6. TESTING THE BIO-PLASTIC

1-2 HOURS

Until now children have not been able to make many choices as they have been following precise instructions to extract the starch and turn it into plastic. Now they will have the opportunity to ask, and answer, their own questions and to plan an investigation. Following a request from a company that specialises in sustainable products, they will think about possible uses for the finished bio-plastic. They will then test it to see if it is suitable for that purpose or whether it would need further research and development (for example to increase its durability).

TYPE OF ENQUIRY

Fair test

OBJECTIVES

To plan a test to assess the suitability of the bio-plastic for a specified purpose.

TO BE ABLE TO

Plan different types of scientific enquiriy to answer questions including recognising and controlling variables where necessary. Present findings from enquiries, including conclusions, casual relationships and explanations of the degree of trust in results, in oral and written forms.

SCIENCE VOCABULARY

test	investigate	results
plan	fair	

RESOURCES

Activity sheet: Letter

Several samples of bio-plastic for children to test and compare.

Any other resources needed will depend upon the investigations carried out by the children. It is therefore a good idea to give children an opportunity to plan their investigation in advance of the activity to give time to collect the necessary equipment together. However, you will need several samples of the bio-plastic so that children can compare how they perform under different conditions.

PRIOR KNOWLEDGE/EXPERIENCE

Children should have had experience of planning and carrying out various investigations. In particular, experience of observing over time and carrying out fair and comparative tests. They should also have experience of presenting their findings in a variety of ways including graphs, tables, photographs and letters.

ACTIVITY NOTES

Show children the letter from ReNEWables. Encourage them to work in pairs to discuss possible uses for the plastic.

Invite them to consider what properties the plastic would need if it were to be used for different purposes. For example, if it is to be used as a disposable bag it would need to be bio-degradable but it would also need to be relatively strong. If it was to be made into a bottle it would need to be waterproof.

Explain to children that they will be testing the bio-plastic to find out if it has the required characteristics. Children can then work in small groups (of no more than four) to decide which characteristic they will be testing, and how they are going to test it. At this stage you may find the ***CIEC online planning tool*** useful. This could first be used for a whole class demonstration of how it works before groups of children use it to plan their own line of enquiry.

Once children have planned their investigation they will need to decide what equipment they will need so that it can be collected together in advance.

It may well be that the investigations will take place over a period of time, for example to find out how quickly the material bio-degrades.

Once children have gathered the data ask them to work in their groups to consider how best to present their findings to ReNEWables UK. This could include tables, graphs and photographs. However, these will also need to be accompanied by a letter which will draw conclusions about what the results mean in terms of the products future potential as well as any suggestions for future tests that could be carried out by the children.

Take this opportunity to talk about the scientific process with children and how, once tests have been carried out, further questions are raised and which in turn lead to more tests. For example, if the plastic is not strong enough scientists might consider adding a new ingredient to find out if that helps to make it stronger.

It is unlikely that there will be any more time available in class to try out different ingredients. However, it is possible, especially if they have already made bio-plastic at home, that some children may wish to try out some different mixtures with their families.

QUESTIONS FOR THINKING

- What products could be made from bio-plastic?
- What properties would the product need?
- How will you test the bio-plastic?
- What will you measure?
- What will you change?
- What will you keep the same?
- How will you show your findings?
- What do your results tell you?