

DIGIEDUHACK SOLUTION CANVAS



Title of the solution:

Kualitok

Challenge addressed:

"How might we push human flourishing through disruptive emerging tech-based education?"

Team name:

Marvip

Challenge category:

emerging technology for education

Solution description

Kualitok is an educational tool that bridges technology with cultural heritage, offering a web platform that enables teachers in Nahuatl-speaking communities to access and integrate culturally relevant, linguistically appropriate content into their lessons. The main goal is to create tailored classes that incorporate the cultural context of the students, enhancing both engagement and understanding by using activities and vocabulary that resonate with their environment. **The Main Elements of the Solution are,**

Culturally Relevant Content: Kualitok provides examples of activities, vocabulary, and educational resources specific to the Nahuatl culture, allowing teachers to create lesson plans that connect with students' identities.

Large Language Model (LLM) Integration: The solution leverages a language model trained with Nahuatl literature, vocabulary, and translations, ensuring that lesson content is accurate, culturally aligned, and linguistically precise.

Teacher Feedback System: Kualitok includes a feedback feature where teachers can contribute insights on vocabulary and context, continuously refining and enriching the AI's suggestions, making the platform adaptive and community oriented.

Context

Students in indigenous communities often face the challenge of not having teachers who can communicate in their native language, forcing them to learn solely in Spanish to access education. This disconnect limits their learning and hinders their cultural connection. Every student has the right to an education that respects and embraces their cultural identity and linguistic heritage. Adaptation to and respect for cultural relevance in education is not just an option—it's a fundamental right that everyone deserves.

Target group

The primary target group for our solution is teachers in indigenous communities who need culturally relevant tools to effectively teach students with a different cultural and linguistic background from the standard curriculum. These teachers often face the challenge of delivering lessons in a language or context that may not fully resonate with their students, limiting students' engagement and learning outcomes. Kualitok empowers teachers by providing a culturally adapted, linguistically appropriate platform that offers vocabulary, examples, and lesson content rooted in the Nahuatl language and culture. With this tool, teachers can make lessons more relatable and meaningful, connecting students with their heritage while adhering to educational standards.

Impact

What is the impact of your solution? How do you measure it?

Children in indigenous communities will develop a stronger sense of belonging as their culture and language are actively preserved and celebrated. This approach not only safeguards their heritage but also enhances the quality of education by making it more relevant and engaging. We plan to assess these outcomes through a comparative study, offering the Kualitok platform to two communities with similar educational and socio-cultural conditions. By analyzing statistical data on academic performance and retention rates, we aim to quantify improvements in students' understanding and connection to their heritage, as well as overall knowledge retention. This evidence-based approach will provide a clear measure of Kualitok's impact on both educational quality and cultural preservation.

Describe it in a tweet

Kualitok will be a user-friendly, web-based platform that supports teachers in integrating Nahuatl language and culture into their classrooms. It will offer customizable educational resources, contextual vocabulary, and a feedback system to continuously improve the tool based on teacher input.

Innovativeness

Unlike conventional language tools or online translators, Kualitok isn't just a translation app. It's specifically designed to provide teachers with contextually relevant vocabulary, cultural references, and examples that enrich lessons, enabling students to learn in a way that resonates with their heritage and community context. Nothing like this exists until now.

Transferability

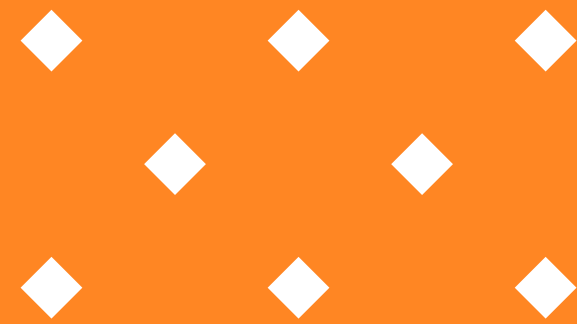
Over time, we aim to scale Kualitok to support other indigenous languages and cultural contexts, providing a template that can be adapted to different regions and communities.

Sustainability

We will introduce Kualitok as a website where teachers can access vocabulary, lesson templates, and cultural references in Nahuatl. This will initially be a free tool, allowing teachers to integrate culturally relevant materials into their lessons without cost barriers. As the platform grows, we will collect anonymized data on resource usage, cultural content popularity, and learning outcomes. This will provide insights into the specific needs and interests of indigenous students.

Team work

Absolutely, we believe that our team is exceptionally well-suited for continued collaboration. Our strength lies in our ability to embrace and build on each other's ideas, respecting and valuing different perspectives. We overcame differing opinions by fostering open dialogue and integrating each member's input into a cohesive solution. This inclusive approach has not only strengthened our project but has also built trust and unity within our team. We're excited to continue working together to bring Kualitok to life and to expand its impact, knowing that our complementary skills and shared commitment are the perfect ingredients for long-term success.



KUALITOK

Preserving cultures, forming educators



*Mariel Álvarez
Maria Paula Recinos
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PROBLEM STATEMENT

At least **8.3%** of primary schools in indigenous communities in Mexico have no teacher who speaks the local indigenous language.

- Teachers in Indigenous communities often lack knowledge of the local **language and cultural context**.
- **Non-adaptation and respect for cultural relevance.**

SOLUTION PROPOSAL

Develop an AI-powered Language Model (LLM) designed specifically for primary school teachers in Indigenous communities.

Goal: Equip teachers with the tools to understand and teach in a culturally and linguistically relevant way.

Focus Areas:

- Nahuatl Language
- Cultural Context: Including worldview, traditions, and local history.

WHICH TECHNOLOGY SHOULD WE USE?

67.61% of the indigenous population in the 67 indigenous towns, by household criteria estimated by the INPI, have a cell phone.

WHAT THE LLM OFFERS

PROTOTYPE

- Interactive Lesson Design
- Bilingual Dictionary
- Pronunciation Practice
- Resource Hub

The screenshot displays the Kualitok web application interface, which is designed for interactive lesson design, bilingual dictionary, pronunciation practice, and resource hub. The interface is divided into several sections:

- Tlamaxtiketl:** A section for lesson design. It features a text input field with the prompt "¡Piali! ¿Qué repasaremos hoy?" and a button "Ayudame a adaptar mi clase de biologia centrada en elementos de la materia". Below this, a text area displays the generated lesson plan in Spanish, including the format, topic, objective, vocabulary, activity, cultural context, and practice exercise.
- Diccionario:** A bilingual dictionary section. It shows three entries with audio playback controls. The first entry is "zahuāni" with a definition: "Empieza a secar algún tipo de planta. 'hace mucho calor por eso las plantitas empieza a secarse con tantito.' 2. Empieza a caerse las hojas del árbol porque ya es tiempo. 'ya mero se caen las hojas de las plantas porque zahuaniya.'". The second entry is "tzayanalli" with a definition: "tzayanalquilitl = tzayanal-quilitl: tzayanalli, hendido, cortado en dos; quilitl, cortado o dividido en dos. Es una yerba acuática cuyas hojas están cortadas en dos. A esta circunstancia debe referirse el nombre.". The third entry is "zan no ye ic" with a definition: "De las plantas medicinales y de otras cosas medicinales.".
- Practica pronunciación:** A pronunciation practice section. It features a text input field with the prompt "xiuala ipan ni tlamachtili" and a button "Grábate". Below this, there is a "Sube tu audio:" section with a "Choose File" button and a "test.wav" file. A "¡Pruébate!" button is also present. A feedback message reads: "Muy bien. Podrias intentar mejorar la entonación.".
- Recursos de clase:** A resource hub section. It features a search bar with the text "cosmologia nahuatl" and a "Buscar" button. Below the search bar, there are several book covers displayed, including "La filosofía nahuatl", "La filosofía nahuatl", "Cosmogonía de mesoamérica", and "Impresos en náhuatl".

<https://kuali-para-nochipa.web.app>

WHAT THE USER OFFERS (BUSSINESS MODEL)

SUPER
INCENTIVOS

- **Feedback–Based Points System:** Partnership with Super Incentivos: Collaborating with platforms like Super Incentivos to motivate teachers through rewards.
- **Impact Data:** Feedback helps the model improve, showing how lessons inspired by the tool affect student understanding and interest.

This feedback is especially valuable because building models for Indigenous languages like Nahuatl is challenging due to limited available data and resources. Teachers' feedback, along with their recorded lessons, will help enrich the model's language understanding, pronunciation accuracy, and cultural relevance, filling critical gaps in Indigenous language resources.

KUALITOK

Preservando culturas, formando educadores

Ayudanos a mejorar.



1. Facilidad de uso: _____
2. ¿La plataforma es fácil de navegar? _____
3. ¿La interfaz es intuitiva y amigable? _____
4. Contenido: _____
5. ¿El contenido cultural y lingüístico es claro y útil? _____
6. ¿El material está bien organizado y es accesible? _____
7. Interacción con la cultura Nahuatl: _____
8. ¿Los recursos proporcionados permiten una comprensión profunda de la cultura Nahuatl? _____
9. ¿El contenido cultural está bien contextualizado? _____
10. Desempeño y accesibilidad: _____
11. ¿La página carga rápido y funciona bien en diferentes dispositivos? _____
12. ¿Es accesible para personas con discapacidades o con limitaciones tecnológicas? _____
13. Soporte: _____
14. ¿El soporte técnico y educativo es útil y responde de manera efectiva a las necesidades de los usuarios? _____
15. ¿El equipo está disponible para resolver dudas o problemas? _____
16. Satisfacción general: _____
17. ¿Cómo calificarías tu experiencia general con la plataforma? _____
18. ¿Recomendarías la plataforma a otros educadores? _____
19. Sugerencias de mejora: _____
20. ¿Qué funcionalidades adicionales te gustaría ver? _____
21. ¿Hay algún aspecto que crees que se podría mejorar en el sitio? _____

TAKING THE LONG VIEW...

- Include more dialects
- Building an ecosystem of collaboration among educators, foundations and communities.
- Teacher's Discussion Panel



**"BUILDING BRIDGES BEYOND
WORDS"**