sequence overview

ENGAGE → EXPLORE → EXPLAIN → ELABORATE

Background

These SPICE resources may be drawn together into a learning pathway to develop students' understanding of buffers. The pathway is structured around a constructivist model based on the 5-Es where teachers may:

- **Engage** students' interest in the concept of buffers. Students watch a video about changes in pH in the human body during exercise and the need to keep pH levels constant.
- Provide opportunities for students to **Explore** the buffering ability of different muscles. Students perform an experiment, then analyse their data graphically to find how different muscles vary in their ability to buffer.
- **Explain** the concept of buffering. Students use an animation to examine how a buffer works. A worksheet links these concepts back to buffering in the body.
- **Elaborate** on the ideas presented. Students apply their knowledge of buffering to the context of ocean acidification and possible environmental consequences facing marine ecosystems.
- **Evaluate** students' progress through the pathway.

The resource is designed for students studying year 12 chemistry, but may also be used with students in earlier years at the discretion of the teacher.

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Buffers 1: pH control in the body

pH control in the body includes a teachers guide, background sheet and video.

This resource introduces students to buffers. It shows how the body's pH changes during exercise and explains the need for buffering to sustain athletic performance. This resource can also be used to explore the role of science in society. See the teachers guide for detailed information on the purpose and use of this resource.

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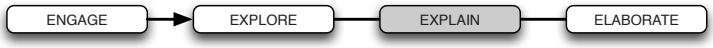
Buffers 2: Buffering ability of muscles

Buffering ability of muscles comprises a teachers guide and student procedure sheet with questions.

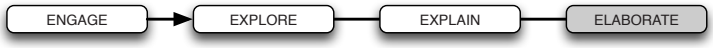
Students measure the buffering capacity of different muscles of a chicken. This exploration leads students to question how buffering occurs. See the teachers guide for detailed information on the purpose and use of this resource.



Buffers 3: Explaining buffers

Explaining buffers comprises a teachers guide, learning object and student worksheet.

This resource uses an interactive learning object to explain what a buffer is and how it works. Students answer questions on an accompanying worksheet to check their understanding and link theory back to the context of buffering in the body. See the teachers guide for detailed information on the purpose and use of this resource.



Buffers 4: Buffering in the ocean

Buffering in the ocean comprises a teachers guide, student worksheet, fact sheet and procedure sheet.

This resource extends and applies students' understanding of buffering in the context of ocean acidification. Students examine scientific data, read about the research of two scientists investigating ocean acidification and its possible consequences, then conduct an experiment to compare the buffering capacity of seawater and freshwater. See the teachers guide for detailed information on the purpose and use of this resource.

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Banner image:

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