

Reflective activities for Science Students

Nature and development of science

AC9S6H01

Examine why advances in science are often the result of collaboration or build on the work of others

Use and influence of science

AC9S6H02

Investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions

Example activity 1

Electronic quiz: Students work in teams to design and build a circuit-based machine that tests others' knowledge on a chosen topic. They must develop an effective format, ensure clear feedback for participants, and identify key problem-solving competencies needed for the task. Afterward, they reflect on what types of competencies are best for the task, what was missing from the task, and the competencies they developed through the process.

Reason for the design

Highlight the importance of planning: Groups that think more carefully about this task before undertaking it are likely to have better results. It is important to highlight this in later reflective discussions.

Content: This task requires students to think about the theory of electronics AND practicalities of circuit design ([AC9S6U03](#))

Timeframe: Sometimes, a simple activity is enough to encourage meaningful reflection. By providing the essentials for this task and integrating it at the end of a unit on circuits, you can keep it time-efficient while emphasising the thinking skills students apply throughout the process.

Reason for the design

Promote empathy for audience needs:

Empathy is required for good communication. This task allows students to reflect on what they view as good communication and understand what influences an audience.

Enable discussion on project management:

Students often lack agency in the way they attempt group tasks. This task is specifically flexible and will bring up a number of common obstacles (e.g. lack of resources, time management) which can be explored more explicitly after the experience. The aim is not the best output but a consideration of the processes leading to the output which can assist in future tasks.

Example activity 2

Socio-scientific issues: Students collaborate in teams to create a communication piece (e.g. print, video, art) presenting both sides of a significant scientific debate. They must consider the competencies required to create the piece, their target audience, and how to coordinate the tasks effectively. Their reflection will examine the production process and reasons why they made their choices, and include peer assessment of the final communication.

Example debate topics: AI in education, helmet laws, the environmental impact of 3D printing.