>News clip: River Strule floods</i>
<p>Clip 7: Lakes</p>	<ul style="list-style-type: none"> Identify the main mountains, rivers and lakes in Northern Ireland Identify some of the key economic activities associated with water and mountain resources 	<ul style="list-style-type: none"> Create a table of economic activities in and around Lough Neagh, listing their positive and negative effects on the environment. For activities that have negative effects, list possible methods of prevention <p>Related resources:</p> <ul style="list-style-type: none"> <i>Ecosystems: Lough Neagh clip</i> <i>Watercycle animation</i> <i>News clip: Lough Neagh pollution</i> <i>News clip: Slurry pollution</i> <i>News clip: Zebra mussels</i>
<p>Quiz</p>	<ul style="list-style-type: none"> Revise all ecosystem learning outcomes 	<ul style="list-style-type: none"> To be completed at the end of section to recap or to identify gaps in learning
<p>Watercycle animation</p>	<ul style="list-style-type: none"> Investigate how physical processes operate to create distinct and diverse environments Understand the major stages of the water cycle Recognise how the global climate changes will affect rivers and lakes in Northern Ireland 	<ul style="list-style-type: none"> Ask pupils to watch the animation. Then describe each stage of the water cycle
<p>Batholith activity</p>	<ul style="list-style-type: none"> Investigate how physical processes operate to create distinct and diverse environments Know the meaning of the terms igneous, metamorphic and sedimentary Identify major rock types found in Northern Ireland 	<ul style="list-style-type: none"> Ask the pupils to create their own flicker book animation by drawing each stage of the Batholith process on pieces of A6 heavyweight paper. Staple the pages together: then flick through it and watch the mountains form
<p>News clip: Larne landfill pollution / Slurry pollution</p>	<ul style="list-style-type: none"> Identify some of the key economic activities associated with water and mountain resources Investigate the conflict between human and environmental needs Understand the environmental impact of human activity on mountain, lake and river resources Appreciate that physical environments must be sensitively managed in order to protect them 	<ul style="list-style-type: none"> River pollution comes from many sources. Research the internet for the five most common sources of river pollution in Northern Ireland and list their effects on the fish living in the rivers. Research and identify methods of preventing further pollution (BBC News site is a good place to start)

<p>News clip: Climate change / River Strule floods / Severe weather</p>	<ul style="list-style-type: none"> • Identify some of the key economic activities associated with water and mountain resources • Investigate the conflict between human and environmental needs • Know the main features of a river at upper, middle and lower stages • Recognise how the global climate changes will affect rivers and lakes in Northern Ireland • Appreciate that physical environments must be sensitively managed in order to protect them 	<ul style="list-style-type: none"> • It is suggested that climate change will cause water levels to rise and rainfall to increase. How will this affect settlements and economic activities situated in flood plains? What can be done to protect vulnerable areas?
<p>News clip: Zebra mussels / Lough Neagh pollution</p>	<ul style="list-style-type: none"> • Identify some of the key economic activities associated with water and mountain resources • Investigate the conflict between human and environmental needs • Understand the environmental impact of human activity on mountain, lake and river resources • Appreciate that physical environments must be sensitively managed in order to protect them 	<ul style="list-style-type: none"> • Pollution of Northern Ireland loughs has a detrimental effect on economic activity. Identify the key sources of pollution in Lough Neagh and list the impact on economic activities in and around the Lough
<p>News clip: Mourne National Park</p>	<ul style="list-style-type: none"> • Identify some of the key economic activities associated with water and mountain resources • Investigate the conflict between human and environmental needs • Understand the environmental impact of human activity on mountain, lake and river resources • Appreciate that physical environments must be sensitively managed in order to protect them 	<ul style="list-style-type: none"> • Discuss the pros and cons of creating a national park in and around the Mourne. Debate from the perspective of local residents, farmers, tourists and MPs • See BBC news story for more information: http://news.bbc.co.uk/1/hi/northern_ireland/6388157.stm
<p>News clip: Ballynahone Bog 1,2 / Cuilcagh National Park</p>	<ul style="list-style-type: none"> • Identify some of the key economic activities associated with water and mountain resources. • Investigate the conflict between human and environmental needs • Understand the environmental impact of human activity on mountain, lake and river resources • Appreciate that physical environments must be sensitively managed in order to protect them 	<ul style="list-style-type: none"> • Garron Plateau is an area of protected bogland. Bogland ecosystems can be disturbed by human activity. Debate the pros and cons of protecting areas of bogland