

Exploring the effect of Augmented Reality on Cognitive Load, Spatial Ability and Chemistry Achievement.

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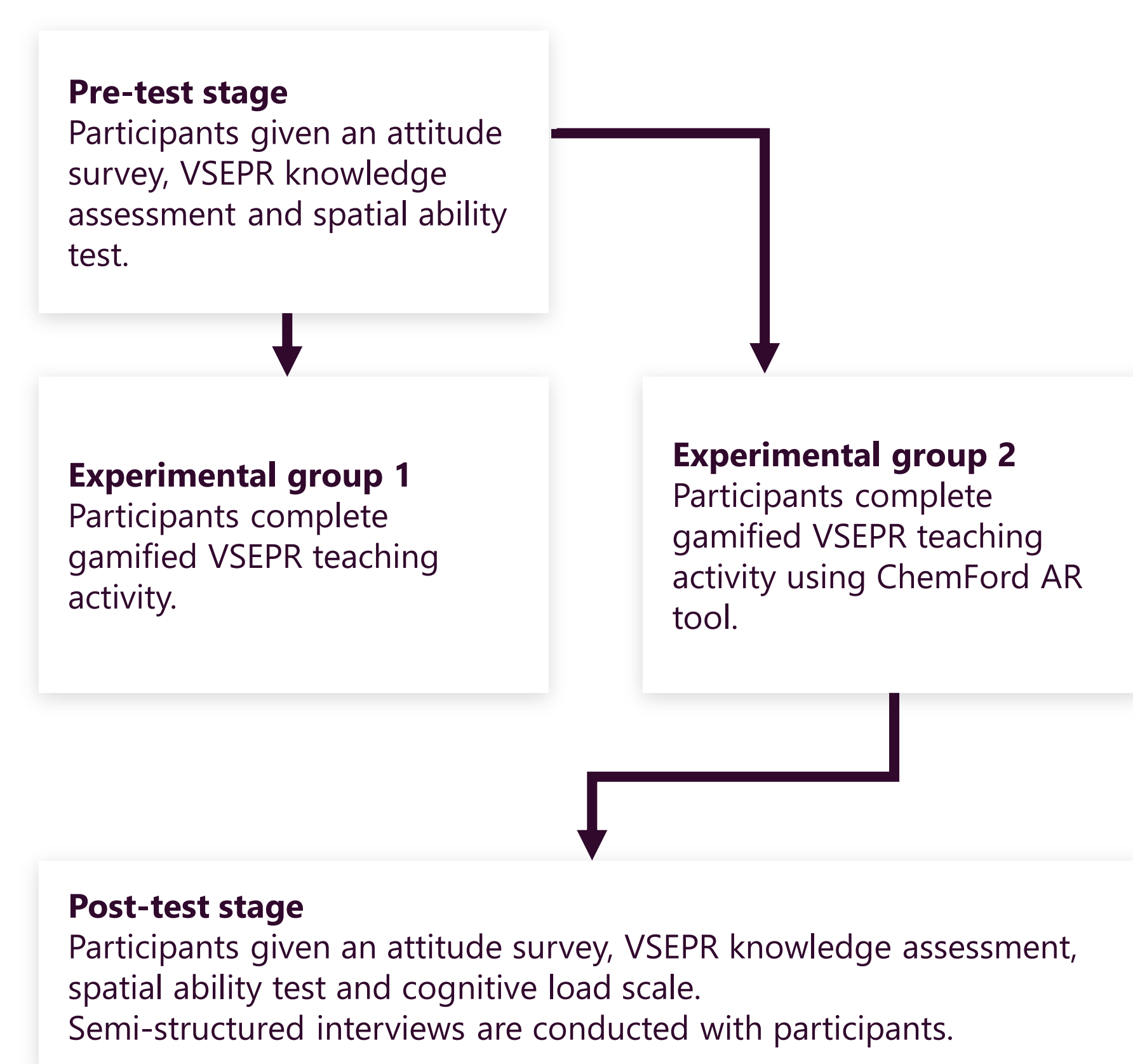


PRESENTER:
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BACKGROUND:

Augmented reality (AR) can be coupled with gamified teaching approaches to improve students' understanding of the topics of VSEPR.

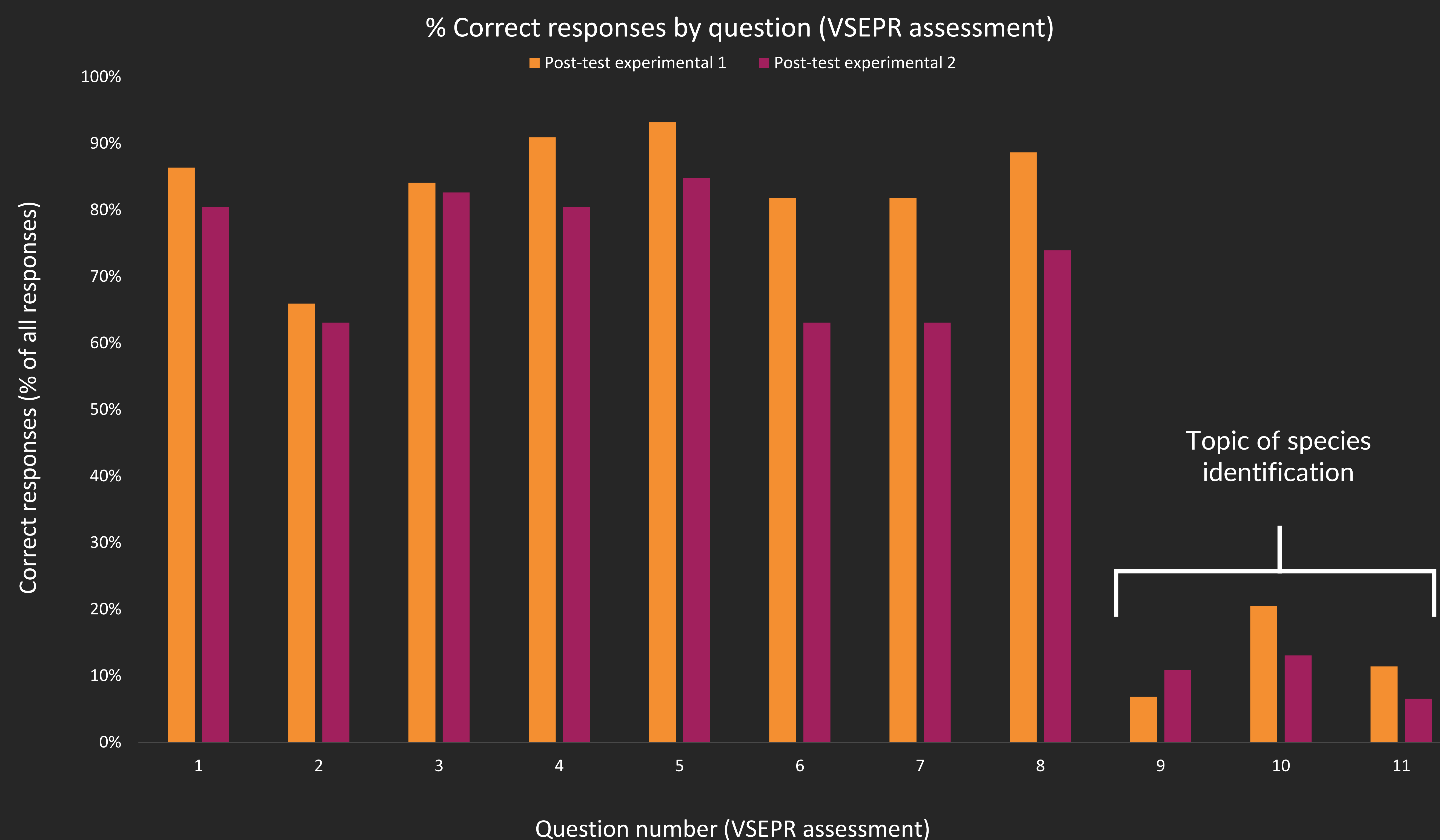
METHODS



RESULTS

- Both experimental groups displayed significant improvement in the VSEPR knowledge assessment following the activity ($p < 0.01$).
- Experimental group 1 displayed significantly better results when identifying molecular geometries ($F = 5.058$, $p = 0.027$).
- There were no significant differences between the cognitive loads as expressed by both experimental groups.
- There was a moderate correlation found between spatial ability and VSEPR knowledge assessment result ($r_s = 0.416$, $p = 0.007$).

Students can recognise geometries and appreciate bond angles, but struggle to identify the shape adopted by chemical species.



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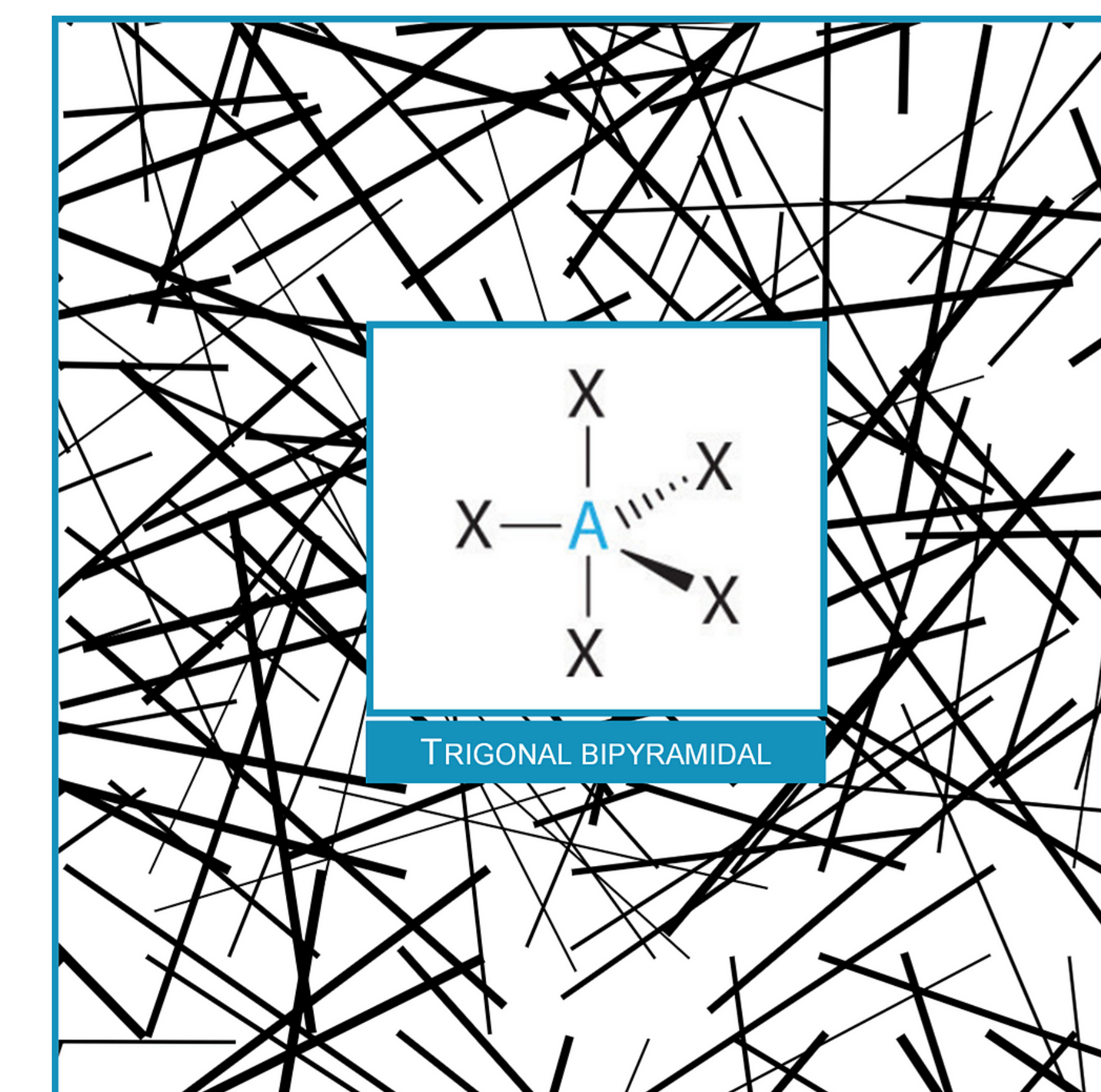


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THE ACTIVITY:

A gamified approach where students' utilise higher-order cognitive skills to analyse and evaluate concepts of VSEPR.



ChemFord required to scan image target!

INTERVIEW RESPONSES

Thematic analysis of the collected data gave rise to three prominent themes:

Supporting the learning experience

- Students enjoyed the challenge, felt more confident on the topic content.
- Promoted active learning in an online learning environment.
- Multiple contexts were perceived as important for learning!

Augmented reality as an asset

- Increased understanding of topics from enhanced perspective.
- Ability to manipulate virtual objects (scaling/rotating/moving) promotes active learning.
- Assists the challenge of mental visualisation.

Challenges of integration

- Online aspect of activity presents a challenge for social interactivity.
- Further exposure of the augmented reality tool to students is required.