The Institute for Native Serving Educators

Bridging Tradition and Innovation: Exploring Hopi Culture through Digital Mapping

Laura Dale

Culturally Sustaining Investigative STEM (CSIS)

2025

Author Note:

Laura Dale is an 8th through 12th grade teacher at Hopi JrSr High School. Correspondences about this curriculum unit can be addressed to Laura Dale, PO Box 2043, Keams Canyon, AZ. 86034. Email contact: ldale@hjshs.org

TOPIC AND CONTENT

This curriculum unit centers on integrating Hopi cultural heritage with modern technology, empowering students to create a website using Google Sites to document and highlight significant Hopi cultural sites. Through the integration of GIS mapping, students will develop interactive maps that pinpoint important cultural landmarks while embedding narratives, images, and other multimedia elements to convey the historical, geographical, and spiritual significance of these locations. By combining traditional Hopi knowledge with digital tools, this project fosters cultural pride, enhances digital literacy, and equips students with 21st-century skills.

The curriculum is intentionally interdisciplinary, connecting technology, social studies, and language arts to provide a holistic learning experience. Students will gain insights into Hopi history and geography while honing their research, critical thinking, and collaboration skills. The process of creating the website will also enhance creativity and communication, as students learn to present information in a clear and engaging manner. This project serves as both a celebration of Hopi culture and a practical application of technological skills, preparing students for future academic and professional opportunities while preserving their cultural identity.

*Grade Level and Content Are*a

This curriculum is tailored for high school students (grades 9–10), who are at an ideal stage for engaging with complex, interdisciplinary projects. The unit integrates technology (website creation and GIS mapping), social studies (exploration of Hopi history, geography, and cultural sites), and language arts (research, writing, and presentation skills). It emphasizes critical thinking and problem-solving while fostering collaboration, making it a meaningful addition to students' academic journeys.

Class Characteristics

The students who are in grades 9-12 participating in this curriculumIns are members of the Hopi community, bringing a wealth of cultural knowledge informed by oral traditions, familial storytelling, and personal connections to the land. Many students are already digital natives with a foundational understanding of technology, though their proficiency levels vary. The curriculum accommodates these differences through a combination of structured lessons, guided practice, and differentiated support.

High school students are capable of engaging in advanced tasks like GIS mapping, content curation, and source evaluation. This curriculum builds on their maturity and cognitive skills by challenging them to critically analyze information, synthesize their findings, and present their work in a professional format. Additionally, the project encourages collaboration with family members, elders, and community experts, fostering a deeper connection to their cultural roots while ensuring accuracy and authenticity in their work.

Classroom Dynamics and Needs

The class is characterized by a diversity of skills and experiences, particularly in technology and cultural understanding. To address these variations, the curriculum includes differentiated instruction, offering workshops for advanced GIS users and individualized support for beginners. Students will work both independently and collaboratively, engaging in peer review and group discussions to refine their projects.

Cultural sensitivity is a cornerstone of this unit. Students are encouraged to consult with community members to gather and verify information, creating a space where traditional knowledge and modern tools intersect. This approach promotes respect, accountability, and a sense of shared purpose, cultivating a classroom environment that values both individual creativity and collective input.

Curriculum Unit Integration with Teaching Schedule

This unit is designed for implementation between August and October, aligning with the beginning of the academic year and the Hopi cultural calendar. The timing ensures that students have sufficient time to develop their projects before

the INE Showcase on November 8th. By embedding the unit into the social studies and technology curriculum, students can explore topics like Hopi history, land stewardship, and web development in a cohesive and meaningful way.

General Teaching Schedule

The unit will be incorporated into the technology and social studies blocks, with language arts providing support for research and writing components. Students will dedicate 1 – 2 class periods per week to the project. The first month focuses on building foundational skills, such as using Google Sites, navigating GIS tools, and conducting effective research. Subsequent weeks will be devoted to curating content, designing website layouts, and integrating interactive elements like maps and multimedia.

Time of Year

The fall semester is an optimal time for this curriculum, aligning with Hopi traditions of reflection and preparation. This alignment reinforces the project's emphasis on cultural preservation and provides opportunities for community involvement. The fall schedule also ensures students can draw on the cultural significance of the season, enhancing the relevance and impact of their work.

Conclusion

This curriculum offers Hopi high school students a unique opportunity to bridge tradition and innovation. By creating a digital repository of Hopi cultural sites, students not only preserve their heritage but also develop critical academic and technological skills. The project fosters a deep sense of cultural pride and identity while preparing students to navigate a rapidly changing world. Through collaboration with family, community members, and peers, students gain a richer understanding of their heritage and the tools to share it with a broader audience. This unit embodies the intersection of cultural sustainability and 21st-century education, making it a transformative experience for all participants.

RATIONALE

This curriculum unit—creating a website using Google Sites to highlight Hopi cultural sites with GIS mapping—represents an intentional effort to merge cultural preservation with the acquisition of modern technological skills. By connecting traditional Hopi knowledge with digital tools, the unit supports students in developing a deeper understanding of their heritage while equipping them with essential skills for the future. This project aims to nurture cultural pride and identity while fostering students' ability to navigate and thrive in the digital age.

Importance of the Topic

This curriculum was developed to address the critical need for educational experiences that honor and preserve the cultural heritage of Hopi students while ensuring their readiness for the demands of an increasingly technology-driven world. Hopi culture, with its profound ties to the land, community, and oral traditions, offers an incredibly rich foundation for learning. However, much of this heritage is at risk due to modernization and limited opportunities to integrate these traditions into contemporary educational frameworks.

By using Google Sites and GIS mapping, students can create interactive digital representations of cultural landmarks, allowing them to visually explore the connections between geography, history, and culture. The topic of Hopi cultural sites is especially meaningful because it ties directly to students lived experiences and their communities' histories. It allows them to explore their identity through research and storytelling while developing the technical skills that will benefit them academically and professionally.

Relevance for High School Students

High school students are at a pivotal stage in their education where they begin to develop a stronger sense of self and make critical decisions about their futures. This curriculum provides an opportunity for students to engage in a meaningful exploration of their cultural identity while building competencies that align with 21st-century skills.

Students will use tools such as GIS mapping and website design to create a digital archive that highlights Hopi cultural sites. This approach not only fosters a sense of pride in their heritage but also encourages students to see themselves as creators and preservers of knowledge. The interdisciplinary nature of the unit—integrating technology, social studies, and language arts—enables students to make connections across subjects and see the relevance of their learning in a broader context.

Furthermore, the project emphasizes critical thinking, collaboration, and creativity. High school students have the maturity to conduct in-depth research, evaluate sources, and present their findings in a professional and impactful manner. These skills are highly transferable and will serve them well in college, careers, and community leadership roles.

Connections to Students' Cultures, Families, and Communities

A central strength of this curriculum is its deep connection to Hopi culture and its emphasis on collaboration with families and the local community. The Hopi people have a long tradition of oral storytelling, intergenerational knowledge-sharing, and a profound respect for the land. This curriculum builds on those traditions by inviting students to work with elders, cultural leaders, and family members to gather and verify information about significant cultural sites.

The use of GIS mapping provides a modern lens for exploring the cultural and geographical significance of these sites. Students will identify landmarks, record their historical and spiritual importance, and map them digitally, creating an interactive experience that can be shared within and beyond their community. This process not only strengthens their connection to their culture but also highlights the relevance of Hopi traditions in today's world.

By designing a website, students create a product that has value beyond the classroom. The website becomes a digital resource that can be accessed by family members, community leaders, and educators, ensuring that the knowledge students curate has a lasting impact. This tangible outcome underscores the importance of their cultural history and demonstrates how modern tools can amplify traditional knowledge.

Positionality Statement

As an educator, my approach to this curriculum is grounded in a commitment to culturally responsive teaching and a recognition of the unique strengths and needs of Hopi students. My "funds of knowledge" include a background in technology integration, a strong pedagogical foundation, and experience working with Indigenous students. I also bring a deep respect for the values, traditions, and perspectives of the Hopi community.

At the same time, I acknowledge that my understanding of Hopi culture, language, and history is limited compared to the lived experiences of my students and their families. This recognition informs my approach, which is rooted in humility and a willingness to learn alongside my students. By involving elders, cultural experts, and community members in the curriculum, I aim to ensure the content is accurate, meaningful, and respectful of Hopi traditions.

Students and the local community are invaluable resources in this process. Elders bring historical and spiritual insights, while students provide a contemporary perspective on how Hopi culture is experienced and expressed today. This collaborative approach enriches the curriculum and models for students the importance of seeking diverse perspectives and engaging with their community.

Elevating Culturally Sustaining Practices

This curriculum represents a commitment to culturally sustaining pedagogy. It empowers students to take an active role in preserving and sharing their cultural narratives while demonstrating how traditional knowledge can adapt and thrive in a modern context. By positioning students as creators and curators, the curriculum moves beyond a surface-level exploration of culture to a dynamic, student-driven process of knowledge production.

The integration of technology is particularly significant because it challenges deficit narratives that often marginalize Indigenous knowledge in educational settings. Instead of presenting Hopi traditions as static or outdated, this curriculum

highlights their relevance and adaptability. It encourages students to see themselves as innovators who can honor their heritage while embracing the possibilities of the future.

Ultimately, this curriculum seeks to empower Hopi students to take pride in their identity, connect deeply with their community, and develop the skills needed to succeed in the 21st century. It is a celebration of Hopi culture, a practical application of modern technology, and a meaningful step toward a more inclusive and responsive educational experience.

INSTRUCTIONAL GUIDE

This unit integrates STEM skills with cultural education, specifically focusing on preserving and sharing the Hopi culture through technology. By utilizing Geographic Information Systems (GIS) tools and creating websites, students can document significant Hopi landmarks, historical narratives, and cultural stories while enhancing their technical abilities. This approach helps students connect modern technology with their heritage, fostering pride and understanding of their cultural identity.

To begin the project, it's essential to engage directly with the Hopi community. Establishing partnerships with local Hopi schools, cultural organizations, or tribal councils ensures that the project respects and preserves cultural integrity. Inviting Hopi elders, knowledge keepers, and community members to share stories and identify significant landmarks is key. These figures can guide students in selecting landmarks that are meaningful to the Hopi people, such as villages, sacred sites, and important natural features. Educators should also ensure that all protocols regarding sacred or private places are observed, with permission sought where necessary.

The project can be framed to highlight the strong connection between Hopi culture and the land. Hopi people have an ancient relationship with their environment, and their cultural landmarks are often tied to stories, traditions, and spiritual practices. By using GIS tools, students can map these cultural landmarks, adding descriptions, images, and videos that tell the stories of these places. It’s important to stress the intersection of technology and cultural preservation, showing how modern tools like GIS can help document and share ancient knowledge for future generations.

In the next phase of the project, students will build websites using Google Sites. This platform is an accessible tool for students to organize their findings and present them digitally. The websites should focus on showcasing the cultural landmarks and the stories behind them. For example, students can create a homepage that introduces the project, explains its goals, and includes a welcome message in both Hopi and English. On the "Landmarks Map" page, students can embed their GIS maps, linking specific locations to the corresponding cultural stories or historical significance. Including multimedia elements like images, audio recordings, and videos will enrich the site and make it more interactive. Additionally, students can dedicate a page to Hopi history and values, sharing information about Hopi clans, ceremonial practices, and the importance of land in their worldview.

To ensure the websites reflect Hopi cultural identity, students should use colors, designs, and visuals that are meaningful in Hopi culture, such as traditional patterns or earth tones. Encouraging students to incorporate Hopi symbolism, such as katsina motifs or corn imagery, will help make the websites visually cohesive and culturally accurate.

Throughout the project, educators can support students by linking the technical aspects of GIS and website creation to their cultural research. It’s vital to emphasize the interdisciplinary nature of the project, where students are not only learning technical skills but also engaging deeply with the cultural narratives of their community. This process encourages collaboration, as students can work together with their families, elders, or community members to gather information and stories about the landmarks.

At the conclusion of the project, students should present their websites to the Hopi community. This provides an opportunity to showcase their work and receive feedback, ensuring that the cultural representation is accurate and respectful. The project can also be used to create a digital archive of Hopi landmarks, contributing to the preservation of cultural knowledge for future generations.

By combining STEM education with cultural preservation, this project empowers students to use modern tools to honor their heritage. Through GIS mapping and website creation, they develop valuable skills while deepening their connection to their culture and community.

TEACHING PLAN: Bridging Tradition and Innovation: Exploring Hopi Culture through Digital Mapping

Grade Level: High School
Subject: Technology / Geography / Social Studies
Duration: Up to 4 - 5 class periods (45 minutes each)
Tools Needed: Computers with internet access, Google accounts, projector/interactive board

Standards:

Social Studies (Grade 12 – Geography and Culture)

SS012-G1.01 – Explain how geographic features and human characteristics create cultural regions.
SS012-G1.02 – Use maps and geographic tools to acquire, process, and report information.
SS012-G3.01 – Describe ways geographic features and resources influence settlement and culture.

Technology / Computer Science (AZ K–12 CS Standards)

CS.DA.12 – Organize and present collected data using digital tools to highlight connections or trends.
CS.IC.12 – Discuss how computing innovations affect people and culture.

CRAIS Alignment

Cultural Relevance – Students map culturally important Hopi or local Indigenous landmarks (villages, dances, artisans, sacred areas) to see how place reflects identity.
Representation and Identity – Students explore how cultural knowledge can be represented visually through digital art forms like icons, colors, and map customization.
Arts Integration – The project blends visual arts (map design, imagery) with digital literacy, geography, and cultural studies, creating an interdisciplinary learning experience.
Inquiry and Storytelling – Students research each site and tell stories behind the landmarks, emphasizing the oral traditions and narrative structure found in Hopi culture.
Student Voice and Collaboration – Students work in pairs or small groups to share knowledge, interview family members or community elders, and select landmarks that hold meaning for them.
Community Engagement – Students can present their digital maps to families, tribal educators, or local cultural centers to strengthen cultural exchange and community connection.

Learning Objectives

By the end of this lesson, students will be able to:

- Access Google My Maps and create a new map.
- Add and customize map layers, markers, and routes.
- Insert information such as text, images, and links to map points.

- Apply Google My Maps as a tool for research, storytelling, and presentations.

Lesson Outline

1. Anticipatory Set (5–10 minutes)

- Begin by showing an example of an interactive map (e.g., historic landmarks, cultural sites, or a travel guide).
- Ask: *"How is this different from a regular map? What could we use interactive maps for in our own learning or community?"*
- Briefly introduce Google My Maps as a tool for creating custom maps to tell stories or present information.

2. Teacher Modeling (15 minutes)

- **Step 1: Access Google My Maps**
  Go to Google My Maps.
  Log in with a Google account.
- **Step 2: Create a New Map**
  Click **Create a New Map**.
  Demonstrate how to rename the map (e.g., "Cultural Landmarks Project").
- **Step 3: Add Layers**
  Show how to add different **layers** (e.g., "Historic Sites," "Parks," "Community Spaces").
  Explain that layers help organize categories of locations.
- **Step 4: Add Markers**
  Use the search bar or click on the map to place a marker.
  Demonstrate adding a title, description, photo, or video to the marker.
  Show how to customize the marker color and icon.
- **Step 5: Add Lines and Routes**
  Demonstrate how to draw a line or create a walking/driving route between two landmarks.
- **Step 6: Share and Embed**
  Click **Share** and explain visibility options (public, private, restricted).
  Show how to copy the share link or embed code for websites.

3. Guided Practice (15–20 minutes)

- Have students **create their own map**:
  Step 1: Rename their map with a topic (e.g., "My Favorite Places in Town").
  Step 2: Create at least 2 layers (e.g., "Food Spots," "Fun Places").
  Step 3: Add at least 3–5 markers with text and images.
  Step 4: Draw one line or route connecting two points.

The teacher circulates the room to assist with technical issues and provide guidance.

4. Independent Practice / Extension (Homework)

- Students expand their maps by adding at least 5–10 more markers.
- Encourage creativity—students might create:
  A personal "Travel Map" of places they've visited.
  A "Cultural Landmarks" map highlighting important sites in their community.
  A "Historical Map" linked to class lessons.

5. Closure (10 minutes)

- Have a few students volunteer to share their maps with the class.
- Discuss how My Maps can be used in school projects, travel planning, or community presentations.
- Ask: *"How can this tool help us tell stories about people, places, and culture?"*

Assessment

- Student participation in guided practice.
- Completion of a map with at least 2 layers, 5 markers, and 1 line/route, ability to add descriptive text, images or links to a marker
- Completion of Cultural Landmarks Project - Student Rubric (see attached).

Teacher Tips

- Model slowly and repeat key steps, as students may get lost navigating multiple tools.
- Provide a printed or digital **step-by-step handout** so students can follow along at their own pace.
- Encourage creativity while reinforcing accuracy in map labeling and descriptions.
- For cultural integration, ask students to create maps highlighting **local traditions, landmarks, or community resources**.

Cultural Landmarks Project Rubric

Criteria	Excellent (25)	Proficient (20)	Developing (15)	Beginning (10)	My Score
Map Creation	I made 5+ landmarks, all labeled and organized.	I made at least 4 landmarks, mostly organized.	I made 2–3 landmarks, not well organized.	I made fewer than 2 landmarks or my map is not done.	_____
Cultural Accuracy	All my landmarks are correct and clearly connected to culture.	Most landmarks are correct and connected to culture.	Some landmarks are wrong or not really connected.	My landmarks don't connect to culture.	_____
Descriptions	I wrote 3+ sentences for each landmark.	I wrote 2–3 sentences for most landmarks.	I wrote short or unclear sentences.	I didn't write descriptions.	_____

Pictures/Media	I added images or videos for all landmarks.	I added some images or videos.	I added few images or videos.	I didn't add pictures or videos.	_____
Creativity	My map looks creative, colorful, and easy to read.	My map has some creativity.	My map looks plain or messy.	I didn't try to make my map creative.	
Reflection	I finished all questions with good details.	I finished most questions with some details.	I finished some questions with little detail.	I didn't finish the questions.	_____

How to Use This Rubric

1. Read each row to see what makes a project "Excellent."
2. While working, think about where your project fits.
3. Write your own score in the **My Score** column.
4. Your goal is to get the best score you can!

Total Points Possible: 100

Reflection/Ticket out: 50 points. Answer all questions in complete sentences. Use the 5 W's.

1. Which landmark was most meaningful to you and why?

2. How can digital maps help preserve cultural traditions?

3. What new skills did you learn while making this project?

REFERENCES:

AAG (2018). GIS day in the classroom. Esri Press

Arnalich, S. (2012). GPS and Google Earth for development: How to create, share and collaborate with maps on the net. Arnalich.

Arizona Department of Education (2022). Resources: Educational technology. https://www.azed.gov/

Bernardini, W. (2023). Becoming Hopi: A history. The University of Arizona Press.

Courlander, H. (1987). The Fourth World of the Hopis: The epic story of the Hopi Indians as preserved in their legends and traditions. Unm Press.

Dwyer, H., Stout, M. (2011). Hopi history and culture. Gareth Stevens Publishing.

Koedt, A.P., Kamma, A. (1999). If you lived with the Hopi Indians. Scholastic Paperbacks.

Kuwanwisiwma, L. (2021). Footprints of Hopi history: Hopihiniwtiput Kukveni'at. The University of Arizona Press.

Mesa Media, INC. (2025). Journey of Hopi rain cloud. https://mesamedia.org/store/2025-Hopi-Calendar-p701896139

Nequatewa, E. (2008). Truth of a Hopi. A & D Publishing.

Rainbow Sky Creations (2019). 8 brilliant reasons why we use exit tickets in the classroom. https://rainbowskycreations.com/why-use-exit-tickets-in-the-classroom-d94/

Tomlinson, R. (2005). Thinking about GIS: Geographic Information System planning. Esri Press.

Waters, F. (1963). Book of the Hopi. The Penguin Group

Wilson College (2024). Benefits and examples of student self-assessment. https://online.wilson.edu/resources/examples-of-student-self-assessment/