

# Making Picture Book Texts with C-LARA (interim report)\*

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## Abstract

We present an overview of functionality added to the C-LARA platform during the period April–June 2024 to support construction of pedagogically oriented multimodal picture books. There are two new functionalities: automatic construction of a thematically coherent set of images for a text, implemented using an automatic prompt-generation method, and systematic annotation of multi-word expressions, implemented using a Chain of Thought method. We briefly describe the new functionalities, give an extended example illustrating how to use them, and provide links to other C-LARA picture book texts.



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\*Authors in alphabetical order. As the title suggests, this should be regarded as a preliminary report which will be completed later. Its purpose is to let people get started using the new picture book and multi-word expression functionality. Final versions of this material will appear as sections in the Third C-LARA Progress Report, which we expect to post in September 2024.

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# 1. Introduction and overview

ChatGPT-based Language And Reading Assistant (C-LARA)<sup>1</sup> is an open source project, inaugurated in March 2023, whose goal is to develop a flexible online platform for creating and sharing multimedia texts useful for language learners. As the name suggests, ChatGPT-4 and GPT-4 are central to the enterprise, and are used in two ways. At runtime, GPT-4, in languages where it has sufficient expertise, performs all the key language- and image-processing functions. In parallel, ChatGPT-4 has also played a major role in the project as a software engineer. Working in close collaboration with a human partner, it has not only written the greater part of the code, but is responsible for a large proportion of the design decisions. Work on the project up to March 2024 is reported in detail in the first and second C-LARA progress reports ([Bédi et al., 2023, 2024](#)). This document presents an update, focussing on two new functionalities developed during the period April–June 2024: automatic construction of a thematically coherent set of images for a text, and systematic annotation of multi-word expressions.

The rest of the report is organised as follows. In §2 we briefly summarise the new functionalities, and in §3 we present an extended example showing how they can be used to rapidly construct a multimodal C-LARA picture book text. §4 gives links to some other example texts of this kind that we have recently produced. §5 suggests further directions. The appendices tell you how to start using C-LARA and give the complete text of the example story.

## 2. New functionality

We briefly sketch the new functionality we have developed to support creation of pedagogical multi-media picture books. All of this is under active development and is likely to improve further over the next few months.

### 2.1. Coherent image sets

The first challenge to address when creating a picture book is to obviously to create good pictures. It is not just necessary to make each individual image adequate in itself; the various images have to be consistent with each other. This is particularly important in a story, where characters and settings must maintain continuity.

In the solution we have developed, the AI generates a plan, based on the text, which alternates “generation” and “understanding” steps. Generation steps create the images. Understanding steps look at the generated images and extract verbal descriptions of aspects like the appearance of a character. The plan inserts these descriptions into later steps.

The extended example presented in Section 3 and Appendix B shows what a plan of this kind looks like in practice.

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<sup>1</sup>The official pronunciation of “C-LARA” is “Clara”.

Read through the following short piece of {l2\_language} text, represented as a JSON list of words and punctuation marks, and identify all the Multi-Word Expressions (MWEs). An MWE is defined here as any collection of two or more words, not necessarily contiguous, that form a meaningful unit within the context of the text and could be expected to appear as an entry, or be an inflected form of an entry, in a comprehensive lexicon. An MWE functions as a single part of speech, such as verbs, nouns, adjectives, adverbs or interjections, and should have a meaning that is not directly deducible from the meanings of its individual components. Typical English MWEs are phrasal verbs and set expressions of various kinds.

Start by writing out an analysis of the passage, considering plausible candidate phrases and giving justifications for why they are or are not MWEs. At the end, write out a list of the MWEs in JSON form.

Here are some examples:

{examples}

Analyze the following text:

{simplified\_elements\_json}

Figure 1: GPT-4 prompt template for “chain of thought” MWE annotation task.

## 2.2. Multi-word expressions

Conversations with language teachers, particularly teachers of English, have convinced us that it is absolutely essential to handle multi-word expressions (MWEs) well. In a sentence like “He has given up”, the least obvious aspect is that “given up” is a single lexical unit, a form of the phrasal verb “give up”. For the texts to be useful, items like these must be annotated appropriately. Unfortunately, in previous experiments where we evaluated the AI’s annotation abilities ([Bédi et al., 2023, § 2](#)); ([Bédi et al., 2024, § 5.1](#)), we found that MWEs were the aspect it found hardest to deal with.

Our previous annotation methods worked by giving the AI the annotation text, together with generic instructions and some few-shot examples, and telling it to return annotated text. It appears difficult to obtain good results with this straightforward approach. Mindful of the fact, already part of the AI folklore (e.g. ([Kojima et al., 2022](#))), that “Chain of Thought” reasoning is often a powerful method, we looked for ways to adapt it to the MWE annotation task. We find we get much better results when we present the text to the AI one segment at a time, together with instructions that require it to “think aloud” as it produces a detailed analysis of why candidate

```

[

[

    "It looks like a thank you note from Simon.",  

    "looks like,thank you",  

    "- 'looks like' is an inflected form of the phrasal verb  

    'look like', hence an MWE.\r\n  

    - 'thank you' is a set  

    expression functioning as an interjection, hence an MWE."  

],  

[

    "She must have thrown it out on Boxing Day morning.",  

    "thrown out,Boxing Day",  

    "- 'must have' is a common phrase, but its meaning  

    is deducible from its component words, hence it is not  

    an MWE.\r\n  

    - 'thrown out' is an inflected form of the phrasal verb  

    'throw out', hence an MWE.\r\n  

    - 'Boxing Day' is a set expression functioning as a proper  

    name, hence an MWE."  

]
]

```

Figure 2: GPT-4 examples for “chain of thought” MWE annotation task, inserted in formatted form in the prompt template. The first element in each triple is the example text, the second is the list of MWEs, and the third is the analysis used to produce the result.

phrases are or are not appropriately considered MWEs. Our prompt template and examples (so far, only tested in English) are shown in Figures 1 and 2.

### 3. “Kitten’s busy morning”: an example

We present a series of screenshots illustrating how to use Simple C-LARA to create a piece of content. We start by going to <https://c-lara.unisa.edu.au> and logging in:



Login Sign up Content

## Login

Username:

Password:

[Password reset](#)

Next, we select “Create new C-LARA project using Advanced C-LARA” from the “My projects” menu. We get a screen that looks like this, and fill in the project name, the text language, i.e. the language in which the text will be written and the annotation language, i.e. the language used for the glosses. We select the first method, “Use the AI to create text and an image based on your instructions”, set the text language to English and the annotation language to French, and check the box “Use coherent AI-generated image set”.

### Create a new project using Advanced C-LARA

Title:	<input type="text" value="Kitten's busy morning"/>
Text language:	<input type="text" value="English"/>
Annotation language:	<input type="text" value="French"/>
Use coherent AI-generated image set:	<input checked="" type="checkbox"/>
	<input type="button" value="Create Project"/>

We now get a screen that looks like this, showing the different tasks that can contribute to making a C-LARA project.

**Kitten's busy morning**

New title:

**Update Title**

Text Language: English

Annotation Language: French

Total API cost for this project: \$0.00

[Create/Edit Plain Text](#)

[Create/Edit Text Title](#)

[Create/Edit Summary](#)

[Estimate/Edit CEFR Level](#)

Everything except the first line is greyed out, so we select that and get the next screen. We select “Generate text using AI” at the top and tell the AI what we would like it to write:

**Create Plain Text ("Kitten's busy morning")**

Text choice:

Generate text using AI  
 Improve existing text using AI  
 Manually enter/edit text  
 Load archived version

Archived version:

Create the text of a picture book for small children entitled "Kitten's Busy Morning". Kitten gently wakes up Human by jumping on her bed, snuggling up and purring, then persuades her to give him breakfast and let him out in the garden. He unsuccessful tries to catch a bird, then scratches on the door until Human lets him in. Exhausted, he curls up in his favourite chair and goes back to sleep.

We want 8-10 pages, each page consisting of a paragraph with 2-4 short sentences. Do not include page numbers.

Prompt:

The AI obliges and produces the text.

Current version: ai\_generated June 11 2024 03:04:41

Kitten woke up early, stretching his tiny paws. He tiptoed across the room and jumped on Human's bed, ready to start the day.

Human was still asleep, so Kitten nestled beside her, purring softly. She opened her eyes and smiled, giving Kitten a gentle pat.

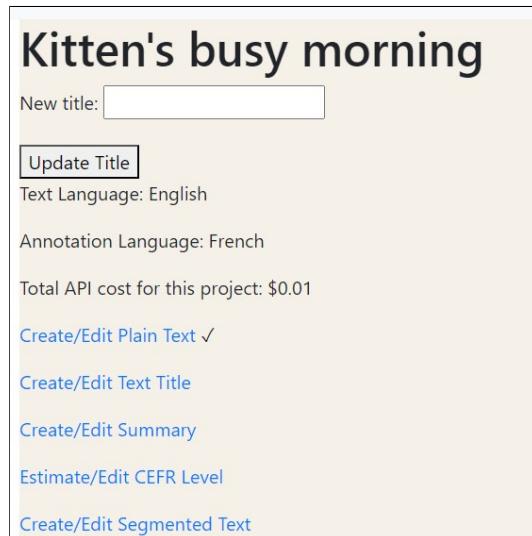
With a happy meow, Kitten led Human to the kitchen. He waited patiently as she prepared his breakfast, his tail wagging with excitement.

After eating his fill, Kitten scratched at the back door. Human opened it, and Kitten darted out into the garden, eager to explore.

In the garden, Kitten spotted a little bird hopping on the grass. He crouched low, waiting for the perfect moment to pounce.

Text:

When we go back to the project overview, we see that we now have more options:



We select “Create/Edit Text Title” and get the following screen. We could ask the AI to create the title for us, which is useful if we’re working in a language we don’t know well, but here it seems simplest to enter the title ourselves. We select “Manually enter/edit title” and do that.

## Create Text Title ("Kitten's busy morning")

Text choice:

- Generate title using AI
- Improve existing title using AI
- Manually enter/edit title
- Load archived version

Archived version:

Current version:

Kitten's busy morning

Text:

We go back to the project overview, where further options have become available as a result of the work we've already done:

# Kitten's busy morning

New title:

Text Language: English

Annotation Language: French

Total API cost for this project: \$0.01

[Create/Edit Plain Text ✓](#)

[Create/Edit Text Title ✓](#)

[Create/Edit Summary](#)

[Estimate/Edit CEFR Level](#)

[Create/Edit Segmented Text](#)

[Create/Edit Segmented Title](#)

[Create/Edit MWE-tagged Text](#)

We select “Create/Edit Segmented Text”, select “Segment text using AI” in the new screen, and hit the “Generate” button.

## Create Segmented Text ("Kitten's busy morning")

Text choice:

- Segment text using AI
- Try to fix errors in malformed segmented text using AI
- Improve existing segmented text using AI
- Manually enter/edit segmented text
- Load archived version

We get this output, where the text has been broken up into smaller units. Page breaks are marked using the <page> tag, and double bars, || mark the ends of segments. The AI has also split up the word “tiptoed” at the top into the two units “tip” and “toed”. This is perhaps not the best choice, and if we wanted to we could edit and save, but we carry on.

Kitten woke up early, stretching his tiny paws.|| He tip|toed across the room and jumped on Human|l's bed, ready to start the day.||<page>Human was still asleep, so Kitten nestled beside her, purring softly.|| She opened her eyes and smiled, giving Kitten a gentle pat.||<page>With a happy meow, Kitten led Human to the kitchen.|| He waited patiently as she prepared his breakfast, his tail wagging with excitement.||<page>After eating his fill, Kitten scratched at the back door.|| Human opened it, and Kitten darted out into the garden, eager to explore.||<page>In the garden, Kitten spotted a little bird hopping on the grass.|| He crouched low, waiting for the perfect moment to pounce.||<page>But the bird flew away just in time, leaving Kitten to chase after it in vain.|| Panting, Kitten returned to the door and scratched to be let back in.||<page>Human opened the door and welcomed Kitten back inside.|| He rubbed against her legs, happy to be home again.||<page>Feeling tired from his busy morning, Kitten made his way to his favourite chair.|| He curled up into a cozy ball, ready for a nap.||<page>As Kitten dreamed of his next adventure, Human watched and smiled.|| What a busy morning it had been for her little friend!||<page>Soon, Kitten was fast asleep, purring softly.|| The house was peaceful and quiet, filled with love and the promise of more playful mornings to come.||

Text:

We next go back to the overview screen and visit “Create Segmented Text Title”. Here we have something we really do need to fix! For whatever reason, the AI has not segmented the title, but added a lot of new text to it.

## Create Segmented Text Title ("Kitten's busy morning")

Text choice:

- Generate title using AI
- Manually enter/edit title
- Load archived version

Archived version: ai\_generated June 11 2024 03:11:03 ▾

Current version: ai\_generated June 11 2024 03:11:03

Kitten's busy morning  
The kitten wakes up. She stretches wide and yawns. Her tiny paws touch her tiny face  
  
She jumps down from her cozy bed. Breakfast time!  
  
The kitchen is quiet and still. She meows for her meal.  
  
Her owner, half-asleep, stumbles in. He pours milk in her dish. She purrs happily.  
  
After she eats, she cleans her face with delicate paws. Spotting a butterfly through the window, she decides it's time for some fun. She leaps onto the windowsill, her eyes following the fluttering wings.

We edit away the new text and also split up the word “Kitten’s” into two units.

## Create Segmented Text Title ("Kitten's busy morning")

Text choice:

- Generate title using AI
- Manually enter/edit title
- Load archived version

Archived version: ai\_generated June 11 2024 03:11:03 ▾

Current version: ai\_generated June 11 2024 03:11:03

Kittenl's busy morning

We go back to the overview and select “Create/Edit MWE-tagged Text”. We get this screen, select “Generate annotated text from segmented text using AI”, and hit the Generate button.

## Create MWE Tagged Text ("Kitten's busy morning")

Text choice:

- Generate annotated text from segmented text using AI
- Manually enter annotated text
- Load archived version

Archived version: ▼

Current version: [redacted]

```
<h1>||Kitten|'s busy morning||</h1><page>
Kitten woke up early, stretching his tiny paws.|| He tip|toed across the room and jumped on Human|'s
bed, ready to start the day.||<page>Human was still asleep, so Kitten nestled beside her, purring softly.|||
She opened her eyes and smiled, giving Kitten a gentle pat.||<page>With a happy meow, Kitten led
Human to the kitchen.|| He waited patiently as she prepared his breakfast, his tail wagging with
excitement.||<page>After eating his fill, Kitten scratched at the back door.|| Human opened it, and
Kitten darted out into the garden, eager to explore.||<page>In the garden, Kitten spotted a little bird
hopping on the grass.|| He crouched low, waiting for the perfect moment to pounce.||<page>But the
bird flew away just in time leaving Kitten to chase after it in vain.|| Panting, Kitten returned to the door
```

This operation is trying to find multi-word expressions, groups of two or more words that should be treated as single units. It's quite a difficult task for the AI, so it uses a "Chain of Thought" method which basically encourages it to think out loud about each segment. It's slow but accurate. After a while, we get the output. If you scroll down, you can see how much work the AI has done while you were waiting.

Current version: ai\_generated June 11 2024 03:24:05

```
<page><h1>||Kitten's busy morning
_analysis: :
1. ***"Kitten 's***:
- The phrase "Kitten 's" is the result of the possessive form of the noun "Kitten." The possessive form is
grammatical and denotes ownership or association. However, it is not a multi-word expression (MWE)
since it is a syntactic construction rather than a set expression with an indivisible meaning. Hence, not
an MWE.

2. ***"busy morning***:
- While "busy morning" is a common collocation, it purely denotes a morning that is busy, with the
meaning directly deducible from its components. It does not form a set expression with a unique
meaning that is different from the sum of its parts. Thus, it is not considered an MWE.
```

Given this analysis, there are no Multi-Word Expressions (MWEs) in the input text since none of the

We're now ready to create the images, which is the fun part. We go to "Add/Remove Images" and get this screen. We fill in the prompt for the "Style image". This is going to be used to set

the overall style for our picture book. We think it would be interesting to try and create images in the style of the French Impressionists, so we ask for a kitten in a garden, in the style of Monet.

### Edit Images ("Kitten's busy morning")

#### Style image

Prompt	Image Preview	Description
An image of a grey tabby kitten in a garden, in the style of Monet.	No image currently stored.	

[Create style image](#)

The AI creates the image, and then analyses it to get a verbal description. This description will be included as part of the requests used to create the other images.

DALL-E-3 image generation successfully completed

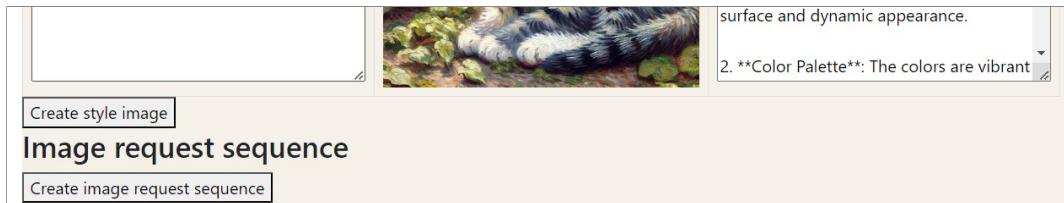
### Edit Images ("Kitten's busy morning")

#### Style image

Prompt	Image Preview	Description
An image of a grey tabby kitten in a garden, in the style of Monet.		<p>The image is styled in a manner that closely resembles Impressionism. The key elements of this style include:</p> <ol style="list-style-type: none"><li>1. **Brushwork and Texture**: The painting features thick, textural brushstrokes that give a sense of movement and light play. The use of visible brush strokes creates a tactile surface and dynamic appearance.</li><li>2. **Color Palette**: The colors are vibrant</li></ol>

[Create style image](#)

We're happy with the style image and description, so we scroll down to “Image request sequence” immediately below and hit “Create image request sequence”:



When the AI has finished, we see that it's populated the bottom of the screen with a table where each line is either a "Generation" request (make an image) or an "Understanding" request (look at an image and get a verbal description). If you scroll down the table, you'll see that the AI has used the descriptions produced by the understanding requests to maintain continuity in the images.

Upload/generate/delete existing images						
Request type	Image/Description	Prompt	Name/Variable	Page	Position	Generate Delete
Generation	No image currently stored.	A cover page illustration showing a charming kitten stretching his tiny paws, with a title overhead: 'Kitten's busy morning'. The scene is warm and inviting, setting the tone for a cozy and playful story.	image_1_bottom	1	Bottom	<input type="checkbox"/>
Generation	No image currently stored.	An image of Kitten waking up early and stretching his tiny paws. He is tiptoeing across the room towards a bed where a Human is sleeping. The room is cozy, with soft morning light coming through the window.	image_2_bottom	2	Bottom	<input type="checkbox"/>
Understanding		Analyze this image depicting Kitten in the bedroom. Provide a detailed description focusing on Kitten's appearance, including fur color, pattern, and any distinct features. Also describe the room, its furnishings, lighting, and the Human in bed.	Kitten-and-room-descript	2	Bottom	<input type="checkbox"/>

We think most of the requests look good, but we would specifically like the kitten to be a grey tabby. We edit the first two lines to do that and check the Generate box on the right-hand side of all the lines. Then we go down to the bottom and hit Process.

Upload/generate/delete existing images							
Request type	Image/Description	Prompt	Name/Variable	Page	Position	Generate	Delete
Generation	No image currently stored.	A cover page illustration showing a charming grey tabby kitten stretching his tiny paws, with a title overhead: 'Kitten's busy morning'. The scene is warm and inviting, setting the tone for a cozy and playful story.	image_1_bottom	1	Bottom	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Generation	No image currently stored.	An image of Kitten, a charming grey tabby, waking up early and stretching his tiny paws. He is tiptoeing across the room towards a bed where a Human is sleeping. The room is cozy, with soft morning light coming through the window.	image_2_bottom	2	Bottom	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Understanding		Analyze this image depicting Kitten in the bedroom. Provide a detailed description focusing on Kitten's appearance, including fur color, pattern, and any distinct features. Also describe the room, its furnishings, lighting, and the Human in bed.	Kitten-and-room-descrip	2	Bottom	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The AI spends a few minutes executing all the requests, keeping us updated about what it's doing. When it's finished, we see that all the Generation lines now have images, and all the Understanding lines have verbal descriptions. Scrolling down, we see that some images could be improved. In particular, when the kitten is trying to catch the bird he's much too close! We should really edit that request and regenerate the image, but we're lazy and just continue.

Upload/generate/delete existing images							
Request type	Image/Description	Prompt	Name/Variable	Page	Position	Generate	Delete
Generation		A cover page illustration showing a charming grey tabby kitten stretching his tiny paws, with a title overhead: 'Kitten's busy morning'. The scene is warm and inviting, setting the tone for a cozy and playful story.	image_1_bottom	1	Bottom	<input type="checkbox"/>	<input type="checkbox"/>
Generation		An image of Kitten, a charming grey tabby, waking up early and stretching his tiny paws. He is tiptoeing across the room towards a bed where a Human is sleeping. The room is cozy, with soft morning light coming through the window.	image_2_bottom	2	Bottom	<input type="checkbox"/>	<input type="checkbox"/>

We go back to the overview, and we have more new options. We select “Create/Edit Lemma Tagged Text” near the bottom.

**Kitten's busy morning**

New title:

**Update Title**

Text Language: English

Annotation Language: French

Total API cost for this project: \$1.08

[Create/Edit Plain Text](#) ✓

[Create/Edit Text Title](#) ✓

[Create/Edit Summary](#)

[Estimate/Edit CEFR Level](#)

[Create/Edit Segmented Text](#) ✓

[Create/Edit Segmented Title](#) ✓

[Create/Edit MWE-tagged Text](#) ✓

[Add/Remove Images](#) ✓

[Create/Edit Phonetic Text](#)

[Create/Edit Lemma Tagged Text](#)

[Create/Edit Glossed Text](#)

We get this screen, select “Generate annotated text from segmented text using AI”, and hit Generate.

### Create Lemma Tagged Text ("Kitten's busy morning")

Text choice:

- Generate annotated text from segmented text using AI
- Generate annotated text from segmented text using TreeTagger
- Try to fix errors in malformed annotated text using AI
- Improve existing annotated text using AI
- Generate annotated text from segmented text with trivial tags
- Manually enter annotated text
- Load archived version

When the AI has finished, we see this screen, where each word has been tagged with its root form and part of speech. We probably aren't going to read through all this, but glancing at the top we see that it's correctly marked “woke” and “up” as parts of the phrasal verb “wake up”.

Current version: ai\_generated June 11 2024 04:52:10

```
<page><h1>||Kitten's#kitten/NOUN# busy#busy/ADJ# morning#morning/NOUN#||</h1>

<page>
Kitten#kitten/NOUN# woke#wake up/VERB# up#wake up/VERB# early#early/ADV#,
stretching#stretch/VERB# his#he/PRON# tiny#tiny/ADJ# paws#paw/NOUN#.|| He#he/PRON#
tiptoed#tip toe/VERB# across#across/ADP# the#the/DET# room#room/NOUN# and#and/CCONJ#
jumped#jump/VERB# on#on/ADP# Human's#Human/PROPN# bed#bed/NOUN#, ready#ready/ADJ#
to#to/PART# start#start/VERB# the#the/DET# day#day/NOUN#.||

<page>Human#Human/NOUN# was#be/AUX# still#still/ADV# asleep#asleep/ADJ#, so#so/SCONJ#
Kitten#Kitten/NOUN# nestled#nestle/VERB# beside#beside/ADP# her#she/PRON#,
purring#purr/VERB# softly#softly/ADV#.|| She#she/PRON# opened#open/VERB# her#her/PRON#
eyes#eye/NOUN# and#and/CCONJ# smiled#smile/VERB#, giving#give/VERB# Kitten#Kitten/PROPN#
a#a/DET# gentle#gentle/ADJ# pat#pat/NOUN#.||
```

Text:

We go back to the overview and this time select “Create/Edit Glossed Text”. We get this screen, where we select “Generate annotated text from LEMMA-TAGGED text using AI”. What this means is that the AI will use the lemma-tagged text we just created as input when it tries to add French glosses. This will help it get a more accurate result. We hit Generate and let it do its thing.

## Create Glossed Text ("Kitten's busy morning")

Text choice:

- Generate annotated text from SEGMENTED text using AI
- Generate annotated text from LEMMA-TAGGED text using AI
- Try to fix errors in malformed annotated text using AI
- Improve existing annotated text using AI
- Manually enter annotated text
- Load archived version
- Delete current glossed text

When it's finished, we see the glossed text. This time, each word is tagged with a French gloss. We see that “woke” and “up” are both tagged with the same word, which is good. But the AI has chosen “réveiller”, which isn't quite right: that's the transitive verb, i.e. “wake someone up”, but we want the intransitive verb, which would be “s'est réveillé”. If we were feeling more energetic, we would edit this, but again we just carry on.

Current version: ai\_generated June 11 2024 04:57:58

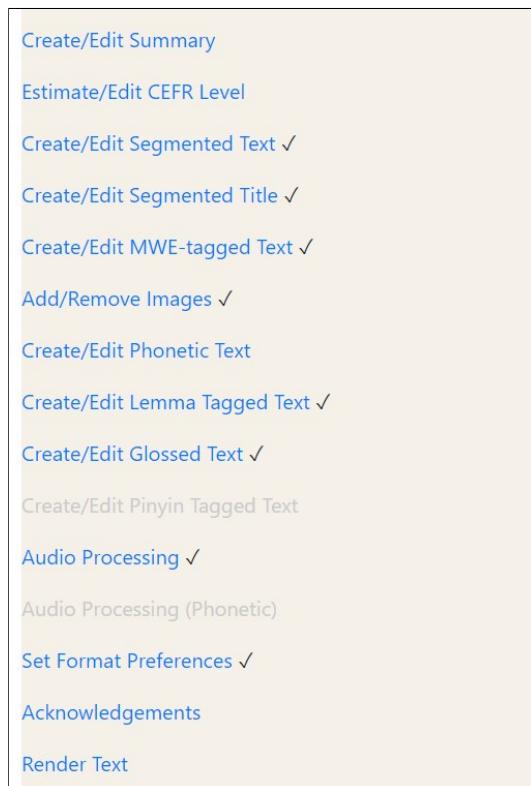
```
<page><h1>||Kitten's#chaton# busy#occupé# morning#matin#||</h1>

<page>
Kitten#chaton# woke#réveiller# up#réveiller# early#tôt#, stretching#étirer# his#son# tiny#petites#
paws#pattes#.|| He#il# tiptoed#marché sur la pointe des pieds# across#à travers# the#le#
room#pièce# and#et# jumped#sauté# on#sur# Human's#de l'humain# bed#lit#, ready#prêt# to#à#
start#commencer# the#la# day#journée#.||

<page>Human#Humain# was#était# still#encore# asleep#endormi#, so#alors# Kitten#Chaton#
nestled#nichait# beside#à côté# her#d'elle#, purring#ronronnant# softly#doucement#.|| She#elle#
opened#ouvrit# her#ses# eyes#yeux# and#et# smiled#sourit#, giving#donnant# Kitten#Chaton#
a#un# gentle#doux# pat#tapotement#.||
```

Text:

We go back to the overview, and now the Render task is accessible:



We select that and get this screen. We hit the Render button and wait.

## Render Text ("Kitten's busy morning")

[Render](#)

[Back to Project](#)

When it's finished, we get a screen with news links. We click on "View Content".

Rendered text created

## Rendered Text ("Kitten's busy morning")

[View Content](#)

Register as content:

[Register as Content](#)

[Back to Project](#)

Here's the final result, our multi-media document! It's not perfect — we immediately notice that the AI has put too many Ts in "Kittten", if we missed that when we reviewed the generated images.

# Kitten's busy morning



But most of it seems to be okay, when we try clicking and hovering on words. Here, we've click on the word "darted". We see on the right that it's correctly tagged as a form of the phrasal verb "dart out". Hovering over it gives the French gloss "se précipiter", which isn't terrible, though the perfect tense "s'est précipité" would be best.

First Previous Next Last Frequency Alphabetical

After eating his fill, Kitten scratched at the back door.  Human opened it, and Kitten darted out into the garden, eager to explore. 



## dart out

← Human opened it, and Kitten darted out into the garden, eager to explore. 

If we click on “Alphabetical” at the top, we can review the whole vocabulary of the text. We see lots of plausible multi-word expressions, which is encouraging.

Kitten woke up early, stretching his tiny paws.  He tiptoed across the room and jumped on Human's bed, ready to start the day. 



- [with \(3\)](#)
- [it \(3\)](#)
- [just in time \(3\)](#)
- [let back in \(3\)](#)
- [his \(3\)](#)
- [make one's way \(3\)](#)
- [wake up \(2\)](#)
- [on \(2\)](#)
- [ready \(2\)](#)
- [purr \(2\)](#)
- [softly \(2\)](#)
- [smile \(2\)](#)
- [happy \(2\)](#)
- [as \(2\)](#)
- [his fill \(2\)](#)
- [scratched at \(2\)](#)
- [back door \(2\)](#)
- [human \(?\)](#)

Going back to the “Rendered text created” screen, we optimistically decide that our text is good enough to show to other people. We select the checkbox and hit “Register as Content”.

Rendered text created

## Rendered Text ("Kitten's busy morning")

[View Content](#)

Register as content:

[Register as Content](#)

[Back to Project](#)

Our new text is now available on the C-LARA social network!

### Kitten's busy morning

Link to published content: [/accounts/rendered\\_texts/308/normal/page\\_1.html](/accounts/rendered_texts/308/normal/page_1.html)

No ratings yet

★★★★★

[Submit rating](#)

Text language:	English
Annotation language:	French
Created by:	<a href="#">mannyrayner</a>
Summary:	Unknown
Length in words:	236
Author:	mannyrayner
Voice:	google_en-GB_en-GB-News-J (segments), google_en-GB_default (words)
Difficulty Level:	Unknown

And when we go to the Home page (far left in the main menu), we see it as the most recent item under “Recently published content”:

## C-LARA updates

Showing updates for: [Last three days](#) ▾

[Update View](#)

### Recently published content

- [Kitten's busy morning](#) (English)
- [ABC of science-fiction \(Ukrainian glosses\)](#) (English)
- [Sumo-Wrestler Tanya Loves Polite Forms of Address](#) (English)
- [Secret Agent Samantha Loves Set Expressions v2](#) (English)
- [Secret Agent Samantha Loves Set Expressions v1](#) (English)

For other search options, go to [Social network > Posted content](#)

### Recent project activities

- No recent activities found.

For more detailed activity tracking, go to [Social network > Activities](#)

We're already wondering if we shouldn't go back and fix those little glitches we noticed. But we can do that tomorrow and update the text.

## 4. Other C-LARA picture book texts

### 4.1. The Princess and the Dragon

A great fire was spreading, and the animals were scared. 



A cute manga-inspired picture book with an ecological theme, about a brave princess who makes friends with a dragon and saves the forest. The home page for the full document is [here](#).

This was our first C-LARA picture book, and it is not very successful. In particular, the continuity is poor. After making it, we developed the functionality for adding automatically generated content descriptions.

## 4.2. ABC of science-fiction

J is for Jetpack. 🎧 A jetpack is a device worn to fly through the air. 🎧



We asked for a 50s-style ABC of science-fiction suitable for low intermediate learners. The home page for the full document is [here](#).

This one came out very well. The AI started by creating a good cover with many useful visual elements, and used that to maintain continuity.

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

Finley was in awe. 🎧 "Why have you come to me?" he asked. 🎧 Muezza smiled and replied, "I am here to guide you to Islam. 🎧 Even as a kitten, you can find peace and love through faith." 🎧



Noticing that our kitten Finley refused to eat pork, we asked for a story suitable for 8–12 year olds and highly respectful towards the Muslim world, about a kitten who converts to Islam. The home page for the full document is [here](#).

This one also came out well. The fact that tabby kittens have a fairly uniform appearance helps maintain visual continuity, as we also saw in “Kitten’s Busy Day”. It is impressive to see how at home the AI appears to be with Islamic culture.

#### 4.4. Supermodel Lisa Loves Phrasal Verbs

Lisa gets picked up by a chauffeur for her photoshoots. 🔊 She enjoys looking at the city through the window. 🔊 She arrives at the studio, ready to work. 🔊



We asked for a glamorous story suitable for teen learners of English which included many examples of phrasal verbs. The home page for the full document is [here](#).

Technically, this one also came out well. There are plenty of phrasal verbs, multi-word processing finds most of them, and the supermodel's appearance is fairly consistent. Several people said they found the story unbearably tacky, but we have not yet shown it to any teenage boys.

## 4.5. Secret Agent Samantha Loves Set Expressions

I followed the villain into a crowded market. 🎙️ He didn't notice me; 🎙️ I was a fly on the wall. 🎙️ But then he vanished into thin air! 🎙️



We wanted something similar to the preceding story but less tacky. The home page for the full document is [here](#).

This one also feels quite successful. The visual continuity is okay, and the AI again manages to annotate most of the multi-word expressions. However, we did a fair amount of prompt editing and regeneration to get this result.

## 4.6. Sumo-Wrestler Tanya Loves Polite Forms of Address

Tanya was not your ordinary English teacher. 🔊 She was huge, strong, and wore a sumo belt. 🔊 She was also one of the top amateur women's sumo wrestlers in Tokyo. 🔊 Her girlfriend, Michiko, was a petite nuclear physicist. 🔊 They made a fun and curious pair. 🔊



Another instalment of “heroines of English grammar”. The home page for the full document is [here](#).

This one is not so good. The AI looks like it’s having problems drawing something as unusual as a female sumo wrestler, and despite regenerating many images Tanya’s appearance is far from consistent. Her petite nuclear physicist girlfriend is however better realised, and the multi-word expressions are well handled.

## 5. Further Directions

The functionality described here is still at an early stage and can be improved and extended in many ways. Here are the ideas uppermost in our minds.

**Cleaning up:** There are some rough edges that need to be addressed. Most obviously, MWE annotation calls often fail because the formatting of the AI’s reply is not quite correct, and glosses created from lemma-tagged input place too much weight on the lemma and not enough on the surface words. Both of these issues are probably fairly easy to correct and would make a large difference.

**Highlighting of MWEs:** From the pedagogical perspective, it would be very useful to add functionality to the multimodal document to change the highlighting behaviour so that hovering over one component of an MWE highlights all the other components as well. The AI thinks this is a fairly easy piece of JavaScript.

**Other languages:** So far, we have only experimented with creating picture book texts in English with French glosses. We will soon start experimenting with other languages. Based on the interests of relevant C-LARA people, the ones which will probably be explored first are Icelandic, Mandarin, French, Ukrainian and Czech.

**Non-AI-supported languages:** Some C-LARA users are working in languages that are not supported by the AI ([Bédi et al., 2024, § 7.3](#)). It is possible to use the picture book functionality here too if we allow users to add sentence translations in an AI-supported language, which in practice will usually be English or French; the AI can then use the translations instead of the actual text. This is easy to do and useful in its own right.

**Simple C-LARA:** The process of creating the picture books is too complicated for casual users. We should extend “Simple C-LARA” ([Bédi et al., 2024, § 4.1](#)) to support a picture book mode.

**Using the AI to critique work:** In the current version of the coherent image functionality, the human needs to critique the generated plans, images and descriptions, and if necessary revise them. An extremely tempting idea is to investigate whether the AI can take over some or all of this work, analysing the output itself. Our impression is that image analysis is much more reliable than image generation, and it seems far from impossible that this will yield results even with the current version of GPT-4o.

**Other kinds of texts:** Another tempting idea is to try using the same methodology for generating complex texts, creating a plan with AI-generated prompts that include both generation and understanding. For example, a request to create a twenty chapter language textbook could yield a plan which contains a generation task for each chapter, which recursively creates further plans to generate each section; other tasks would critique the output for coherence and fix issues. We don’t know how well this might work in practice, but it is easy to implement an initial version and experiment.

## Acknowledgements

We would very much like to express our gratitude to OpenAI for making available to us an early GPT-4 API key, without which this project would have been impossible.

Many C-LARA colleagues gave useful suggestions and comments. We would particularly like to thank (in alphabetical order) Branislav Bédi, Francis Bond, Cathy Chua, Belinda Chiera, Sölvi Halldórssón, Ivana Horváthová, Yixuan Lu, Claudia Mărginean, Christèle Maizonniaux, Marta Mykhats, Chadi Raheb, Annika Simonsen, Pauline Welby, Chunlin Yao, Rina Zviel-Girshin and Hrafnhildur Ming Þórunnardóttir.

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- Takeshi Kojima, Shixiang Shane Gu, Machel Reid, Yutaka Matsuo, and Yusuke Iwasawa. Large language models are zero-shot reasoners. *arXiv preprint arXiv:2205.11916*, 2022.

## A. How to access C-LARA

If you want to experiment with C-LARA, we recommend doing the following:

### Create an account

Go to the C-LARA login page, <https://c-lara.unisa.edu.au>. Use the Register tab to create an account. You need to supply an email address to be able to use password retrieval and email confirmation, and receive email updates. We will not share your address with third parties.

### Register an API key or submit a funding request

Creating an account is free and language learners can use it to read existing C-LARA content and do a lot of other things. But the AI-based functionality which permits content creation and is the heart of the platform uses GPT-4 and other OpenAI models, which costs money. In order to access these functions, in particular to use the AI to create multimodal content, you need to be able to pay for the OpenAI calls.

The preferred solution is to use an OpenAI API key valid for GPT-4. Open a ChatGPT account at <https://chat.openai.com/auth/login> if you do not already have one and get an API key from <https://platform.openai.com/api-keys>. Then on C-LARA, go to Edit configuration information under the dropdown list on the extreme right and enter your key. Calls you make to OpenAI through C-LARA will then be charged directly to your account.

If this solution does not work for you, perhaps because you are not able to open a ChatGPT account due to your geographical location, we have a small amount of funding available to help people experiment. Contact us, explaining briefly what you are thinking of doing and why you can't use an API key. We are typically handing out ten dollars per request, which will let you create half a dozen pieces of content.

## B. Full text of “Kitten’s busy morning”

### Style image

DALL-E-3 image generation successfully completed

### Edit Images ("Kitten's busy morning")

#### Style image

Prompt	Image Preview	Description
An image of a grey tabby kitten in a garden, in the style of Monet.		<p>The image is styled in a manner that closely resembles Impressionism. The key elements of this style include:</p> <ol style="list-style-type: none"><li>1. **Brushwork and Texture**: The painting features thick, textural brushstrokes that give a sense of movement and light play. The use of visible brush strokes creates a tactile surface and dynamic appearance.</li><li>2. **Color Palette**: The colors are vibrant</li></ol>

[Create style image](#)

**Prompt (human-provided):** An image of a grey tabby kitten in a garden, in the style of Monet.

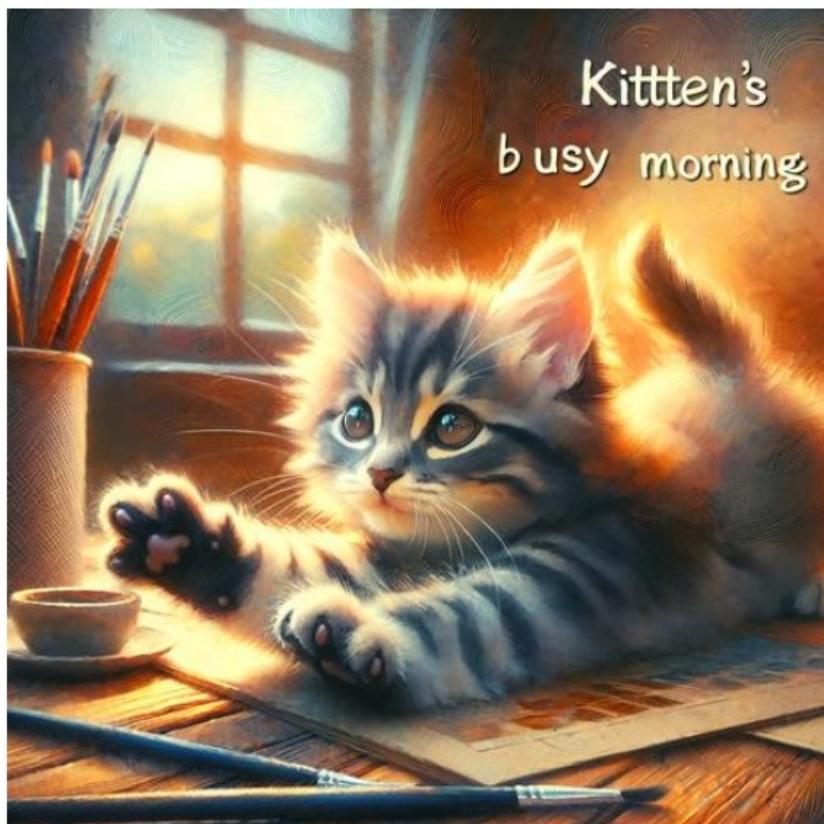
**Style description (AI-generated):** The image is styled in a manner that closely resembles Impressionism. The key elements of this style include:

1. **Brushwork and Texture**: The painting features thick, textural brushstrokes that give a sense of movement and light play. The use of visible brush strokes creates a tactile surface and dynamic appearance.
2. **Color Palette**: The colors are vibrant and varied, utilizing a wide range of hues to capture the play of natural light. There is a significant emphasis on the interaction of light and shadow, using contrasting colors to create depth.
3. **Light and Atmosphere**: Light is depicted in a naturalistic manner, enhancing the overall atmosphere of the scene. The artist captures the intricate details of how light interacts with the subject and surroundings, giving a luminous and glowing effect typical of daylight.
4. **Subject Matter**: The subject, a cat in a garden, is painted with a focus on everyday life and nature, capturing the charm and beauty of a simple, tranquil moment. This type of subject matter is common in Impressionist works, which often depict scenes of domestic life and nature.
5. **Detail and Composition**: While there is an attention to detail in the subject, the background and surroundings are more loosely rendered, creating a clear focal point on the central subject. The composition is balanced and harmonious, with elements carefully arranged to lead the viewer's eye through the scene.

6. **\*\*Overall Feel\*\*:** The image conveys a sense of peace and serenity, capturing a fleeting moment in time. The overall feel of the painting is soft and dreamlike, yet grounded in the vivid depiction of everyday beauty.

In creating thematically related images, focus on maintaining these stylistic elements: the visible, textured brushstrokes, dynamic use of color, naturalistic light, and serene atmosphere, with subjects that capture the tranquility and simple elegance of everyday life.

# Kitten's busy morning 🎧



**Prompt: (AI-generated, minor human edit)** A cover page illustration showing a charming grey tabby kitten stretching his tiny paws, with a title overhead: 'Kitten's busy morning'. The scene is warm and inviting, setting the tone for a cozy and playful story.

## Page 2

Kitten woke up early, stretching his tiny paws. 🎵 He tiptoed across the room and jumped on Human's bed, ready to start the day. 🎵



**Prompt: (AI-generated, minor human edit)** An image of Kitten, a charming grey tabby, waking up early and stretching his tiny paws. He is tiptoeing across the room towards a bed where a Human is sleeping. The room is cozy, with soft morning light coming through the window.

**Image understanding request: (AI-generated)** Analyze this image depicting Kitten in the bedroom. Provide a detailed description focusing on Kitten's appearance, including fur color, pattern, and any distinct features. Also describe the room, its furnishings, lighting, and the Human in bed.

**Content description (AI-generated):** The image portrays a cozy bedroom scene bathed in warm, natural sunlight. The focal point is a kitten, playful and seemingly alert. Here are detailed observations:

### Kitten:

- **Fur Color and Pattern**: The kitten has a mixed fur pattern with a combination of dark and light stripes. The main colors are various shades of gray and black, with lighter colorations around the face, chest, and paws.

- **Distinct Features**: Its eyes are vivid and expressive, seemingly taking in its environment. The ears are upright, indicating attentiveness. The fur appears soft and fluffy, characteristic of a young kitten, with prominent whiskers adding to its curious appearance.

### ### Room:

#### - **Furnishings**:

- **Bed**: The bed is a significant feature in the room, covered with light blue or gray bedding. The bed frame looks simple and modern.

- **Curtains**: Flowing curtains frame a large window, allowing ample sunlight to flood the room.

- **Nightstand and Lamp**: A bedside table is present, with an overhead lamp casting a gentle warm glow.

- **Plants**: There is greenery, likely houseplants, adding a touch of nature to the room.

- **Flooring**: The flooring appears to be hardwood, contributing to the room's warm and inviting atmosphere.

- **Wall Decor**: There's a painting or a piece of art hanging on the wall behind the bed, which adds to the room's aesthetic appeal.

### ### Lighting:

- The room is well lit, with sunlight streaming through the window creating a cozy and inviting ambiance. The light highlights the textures and colors, making the scene appear lively and serene.

### ### Human:

- A human figure is partially seen lying in bed, possibly asleep or resting.

- **Clothing**: The person is covered with a blanket, visible up to the shoulders.

- **Posture**: They are lying on their side or on their back, suggesting a restful or relaxed state.

Overall, the image exudes a sense of comfort and tranquility, with the playful kitten adding a touch of liveliness to the serene bedroom setting.

## Page 3

Human was still asleep, so Kitten nestled beside her, purring softly. 🎧  
She opened her eyes and smiled, giving Kitten a gentle pat. 🎧



**Prompt: (AI-generated)** An image of Kitten nestled beside a Human, purring softly. The Human is waking up and smiling, giving Kitten a gentle pat. Use the consistent visual elements from {Kitten-and-room-description}.

## Page 4

With a happy meow, Kitten led Human to the kitchen. 🎧 He waited patiently as she prepared his breakfast, his tail wagging with excitement.



**Prompt: (AI-generated)** An image of Kitten leading Human to the kitchen. Kitten is looking excited, with his tail wagging, while Human is preparing Kitten's breakfast. Maintain the appearance of Kitten and Human as described in {Kitten-and-room-description}.

## Page 5

After eating his fill, Kitten scratched at the back door.  Human opened it, and Kitten darted out into the garden, eager to explore. 



**Prompt: (AI-generated)** An image of Kitten at the back door, scratching to be let out. Human is opening the door, and Kitten is about to dart into the garden with excitement. Include visual consistency from {Kitten-and-room-description}.

## Page 6

In the garden, Kitten spotted a little bird hopping on the grass. 🎧 He crouched low, waiting for the perfect moment to pounce. 🎧



**Prompt: (AI-generated)** An image of Kitten in the garden, crouched low while watching a little bird hopping on the grass. The garden is lush with greenery and colorful flowers. Kitten's appearance remains the same as in {Kitten-and-room-description}.

**Image understanding request: (AI-generated)** Analyze this image depicting Kitten in the garden. Provide a detailed description focusing on the garden's elements, including types of plants, flowers, and any additional animals or objects. Ensure to capture the overall atmosphere of the garden.

**Content description (AI-generated):** This charming image features a playful kitten in a vibrant garden, evoking a serene and picturesque atmosphere. Here's a detailed description of the garden's elements:

\*\*Gardenscape\*\*:

- \*\*Pathway\*\*: The kitten is sitting on a stone pathway, composed of uneven, natural stones, adding a rustic charm to the scene.

**\*\*Flora\*\*:**

- **Flowers**: Various flowers are in full bloom, showcasing an array of colors. Prominent among them are:

- **Hydrangeas**: Clustered to the left of the kitten, their spherical blooms exhibit a gradient of colors from pale blue to purple.

- **Delphiniums**: Taller plants with spires of flowers in shades of blue, pink, and white, standing gracefully in the background.

- **Multiple Bushes and Shrubs**: Providing a lush green backdrop interspersed with small flowers in red, pink, and orange.

**\*\*Foliage\*\*:**

- **Trees**: The garden is dotted with tall, leafy trees casting comforting shade and contributing to the dappled light effect seen in the image.

- **Ground Plants**: Various green plants and small bushes are scattered around, framing the pathway and adding layers to the landscape.

**\*\*Additional Elements\*\*:**

- **Bird**: A small bird, likely a blue tit or similar species, stands near the kitten, adding a dynamic and lively interaction to the scene.

- **Lighting**: The light filtering through the trees creates a soft, ethereal effect, enhancing the tranquil and idyllic nature of the garden.

**\*\*Atmosphere\*\*:**

- The garden exudes a peaceful and enchanting ambiance. The harmonious interplay between the flora and fauna, the warm sunlight filtering through the greenery, and the quaint setting of the stone pathway all contribute to a serene and lively garden atmosphere.

In essence, this image captures the joyous and innocent spirit of nature, as epitomized by the curious kitten exploring its lush, vibrant surroundings.

## Page 7

But the bird flew away just in time, leaving Kitten to chase after it in vain.

🔊 Panting, Kitten returned to the door and scratched to be let back in.



**Prompt:** (AI-generated) An image of Kitten chasing after the bird, which is flying away. Kitten is panting as he runs across the garden, showing determination. Use the garden elements described in {Garden-description}.

## Page 8

Human opened the door and welcomed Kitten back inside. 🎵 He rubbed against her legs, happy to be home again. 🎵



**Prompt: (AI-generated)** An image of Human opening the door and welcoming Kitten back inside. Kitten is rubbing against her legs, looking content. Maintain consistency with {Kitten-and-room-description} and include elements from {Garden-description} for continuity.

## Page 9

Feeling tired from his busy morning, Kitten made his way to his favourite chair. 🎧 He curled up into a cozy ball, ready for a nap. 🎧



**Prompt: (AI-generated)** An image of Kitten curling up into a cozy ball on his favorite chair, looking ready for a nap. The chair is placed in a warm and cozy room. Ensure Kitten's appearance matches {Kitten-and-room-description}.

## Page 10

As Kitten dreamed of his next adventure, Human watched and smiled. 🎵  
What a busy morning it had been for her little friend! 🎵



**Prompt: (AI-generated)** An image of Kitten dreaming of his next adventure while Human watches with a smile. The room is peaceful, with a warm atmosphere. Maintain visual consistency from {Kitten-and-room-description}.

## Page 11

Soon, Kitten was fast asleep, purring softly. 🎵 The house was peaceful and quiet, filled with love and the promise of more playful mornings to come. 🎵



**Prompt: (AI-generated)** An image of Kitten fast asleep, purring softly. The house is quiet and filled with a sense of love and peace, hinting at more playful mornings to come. Ensure Kitten's appearance and room elements match {Kitten-and-room-description}.