



University
of
South Australia



Building culturally relevant multimedia resources for Indigenous languages using AI tools and collaborative development

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Outline

- What is C-LARA?
- Why images matter (especially in Indigenous contexts)
- The AI-based image creation process
- Examples: Kok Kaper, Drehu, Iaai
- Observations and lessons learned
- Community reviewing
- Further directions

What is C-LARA? (1)

<https://www.c-lara.org/>

- Online platform for creating **multilingual multimodal learner texts**
- Uses AI (OpenAI models, TTS) for writing, glossing, creating images, etc.
- Output: an **interactive text** (text + images + optional audio)
- **Community-based**: projects can be shared, reviewed, improved



Finley's Journey to Faith: A Kitten's Tale
of Inspiration



Ást Dóra Drekans



Journalist Jamila Loves Subject-
Auxiliary Inversion



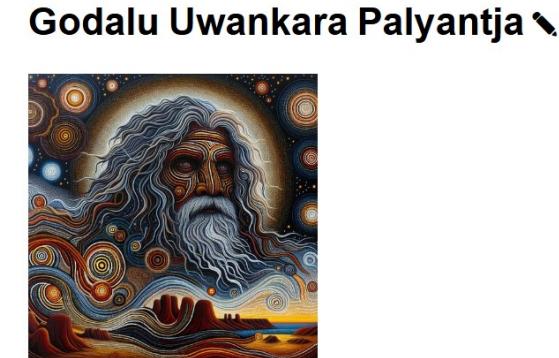
What is C-LARA? (2)

<https://www.c-lara.org/>

- For languages the AI “knows,” it can handle most tasks automatically
- For Indigenous/lesser-resourced languages, the user needs to write and annotate the texts
- However, the AI can still **create the images** from a translated mainstream language

Why images matter for pedagogical texts

- Feedback from Indigenous community teachers
 - Better engagement and comprehension with visuals (**cf. dual coding theory, by Fraisse, 1970 ; Paivio, 1971 - psychology**)
 - The image = a trigger for verbal production
 - Stock images from the web in most cases culturally inappropriate
 - AI images, while imperfect, can be guided to be much closer culturally



The AI-based image creation process

- Model like gpt-4o creates image descriptions from style + translations of page text + contextual information sometimes
- Image descriptions given to model like DALL-E-3 to make images
 - AI can read and rate images automatically
 - User can regenerate images, adding advice or editing the prompts
[So far, this option works best]



Image pipeline in more detail

- **Segment** text into pages and add **translations** [*Manual*]
- **Create style description** [*Typically in response to short user prompt*]
- **Create element descriptions** [*Recurring items in images*]
- **Create page image descriptions** [*AI*]
- **Call DALL-E-3** → multiple candidate images [*AI*]
- **User or AI review** (vote, edit, or remake descriptions)
- **Final images** integrated into the multimodal text [*Platform*]

Creating a style description (1)

- Typically we let the AI **self-select** an appropriate style based on minimal advice: e.g. “cartoon-inspired for small children”, “generally respectful towards this culture”
- Alternatively, user can specify “modern watercolour,” “classic 1950s children’s book,” etc and/or give more details
- AI creates detailed description (themes, colour palette, etc)
- AI creates sample image illustrating style
- User typically edits/refines the AI description over several rounds

Creating a style description (2)

- User can **specify the language** in which the AI writes descriptions
- **Anecdotally:** better images in Kanak languages when descriptions are written in French

Edit Image Style (Boole i Sisiwanyano me Koradrane qatr - version française)



Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

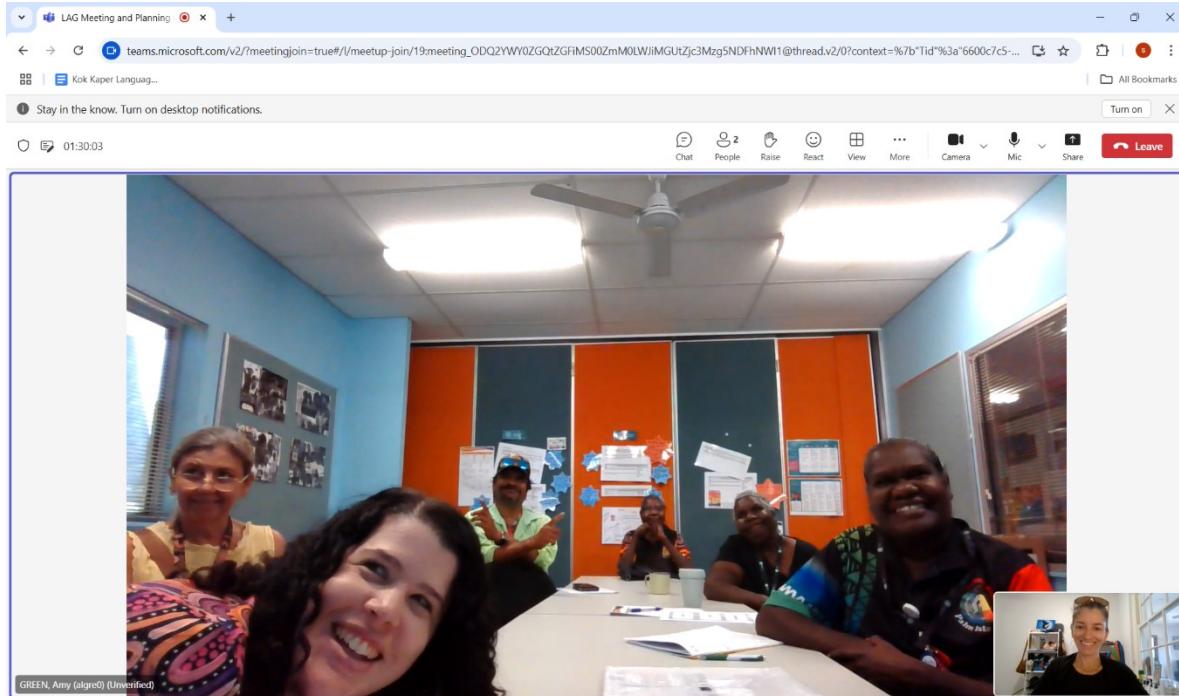
Le style de ces images doit refléter et respecter la culture kanak, en s'inspirant des traditions artistiques et visuelles locales. Utilisez une technique de peinture numérique imitant les textures des dessins ou peintures traditionnelles kanak qui soulignent leur lien avec la nature et l'environnement insulaire. La palette de couleurs doit être terreuse et naturelle, avec des verts profonds, des bruns terracotta, des bleus océaniques et des jaunes soleil, pour évoquer le paysage luxuriant des îles. Les lignes doivent être fluides et organiques, rappelant les motifs et les symboles souvent présents dans l'art kanak traditionnel. L'atmosphère doit être à la fois mystique et épique, capturant la grandeur et l'esprit des guerriers et des jeux légendaires, tout en conservant une touche de sérénité et de respect pour la

Upvotes: 0 Downvotes: 1  

[Back to Edit Images and Pages](#)

The Kowanyama Language Team

- Acknowledging the Kok Kaper, Yir-Yoront and Kunjen Traditional Owners of the languages and Countries in and around Kowanyama



- Kowanyama Language Advisory Group at the Kowanyama State School

REVIEWING THE 50 IMAGES generated for the “50 words in Kok Kaper” picture dictionary

- Successful image generation ✓
- of the 50 illustrations initially generated by AI, a total of 26 (or 52% of them) are either good or acceptable
- N.B. to confirm the judgement on the images we need more votes from Kowanyama community members

Example of a good image



- **mim-marpany (rainbow snake, cyclone):**
This image incorporates the cyclone as a meteorological phenomenon and the mythical totemic being associated with it (mim- is one of the surface forms of classifier "miny", animal / meat, which specifies that cyclone is an animal)



What can we do to improve a “bad image”?

- C-LARA has implemented two functionalities to improve “bad images”:
 - “Edit description” functionality
 - “Upload own image” functionality

1) “EDIT DESCRIPTION” functionality

- To improve an image, we used the "edit description" functionality for 17/50 images (or for 34% of them).
- This resulted in 13 good or acceptable images (76%) and 4 bad results (24%)

Example of a successful result after using the “Edit description” functionality



Original text

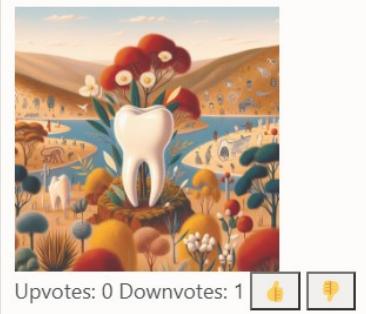
Kulng



Upvotes: 0 Downvotes: 1



Upvotes: 0 Downvotes: 1



Upvotes: 0 Downvotes: 1



Upvotes: 0 Downvotes: 1



Upvotes: 1 Downvotes: 1

Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

- **kulng (tooth, teeth):**
- Initially, AI created images of a tooth in a landscape.
- After editing the description and generating new images, we obtained a better result, a cartoon-like character with a toothy smile.

Example of a “bad result” despite using the “Edit description” functionality



Social network ▾ My projects ▾

Original text

Path-ch'rrich

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 1 Downvotes: 1

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

Essential aspects:

- The image should depict the concept of “sky” in a manner that is inviting and awe-inspiring, engaging children with a sense of wonder.
- The portrayal of the sky should highlight a warm and earthy color palette, featuring ochre, deep reds, soft greens, and ocean blues, mirroring the vibrant natural landscape of Cape York.
- There should be cultural motifs subtly integrated within the sky or clouds to enhance cultural relevance for Australian Aboriginal children.

Create similar images

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

Essential aspects

- The image should depict a cloudless sky during daylight hours.
- The scene should reflect the natural landscape of the western coast of Cape York.

Image Specification

Create an illustration of a vast, cloudless sky during daylight hours, capturing the essence of the western

Create similar images

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

- **path ch'rrich (clear blue sky):** AI created images of a sky with clouds.
- After editing the description (specifying the need for an illustration of a cloudless sky), AI still produced images containing clouds.

2) “UPLOAD OWN IMAGE” functionality

- To improve an illustration, we used the "upload own image" functionality for 6/50 images (or for 12% of them).
- This resulted in 2 good or acceptable results (33%) and 4 bad results (66%)

Example of a successful result using the "Upload own image" functionality

Social network ▾ My projects ▾

Original text

Chel

The screenshot shows a user interface for generating images. At the top, there are three generated images of eyes, each with upvote and downvote counts of 0. Below them is a note: "Note: This is the exact text that was sent to DALL-E-3 to generate the images above." Underneath is a section titled "Essential aspects" with the following text: "An eye is featured prominently in the image. The eye should appear realistic yet stylized in a way that is inviting to children, combining human elements with motifs inspired by Aboriginal art. Ensure the eye conveys a sense of wonder and curiosity." A "Create similar images" button is present. At the bottom, there are four more generated images of eyes. The first image on the left is circled in blue, and the third image from the left is highlighted with a green border. The first image has 1 upvote and 0 downvotes. The second image has 0 upvotes and 1 downvote. The third image has 2 upvotes and 0 downvotes. The fourth image has 0 upvotes and 1 downvote.

Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1 Upvotes: 0 Downvotes: 1

Note: This is the exact text that was sent to DALL-E-3 to generate the images above.

Essential aspects

An eye is featured prominently in the image. The eye should appear realistic yet stylized in a way that is inviting to children, combining human elements with motifs inspired by Aboriginal art. Ensure the eye conveys a sense of wonder and curiosity.

Create similar images

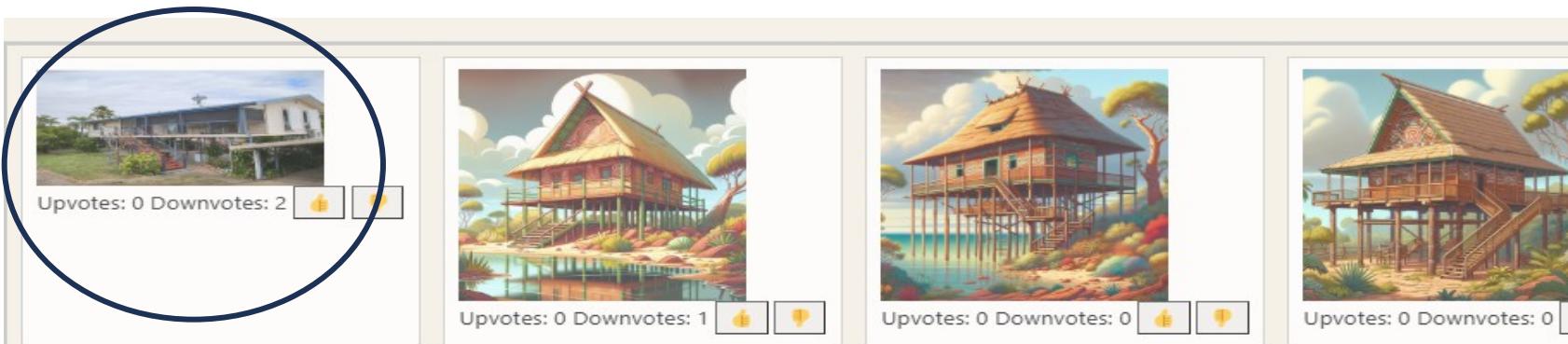
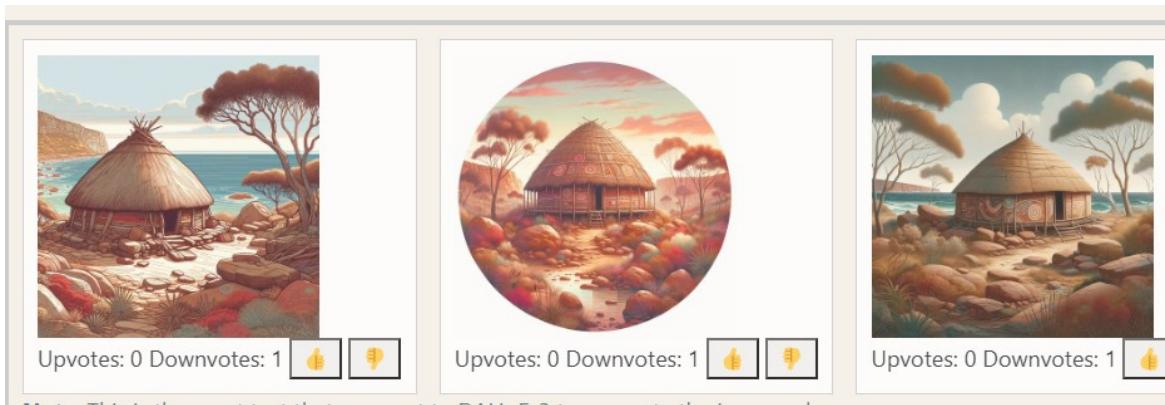
Upvotes: 1 Downvotes: 0 Upvotes: 0 Downvotes: 1 Upvotes: 2 Downvotes: 0 Upvotes: 0 Downvotes: 1

Back to Edit Images and Pages

- **chel (eye):** the images generated initially weren't what we were looking for. The "successful" image was created by AI based on the suggestion provided by the "upload own image" option and produced a good result.



Example of a bad result despite using the “Upload own image” functionality

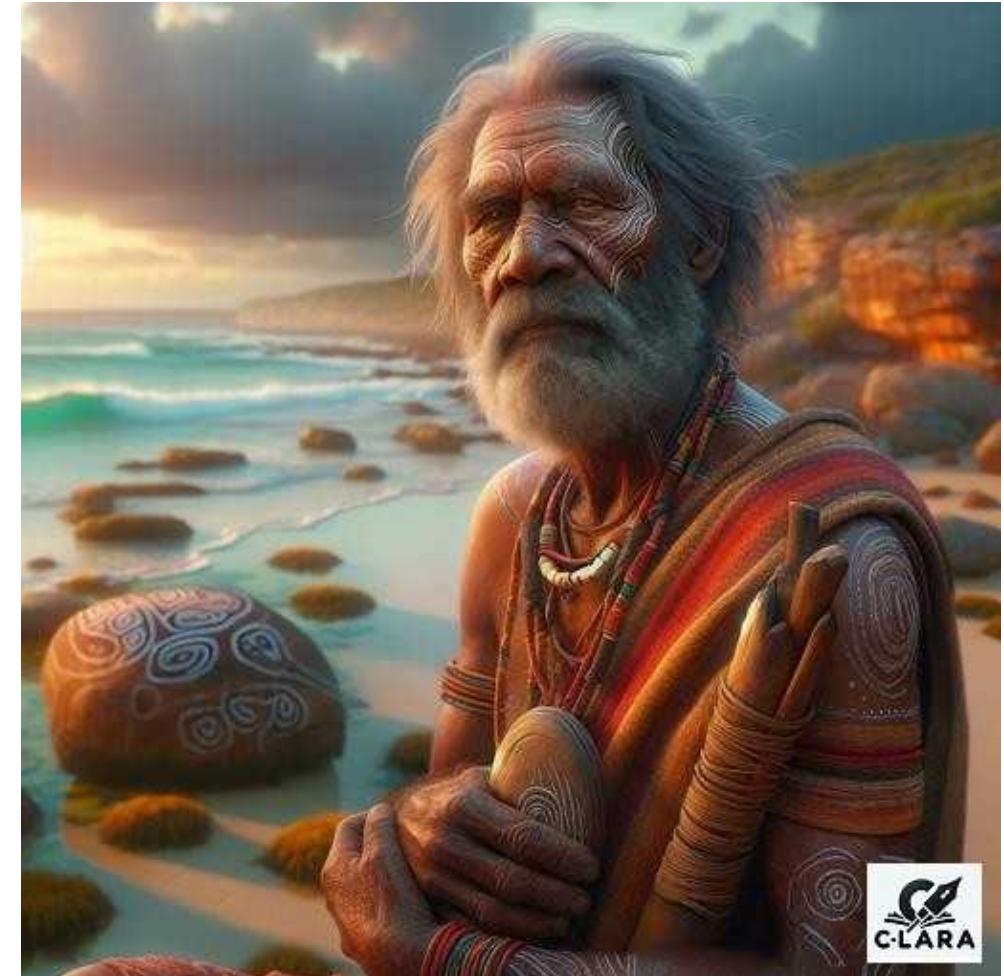


- **mirrm (house):** initially AI generated images of thatched huts.
- We needed an image of a modern Kowanyama house.
- After uploading an image as a prompt, the images generated by AI still weren't appropriate.

Example of a “bad result” when generating images of people

×

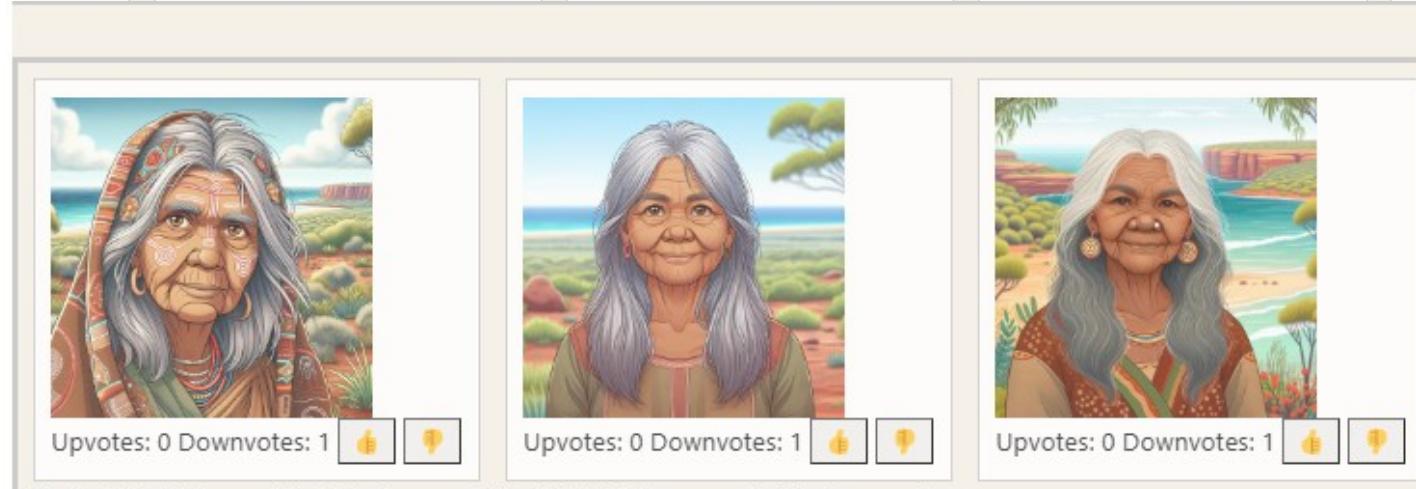
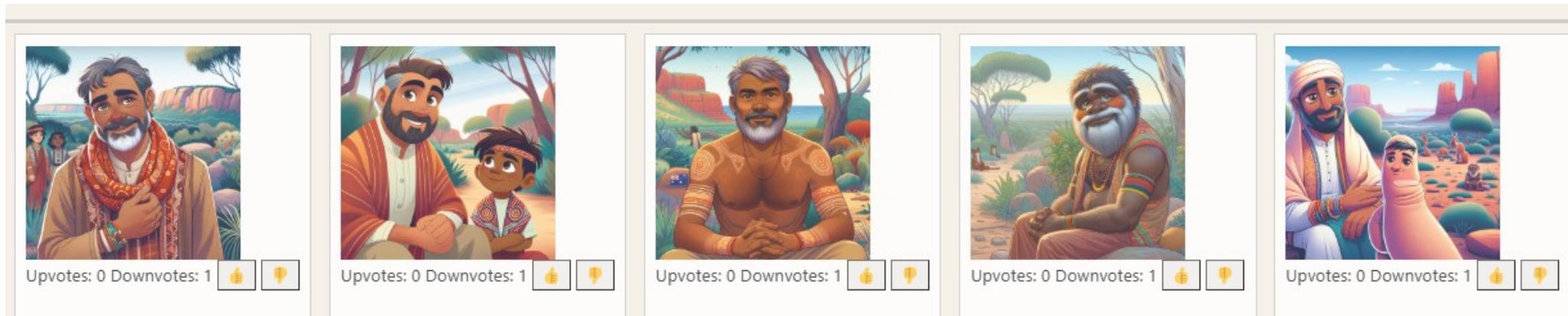
- **Pa-wengkena (wise old man):**
- AI tends to generate clothing, accessories and body/face paint that often aren't appropriate to the Australian Aboriginal context in general or to Kowanyama specifically



More examples of “bad results” when generating images of people



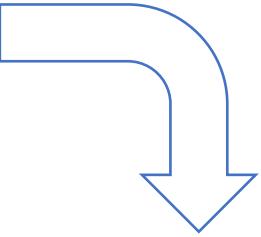
- AI is inconsistent in generating people that physically look Australian Aboriginal



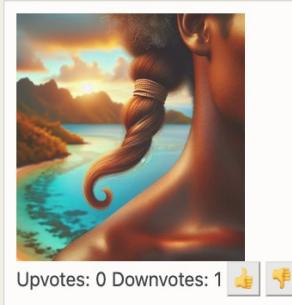
Example from Dreihu text

✖ Examples of bad images

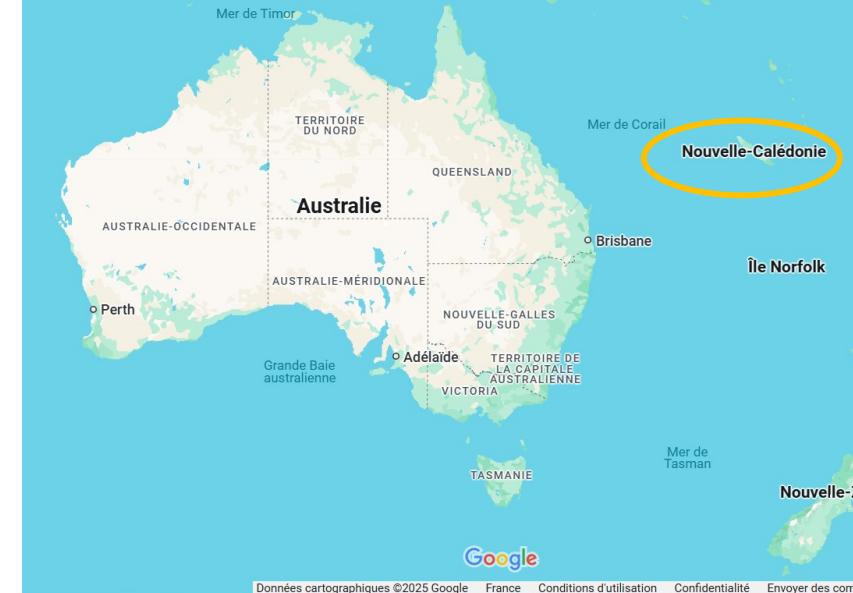
pene he ↪ = hair



✓ Examples of good page images (3)



Note: This is the exact text that was sent to DALL-E-3 to generate the images above.



Example from Drehu text

- **Image from “Boole i Sisiwanyano me Koradrane qatr”.** The great cricket match between the two legendary heroes Sisiwanyano and Koradrane.
- => Generating consistent images for stories is still difficult for AI. It can't yet reproduce the same images for the same character throughout the story.



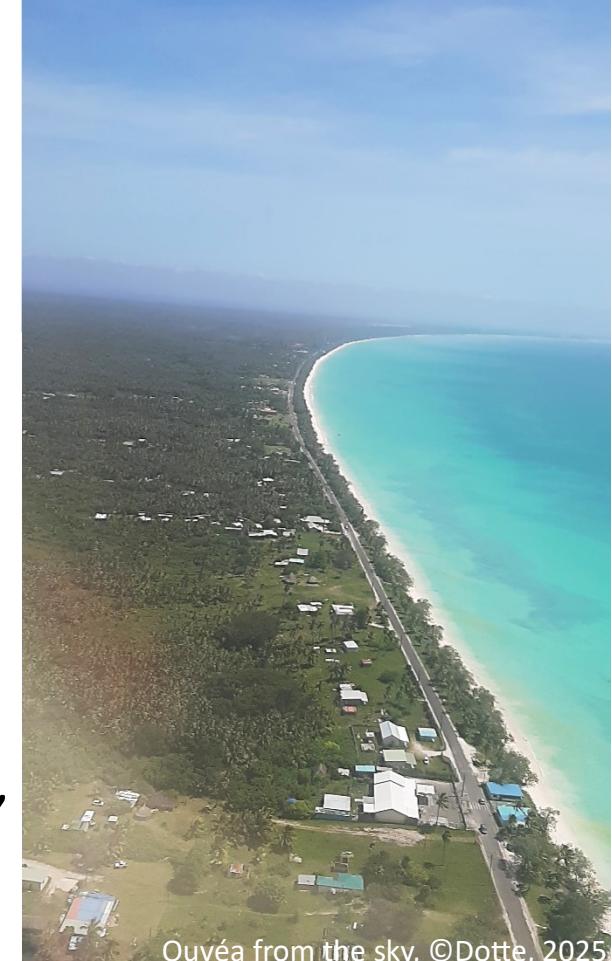
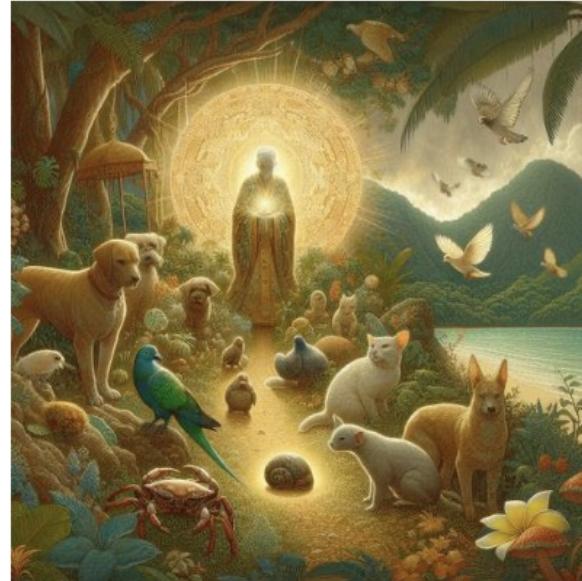
Example from Iaai text

- **Image from “Bongu eu me ovethet”.**
“Soohmwecaa”, the spirit of the island, summons all the birds and animals to a great meeting.





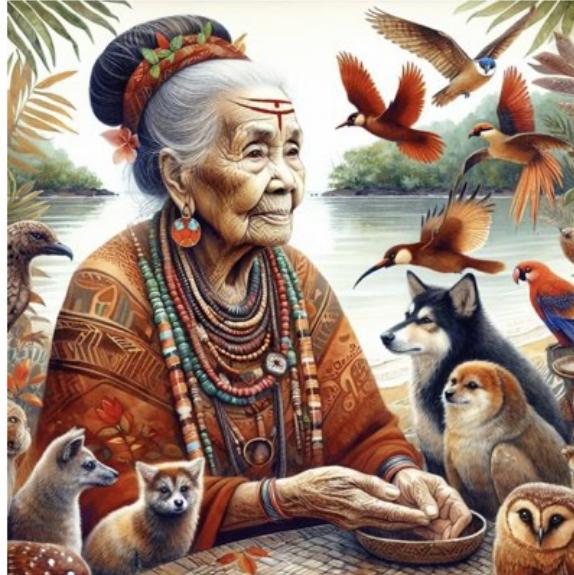
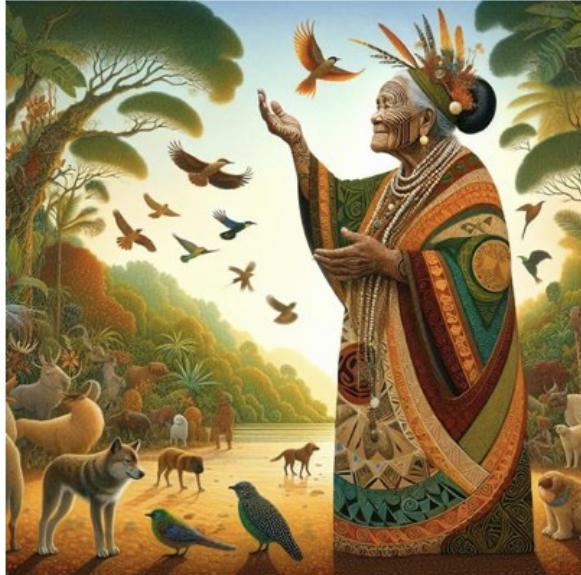
Examples of bad page images : **Bongu eu me ovethet**



- **Iaai atoll:** The images generated by the AI are not appropriate. To obtain more suitable images, we encourage the AI to remove the mountain representations, which are not relevant to the Ouvéa atoll. But for this story, as for other resources, the final result we have managed to create so far does not reflect what the island of Ouvéa looks like.

Ouvéa from the sky, ©Dotte, 2025

X Examples of bad page images : Bongu eu me ovethet

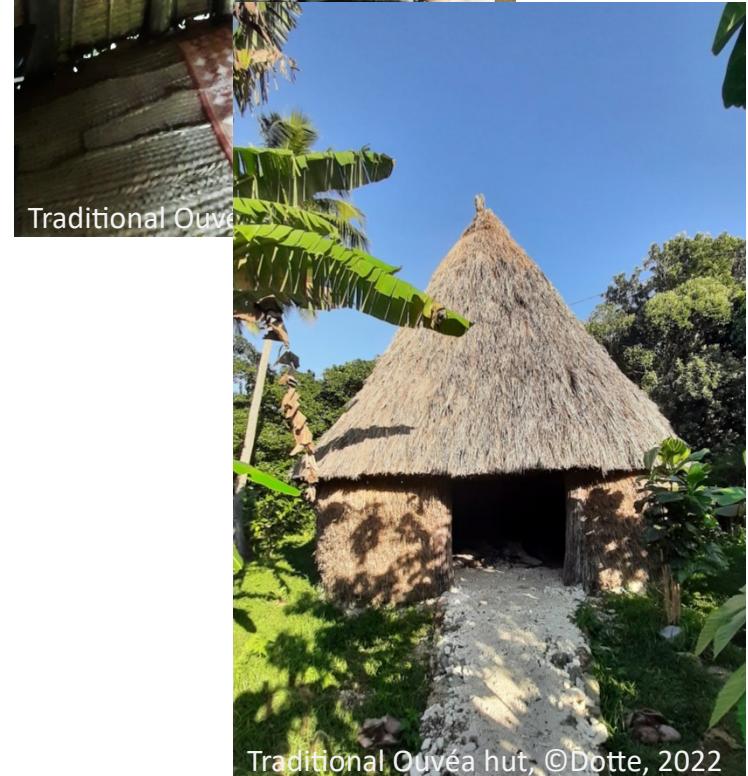
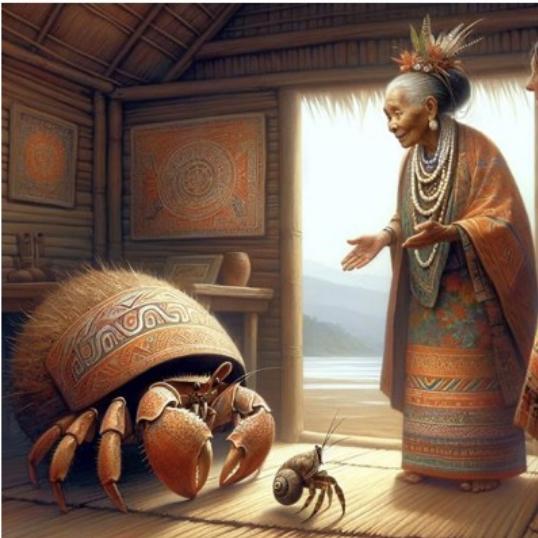


- **Clothing and accessories:** the influence of indigenous motifs is too far removed from the motifs of traditional Polynesian dresses, the jewellery and hair accessories are inappropriate, face tattoos, which are not representative of local cultural practices, inappropriate forest animals surrounding the main character...

Women from Ouvéa, ©Dotte, 2022



Examples of bad page images : **Bongu eu me ovethet**

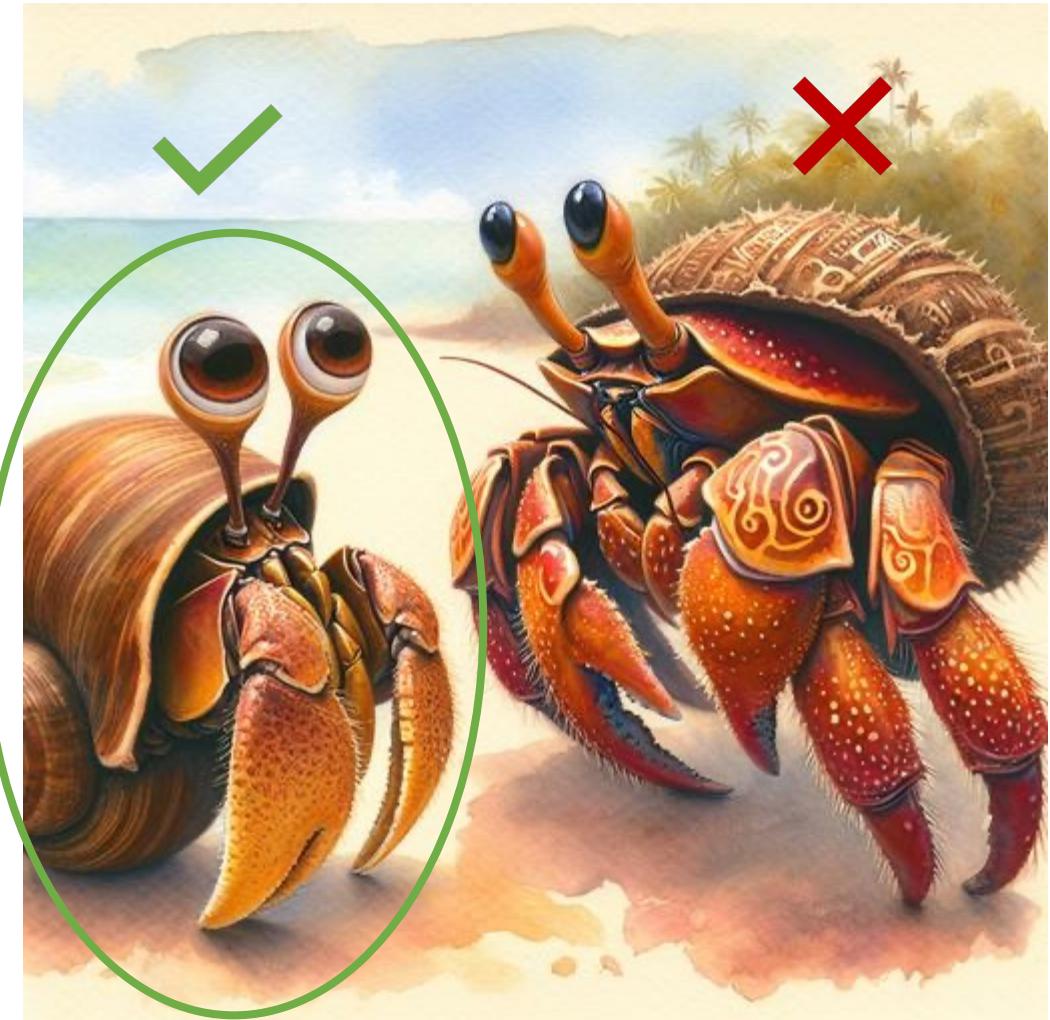


- **Habitat:** representation of the habitat too far removed from what exists in Ouvéa...



Examples of good page images

- **ovethet (hermit crab):**
- a fairly realistic representation in terms of the animal's physical appearance, the turquoise colour of the lagoon and the atoll lined with coconut palms, of which there are many on the Ouvéa island



Observations and lessons learned (1)

- (Still at an early stage – have only been using this functionality for a few weeks)
- AI is best at **unconnected** images of objects/scenery
- **Narratives with people** are trickier; controlling cultural appearance is challenging
- Distinguishing **different cultures or ethnicities** is an ongoing challenge
 - E.g. difficulty in generating initial images close to New Caledonia's diverse ecosystems (rainforest, dry forest, coral atolls, animal and plant species endemic to an 'isolated' area, etc.)

Observations and lessons learned (2)

- **Stylized** images (cartoons, dot paintings, stained glass windows, etc) tend to work best
- **Negative instructions** often fail: better to say “modern appearance” than “no face paint”
- **Hard for an outsider** to know when images are good or not
- Is it **ethical** to ask an AI to generate illustrations for Indigenous/under-resourced context rather contracting a (human) local artist?
- **Ongoing improvements** in the model → fewer errors over time
(Ethan Mollick: “This is the worst AI you’ll ever use”)

Community reviewing interface

- Up/downvote images, request new images, add advice
- Feedback from multiple community members
- Helps refine the final set of images for posted texts
- First tests in Kowanyama community soon

Community Member Reviewing (Kok Kaper 50 words Cartoon, Page 11)

Text used to create images

tree

Original text

Yok

Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1

Upvotes: 0 Downvotes: 1

Create similar images

Upload Your Own Image

Choose an image file: No file chosen

Advice from Community Members

No unprocessed advice items for this page.

Add your advice

[Back to Overview](#)

Future directions

- Create **more texts!**
 - Larger picture dictionaries for Kanak languages
- Trial C-LARA texts and images in **classrooms**
 - Kowanyama
- Experiment with the **community feedback** approach
- Continue to test **narrative** (connected story) generation improvements
- Explore **style selection** for specific cultures
- Monitor **new AI model releases** for better image generation capabilities

Summary

- C-LARA is an AI-driven platform for creating **multimodal** texts
 - In particular, support for flexible creation of **images**
 - Image generation capabilities still at an early stage
 - Production of simple images (esp dictionaries) now working acceptably
- We handle **Indigenous languages** with manual translations
- Choosing a **good style** for the images is important
 - AI often makes a strong choice
- We welcome **more communities** to try it out

If you want to use C-LARA

- Instructions at <https://www.c-lara.org/using.html>
- Can run on your own OpenAI API key
- We would love to hear your feedback ☺

Merci

Thank you

谢谢

Спасибо

Bedankt

Oleti

Takk

مُتَشَكِّرٌ

atraqatr

<https://www.c-lara.org/>

https://c-lara.unisa.edu.au/clara_working_docs/ComputEL-8PresentationV06.pptx

https://c-lara.unisa.edu.au/accounts/public_content_list/

