The BiL tool – science years 11–12

Science: Years 11–12

Communication and Collaboration

- Science is a global enterprise that relies on clear communication, international conventions, and review and verification of results.
- Collaboration between scientists, governments and other agencies is often required in scientific research and enterprise.

Development

- Development of complex scientific models and/or theories often requires a wide range of evidence from many sources and across disciplines.
- New technologies improve the efficiency of scientific procedures and data collection and analysis. This can reveal new evidence that may modify or replace models, theories, and processes.

Influence

- Advances in scientific understanding in one field can influence and be influenced by other areas of science, technology, engineering, and mathematics.
- The acceptance and use of scientific knowledge can be influenced by social, economic, cultural, and ethical considerations.

Application and Limitation

- Scientific knowledge, understanding, and inquiry can enable scientists to develop solutions, make discoveries, design action for sustainability, evaluate economic, social, and environmental impacts, offer valid explanations, and make reliable predictions.
- The use of scientific knowledge may have beneficial or unexpected consequences; this requires monitoring, assessment, and evaluation of risk, and provides opportunities for innovation.
- Science informs public debate and is in turn influenced by public debate; at times, there may be complex, unanticipated variables or insufficient data that may limit possible conclusions.

Pedagogical questions:

- What might happen if scientists communicate without using international conventions?
- How do scientists communicate with each other?
- Do scientists only communicate via a scientific report?
- Scientists ask lots of questions of each other and they can appear to be too critical to non-scientists. Why is this essential during peer reviews?
- How does the science community contest and refine ideas and/or claims? Why is this important?
- Why might a scientist want to repeat and build on someone else’s investigation?
- How does the science community develop a shared understanding?
- Why is it important to develop a shared understanding?
- Has there been an increase in the collaboration between countries to address this large-scale science project or issue?
- Why couldn’t it be achieved in Australia alone?