

Clyde Waterfront Education curriculum resources

Lesson / project idea

'River Basin'

<p>Title</p> <p>The Purification of the water of the Clyde: Cholera</p>	<p>Curricular area</p> <p>Social Subjects</p>	<p>Age group</p> <p>Lower/Middle Secondary</p>
<p>Lesson/project focus</p> <p>Lesson 1: Pollution, disease and the purification of Glasgow's water supplies</p> <p>Project: Filtration of impurities in water</p>	<p>Cross curricular links</p> <p>Science (Biology and Chemistry) Technological Studies</p>	<p>Cross cutting themes</p> <p>Curriculum for Excellence; Determined to Succeed; Assessment is for Learning; NEET; Citizenship; PSD</p>
<p>Short description</p> <p>Historical context of causes and consequences of water pollution will be focus of enquiry and technological solutions to the problems of polluted water supplies will be examined and solved through engaging learners in a model construction project based on the difficulties of piping water from Loch Katrine to Glasgow.</p>		
<p>Description</p> <p>This lesson/project idea will develop knowledge and understanding of the causes and consequences of water pollution using the historical context of 19th Century Glasgow and the condition of the River Clyde as a focus for enquiry. This can act as a microcosm which can be expanded into a more generalised study of the problems of water pollution and disease.</p> <p>Technological solutions to the problems of polluted water supplies will be examined in the first lesson area. Enterprising responses can be developed by engaging learners in a model construction project based on the difficulties of piping water from Loch Katrine to Glasgow.</p>		
<p>Aims of learning</p> <ul style="list-style-type: none"> • To meet the learning objectives of lesson topic • To put learning of topic into context in local area – the historical perspective, and how modern 		

technology has provided solutions to challenges over time

- Develop employability skills such as communication planning, organisation, time management, presenting, analysing, resourcing, etc

Broad Outcomes of learning

- Subject knowledge gained and enhanced through application
- Confident work independently from teacher-led lessons improved
- Ability to express knowledge in context of local situation – making learning relevant
- Established links in the community through study of topic
- Enhanced enterprising skills and attitudes developed (CfE) through working on problems in a team and evaluating individual and team work as they progress (additional self-development)
- Developed employability skills through applying learning to model making and replicating a real situation

CfE Experiences and Outcomes

Learning in the social studies will enable the learner to:

- develop an understanding of the history, heritage and culture of Scotland, and an appreciation of the local and national heritage within the world
- broaden understanding of the world by learning about human activities and achievements in the past and present
- develop understanding of the learner's own values, beliefs and cultures and those of others
- develop understanding of the principles of democracy and citizenship through experience of critical and independent thinking
- explore and evaluate different types of sources and evidence
- learn how to locate, explore and link periods, people and events in time and place
- learn how to locate, explore and link features and places locally and further afield
- engage in activities which encourage enterprising attitudes
- develop an understanding of concepts that stimulate enterprise and influence business
- establish firm foundations for lifelong learning and for further specialised study and careers

People, place and environment

Learners can

- identify the possible consequences of an environmental issue and make informed suggestions about ways to manage the impact.
- investigate the climate, physical features and living things of a natural environment different from the learner's own and explain their interrelationship
- compare the social and economic differences between more and less economically-developed countries and can discuss the possibilities for reducing these differences.

Resources

- BBC Scotland programme 'The Lady of the Lake' which examines aspects of water pollution in 19th C. Glasgow and the construction of the pipeline

Resources for project

- Model of a mountainous terrain
- Using commercial kit learners interact to construct a pipeline replicating the

<p>from Loch Katrine to Milngavie 1859</p> <ul style="list-style-type: none"> • Websites devoted to Cholera in 19th c. Glasgow and the construction of the pipeline from Loch Katrine to Milngavie easily accessed through Google search engine. e.g. www.scottishwater.co.uk/education www.water-technology.net/projects/katrine www.theglasgowstory.com 	<p>shallow fall from Loch Katrine to the Milngavie reservoir taking account of the need for the construction of aqueducts</p> <ul style="list-style-type: none"> • Learners might also experiment with commercial filtration kits to learn more about the principles of water filtration and purification in an active, experiential fashion
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Relevance to curriculum

Relevance of water pollution, its causes and consequences and how technological solutions operate. Active learning using real world exemplars

How to develop an *enterprising* lesson

Developing confident learners

How will you provide a *real* context for learning?

- Learners develop enquiry skills by web-based research on the lesson theme.
- Partners in learning: make contacts with organisations - e.g. Scottish Water - who can offer advice/support
- Look at the jobs that are linked to this task in a real context
- Action & participation activity: learners are working to complete their constructed design within a time constraint and have to interact with their peers to complete the model
- Work will form a display showing what they have done
- Teams will present to business/community/peers on their product

Developing responsible citizens

How will you give *responsibility* to learners for their learning?

- Independent learning – research, analysis, reporting, co-ordinating
- Ownership of their part in the learning/roles
- They have control over how they organise themselves to complete their task
- They share responsibility of the task with their peers in a team and learn to problem solve
- Specific roles within each company are taken on by learners within each team
- Decision making – self and with group

Developing effective contributors

How will you develop *relationships*?

- Encourage learners to work in a team with others, taking on roles and responsibilities in the group
- Working with internal and external partners in learning
- Learning to contribute and communicate through co-operating and negotiating

Developing successful learners

How will you *reflect* on this learning?

- Test k/u knowledge at end of unit
- Time can be built in to reflect at specific stages to review how they are getting on in their task and make changes if necessary
- Self/peer/team/teacher assessment
- Recording evidence for EiE and CfE
- Progression identified
- Identify skills that have been developed and ones that require more work

Developing lifelong and employability skills

How will you establish links with external partners in order to put this into a real context and make this more relevant for young people?

- Engagement with external organisations such as Scottish Water, local authority planning personnel, engineering firms
- Input from specialists in team building skills and how to work with others

Is there an opportunity to highlight career opportunities?

- Interaction with organisations such as above promotes awareness of job opportunities in related fields

Reviewing the process

If this is a lesson idea, how could you involve other curricular areas?

Science

Biology - study of bacteria

Chemistry - filtration, distillation

Social Studies

Geography – developing countries, health issues

Modern Studies – aid to the developing world, community projects

Technological Studies

Project Design

Water technology

Languages

Reports, creative writing

Could it be incorporated into an activity/project with a higher profile (for example, presentation, competition, production of materials, event)?

- Presentation to associated partners of Clyde Waterfront on the theme of 'The Clyde : Then and Now' (e.g. Local community groups, local businesses)

Brief outline of plan

Sequence	Input and content	Teacher activity	Learner activity
1	<p>Introduction of topic</p> <p>Establish the outcomes of learning</p> <p>Research pollution of the Clyde in mid-19th Century and its consequences for the health of the populace</p>	<ul style="list-style-type: none"> • Make bank of PCs available for learner access • Assist learners to organise themselves in groups to undertake research • Encourage use of appropriate searches to elicit information • Monitor learner processing of information • Act as facilitator and advisor/consultant to groups • Keep learners task-focused 	<ol style="list-style-type: none"> 1. Learners research using appropriate search criteria prior to report back. 2. Working in groups, learners agree relevant data to be incorporated into report-back at plenary. 3. Learners report back in class setting
2	<p>Class view video/DVD on Loch Katrine (as above)</p> <p>Use visual as basis for discussion</p>	<ul style="list-style-type: none"> • Lead discussion through structured Q&A session with learners • Organise necessary materials for pipeline project 	<ol style="list-style-type: none"> 1. Select relevant scenes from visual to support group activity 2. Learners work in groups co-operatively and sensitively with materials to produce satisfactory outcome

	Pipeline group activity based on commercial model	<ul style="list-style-type: none">• Supervise learner activity• Act as facilitator/advisor• Keep learners task-focused	<ol style="list-style-type: none">3. Groups demonstrate and present finished 'model' to peers4. Discuss difficulties encountered and how problems resolved through group dynamics and interaction5. Learners present finished model to participating businesses6. Business provide feedback to learners on success of their product
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