



Teaching Geoscience with Video Games



Level up your lectures!

If you gave your students a choice of either a textbook or a video game, which would they choose?

Video games are not only extremely entertaining pastimes, but they also have the potential to be very powerful educational tools. Especially for geoscience! Countless popular games see players explore amazing volcanic landscapes, digging up mineral deposits and interacting with dinosaurs (both alive and dead). Not only are they having fun but they might also learning. With the help of teachers, they could learn even more by realising the truth behind what they see!

Tangential Learning

The process by which people self-educate around a topic if it is exposed to them through something they already enjoy. Video games are a perfect medium to expose students to geoscience and stimulate tangential learning.

Many games do not explain much of the science behind things, meaning that additional research is required to understand the full picture. By hooking the student's interest with a video game, they could easily be prompted to conduct their own learning at home.

Workshop Exercise

Analyse the volcanology shown in four short clips from popular video games, including Pokémon, Mario Kart and Legend of Zelda. Fill in the table provided with your observations.

This could be expanded on by asking whether or not the features are scientifically accurate or not. Provide real-world examples of these features. How do they compare?

In other scenarios, students could asked to write a piece on features found within a video game as a homework piece. Or, groups could give presentations to the class about the different features found in a single game. If they do not have access to a game, YouTube has thousands of video game walkthroughs that can be a quick, free alternative.

Further Reading

- Extra Credits: Tangential Learning – How Games Can Teach Us While We Play (*YouTube*)
- BGS: 3D geological models in Minecraft (www.bgs.ac.uk)
- McGowan & Scarlett: Volcanoes in Video games: The portrayal of volcanoes in commercial off-the-shelf (COTS) video games and their learning potential, 2021 (*Geoscience Communication*)
- McGowan & Alcott: The Potential for Using Games to Teach: Learning about the geology and geomorphology of Hokkaido (Japan) from playing Pokémon Legends: Arceus, 2022 (*Geoscience Communication*)
- Jane Robb: The Geology of Skyrim: An unexpected journey (www.blogs.egu.eu)



Have any questions?

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Workshop 3: Teaching Geoscience With Video Games

Task: You will be shown four short video clips from popular commercial video games. Each video includes several volcanic features. Fill in the table below with information on each feature seen (whether scientifically accurate or not).

Video Game	Volcano Type, Shape, other comments	Ash Plume Shape, Ashfall, Hazard Impact, other comments	Lava Molten/Cooled, Volume, Hazard Impact, other comments	Other Volcanic Features Bombs, PDC, Resurgence etc
Pokémon Legends: Arceus – Firespit Island				
Mario Kart – Grumble Volcano				
Legends of Zelda: Breath of the Wild – Death Mountain				
New Pokémon Snap: Fireflow Volcano				

Workshop 3: Teaching Geoscience With Video Games

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Pokémon Legends: Arceus – Firespit Island	<i>Stratovolcano within a collapsed crater/edifice. Very steep cone.</i>	<i>N/A</i>	<i>Pools of molten lava within larger crater 2 people standing near the lava.</i>	<i>Pockets of 'steam' within larger crater. Lava tunnel. Outwash beach.</i>
Mario Kart – Grumble Volcano	<i>Conical stratovolcanoes (multiple)</i>	<i>One plume from the first active volcano.</i>	<i>Lava pouring down volcanoes. Massive lava pool everywhere else.</i>	<i>Lava tunnel. Active explosion releasing bombs. Earthquakes.</i>
Legends of Zelda: Breath of the Wild – Death Mountain	<i>Stratovolcano. Very steep.</i>	<i>Ash 'particles' floating in the air. Sometimes rising.</i>	<i>Multiple lava flows pouring down the slopes.</i>	<i>N/A</i>
New Pokémon Snap: Fireflow Volcano	<i>Stratovolcano (far in the background)</i>	<i>Very large ash plume. Red close to vent, grey further away. Wind blown. Dark grey sky everywhere.</i>	<i>Molten flows at vent. Partially molten lava flow further away. Does not break when trampled.</i>	<i>Multiple species living in the volcanically active region.</i>