Optionality in Assessment: Case Studies

Case Study 10

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Institution: York

Discipline/Field of Study: Biology

Type of Assessment: Presentation – show and tell

Credits: 6

Level: 4

Unit Type: Mandatory or core for all students on a particular programme

Type of Optionality: Submission format, negotiated assessment task/question and assessment type chosen from a pre-selected list

Assessment Details:

a. Instructions for completing the assessment.

Facing the four Grand Challenges
Spring Term Assessment: Animal and Plant Biology BIO00012C

Your aim:
- To develop a realistic solution that tackles one of the four problems addressed in your Grand Challenge lectures.
- As you will have seen from your Grand Challenge lectures these problems are significant and current issues that Biologists need to work towards solving.
- This exercise provides you with the opportunity to work towards tackling a real-world problem where your **results and ideas** could have a measurable impact.
- You are choosing **(1) a challenge** to tackle, **(2)** choosing **an audience** that your solution is aimed at, and **(3)** choosing **a format** to present your solution in.

The four key challenges are:
1. How do we feed a growing population?
2. How can we stay healthier for longer?
3. Why are conservation and biodiversity important?
4. What is climate change and how do we deal with it?

Your audience choices are:
1. School children (specify your age range)

2. General public

3. Business/funding investors or research council

4. Policy makers

5. Environmental group/NGO/charity

You can choose to present your solution to the challenge as:
1. A poster to lobby and/or educate.

2. Development of a technology/product

3. Event/workshop

The four challenges cover a huge range of potential topics so you can choose to focus on a problem of interest to you within each of the challenges. A few examples of topics that you might consider within each of the Grand Challenges are suggested below but these are not exhaustive, and you are free to consider any problem you consider relevant within the remit

of any of the four Grand Challenges. Feel free to contact us if you have any questions about these:

1. "How do we feed a growing population" could tackle a problem in sustainable farming, food waste or water sustainability for example.

2. "How can we stay healthier for longer" could consider issues relating to the developing world or westernised societies such as malaria, obesity, starvation, smoking, vaccination.

3. "Why are conservation and biodiversity important" could look at solutions to issues such as ocean plastics, zoonoses or invasive species.

4. "What is climate change and how do we deal with it" may identify solutions in the context of low-lying tropical islands, coral bleaching, or species range shifts for example.

How you may want to go about finding a solution to your challenge could consider:
You may want to organise an event for the general public to encourage people to eat less meat. E.g., like PETA and present this as a poster
You may develop an app which helps children to get more exercise and present the concept for this. e.g., Pokémon GO, or a game which works in schools' outreach to help educate students on a particular issue. You could show this with a run-through of such a game using props at the "show and tell".
You may orchestrate a leaflet campaign for a business to encourage staff to make small changes they can carry out to reduce the impact of climate change.
You may pitch a research plan to a research council or to business investors to develop an invention which tackles the problem of ocean plastics. You could show this with a prototype model at the "show and tell."

The format:
- You will be working in groups of 6/7 which will be assigned to you.
- Within your groups you will choose **(1) a challenge, (2) your audience** and **(3) a format** that you would like to present your solution in at our "show and tell" session on the 14th and 17th March.
- You will be sent a link to a Google sheet to specify which of the four challenges you would like to address. There will be a maximum of 10 groups working on the same Grand Challenge.
- The "show and tell" presentations will take place in T/005. Please only come to the session in your timetable. You will be presenting to one member of staff not the entire room.
- Within the assessment session you will present your work to the members of staff assessing the project (Rachel, Tim, and other staff) and will also have the opportunity to see other groups talk about their work. The visiting employers are there to talk to but will not be marking your work.

- **Deadline:** "Show and tell" presentation session 14th and 17th March - come to the slot that you have been allocated.
- **Accompanying Professional Report: formative report – see additional word document for details on how to produce this report, its aims and format, and date for submission (noon 13th March 2023).**

b. Marking rubric

Grand Challenges Assessment - Animal & Plant Biology BIO00012C Marking Criteria

Each group will present their development of a technology/product, an educational poster or an event or workshop as part of a "show and tell" session. You will be marked on the effort put in to the solution (poster, product, event) as well as the explanation (or defence) of the project.

First Class (70-100)

The work should highlight ways in which the proposed solution can realistically and effectively address the challenge. This will require familiarity with some of the literature and key facts associated with the chosen problem which should either be cited in the work itself or mentioned during the "show and tell". The work should also be expertly pitched for the target demographic and use appropriate terminology and explanation for the audience.
E1: Logically structured work which addresses the complexity of the problem and demonstrates how the solution realistically deals with more than just one aspect of the problem.
E2: Exceptional presentation. This will depend on the medium chosen. E.g. a (semi-functional) prototype technology, an exceptionally clear, powerful and eye-catching poster, a demonstration event complete with props and agenda.
E3: Effective targeting of demographics incorporated into the design of the solution, evidencing the use of peer reviewed (demographics/marketing) research.
E4: An imaginative and creative approach to solving a grand challenge, which sets this work apart by showing exceptional impact/insight.

Upper Second (60-69)

A good solution to the chosen problem which demonstrates understanding of context by highlighting how it it is realistic and effective. This will require familiarity with some of the literature and key facts associated with the chosen problem which should either be cited in the work itself or mentioned during the "show and tell". The work should also pitched appropriately for the target demographic and use appropriate terminology.

Lower Second (50-59)

The problem is well defined but may lack relevance for the target demographic. There is a good solution to the chosen problem. Key facts associated with the chosen problem are present in the work itself or mentioned during the "show and tell" but may be poorly linked to the solution. The work may include some aspects which may not be appropriate for the target demographic.

Third Class (40-49)

Poor, inelegant solution to the challenge which fails to take into account feasibility. May include a significant amount of irrelevant and /or inaccurate material. Project is pitched at an inappropriate level and lacks background or context.

Compensatable fail (30-39)

Very little evidence of effort or thought. Limited communication on a topic that may be poorly defined.

Fail (0-29)

No evidence of effort or thought. The following Fail indicators will be used to award marks in the range 0-29.
F1: Confused and incoherent e.g. inability to correctly form grammatical sentences
F2: No discernible topic or realistic solution presented
F3: Shows no scientific understanding of the topic
F4: Shows no consideration or understanding of the audience demographic

c. Teaching materials:

CS10_Grand_Challenges_Intro_2022_23__1_.pptx

d. Other links or pertinent information

We feel this is a valuable opportunity for optionality in assessment because it connects students with current real-world biological challenges, thereby offering the opportunity for them to develop solutions with a tangible impact on a field they are studying giving them a sense of agency and a sense of the value of their scientific knowledge beyond the scope of their university-based studies. For example, students have proposed both local and larger scale initiatives that they could go on to seek funding for via different bodies, e.g., a university-based food waste app to improve the sustainability of self-catering campus accommodation. The optionality component additionally allows students to build skills specific to potential career routes that they are interested in, e.g., those interested in educational careers may choose to develop educational resources, as well as their wider transferable skills. The opportunities to connect with relevant employers throughout the assessment (e.g., from teaching, STEM industry partners and Community Interest Companies) via online videos during their assessment development, and in the "show and tell" assessment session itself gives students the chance to see how their proposed solutions connect with relevant employers, as well as learning about different career paths. Non-assessed questions from employers during the show and tell also help students to reflect on their transferable skills development throughout the semester, giving students the chance to see the value of their skill set in different job settings, as well as helping them to understand how the skills they have developed in their degree during their first year can be relevant to applications for summer placements or year in industry/placement opportunities throughout the rest of their degree.