Physics in Place: A Cultural and Scientific Analysis

Written Research Assignment

Nanmo Physics

March, 2025

Purpose

To explore the intersection of physics principles and cultural significance in your local environment through written analysis and visual documentation. This assignment recognizes that understanding place—as both a physical and cultural entity—is fundamental to Indigenous knowledge systems and perspectives, particularly First Peoples' holistic approaches to understanding the natural world.

Required Sections

1. Introduction

- Overview of chosen place/structure/system
- Brief historical context
- Thesis statement connecting physics concepts from our course to cultural significance
- Acknowledgment of whose traditional territories the place exists within

2. Physical Analysis

- Detailed explanation of at least two physics principles from our course present
- Supporting calculations and measurements
- Technical diagrams or photographs with detailed captions explaining physics concepts
- Analysis of how physical properties contribute to the structure's function

3. Cultural Significance

- Historical background and importance to local community
- Traditional knowledge and practices associated with the place
- Documentation of community perspectives (with appropriate permissions)
- Analysis of how physics understanding contributed to traditional practices
- Discussion of First Peoples' relationships to this place (where applicable)

4. Integration Analysis

- Discussion of how physical properties and cultural significance intersect
- Examination of traditional knowledge systems and modern physics understanding
- Analysis of how place contributes to community identity
- Reflection on different ways of knowing and understanding the natural world

5. Reflection

- Personal insights on the relationship between physics and culture
- Discussion of learning experience
- Broader implications for understanding physics in cultural context
- How this project has influenced your own connection to place

Community Consultation Guidelines

Approaching Community Members

1. **Research Before Contacting**: Learn about appropriate protocols for the specific community you wish to consult with before making contact.
2. **Proper Introductions**: Begin by introducing yourself, your school, the purpose of your project, and how their knowledge will be used and credited.
3. **Respect for Knowledge Keepers**: When approaching Elders or knowledge keepers, follow community protocols which may include:
    - Bringing a small gift as a token of respect (e.g., tea, tobacco, or other culturally appropriate offerings)
    - Speaking in a respectful manner and listening more than speaking
    - Being patient and allowing time for stories and context
4. **Informed Consent**: Clearly explain how any information shared will be used in your project and obtain written permission using the provided consent forms.
5. **Review and Approval**: Offer to share your draft with contributors before final submission to ensure accurate representation of their knowledge.

Format Requirements

- Length: 1500-2000 words
- Structure: Research paper format with clear sections
- Visuals: Minimum 4 original photographs/diagrams with detailed captions
- Citations: APA format
- Font: 12-point Times New Roman, double-spaced
- Digital submission in PDF format

Research Requirements

- Minimum 4 academic sources
- Minimum 2 community sources (interviews, local documents, webistes)
- Proper documentation of all consultations

Emerging	
Description	Student demonstrates basic understanding of physics concepts and cultural research methods, requiring significant guidance to complete tasks. Work shows initial attempts to connect physical and cultural elements but lacks depth and independence.
Skills and Abilities	• Identifies basic physics principles in chosen location with substantial guidance and support • Conducts preliminary research using provided sources and basic documentation methods • Creates simple visual documentation with basic captions that need significant revision • Makes surface-level connections between physical properties and cultural significance • Submits work more than 3 days late without communication, uses incorrect file formats, and leaves significant work incomplete

Developing	
Description	Student shows growing comprehension of both physics concepts and cultural analysis, requiring moderate guidance. Work demonstrates increasing ability to make connections and conduct independent research, though analysis remains somewhat superficial.
Skills and Abilities	• Explains fundamental physics principles with some accuracy, occasionally needing correction • Conducts research using recommended sources and follows documentation guidelines with reminders • Produces clear visual documentation with descriptive captions that address both physics and culture • Draws meaningful connections between physical properties and cultural significance with some guidance • Submits 1-2 days late or requests last-minute extensions while generally following format requirements and completing most work, though it may be rushed

Proficient	
Description	Student demonstrates solid understanding of physics concepts and cultural research methods, working independently with minimal guidance. Work shows thorough analysis and clear connections between physical and cultural elements.
Skills and Abilities	• Accurately analyzes and explains physics principles present in chosen location with supporting evidence • Independently conducts comprehensive research using diverse academic and community sources • Creates high-quality visual documentation with detailed, informative captions that integrate concepts • Develops clear, well-supported connections between physical properties and cultural significance • Submits on time with proper formatting, communicates about potential delays, and completes all components thoroughly

Extending	
Description	Student exhibits exceptional understanding of physics principles and cultural research methods, working independently and showing initiative. Work demonstrates sophisticated analysis, original insights, and seamless integration of physical and cultural elements.
Skills and Abilities	• Provides sophisticated analysis of physics principles with innovative applications and insights • Conducts extensive research that exceeds requirements, incorporating unique perspectives and sources • Produces outstanding visual documentation with comprehensive captions that enhance understanding • Develops complex, nuanced connections between physical properties and cultural significance • Submits quality work ahead of deadlines, maintains clear communication, prepares well for known absences, and creates systems for tracking requirements