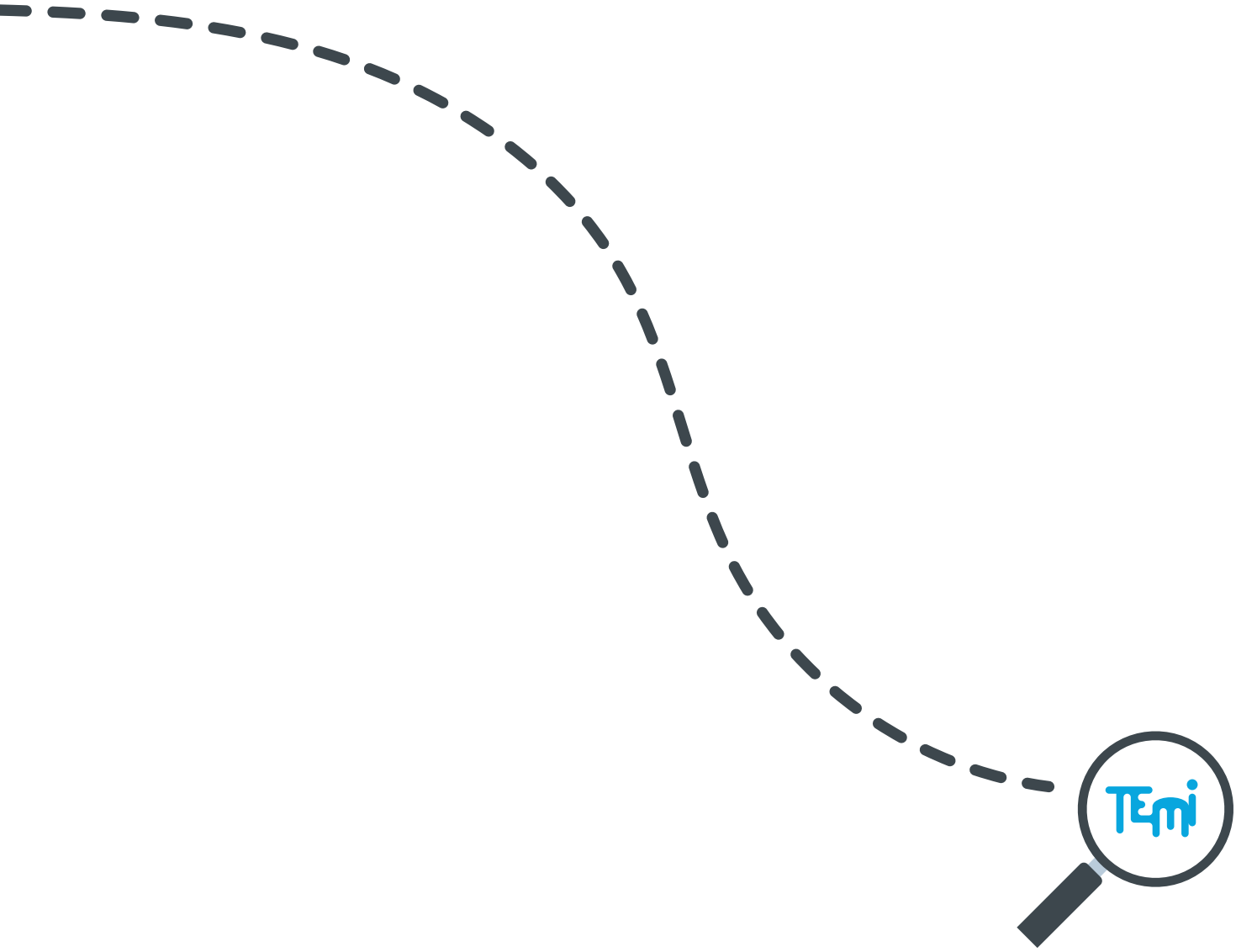
The Hypothesiser Lifeline & Characterisation sheet

CLASSROOM SCIENCE ACTIVITY TO
SUPPORT STUDENT ENQUIRY-BASED LEARNING



This classroom-tested teaching plan uses the four innovations of the TEMI project, as detailed in the Teaching the TEMI Way (TEMI, 2015).

You should read this companion book to get the most from your teaching. The **TEMI** techniques used in this teaching plan are: **1)** productive science mysteries, **2)** the **5E model** for engaged learning, **3)** the use of presentation skills to engage your students, and **4)** the apprenticeship model for learning through gradual release of responsibility. You might also wish to use the hypothesiser lifeline sheet (available on the **TEMI** website) to help your students document their ideas and discoveries as they work.

To know more about **TEMI** and find more resources **www.teachingmysteries.eu**

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The Hypothesiser Lifeline

The Hypothesiser Lifeline illustrated on the next page is an example of a cognitive scaffold that can be built into **TEMI methodology**. A cognitive scaffold summaries the processes students need to follow to carry out an enquiry skill. These have been used successfully in other subjects where the **TEMI GRR** model has been used. It is repeated student´s use of these strategies, which helps students internalise the thinking and move towards perform the enquiry skill on their own.

HYPOTHESIS 1

Things I can do to test this:

Results of test:

Reason for rejection/acceptance of hypothesis :

HYPOTHESIS 2

Things I can do to test this:

Results of test:

Reason for rejection/acceptance of hypothesis :

Hypothesiser Lifeline

OBSERVE
What did you see happen?

EXPLAIN
What is your hypothesis (idea) for why it happened? What science do you know to back up your idea?

TEST
If your idea is correct, and you do an experiment to test it (you decide what the experiment is). Then, what do you predict will happen?

CONCLUDE
What did you find out in your test? Can you conclude that your hypothesis is correct or wrong?

KEY WORDS

Hypothesis: Explanation of what you are going to test
Observation: What you can see (hear or smell)
Prediction: What you expect to happen
Conclusion: What you have found out

Construct Explanations Lifeline

1. WRITE DOWN YOUR OBSERVATIONS

Remember to use scientific words

2. RECALL ANY RELEVANT SCIENCE IDEAS

Search your memory for science ideas that could explain your observations. List a few below.

CHOOSE ONE IDEA

3. CONNECT THE IDEA TO YOUR OBSERVATIONS

Draw a picture wich connects the science idea to your observation.

DOES THIS IDEA HELP TO EXPLAIN YOUR OBSERVATIONS?

NO
CHOOSE ANOTHER IDEA

YES
WRITE THE EXPLANATION

4. WRITE A CLEAR AND ORGANISED EXPLANATION

I can explain (write down the part of the observation that the science idea can explain) using the science idea of... (idea)

Your explanation should include:

- ☐ What the science idea tells us in general
- ☐ What the science idea tells us was happening this case
- ☐ Which part of the observation the science idea can explain

KEY WORDS

Observation: What you can see (hear or smell)


The
Book of Science
Mysteries

Characterisation sheet

This sheet will help you to assess activities and characterise them with respect to the four TEMI innovations.
How to fill in the form:

① Start by discussing the **mystery**. By **mystery**, we don't mean the whole activity, but rather the scientific mystery at the base of the activity. Is the mystery productive? Is the phenomenon mysterious? Is the mystery relevant for IBSE?

② Continue to the **5E model**, which helps assess the **IBSE** aspect of the activity.
How does each of the 5Es get expressed in the activity? (Note: not all activities need to include each of the 5Es).

③ **Showmanship** can be evaluated using the ICE model. The ICE model evaluates three dimensions of the showmanship experience:

Interactivity: to what extent and in what ways are students (inter)active in the experience?

Classroom: what is the physical classroom arrangement? How are students seated? What physical props are needed?

Exposition: How does the teacher expose or present the activity? Is there use of a story? What voice does the teacher use to talk to the students?

The purpose of showmanship is to create a holistic experience. Thus, the three dimensions must merge to create an overall experience. Is this the case in the activity? If not, how can this be fixed?

④ **GRR**
Which skills can be developed in the activity? Mark which dimensions are currently supported in the activity and which dimensions you think the activity can support.

⑤ **Spider chart**

The spider chart can give an overall view of the expression of each innovation in the activity.

For each innovation, mark how you think the innovation is expressed:

1. there is little expression of the innovation in the activity.
2. there is some expression of the innovation in the activity.
3. there is substantial expression of the innovation in the activity.
4. the innovation is a major part of the activity.

Do so for each of the four innovations. Connect the lines and you will get a web. The web shows the strengths and weaknesses of the activity.

⑥ Under the table, you will also find a space for giving a star and for making a wish (see below). Next to the star, you may comment something in the activity that is particularly noteworthy. Next to the wish, you may suggest an improvement to the activity.

Give a Star ★
Make a Wish

Characterisation Sheet

Name of the Activity:

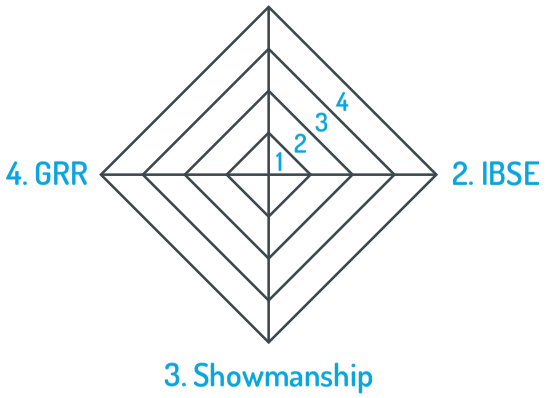
Group members:

1. THE MYSTERY

Is the mystery productive? Is the phenomenon mysterious? Is the mystery relevant for IBSE?	

4. GRR

Which of the following skill/s are currently developed in the activity (circle in the list below)? Which other skill/s could be developed in this activity (mark by an asterix)?	
Explore	Explore
Explain	Explain
Expand	Expand
Evaluate	Evaluate
Other:	



2. IBSE: THE 5E MODEL

Engage	
Explore	
Explain	
Expand	
Evaluate	

3. SHOWMANSHIP - THE ICE MODEL

Interactivity (Student)	
Classroom arrangement (Physical)	
Exposition (Teacher)	
Do the ingredients merge well to form a good ICE experience?	

Give a Star ★	
Make a wish	