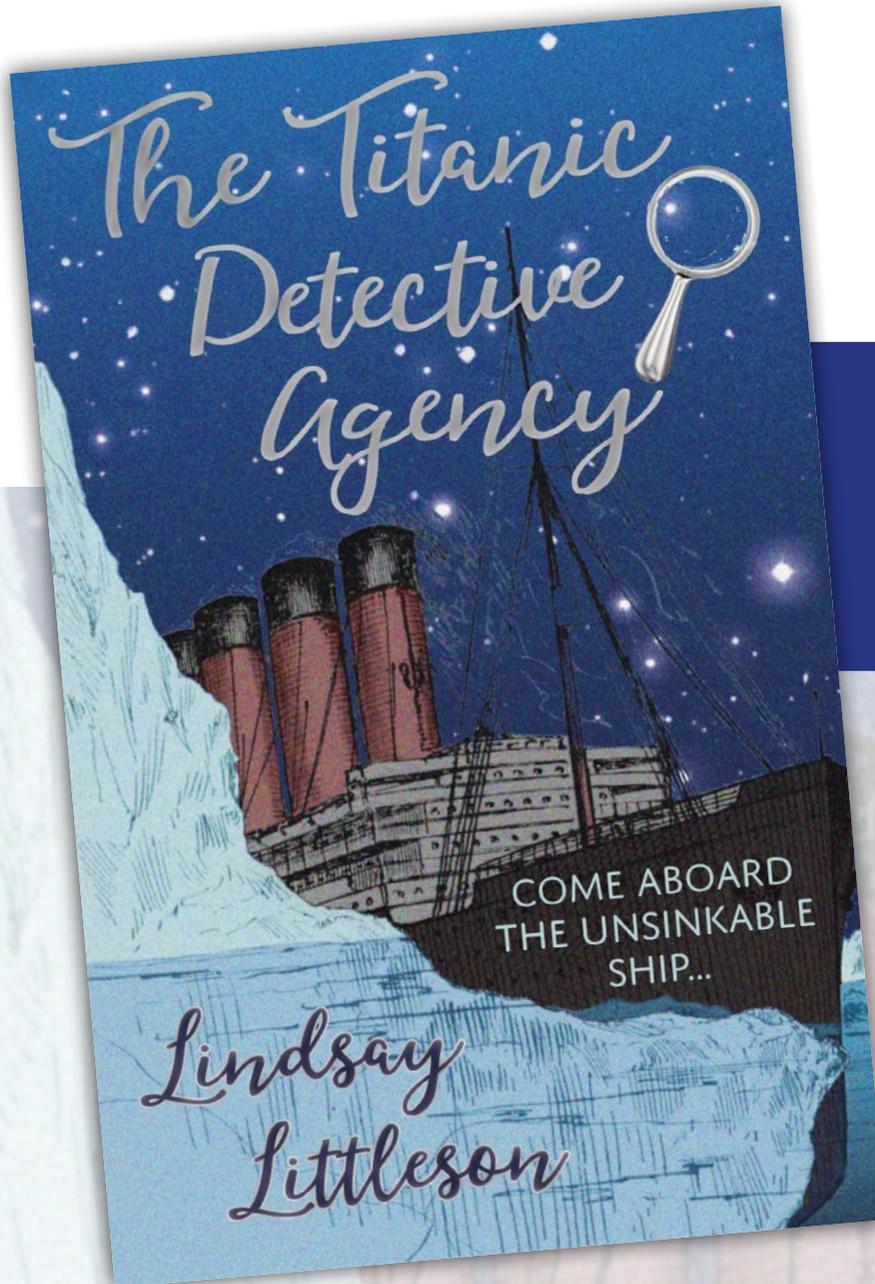




# STEM By The Book

## The Titanic Detective Agency Lindsay Littleson



### Experiences and Outcomes

I can identify my senses and use them to explore the world around me. [SCN 0-12a](#)

I can have explored my senses and can discuss their reliability and limitations in responding to the environment. [SCN 1-12a](#)

I have explored the structure and function of sensory organs to develop my understanding of body actions in response to outside conditions. [SCN 2-12a](#)

## Resources

### Effects of cold water on the body

- Plastic tank/bowl
- Paper
- Ice cubes
- Pen/pencil
- Access to water
- Nut and Bolt
- Plastic/wooden stacking cubes
- Stopwatch/timer/phone
- Paper towels

## Activity – Effects of cold water on the body

In the novel Johan talks of the shock he feels when the cold water hits his body and the numb feeling it causes in his arms and legs. This investigation lets learners experience the effects of cold water on the body for themselves.

Prepare by placing ice cubes and cold water into your bowl or tank, making sure it is deep enough to allow learners to submerge their hand easily.

**Stacking Cubes** – using just one hand see how many cubes you can stack on top of each other in 20 seconds, use a stopwatch or other timing device and record your results (Figure 1).

Now submerge the hand that was used to stack the cubes into the icy water for as short period of time. We recommend around 25 seconds, do not encourage learners to keep their hands in cold water for longer than they feel comfortable.

On removing your hand from the water, dry it off as quickly as possible and repeat the stacking cube challenge.

**Nut and Bolt** – take a threaded nut and bolt and start off having them unscrewed and separated. Time how long it takes to thread the nut and screw it all the way along the bolt (Figure 2).

Now submerge both hands into the icy water for roughly 25 seconds, quickly dry your hands and repeat the activity. Did it take longer this time? What do you think is happening to your body?

**Pen and Paper** - Another simple activity to demonstrate the effect of cold water on the body is to write a short note using a pen or pencil and paper both before and after submerging the writing hand in icy water.

Has the handwriting changed?  
Can you explain why?



Figure 1



Figure 2



## Hints and Tips

Keep plenty of paper towels nearby to mop up any spillages and to dry off wet hands.

Make predictions before carrying out each activity.

## What Next?

Think more about what happens to the body in cold conditions, what do you think would happen to your heart rate?

You can investigate this by taking a pulse before and after exposure to cold water or you could use a sports watch, which measures heart rate, to show the effects.

Why not think about investigating materials that aid survival in cold water. Look at wet suits and dry suits, how do they work? Find out more at [National Geographic](#).

Another famous Ship the RRS Sir David Attenborough is used in polar exploration. STEM Learning have created a range of STEM resources linked to the in its [Polar Explorer Programme](#).

A full activity pack for Polar Explorer can be found [here](#).



To see videos of all the activities mentioned here and more ideas linked to the Titanic you can visit the [Primary Science Teaching Trust](#).

