WORKSHEET: *PUT THE SLIDES TO ONE SIDE*

This task will empower you to make *science the protagonist* of your story when presenting to public audiences or in formal education contexts. Your challenge (should you choose to accept it) is to *Put the slides to one side* and instead use props, demonstrations or models to explain scientific concepts or theories.

Part One: Designing your demonstration (using an experiment, prop and/or model)

The worksheet that follows will help to guide you through the development of your demonstration. Some aspects of this worksheet have been guided by a blog by Alom Shaha[1] building on an essay by David A. Katz[2] which both focus on science demonstrations for teaching rather than science communication.

Before designing your demonstration:	
Topic What is the scientific concept you would like to explain in your demonstration?	
Learning What are the key aspects of this concept that you hope to illustrate and understand through this demonstration?	
Audience Who is the intended audience for your demonstration? e.g. age? Background?	

How will you make sure your demonstration is suitable for your audience?	
Purpose What are the learning or science communication objectives you hope to achieve with your demonstration? **If the demonstration is used with students, is it relevant to the syllabus or learning outcomes?**	
Planning your demonstration	
Safety is paramount when designing and executing your demonstration. Be sure to check the relevant safety documentation for your institution and for the location where you will share your demonstration. Note down any safety considerations here so that they are ready for your risk assessment.	
Materials What do you need to create your demonstration? Consider budget/availability and factors such as sustainability. Is your equipment reusable or will you have to build it each time you use it?	

Sketch Draw out a step by step diagram and scripted explanation for each stage of your demonstration. You may want to create a storyboard on a separate piece of paper or using a digital tool.	

WORKSHEET: PUT THE SLIDES TO ONE SIDE

Time Do you have enough time to create your demonstration and to practice adequately? Create a time plan for your project. How will you ensure you keep to 90 seconds?	
Backup Do you need some extra pieces in case something breaks or a spare set of batteries etc.	
Creating your demonstration	
Write your script Be sure that you know how to explain your demonstration correctly. Use this space to sketch out a draft script.	

WORKSHEET: PUT THE SLIDES TO ONE SIDE

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Practice makes perfect Be sure to rehearse your demonstration and script so that you are confident and clear when showing it to a larger audience. Make sure that it is reproducible too.	
Performance (adapted from[1&2]) How will you engage your audience even more? Jokes, costumes, props, narrative, surprises? Think about how to make your demonstration more memorable so that the science sticks too!	
Checklist	
Is the demonstration interesting and engaging? Some things to consider: ***Connection to content*** Make sure your demonstration supports the content that you are trying to communicate. ***Simplicity vs Complexity*** A simple demonstration can be very helpful to break down the complexities of your content or serve as an analogy for your topic, but it's important to be aware of potential misconceptions. Alternatively, if you	

choose to perform a complex demonstration or to introduce a complex piece of apparatus, take the time needed to introduce how it works and the history of its invention or utilisation. ***Technology*** Use technology familiar to your audience to increase engagement. For example, consider using mobile phones as measurement devices or as tools to encourage the audience to record the demonstration.[3] ***Exciting or an element of surprise*** Try to introduce something surprising into your demonstration	
Safety - MOST IMPORTANT Make sure you have completed your risk assessment and discussed this with your teacher and other colleagues.	

Remember that even with careful practice and planning, sometimes demonstrations don't quite go to plan. Don't worry too much if this happens. You could prepare a recording of your demonstration just in case or explain what *should* have happened and *why* it didn't go to plan.

Extension Exercise

Create an illustrated worksheet or video to help others to recreate your demonstration including your script and science explanations. You could also create a student/audience worksheet to support them to learn more about your topic.

References

1. The Use of Demonstrations in Science Teaching, Alom Shaha, 9 April 2012
2. The Art of Effective Demonstrations, David A. Katz, from Chemical Principles Visualized, 2002, 2005
3. Gordon, T., Georgiou, H., Cornish, S., & Sharma, M. (2019). Science in your pocket: Leaving high school students to their own 'devices' while designing an inquiry-based investigation. *Teaching Science*, *65*(1), 17-25.

Part Two: Addressing the Class Rubric

This part of the worksheet should be edited to include the categories emerging from the class rubric so that students can make notes about how their demonstration addresses the marking criteria. This should be submitted by the student prior to the presentation session.

Class Rubric	
Criteria 1 [EDIT]	
Criteria 2 [EDIT]	
Criteria 3 [EDIT]	
Criteria 4 [EDIT]	
Criteria 5 [EDIT]	
Criteria 6 [EDIT]	
Criteria 7 [EDIT]	
Criteria 8 [EDIT]	

WORKSHEET: PUT THE SLIDES TO ONE SIDE

Part Three: Student Reflection

In the worksheet that follows, you will be guided to reflect on what you have learnt through this exercise. Please complete the following questions:

Reflection: My Demonstration	
Describe the scientific concept you chose for your demonstration.	
How do you think the development of your demonstration impacted your understanding of your chosen topic?	
Do you think your demonstration was suitable for your audience and purpose? Please provide reasons for your answer.	

WORKSHEET: PUT THE SLIDES TO ONE SIDE

Is there anything you would do differently if repeating this exercise?	
What methods/principles did you use in the creation of your demonstration? How might these be transferable to different communication contexts?	
What skills did you learn during the creation of your demonstration? How might these be transferable to different communication contexts?	

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