

**Royal Society of Biology response to the Institute for Apprenticeship and Technical Education T Level consultation on proposed outline content - Agriculture, Environmental and Animal Care: Agriculture, Land Management and Production**

July 2020

<https://www.instituteforapprenticeships.org/media/4317/animal-care-and-management-draft-outline-content-for-consultation.pdf>

Occupational specialisms:

- Crop production
- Floristry
- Habitat management (land and water)
- Land-based engineering
- Ornamental and environmental horticulture and landscape
- Tree and woodland management and maintenance

**In what capacity are you responding to this consultation?** Other: Subject organisation / Learned Society

The Royal Society of Biology (RSB) is a single unified voice for biology: advising Government and influencing policy; advancing education and professional development; supporting our members, and engaging and encouraging public interest in the life sciences. The Society represents a diverse membership of individuals, learned societies and other organisations. Individual members include practising scientists, students at all levels, professionals in academia, industry and education, and non-professionals with an interest in biology.

The Royal Society of Biology is committed to supporting and encouraging the study of biology at primary, secondary and tertiary levels across the UK, working in coordination with our member organisation and with the broader scientific community. Steered by our Education and Science Policy Committee, we aim to do this through bringing together the education and science communities, informing policymakers, providing impartial, evidence-based advice and being seen as the leading voice for biology. Our education priorities 2017-2022<sup>i</sup> underpin our policy work, and outline important factors that contribute to an excellent biology education for all students.

To inform this response we sought views from the Royal Society of Biology's Education and Science Policy Committee, Education Policy Advisory Group and UK Plant Sciences Federation. We have also drawn on existing policy positions<sup>ii</sup>, engagement with previous T level consultations and our draft framework for a coherent 5 – 19 biology curriculum.

Contact details

Lauren McLeod AMRSB  
Head of Education Policy  
Royal Society of Biology  
[lauren.mcleod@rsb.org.uk](mailto:lauren.mcleod@rsb.org.uk)  
0203 925 3462

## Core Content

**Does the knowledge in the core content and the core skills specified for the employer set project enable a learner to develop a broad understanding relevant to the agriculture, environment and animal care sector?**

Yes	No	Unsure
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The Royal Society of Biology (RSB) is working with the bioscience and education communities to develop an informed position for a framework for a coherent 5-19 biology curriculum.<sup>iii</sup> The RSB want to ensure that students, at all educational stages and through all qualification routes, engage with a biology curriculum that is coherent and prepares them for their next steps in life. This includes progression from compulsory schooling into further and higher education, and beyond.

The RSB curriculum framework includes a 5-19 exemplification, which presents the essential concepts in biology within the context of five big questions of biology. The five big questions encompass the ideas that all students should have the opportunity to learn by the end of compulsory education. The big questions are posed for the following age ranges: 5-7, 7-11, 11-14, 14-16 and 16-19 and are split into themes, which include detailed content statements. A map detailing the big questions and themes within them across 5-19 has been published on our website.<sup>iv</sup>

In this response, we explore the RSB curriculum content down to theme level. However, we would welcome the opportunity to engage with Awarding Organisations on the detailed content statements within these themes. The full 5-19 curriculum framework is still in development, and a suite of documents on a framework for the biology is due for publication in early 2021. The RSB has used draft versions of this exemplification to engage with curriculum developers and policy makers, and is happy to use the draft framework to engage further with awarding bodies as they design the technical qualifications.

Based on the RSB curriculum framework, the agriculture, land management and production core content include biological concepts that we would expect students' to have met in a classroom context by the age of 16. The overlap between our exemplification and the life science content in the Agriculture, land management and production routes suggest the content will enable T Level students to develop a broad understanding of biological concepts relevant to the sector.

The T Level core content covers the following content in the RSB 5-19 exemplification: Within the agriculture, land management and production pathway, we would expect all bioscience-related routes to cover the thinking and reasoning and application and impact questions: "How do we study the biological world?" and "How do people use biological knowledge" from the RSB 5-19 curriculum framework, and are pleased to see this in the outline core knowledge and understanding and employer set project:

<b>Core knowledge and understanding</b>	
<b>T-Level</b>	<b>RSB framework for biology</b>
<b>Sustainability</b> <ul style="list-style-type: none"> <li>- requirement and environmental legislation</li> <li>- Government environmental policies and initiatives</li> <li>- Concept of sustainable development and solutions</li> <li>- Climate change and scientific views on causes and impacts</li> </ul>	Influencing Society  Biodiversity and human impact
<b>Biosecurity</b>	Developing applications to promote human and environmental wellbeing
<b>Ethics</b>	Carrying out practical experiments and investigative work <ul style="list-style-type: none"> <li>- work safely to minimise hazards</li> <li>- work ethically, minimising harm to living organisms and disruption of ecosystems</li> </ul> Evaluating impacts of biological knowledge and its applications
<b>Employer set project</b>	
<b>T-Level</b>	<b>RSB framework for biology</b>
<b>Analysing</b> <b>Communication</b> <b>Investigating</b> <b>Critical thinking</b> <b>Decision Making</b>	Asking questions about the biological world Planning practical experiments and investigative work Carrying out practical experiments and investigative work Analysing, interpreting and evaluating data Developing explanations, classification systems and models Communicating information and engaging in evidence-based arguments

**Does the T-Level occupational specialist content include the right knowledge and skills to meet employer needs when recruiting for a related occupation?**

Yes	No	Unsure
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We would expect each of the occupational specialism routes to have a focus on the particular themes within the five content-based big questions, depending on the area of specialism, but not necessarily cover the full scope of all themes at 16-19.

Crop production	How do organisms live together? How do organisms stay healthy? Why are organisms so different?
Floristry	What are organisms and what are they made of? Why are organisms so different?
Habitat Management	How do organisms live together? Why are organisms so different?
Livestock Production	What are organisms and what are they made of? How do organisms grow and reproduce? How do organisms live together? How do organisms stay healthy?
Ornamental and Environmental Horticulture and Landscaping	What are organisms and what are they made of? How do organisms grow and reproduce? How do organisms live together? How do organisms stay healthy? Why are organisms so different?
Tree and woodland management / maintenance	What are organisms and what are they made of? How do organisms grow and reproduce? How do organisms live together? How do organisms stay healthy? Why are organisms so different?

**Is there anything missing from the core and specialised content?**

Yes	No	Unsure
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**All specialisms:**

From our mapping of outline occupational specialism content we would additionally suggest that some biology content should be included within the core content, as they form a biological basis for each of the occupational specialisms and would benefit from being covered in a class-room setting and is relevant to both agriculture, land management and production, and animal care and management.

- Tissues, organs and systems  
Cells are made of molecules organized into membranes and other structures, adapted to their functions including the transport of substances into and out of the cell. There are similarities and differences between the cells of animals, plants and microorganisms.
- Health and infectious disease  
Some disease in humans, other animals and plants are caused by infection by pathogens, including viruses, and some bacteria, protists and fungi. Effective prevention or treatment of a communicable disease depends on identification of the disease and the pathogen causing it.

**Specialism: Crop Production:**

It is noted that there is little mention of genetically modified (GM) or gene edited (GE) crops. As this T level is likely to be tailored to a UK perspective rather than global agriculture, we suggest that providing students with an understanding of the technical and regulatory challenges of integrating GM/GE crops into more traditional crop production will be important for their future work in this area.

Our members flagged that there is an absence of a focus on chemical crop protection measures used in agriculture. As this a major component of agricultural practise in the UK, there should be a greater focus on this. It's also a fairly complex area in terms of chemical crop protection measures available, their appropriate/safe use, legislation surrounding their use.

We would recommend engaging with the Insecticide Resistance Action Committee ([IRAC](#)), Fungicide Resistance Action Committee ([FRAC](#)) and Herbicide Resistance Action Committee ([HRAC](#)) for best advice on chemical crop protection measures

**Is there anything in either the core or specialised content that is not necessary?**

Yes	No	Unsure
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**Does the outlined content cover everything somebody needs to learn to be able to start work in the occupational specialism?**

Yes	No	Unsure
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**Overall, is the content suitable for teaching in a school or college-based setting?**

Yes	No	Unsure
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The resources and availability of practical equipment vary between colleges. This has the potential to limit accessibility of courses for students within particular geographical areas. The Institute for Apprenticeships and Technical Education should review geographical coverage and ensure all students have the opportunity to access all T level routes. In some cases this may require financial support for students to travel, or additional funding for colleges to maintain and update equipment and facilities.

Developing practical technical skills is an essential part of the T Level qualification. The resources and availability of practical equipment may also vary by employer. Where these opportunities or resources are not already available, the Department for Education should ensure that the appropriate funding and provisions are in place for students.

**Overall, is the content set at the appropriate level of demand for a level 3 qualification?**

Yes	No	Unsure
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**Ornamental horticulture sector**

**In relation to the performance outcome 4 in the ornamental and environmental horticulture and landscaping specialism, do you feel propagation skills will be desired by ornamental and environmental horticulture employers over the next ten years?**

Yes	No	Unsure
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<sup>i</sup> [https://www.rsb.org.uk/images/RSB Education Priorities 2017 20.06.pdf](https://www.rsb.org.uk/images/RSB_Education_Priorities_2017_20.06.pdf)

<sup>ii</sup> [https://www.rsb.org.uk/images/RSB response to T Level consultation outline of content 16.01.19.pdf](https://www.rsb.org.uk/images/RSB_response_to_T_Level_consultation_outline_of_content_16.01.19.pdf)  
[https://www.rsb.org.uk/images/RSB response to Ofqual consultation on regulating technical qualifications August 2018.pdf](https://www.rsb.org.uk/images/RSB_response_to_Ofqual_consultation_on_regulating_technical_qualifications_August_2018.pdf)

[http://www.rsb.org.uk/images/RSB T level consultation response 6 February 2018.pdf](http://www.rsb.org.uk/images/RSB_T_level_consultation_response_6_February_2018.pdf)

[http://www.rsb.org.uk/images/RSB response to the IfA consultation on draft occupational maps.pdf](http://www.rsb.org.uk/images/RSB_response_to_the_IfA_consultation_on_draft_occupational_maps.pdf)

<sup>iii</sup> Developing a framework for the biology curriculum (SSR September 2018)

[https://www.rsb.org.uk/images/SSR September 2018 23-29 McLeod.pdf](https://www.rsb.org.uk/images/SSR_September_2018_23-29_McLeod.pdf)

<sup>iv</sup> [https://www.rsb.org.uk/images/Mapping the biology curriculum.pdf](https://www.rsb.org.uk/images/Mapping_the_biology_curriculum.pdf)