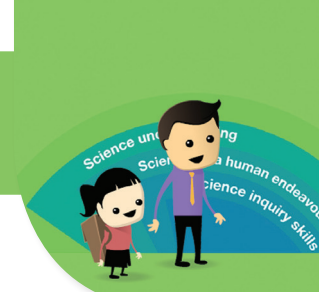# Science Bringing it to Life Year 9 –10
Student Questioning Tool

Ask these questions to help you think, work and process like a scientist.

What do you observe?

What are the observable differences?
What equipment might help to make observations? (camera)
What equipment can extend your senses? (hand lens, microscope)
What is interesting/unexpected/unexplained?

What changes over time and/or geographically?

What features/properties change over time and/or geographically?

What will you observe at a range of scales?

What do you see/hear/smell/taste/feel?
What features of properties will you observe and/or measure?
How often will you make your observations?
What more do you notice when you shift your perspective?

Will the data you select be reliable?

What do you notice about this data/information?
What secondary sources will you use to help your observations?

What patterns and relationships can you see?

What patterns and/or relationships do you see in the data?
Are there any anomalies?
What do you think is happening and why?
How could you generalise?

How did someone come up with this idea?
What is a challenging question you would ask a significant scientist from history?

Why would you ask that question?
How might technology contribute to our understanding of science?

How do models change over time?

How does this generalisation change over time?
How have the models of...changed over time?
How can I explore theories by gathering evidence and applying physical laws? How might equilibrium be affected by change?

What do you predict will happen?

What might happen if....?
What would happen if you added or removed…?
What do you think will happen next?
What is your hypothesis?
What do you already know that led to your prediction?
What other predictions might be plausible?
Scientists currently think… so how does this relate to your idea…?
What changes can we predict with accuracy?
How might someone else explain or interpret this same phenomena?

What investigations could you design?

**How will you change, measure and control variables?**

How might you test your predictions?
What could you try? Do you think you could…?
What kinds of tests can you design to help you answer your questions?
What should you consider in planning?
How will you measure and record the data?
How will you ensure the data is reliable, representative?
How will you consider fairness?
Which variable (independent) will you manipulate? Why?
Which variable (dependent) will you measure? Why?
Which variables will you keep constant? Why?

How can you measure accurately?

What equipment will you choose that will improve the accuracy in the data you collect?

What could you explore to test this theory?

How might collaboration be of use to scientists?
Where do you find connections across the disciplines?
How would your hypothesis have differed from that of a scientist?
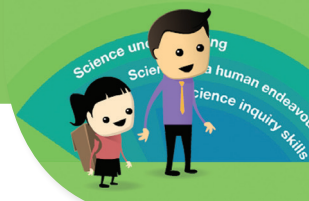
How can you review and communicate?

How does the science community develop a shared understanding?

How might you show other students the groupings you have decided on?
How might you represent these groups?
How does the data/evidence you have gathered compare with the current science understanding (theories)?

How can a model influence the way we think about science and help develop scientific theories?

How can you best represent the data?

How can you identify and communicate trends in the data?

How could you communicate ideas using appropriate language, conventions and representations for particular purposes?

How can you evaluate the fairness of your test/investigation?

How could you improve your test/investigation?

What could you do differently?

Were your results consistent with your hypothesis?

What could you change next time to get more accurate results?

How could you explain?

How might someone else explain or interpret this same phenomenon?

Has your prediction changed? How? How does it compare with your original hypothesis?

So what?
What next?

Which of your decisions might this understanding influence?
How?
What other science might help us understand this/make this decision?
What else could you/would you need
to investigate?
What new developments might this lead to?
Or new careers?
What do we still need to know?
Who decides what is valued to investigate?
Who might need to know this and why?
Who decides how the science is used?
Who might benefit? What is the 'cost'?
What would our lives be like if we didn't know this?

What technological changes have occurred as a consequence?

What if a particular technology had not been available?

How has technology changed the way we think about this scientific idea?