

GCSE Natural History consultation 2020

<https://teach.ocr.org.uk/naturalhistory>

Responses (Matt Frost):

Section 1: Definition, Purpose, Scope

Definition

Please read the following proposed definition of 'natural history'.

'Natural History focuses on understanding the rich and diverse natural world. Through observational study (generating systematic records of direct and indirect observations, often made over long periods of time) and investigation, natural history seeks to understand the diversity, complexities, and interconnectedness of life on Earth in contrasting habitats. Natural history explores how our natural world has been shaped, and how it continues to change, both by natural processes and through human intervention'

4. To what extent do you agree or disagree with the definition we have provided above? 4 – agree.

5. Is there anything that you would add or remove from the definition given above?

Maybe after 'life on Earth' a parenthesis with a definition e.g. 'Earth' refers to the totality of land and oceans, or something like that. Often the marine component is not obvious when people talk about earth (it would be more logical on this planet to talk about 'sea'!)

Purpose

Please read the following statement about the purpose of studying a GCSE in Natural History:

'Natural history offers a unique opportunity to observe and engage with the natural world to develop a deeper understanding of the flora and fauna (life on Earth) within it. It is a study of how the natural world has been shaped and has evolved as well as how humans (as part of that natural world) influence, conserve and protect it. It is vital that we continue to develop our understanding of the natural world in order to safeguard the future.

To fully appreciate the complexities of the natural world it is important to study it closely and interact with it through field research and measurement. Natural history provides opportunities to develop skills out in the field as well as in a classroom and/or laboratory. Studying natural history makes an important contribution to understanding the relationship between the natural world and culture, policy decisions, scientific research and technology.

Study of science, geography, history and the arts at key stages 3 and 4 provides a variety of complementary skills and knowledge which support the study of Natural history. This subject supports the development of unique skills and knowledge which give a sharper focus and depth to the complexities of the natural world. The progression pathway for this subject at

key stage 5 and beyond could be scientific, geographical, environmental, ecological or natural history itself.'

6. To what extent do you agree with the purpose described above?

4 - agree

7. What other purpose/s might a GCSE in Natural History serve?

Sustainability: the way we should be using our planet in a sustainable manner should be a key component of the course. There is too much focus on the natural world as something separate from ourselves that we view via a telescope / microscope / lecture. With the environmental crisis as it is (Climate and Extinctions for one) it is important that our 'relationship' to the natural world and impact on it is included.

Oceans: the marine component of our planet is often secondary to studies in natural history and ignorance of the marine realm (and how it interacts with other components of the earth's ecosystem) is widespread, even in an 'island nation' like the UK. A GCSE in Natural History would provide an excellent opportunity to address this gap in knowledge.

Scope

8. We are referring to all life on Earth where we say flora and fauna. To what extent do you agree with the following statement?

It is important that a GCSE Natural History qualification covers:

local flora/fauna; national flora/fauna; international flora/fauna (5 – strongly agree for all).

9. If you have further comments on question 8 please add them below.

It is logical that a course in natural history would include discussions of international and national flora/fauna. I feel that teachers should be encouraged to consider local flora/fauna as well (particularly as part of any fieldwork) as this is where real engagement occurs. There are many coastal cities where (astonishingly), many young people are completely unaware of the marine realm so interactions with rocky and sediment shores for example would be a major benefit.

Section 2: Subject Content

In this section we'd like to understand what content you would expect to see in a Natural History GCSE to make it an interesting and purposeful qualification for students.

(Please note, the Department for Education is responsible for creating the subject content should this new GCSE be approved.)

To help explore what content you would expect, we have identified below five possible content themes. Alongside each theme we have added some exemplification for potential content that could be covered.

Theme 1: The natural shaping of the world

Potential content areas for this theme (non-exhaustive):

Why are landscapes as they are?

Pangea

Plate tectonics (vertical as well as lateral movement, e.g. giving rise to marine fossils at high altitude)

Island formation by volcanic activity

Ice ages/glaciation

Distinctive landscapes (e.g. limestone pavements, glacial valleys)

Natural changes over time and the impact on flora and fauna.

10. To what extent do you agree this theme should be included in a GCSE Natural History qualification? 5 – strongly agree.

11. Is there any other content you would expect to see covered in this theme at GCSE level? Please add below

The formation of coral atolls is a wonderful example of use of scientific observation / hypotheses testing, with Darwin's work on this being exemplary.

12. Is there any content you do not think would be appropriate to cover for this theme at this level? Please add below

No.

Theme 2: Life in the early world

Potential content areas for this theme (non-exhaustive):

Evidence of the early world in modern landscapes

Dinosaurs

The rise of mammals

Fossil records (the Jurassic coast)

Fossil plants and piecing ecologies together

Evolution

13. Do you agree this theme should be included in a GCSE Natural History qualification?

4 - agree

14. Is there any other content you would expect to see covered in this theme at GCSE level? Please add below

Although I think this theme is important, I feel there is a danger that Themes 1 and 2 are not the ones to that will encourage engagement in the very real issues facing us today. They are important concepts to teach but the focus should be on today's natural environment and challenges.

15. Is there any content you do not think would be appropriate to cover for this theme at this level? Please add below.

No.

Theme 3: Flora and fauna

Potential content areas for this theme (non-exhaustive)

Inter-relationships; understanding of biodiversity

Humans being part of the natural world and reliant upon it

Habitats (world versus local, urban versus rural)

Basic knowledge of terrestrial/aquatic organisms (animals, plants, fungi etc.)

Taxonomies/classification

Organisms of the British Isles

Practical uses of flora/fauna - past and present (e.g. medicine, manufacturing)

Ecology

16. Do you agree this theme should be included in a GCSE Natural History qualification? 5 – strongly agree

17. Is there any other content you would expect to see covered in this theme at GCSE level? Please add below.

Again, I feel the concept of sustainability should be more explicit with regard to bullet points 2 & 7.

The habitats section should include terrestrial vs marine (this would help elucidate concepts such as species vs phyletic diversity) and the vital role of the oceans in photosynthesis for example should be highlighted. The marine realm should be a core component in basic knowledge - everyone knows about fungi but how many know about the importance of marine fungi?

18. Is there any content you do not think would be appropriate to cover for this theme at this level? Please add below.

Theme 4: Human impact on the world

Potential content areas for this theme (non-exhaustive):

Impact of humans on ecosystems/habitats

Climate change (e.g. impact on flora/fauna)

Land management practices (impact on flora and fauna)

Effects of introducing non-native species (e.g. harlequin ladybirds, Rhododendron)

How different communities around the world (especially indigenous peoples) have developed sustainable ways to live

Farming methods

Impact of diet choices for land usage and environmental impact

Conservation methods/measures

Methods of tracking/monitoring organisms

Controlling invasive species

Nature reserves/marine reserves

Introduction of grazing to encourage biodiversity (e.g. in woodland)

Species reintroduction (e.g. wolves, beavers, red kites)

Impacts of losing our natural history (past and present)

19. Do you agree this theme should be included in a GCSE Natural History qualification? **5-strongly agree**

20. Is there any other content you would expect to see covered in this theme at GCSE level? Please add below.

Fisheries should be included (including whaling, industrialisation, modern issues). It is one of the most high-profile and political activities around the globe and is vital as a food source for significant parts of the world's coastal population. It is however also responsible for some of the most devastating damage to marine habitats and species.

21. Is there any content you do not think would be appropriate to cover for this theme at this level? Please add below.

I feel care should be taken over the topic of diet choices and am not sure it is appropriate here. This involves issues such as ethics and is not really a straightforward natural history topic.

Theme 5: Our changing view of the world

Potential content areas for this theme (non-exhaustive):

Description, interpretation and classification of the natural world over time (from cave paintings to natural history documentaries)

Land usage conflict

How the natural world is depicted

Changing cultural views on the natural world over time (e.g. whale hunting versus whale watching holidays)

Natural history and culture (influence and aspiration drawn from the environment)

Representation in art and literature (e.g. poetry).

22. Do you agree this theme should be included in a GCSE Natural History qualification?

Yes – strongly agree

23. Is there any other content you would expect to see covered in this theme at GCSE level? Please add below.

Development of environmental awareness and very brief overview and introduction to the 'players' involved (Campaign groups; NGOs; Government agencies)

Recent and current awareness of the importance of the marine environment (theories like the Azoic theory for the deep sea are fairly recent and rapid development of appropriate technologies is allowing us to move towards greater knowledge and exploitation of the marine realm. The move towards aquaculture i.e. farming in the ocean (now c. 50%) is incredibly important from a natural history / sociological perspective.

25. In this section we have shared some ideas for possible content themes. Is there a theme that you would expect to be included in GCSE Natural History that we didn't list? No

26. If you answered yes, please describe what this theme should be and why you think it should be included. N/A

27. On a scale of 1–5, please rank the themes below in terms of importance for inclusion in a GCSE Natural History qualification.

RANK: Theme 3: Flora and fauna; Theme 4: Human impact on the world; Theme 5: Our changing view of the world; Theme 1: The natural shaping of the world; Theme 2: Life in the early world

Section 3: Skills

In this section we would like to explore what key skills you think would be important for a GCSE in Natural History.

28. To what extent do you agree that an element of outdoor study should be an important part of a GCSE in Natural History? – 5 – strongly agree

29. How important are observation and recording skills as part of a GCSE in Natural History?

Examples include:

Use and understand classification systems

Identify and describe diversity at different levels of scale to understand complexity and change

Document and record evidence collected in the field, e.g. through use of illustration, photographic/film portfolios, field notebooks

Preservation/recording/cataloguing/curation of specimens

4 – NOT IMPORTANT

30. How important are monitoring skills as part of a GCSE in Natural History?

Examples include:

Safe use of techniques for monitoring/detecting organisms. For example: Longworth traps, moth traps, camera traps, satellite tags, methods for monitoring reptiles, using photographs, bat detectors, bird ringing, etc.

Use of indirect evidence (e.g. signs, tracks, landscape analysis)

Use of Identification charts

4 – NOT IMPORTANT

31. How important are cartographic skills and use of digital methods as part of a GCSE in Natural History?

Examples include:

Use and understand Geographical Information Systems (GIS)

Use and understand digital data collection methods

Interpretation and analysis of mapped data/information

4 – NOT IMPORTANT

32. How important are data skills as part of a GCSE in Natural History?

Examples include:

Methods of tabulating and manipulating data

Methods of representing data graphically

Interpreting and analysing data

Validity and reliability of results

Understand appropriate sample sizes

Use of approximation

Interpretation and analysis of visual imagery (art, photographs, diagrams)

Understanding of bias in written and visual representations of the natural world

Critical thinking, ability to be critical about data/statistics on the natural world

4 – NOT IMPORTANT

33. How important are research skills as part of a GCSE in Natural History?

Examples include:

Understand the selection and justification of a research topic

Explore and understand the process of research

Use of primary and secondary sources of information

Presentation methods of research findings

Recording sources used e.g. bibliography

Ethical consideration of the approaches for capturing/recording impact on the environments being studied

4 – NOT IMPORTANT

34. How important are qualitative skills as part of a GCSE in Natural History?

Interpretation and analysis of visual imagery (art, photographs, diagrams)

Understanding of bias in written and visual representations of the natural world

35. Are there additional skills you consider important to develop as part of a GCSE in Natural History? Please tell us below.

No. I have marked all above as not important. This course should be aimed at really inspiring pupils with a love for and knowledge of the natural world and a greater understanding of natural history. If it works then they may pursue further and that enthusiasm will lead to an understanding of the requirement for the skills described here. There is a danger however that pupils may be discouraged straight away if they are focusing too much on GIS, statistics, sampling and other tools/mechanisms. It is appropriate to bring these elements into each of the themes in a 'light touch' way (e.g. it will be hard to have a field component without teaching how to record what you see) but too many lessons focused on these 'tools' may be detrimental to what else the course is trying to achieve.

Section 4: Delivery within school/college

In this section we would like to find out how a GCSE in Natural History might be delivered within a UK school.

* 36. Do you work in a UK school or college? **NO.**

This final section is for you to add any other comments and to indicate whether you would like to stay in contact with us.

37. Please share anything else that you think we should consider when developing a GCSE in Natural History.

I can only reiterate that this course would be an excellent opportunity to make sure that the marine realm is better incorporated into the curriculum. At present in sciences in general it is often not given the importance it deserves and the oceans are central to much of today's issues including climate change, sustainable resource exploitation and diversity / extinctions.

* 38. Are you happy to receive updates from us on our progress? **YES.**

39. Would you be happy in principle to provide additional advice and input in the future? **YES.**

40. Would your organisation be interested in becoming involved in developing the qualification content or support materials for OCR? **YES.**

41. Please write here any final comments you'd like to make on this topic. **NONE.**

THANK YOU

Thank you for taking the time to complete this consultation.

To help us evaluate the responses we receive to this consultation it would be helpful to know a bit more about you. Please answer the questions below:

Question Title

* 42. Are you based in the UK? Yes

43. If you would be happy to be contacted to further discuss your answers, or for further research, please leave your contact details below:

Name

Position

Organisation

Email address

Question Title

44. How did you find out about this consultation? Other