

The Acorn House: Indigenous Storytelling with Technology

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Initial Concept: The Acorn Playhouse for Indigenous Storytelling

SUMMARY:

In celebration of Native American Heritage Month, the "Acorn House" project aims to pay tribute to Indigenous culture and heritage by utilizing a staple of the Indigenous diet in a creative and culturally meaningful way. The project's goal is to construct a quaint acorn-themed

playhouse that not only serves as an engaging play space but also serves as a medium for storytelling, cultural enrichment, and education. This unique project merges Indigenous traditions, technology applications, and immersive play scenarios.

RESEARCH PLAN:

To achieve the project's goal, a series of exploratory technology experiments and research activities have begun:

1. Researching and gathering information on Indigenous cultures, particularly their use of acorns as a dietary staple and its cultural significance.

Indigenous Storytelling with the Acorn Playhouse

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TDF Project 4 Proposal
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The Acorn Playhouse for Indigenous Storytelling by Maria-Teresa Carmier Villalobos

MOTIVATION:
In celebration of Native American Heritage Month, the "Acorn House" project proposes to construct a playhouse that pays tribute to Indigenous culture and heritage by utilizing a staple of the Indigenous diet in a creative and culturally meaningful way. The project's goal is to construct a quaint acorn-themed playhouse that not only serves as an engaging play space but also serves as a medium for storytelling, cultural enrichment, and education. This unique project merges Indigenous traditions, technology applications, and immersive play scenarios.

RESEARCH PLAN:
The project will begin with a series of exploratory technology experiments and research activities have begun:
- Research and gather information on Indigenous cultures and their use of acorns, as well as prehistoric methods of acorn processing and storage.
- Apply technology, design, and craftsmanship to create an immersive and educational play space that celebrates Indigenous culture and heritage.
- Promote storytelling as a powerful tool for cultural preservation and education.
- Engage children in a playful, educational, and culturally enriching environment that fosters a deeper understanding and appreciation of the diversity within Indigenous people's culture and traditions.

CURRENT WORK:
The project has commenced with initial research into Indigenous cultures and their use of acorns, as well as prehistoric methods of acorn processing and storage. The team has also begun developing a full-sized wooden version, while aesthetically appealing, will be the most durable and sustainable option for the playhouse.

In light of this, I decided to adopt a more agile and iterative approach, instead of a traditional wooden construction, I'd like to explore the use of laser-cut cardboard prototypes to quickly iterate and validate several advantages, including faster iteration, scalability, and modularity.

CHALLENGE LEVEL:
The challenge level of the project are:
- Foster a deeper understanding and appreciation of Indigenous cultures and their use of acorns.
- Apply technology, design, and craftsmanship to create an immersive and educational play space that celebrates Indigenous culture and heritage.
- Promote storytelling as a powerful tool for cultural preservation and education.
- Engage children in a playful, educational, and culturally enriching environment that fosters a deeper understanding and appreciation of the diversity within Indigenous people's culture and traditions.

TIMELINE:
The project timeline for the Acorn House for Indigenous Storytelling is as follows:
- November 16: Proof of concept (1) - Create Grasshopper design, gather feedback, refine design.
- November 20: Working prototype(s) & Demonstrations - Refine design, print cardboard prototypes, and demonstrate the playhouse to stakeholders.
- November 25: Practice presentation for Jacobs Design Universe - Prepare a presentation showcasing the project's cultural significance, design, and proposed outcome to date, emphasizing the educational and storytelling aspects.

Check-in 1 : Rethink feasibility

Being intentional with Design

Inspiration

Illustrative draft set in a children's museum:

staple and its cultural significance.

2. Experiment with Grasshopper in Rhino to design the acorn-shaped structure while respecting Indigenous design aesthetics.
3. Explore crafting techniques, including using sustainable materials and Indigenous-inspired artwork, to create the playhouse.
4. Develop interactive storytelling elements rooted in Indigenous narratives and heritage, ensuring cultural authenticity and respect.

CURRENT WORK:

The project has commenced with initial research into mine and other Indigenous cultures and their use of acorns, as well as preliminary rhino design experiments. During this phase, it became apparent that constructing a full-fledged wooden house, while aesthetically appealing, may not be the most feasible approach due to time constraints and logistical considerations.

In light of this, I decided to adopt a more agile and scalable approach. Instead of a traditional wooden construction, I'd like to explore the use of laser-cut cardboard as the primary material for building. This decision offers several advantages, including faster iteration, scalability, and movability.

MOTIVATION:

The core learning goals of this project are to:

- Foster a deeper understanding and appreciation of Indigenous cultures and their contributions to society.
- Apply technology, design, and craftsmanship to create an immersive and respectful representation of Indigenous heritage.
- Promote storytelling as a powerful tool for cultural preservation and education.

- Engage children in a playful, educational, and culturally enriching environment that encourages respect and understanding of the diversity within Indigenous people's culture and traditions.

CHALLENGE LEVEL:

The project's challenge level is Platypus, indicating moderate complexity, as it involves design, craftsmanship, and cultural sensitivity, ensuring an engaging but manageable challenge.

TIMELINE:

The project timeline for the Acorn House for Indigenous Storytelling is as follows:

- November 16: Proof of concept(s) - Finalize Grasshopper design, gather cultural insights, and begin crafting prototypes.
- November 30: Working prototype(s)/demonstrations - Refine design, collaborate with Indigenous communities, and continue construction of the Acorn House.
- December 4: Practice presentation for Jacobs Design Showcase - Prepare a presentation showcasing the project's cultural significance, design, and progress made to date, emphasizing the educational and storytelling aspects.

Technology Exploration and Results :

Focused on integrating Particle photons with sensors like ultrasonic proximity and PIR motion sensors.

List of Technology Experimented with in the "Acorn House" Project:

1. Particle Photon 2: A powerful IoT microcontroller used as the central brain of the exhibit for processing sensor data and communicating with external services.
2. 3V Ultrasonic Proximity Sensor: Employed to detect the presence and distance of visitors approaching the exhibit.
3. PIR (Passive Infrared) Motion Sensor: Utilized for detecting motion within the exhibit space, adding an additional layer of visitor interaction.
4. APDS-9960 Gesture Sensor: Integrated to recognize hand gestures, enabling interactive elements within the exhibit.
5. Webhooks: Implemented for real-time communication between the Particle Photon and external web services, facilitating data transmission and event triggers.
6. C++ Programming Language: Used for writing the firmware of the Particle Photon, managing sensor data input, and controlling output responses.
7. JavaScript: For scripting the interactive elements of the web interface, including the response to sensor-triggered events.
8. HTML/CSS: Employed for structuring and styling the web interface, ensuring it is both functional and visually appealing.
9. GitHub Pages: Used to host the web interface, allowing for easy access and interaction with the exhibit content online.
10. Zapier Integration: Served as an intermediary service to bridge the Particle Cloud with other web services or platforms.
11. PuTTY: A terminal emulator used for monitoring and debugging the Particle Photon's outputs.
12. Particle CLI (Command Line Interface): Utilized for comprehensive device management, including local compiling and firmware flashing to the Particle Photon.
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 - Outcome: Developed "Acorn House," an interactive exhibit for children, emphasizing immersive storytelling about Indigenous cultures.
 - Photos: [Include photos of your prototype, sensor setup, and any diagrams or sketches of the exhibit layout]

Challenges and Progress

- Sensor Integration: Overcoming the challenge of accurately detecting visitor presence and triggering appropriate responses.
- Web Interface Development: Creating a responsive and engaging web interface that reacts to sensor data.
- Progress Evidence: Successfully demonstrated the prototype where sensor data activates an audio story, enriching the visitor experience.

Response to Peer Feedback

- Feedback Overview: Received constructive feedback on enhancing user interaction and improving sensor sensitivity, combining insight with other students in the class that are interested in immersive storytelling.
- Implementations: For future use case scenarios

Speculations on Technology Design

- Human Experience Impact:
 - Enhanced Learning: Technology integration makes educational content more engaging and interactive, particularly for younger audiences.
 - Personalized Experiences: Future exhibits could use similar technology to tailor experiences based on individual interactions.
- Impact on Engineering and Building:
 - Smart Environments: These technologies pave the way for smarter, responsive environments in educational settings.
 - Sustainable and Adaptive Design: IoT integration could lead to more sustainable and adaptive architectural designs.
- Supporting Sketches/Storyboards: [Include sketches or storyboards that illustrate how the technologies come together to create an interactive environment]

Conclusion

- Summary: The project successfully* demonstrated how integrating modern technology into exhibit design could profoundly impact educational experiences and drive innovation in exhibit engineering.
- Future Perspective: This exploration is just the beginning, with vast potential for these technologies to transform how we build and interact with educational spaces, making them more engaging, adaptive, and personal.

Final Technologies Used :

1. Ultrasonic Sensor: The backbone of my interactive exhibit, this sensor played a crucial role in detecting the proximity of visitors, triggering the storytelling experience as they approached. Its reliability and accuracy were pivotal in creating a seamless interactive experience.
2. GitHub Site: My central platform for hosting the interactive web interface. This site not only provided an accessible portal for the audio storytelling but also served as a showcase of the project's digital aspect, reflecting the integration of technology and storytelling.
3. PuTTY: This tool was indispensable during live sessions for troubleshooting. It allowed us to monitor real-time data from the Particle Photon and make necessary adjustments on the fly, ensuring that the exhibit ran smoothly and without interruptions.

These technologies were the pillars of my project, each contributing significantly to creating an engaging, educational, and technologically innovative experience at the Berkeley Children's Museum. Their successful integration represents a step forward in how we blend technology with educational content to create meaningful experiences for children.

*successful :

