Living with a Changing Coast: Primary learning & teaching programme

Exe Estuary & Poole Harbour

By David Weatherly
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Funded by the Living with a Changing Coast Project www.licco.eu
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About this resource

Background

The development and delivery of this education programme has been funded by the Living with a Changing Coast (LiCCo) project. This cross-channel project is part-financed by the Interreg IVA France (Channel) – England programme and is led by the Environment Agency (South West Region). The project started in April 2011 and will end in September 2014. It focuses on the Exe Estuary and Poole Harbour in the South West of England and a further five coastal sites in Normandy, France.

The mission of LiCCo is to help coastal communities to adapt to coastal change and climate change impacts, such as sea level rise and erosion, through:-

- Engaging with target audiences in the coastal study sites and supporting their involvement in decision making processes on coastal management;
- Raising awareness of the environmental, social and economic impacts of climate change on coastal communities;
- Considering the challenges and opportunities of climate change in coastal areas and understanding what can be done to prepare and adapt to these.

The UK partners in the project are:-

- Environment Agency (lead partner)
- National Trust
- Exe Estuary Management Partnership (hosted by Devon County Council)
- Dorset Coast Forum (hosted by Dorset County Council)

Additional information is available on the project website:  www.licco.eu
Aims of the LiCCo education programme

The purpose of the education dimension of the LiCCo project has been to:

- Provide site based educational activities at the Exe Estuary in Devon and Poole Harbour sites in Dorset to teach local children and young people about the ecology, use, management and natural processes affecting their local coast;
- Develop web based information which is specific to the local coastline and freely available;
- Develop an educational package for schools and other audiences with an interest in coastline management, enabling them to explore and better understand coastal ecology; climate change, coastal management issues; the associated conflicts, risks and costs and the options to adapt to future coastal change.

The educational resources presented here have been written particularly to help children and young people aged between 7 and 11 years investigate key questions such as:

- How and why has the coast changed here in the past, how is it changing today and how might it continue to change in the future, as a result of both natural processes and human impacts?
- How is the coast managed to maintain and improve its special character and diverse ecosystem for future generations and to protect coastal communities, properties and infrastructure?
- How can people adapt their lifestyles and livelihoods to respond to a changing coast and climate?
Design of the primary Key Stage 2 education programme

The Exe Estuary and Poole Harbour Primary Learning and Teaching Programme has been written and resourced with a strong cross-curricular dimension which links subject disciplines in a purposeful and appropriately challenging way to add insight and intellectual value to the key question led enquiries investigated by the children. A secondary programme for Key Stage 3 provides further progression and challenge. The programme enables progression in key subject concepts; knowledge and understanding; skills and attitudes and values whilst being both motivational and relevant to the world of the 21st century. Enquiry based learning is central to the programme. Each of the investigations is key question led and is accompanied by detailed planning documentation and a wide variety of learning and teaching resources which are clearly signposted in the schemes of work. Background information on each topic is provided for teachers so that they can be fully confident in managing learning both in and outside of the classroom.

Each of the key question led enquiries has specific aims and objectives relating to that particular investigation. This is followed by detailed learning and teaching activities that are designed to interest and motivate children and stretch them to achieve the following outcomes progressively through the learning and teaching programme:

- Identify
- Recognise
- Respond to and ask simple relevant questions
- Contribute views and opinions
- Use basic vocabulary
- Describe
- Observe
- Reason
- Select
- Classify
- Categorise
- Sequence
- Order
- Use appropriate vocabulary
- Compare and contrast
- Use secondary evidence
- Communicate informed views and opinions
- Use specialist vocabulary
- Apply
- Prioritise
- Analyse
- Demonstrate understanding through basic explanations of cause and effect
- Suggest enquiry questions and routes to investigate them
- Use primary evidence
- Synthesise
- Identify, describe and explain patterns, processes, links and relationships
• Reach substantiated conclusions and make informed judgements
• Demonstrate the development and application of informed attitudes and values
• Reflect
• Evaluate
• Critique
• Predict
• Hypothesise

Listed below are the areas of the statutory programmes of study from subjects at Key Stage 2 which can be delivered through the use of the Exe Estuary and Poole Harbour enquiries. Some of these e.g. in Science and Geography are very precise as they deliver specific areas of knowledge and understanding whilst others, particularly in English e.g. the application of writing conventions, are more generic in the sense that they can be exemplified through any relevant and engaging study in other subjects. From a planning perspective the cross referencing below will assist with ensuring coverage of the National Curriculum programmes of study. It will also enable teachers to approach the Exe Estuary and Poole Harbour enquiries with confidence that statutory requirements are being fulfilled within a creative approach to delivering a highly relevant, engaging and challenging programme.

**English**

**Spoken language – Years 1 to 6**

Pupils should be taught to:
• listen and respond appropriately to adults and their peers
• ask relevant questions to extend their understanding and knowledge
• use relevant strategies to build their vocabulary
• articulate and justify answers, arguments and opinions
• give well-structured descriptions, explanations and narratives for different purposes, including for expressing feelings
• maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments
• use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas
• speak audibly and fluently with an increasing command of Standard English
• participate in discussions, presentations, performances, role play, improvisations and debates
• gain, maintain and monitor the interest of the listener(s)
• consider and evaluate different viewpoints, attending to and building on the contributions of others
• select and use appropriate registers for effective communication.
Years 3 and 4 programme of study

Reading – word reading

Pupils should be taught to:
• apply their growing knowledge of root words, prefixes and suffixes (etymology and morphology) as listed in English Appendix 1, both to read aloud and to understand the meaning of new words they meet
• read further exception words, noting the unusual correspondences between spelling and sound, and where these occur in the word.

Reading – comprehension

Pupils should be taught to:
• develop positive attitudes to reading and understanding of what they read by:
  • listening to and discussing a wide range of fiction, poetry, plays, non-fiction and reference books or textbooks
  • reading books that are structured in different ways and reading for a range of purposes
  • using dictionaries to check the meaning of words that they have read
  • increasing their familiarity with a wide range of books, including fairy stories, myths and legends, and retelling some of these orally
  • identifying themes and conventions in a wide range of books
  • preparing poems and play scripts to read aloud and to perform, showing understanding through intonation, tone, volume and action
  • discussing words and phrases that capture the reader’s interest and imagination
  • recognising some different forms of poetry [for example, free verse, narrative poetry]
  • understand what they read, in books they can read independently, by:
  • checking that the text makes sense to them, discussing their understanding and explaining the meaning of words in context
  • asking questions to improve their understanding of a text
  • drawing inferences such as inferring characters’ feelings, thoughts and motives from their actions, and justifying inferences with evidence
  • predicting what might happen from details stated and implied
  • identifying main ideas drawn from more than one paragraph and summarising these
  • identifying how language, structure, and presentation contribute to meaning
  • retrieve and record information from non-fiction
  • participate in discussion about both books that are read to them and those they can read for themselves, taking turns and listening to what others say.
**Writing – transcription**

**Spelling (see English Appendix 1)**

Pupils should be taught to:
- use further prefixes and suffixes and understand how to add them (English Appendix 1)
- spell further homophones
- spell words that are often misspelt (English Appendix 1)
- place the possessive apostrophe accurately in words with regular plurals [for example, girls’, boys’] and in words with irregular plurals [for example, children’s]
- use the first two or three letters of a word to check its spelling in a dictionary
- write from memory simple sentences, dictated by the teacher, that include words and punctuation taught so far.

**Writing – handwriting**

Pupils should be taught to:
- use the diagonal and horizontal strokes that are needed to join letters and understand which letters, when adjacent to one another, are best left unjoined
- increase the legibility, consistency and quality of their handwriting [for example, by ensuring that the downstrokes of letters are parallel and equidistant; that lines of writing are spaced sufficiently so that the ascenders and descenders of letters do not touch].

**Writing – composition**

Pupils should be taught to:
- develop their understanding of the concepts set out in English Appendix 2 by:
  - extending the range of sentences with more than one clause by using a wider range of conjunctions, including when, if, because, although
  - using the present perfect form of verbs in contrast to the past tense
  - choosing nouns or pronouns appropriately for clarity and cohesion and to avoid repetition
  - using conjunctions, adverbs and prepositions to express time and cause
  - using fronted adverbials
  - learning the grammar for years 3 and 4 in English Appendix 2
- indicate grammatical and other features by:
  - using commas after fronted adverbials
  - indicating possession by using the possessive apostrophe with plural nouns
  - using and punctuating direct speech
- use and understand the grammatical terminology in English Appendix 2 accurately and appropriately when discussing their writing and reading
Writing – vocabulary, grammar and punctuation

Pupils should be taught to:
- develop their understanding of the concepts set out in English Appendix 2 by:
  - learning how to use both familiar and new punctuation correctly (see English Appendix 2), including full stops, capital letters, exclamation marks, question marks, commas for lists and apostrophes for contracted forms and the possessive (singular)
  - learn how to use:
    - sentences with different forms: statement, question, exclamation, command
    - expanded noun phrases to describe and specify [for example, the blue butterfly]
    - the present and past tenses correctly and consistently including the progressive form
    - subordination (using when, if, that, or because) and co-ordination (using or, and, or but)
  - the grammar for year 2 in English Appendix 2
  - some features of written Standard English
  - use and understand the grammatical terminology in English Appendix 2 in discussing their writing.

Years 5 and 6 programme of study

Reading – word reading

Pupils should be taught to:
- apply their growing knowledge of root words, prefixes and suffixes (etymology and morphology) as listed in English Appendix 1, both to read aloud and to understand the meaning of new words they meet

Reading – comprehension

Pupils should be taught to maintain positive attitudes to reading and understanding of what they read by:
- continuing to read and discuss an increasingly wide range of fiction, poetry, plays, non-fiction and reference books or textbooks
- reading books that are structured in different ways and reading for a range of purposes
- increasing their familiarity with a wide range of books, including myths, legends and traditional stories, modern fiction, fiction from our literary heritage, and books from other cultures and traditions
- recommending books that they have read to their peers, giving reasons for their choices
- identifying and discussing themes and conventions in and across a wide range of writing
- making comparisons within and across books
- learning a wider range of poetry by heart
- preparing poems and plays to read aloud and to perform, showing understanding through intonation, tone and volume so that the meaning is clear to an audience
- understand what they read by:
• checking that the book makes sense to them, discussing their understanding and exploring
  the meaning of words in context
• asking questions to improve their understanding
• drawing inferences such as inferring characters’ feelings, thoughts and motives from their
  actions, and justifying inferences with evidence
• predicting what might happen from details stated and implied
• summarising the main ideas drawn from more than one paragraph, identifying key details
  that support the main ideas
• identifying how language, structure and presentation contribute to meaning
• discuss and evaluate how authors use language, including figurative language, considering
  the impact on the reader
• distinguish between statements of fact and opinion
• retrieve, record and present information from non-fiction
• participate in discussions about books that are read to them and those they can read for
  themselves, building on their own and others’ ideas and challenging views courteously
• explain and discuss their understanding of what they have read, including through formal
  presentations and debates, maintaining a focus on the topic and using notes
  where necessary
• provide reasoned justifications for their views.

Writing – transcription

Writing – handwriting and presentation

Pupils should be taught to:
• use further prefixes and suffixes and understand the guidance for adding them
• spell some words with ‘silent’ letters [for example, knight, psalm, solemn]
• continue to distinguish between homophones and other words which are often confused
• use knowledge of morphology and etymology in spelling and understand that the spelling
  of some words needs to be learnt specifically, as listed in English Appendix 1
• use dictionaries to check the spelling and meaning of words
• use the first three or four letters of a word to check spelling, meaning or both of these in
  a dictionary
• use a thesaurus.

Pupils should be taught to write legibly, fluently and with increasing speed by:
• choosing which shape of a letter to use when given choices and deciding whether or not
  to join specific letters
• choosing the writing implement that is best suited for a task.
Writing – composition

Pupils should be taught to plan their writing by:

- identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own
- noting and developing initial ideas, drawing on reading and research where necessary
- in writing narratives, considering how authors have developed characters and settings in what pupils have read, listened to or seen performed

Draft and write by:

- selecting appropriate grammar and vocabulary, understanding how such choices can change and enhance meaning
- in narratives, describing settings, characters and atmosphere and integrating dialogue to convey character and advance the action
- précising longer passages
- using a wide range of devices to build cohesion within and across paragraphs
- using further organisational and presentational devices to structure text and to guide the reader [for example, headings, bullet points, underlining]

Evaluate and edit by:

- assessing the effectiveness of their own and others’ writing
- proposing changes to vocabulary, grammar and punctuation to enhance effects and clarify meaning
- ensuring the consistent and correct use of tense throughout a piece of writing
- ensuring correct subject and verb agreement when using singular and plural, distinguishing between the language of speech and writing and choosing the appropriate register
- proof-read for spelling and punctuation errors
- perform their own compositions, using appropriate intonation, volume, and movement so that meaning is clear.

Writing – vocabulary, grammar and punctuation

Pupils should be taught to develop their understanding of the concepts set out in English Appendix 2 by:

- recognising vocabulary and structures that are appropriate for formal speech and writing, including subjunctive forms
- using passive verbs to affect the presentation of information in a sentence
- using the perfect form of verbs to mark relationships of time and cause
- using expanded noun phrases to convey complicated information concisely
- using modal verbs or adverbs to indicate degrees of possibility
- using relative clauses beginning with who, which, where, when, whose, that or with an implied (i.e. omitted) relative pronoun
- learning the grammar for years 5 and 6 in English Appendix 2

Indicate grammatical and other features by:

- using commas to clarify meaning or avoid ambiguity in writing
- using hyphens to avoid ambiguity
- using brackets, dashes or commas to indicate parenthesis
Mathematics

Year 3 programme of study

Number – addition and subtraction

Pupils should be taught to:
• add and subtract numbers mentally,

Measurement

Pupils should be taught to:
• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
• estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours
• compare durations of events [for example to calculate the time taken by particular events or tasks].

Statistics

Pupils should be taught to:
• interpret and present data using bar charts, pictograms and tables
• solve one-step and two-step questions for example, How many more?’ and ‘How many fewer?’ using information presented in scaled bar charts and pictograms and tables.

Year 4 programme of study

Number – addition and subtraction

Pupils should be taught to:
• add and subtract numbers with up to 4 digits.

Measurement

Pupils should be taught to:
• convert between different units of measure for example, kilometre to metre; hour to minutes
Statistics

Pupils should be taught to:
- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

Year 5 programme of study

Number – addition and subtraction

Pupils should be taught to:
- add and subtract whole numbers with more than 4 digits
- add and subtract numbers mentally with increasingly large numbers
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Number – multiplication and division

Pupils should be taught to:
- solve problems involving multiplication and division
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Number – fractions (including decimals and percentages)

Pupils should be taught to:
- recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’.

Statistics

Pupils should be taught to:
- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables.
Year 6 programme of study

Algebra

Pupils should be taught to:
• link percentages or 360° to calculating angles of pie charts.

Statistics

Pupils should be taught to:
• interpret and construct pie charts and line graphs and use these to solve problems
• calculate and interpret the mean as an average

Science

Years 3 and 4 programme of study

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:
• asking relevant questions and using different types of scientific enquiries to answer them making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Year 3 programme of study

Plants

Pupils should be taught to:
• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
• explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
Animals, including humans

Pupils should be taught to:
- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat

Rocks

Pupils should be taught to:
- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter.

Year 4 programme of study

Living things and their habitats

Pupils should be taught to:
- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things.

Animals, including humans

Pupils should be taught to:
- construct and interpret a variety of food chains, identifying producers, predators and prey.

Years 5 and 6 programme of study

Working scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
Year 5 programme of study

Living things and their habitats

Pupils should be taught to:
• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
• describe the life process of reproduction in some plants and animals.

Year 6 programme of study

Living things and their habitats

Pupils should be taught to:
• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animal
• give reasons for classifying plants and animals based on specific characteristics.

Evolution and inheritance

Pupils should be taught to:
• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Art and Design

Key stage 2

Pupils should be taught to develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of art, craft and design.

Pupils should be taught:
• to create sketch books to record their observations and use them to review and revisit ideas
• to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials (for example, pencil, charcoal, paint, clay)
• about great artists, architects and designers in history.
Computing

Key stage 2

Pupils should be taught to:
• understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Design and technology

Key stage 2

When designing and making, pupils should be taught to:

Pupils should be taught to:
• understand how key events and individuals in design and technology have helped shape the world

Geography

Key stage 2

Pupils should develop their use of geographical knowledge, understanding and skills to enhance their locational and place knowledge.

Pupils should be taught to:

Locational knowledge
• name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics
• key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time

Place knowledge
• understand geographical similarities and differences through the study of human and physical geography of a region of the United Kingdom, a region in a European country, and a region within North or South America

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**Human and physical geography**

describe and understand key aspects of:
- physical geography, including: climate zones, biomes and vegetation belts, rivers, and the water cycle
- human geography, including: types of settlement and land use, economic activity

**Geographical skills and fieldwork**
- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
- use the eight points of a compass, four and six-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world
- use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.

**History**

**Key stage 2**

Pupils should be taught about changes in Britain from the Stone Age to the Iron Age. This could include:
- a local history study

**Examples (non-statutory)**
- a depth study linked to one of the British areas of study listed above
- a study of an aspect of history or a site dating from a period beyond 1066 that is significant in the locality.
- a study of an aspect or theme in British history that extends pupils’ chronological knowledge beyond 1066 e.g. the Industrial Revolution of the 18th and 19th centuries

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May 2014