

Subject Area: Environmental Science
Unit Title: Climate Change and Cultural Heritage
Grade Level: 9th Grade
Lesson Number: 1 of 10

Duration: 60 minutes
Date: March 10, 2023
Teacher: Ms. Jane Smith
Room: 205

Curriculum Standards Alignment

Content Standards:

- Understand the impact of climate change on cultural heritage
- Analyze the effects of climate change on cultural monuments and traditional practices

Skills Standards:

- Critical thinking and problem-solving
- Communication and collaboration

Cross-Curricular Links:

- History
- Geography
- Science

Essential Questions & Big Ideas

Essential Questions:

- What are the impacts of climate change on cultural heritage?
- How can we protect cultural heritage from the effects of climate change?

Enduring Understandings:

- Climate change has significant impacts on cultural heritage
- Cultural heritage is an important part of our identity and must be protected

Student Context Analysis

Class Profile:

- Total Students: 25
- ELL Students: 5
- IEP/504 Plans: 3
- Gifted: 2

Learning Styles Distribution:

- Visual: 40%
- Auditory: 30%
- Kinesthetic: 30%

Pre-Lesson Preparation

Room Setup:

- Arrange desks in a U-shape to facilitate discussion
- Set up a projector and screen for video presentation

Technology Needs:

- Computer with internet access
- Projector and screen

Materials Preparation:

- Whiteboard markers
- Handouts with guided notes

Safety Considerations:

- Ensure students are seated safely during video presentation

Detailed Lesson Flow

Introduction (10 minutes)

- Introduce the topic of climate change and cultural heritage
- Ask students to share their prior knowledge

Video Presentation (20 minutes)

- Show a video on the impacts of climate change on cultural heritage
- Have students take guided notes

Engagement Strategies:

- Ask students to identify the main points of the video
- Have students discuss the video in small groups

Guided Practice (20 minutes)

- Have students work in groups to analyze a case study of a cultural monument affected by climate change
- Have students present their findings to the class

Scaffolding Strategies:

- Provide students with a graphic organizer to guide their analysis
- Have students work in pairs to complete the graphic organizer

Independent Practice (20 minutes)

- Have students write a reflection on what they learned about climate change and cultural heritage
- Have students brainstorm ways to protect cultural heritage from the effects of climate change



Closure (10 minutes)

- Review the main points of the lesson
- Ask students to share their reflections and ideas for protecting cultural heritage

Differentiation & Support Strategies

For Struggling Learners:

- Provide additional support during guided practice
- Offer one-on-one instruction during independent practice

For Advanced Learners:

- Provide additional challenges during independent practice
- Encourage students to research and present on a topic related to climate change and cultural heritage

ELL Support Strategies:

- Provide visual aids and graphic organizers to support comprehension
- Offer one-on-one instruction during guided practice

Social-Emotional Learning Integration:

- Encourage students to reflect on their own emotions and thoughts about climate change and cultural heritage
- Have students work in groups to brainstorm ways to protect cultural heritage and promote social-emotional learning

Assessment & Feedback Plan

Formative Assessment Strategies:

- Observe student participation during group work
- Review student reflections and ideas for protecting cultural heritage

Success Criteria:

- Students can explain the impacts of climate change on cultural heritage
- Students can identify ways to protect cultural heritage from the effects of climate change

Feedback Methods:

- Provide verbal feedback during group work
- Write feedback on student reflections and ideas for protecting cultural heritage

Homework & Extension Activities

Homework Assignment:

Have students research and write a short paper on a topic related to climate change and cultural heritage

Extension Activities:

- Have students create a public service announcement about the importance of protecting cultural heritage from climate change

- Encourage students to participate in a local event or project related to climate change and cultural heritage

Parent/Guardian Connection:

Send a letter to parents/guardians explaining the lesson and asking for their support in reinforcing the importance of protecting cultural heritage

Teacher Reflection Space

Pre-Lesson Reflection:

- What are my goals for this lesson?
- What challenges do I anticipate?
- What strategies will I use to support struggling learners?

Post-Lesson Reflection:

- What went well?
- What would I change?
- What strategies were effective in supporting student learning?

What is Climate Change?

Climate change refers to the long-term warming of the planet due to an increase in average global temperature.

This warming is primarily caused by the increasing levels of greenhouse gases in the Earth's atmosphere, such as carbon dioxide and methane.

What is Cultural Heritage?

Cultural heritage refers to the tangible and intangible aspects of a culture, including monuments, artifacts, traditions, and customs.

Cultural heritage is an important part of our identity and plays a significant role in shaping our values, beliefs, and practices.

The Impact of Climate Change on Cultural Heritage

Climate change poses a significant threat to cultural heritage, as rising temperatures, sea-level rise, and extreme weather events can damage or destroy cultural monuments and artifacts.

Additionally, climate change can also impact the intangible aspects of cultural heritage, such as traditions and customs, as communities are forced to adapt to changing environmental conditions.



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Case Study - The Impact of Climate Change on the Ancient City of Petra

Introduction to Petra

Petra is an ancient city located in Jordan, known for its rock-cut architecture and stunning natural surroundings.

The city was once the capital of the Nabataean Kingdom and is now a UNESCO World Heritage Site.

The Impact of Climate Change on Petra

Climate change is having a significant impact on Petra, as rising temperatures and changing precipitation patterns are causing erosion and damage to the city's rock-cut structures.

Additionally, the increased frequency of extreme weather events, such as floods and landslides, is also posing a threat to the city's stability and integrity.

Conservation Efforts

Efforts are being made to conserve and protect Petra from the impacts of climate change, including the implementation of sustainable tourism practices and the development of climate-resilient infrastructure.

Additionally, researchers and conservationists are working to monitor and mitigate the effects of climate change on the city's rock-cut structures and surroundings.

Introduction

Protecting cultural heritage from climate change requires a multi-faceted approach that involves governments, communities, and individuals.

This can include measures such as conservation and restoration of cultural monuments, adaptation of cultural practices and traditions, and education and awareness-raising about the importance of cultural heritage and the impacts of climate change.

Conservation and Restoration

Conservation and restoration of cultural monuments and artifacts is critical to protecting cultural heritage from climate change.

This can involve measures such as stabilizing structures, repairing damage, and protecting against erosion and weathering.

Adaptation of Cultural Practices and Traditions

Adapting cultural practices and traditions to climate change is also important for protecting cultural heritage.

This can involve measures such as modifying traditional agricultural practices, developing climate-resilient infrastructure, and promoting sustainable tourism.

Summary

In conclusion, climate change poses a significant threat to cultural heritage, and it is essential that we take action to protect it.

This can involve measures such as conservation and restoration of cultural monuments, adaptation of cultural practices and traditions, and education and awareness-raising about the importance of cultural heritage and the impacts of climate change.

Recommendations

Based on the findings of this lesson, it is recommended that:

- Governments and communities take action to conserve and protect cultural heritage from climate change
- Individuals take steps to reduce their carbon footprint and mitigate the impacts of climate change
- Education and awareness-raising about the importance of cultural heritage and the impacts of climate change be promoted

List of References

- IPCC (2019). Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.
- UNESCO (2019). World Heritage and Climate Change.
- National Oceanic and Atmospheric Administration (2020). Climate Change: How Do We Know?

Appendix A: Graphic Organizer

Graphic organizer for students to use during the lesson

Appendix B: Worksheet

Worksheet for students to complete during the lesson

Index of Terms

- Climate change
- Cultural heritage
- Conservation
- Restoration
- Adaptation