



LeQtire

Comprehensive Feature Documentation

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Introduction

LEQTURE is your all-in-one lecture tool that leverages generative AI to offer **unique & non-generic** solutions that significantly enhance students' learning experience and information retention.

- ◉ **Quizzes** - Contrary to existing solutions, LeQtur offers a wide variety of question types beyond multiple choice, including interactive formats and built-in hints for deeper understanding.
- ◉ **Flashcards** - Features a unique *Test Me* mode that evaluates not only memory but also conceptual knowledge, with paraphrased questions for true comprehension testing.
- ◉ **Checklist** - Unlike conventional tools, provides an interactive checklist that lets students instantly get clarifications on specific items, linked directly to lecture timestamps and slide content.
- ◉ **Summaries** - Offers a non-generic, engaging layout that elevates the learning experience. Uses advanced algorithms and logic to extract and embed relevant images directly into LaTeX - a capability unique to **LeQtur**.

All of this is packaged with a strong focus on **accessibility**, with LeQtur offering a wide range of accessibility features to ensure an inclusive and equal learning experience for all students.

1 Core Interface

► Core Interface

➤ Main Panel

The LeQtur panel overlays on lecture videos/pages and provides:

Header Section

- ◉ **Title:** "LeQtur" (customizable logo)
- ◉ **Subtitle:** Dynamically updates based on current activity
 - "Ask about this slide" (default)
 - "Generating Quiz..." (during quiz generation)
 - "Generating summary..." (during summary generation)
 - Shows current slide context when available

Controls Bar Model Selector

- ⦿ Dropdown menu to choose AI model
- ⦿ Options:
 - **Gemini Pro** (default): Best quality, slower
 - **Gemini Flash**: Balanced speed and quality
 - **Gemini Flash Lite**: Fastest, lower quality
- ⦿ Persists selection across sessions

Buttons

1. ⚙ **Settings**: Opens settings panel
2. **Quiz**: Generates interactive quiz from lecture content
3. **Flashcards**: Creates flashcard deck from lecture
4. **Checklist**: Generates study checklist
5. **Summary**: Creates comprehensive lecture summary
6. 🗑 **Clear**: Clears chat history


Chat Area

- ⦿ Displays conversation history
- ⦿ Shows AI responses with markdown rendering
- ⦿ Supports LaTeX rendering (inline: \dots , display:
$$\dots$$
)
- ⦿ Code syntax highlighting
- ⦿ Clickable links
- ⦿ Image support in messages

Input Section

- ⦿ **Text Input**: Main question input field
 - Supports Shift+Enter for new lines
 - Enter to send (configurable)
 - Placeholder: "Ask something..."
- ⦿ 📎 **Attach**: Upload files
 - PDF slides
 - VTT transcripts
 - Images
 - Shows upload status and file info
- ⦿ **Send Button**: Submits question
- ⦿ **Stop Button**: Appears during generation, cancels current request

► Settings Panel

Access via  button. Comprehensive configuration for all features.

> General Settings

Answer Type Controls how the AI responds to questions.

Options:

1. Short (Default)

- ⊙ Brief, concise answers
- ⊙ 1-3 sentences typically
- ⊙ Best for quick clarifications

2. Detailed

- ⊙ In-depth explanations
- ⊙ Multiple paragraphs
- ⊙ Includes examples and context
- ⊙ Best for learning new concepts

3. Custom

- ⊙ Reveals text input field
- ⊙ Enter your own answer style instructions
- ⊙ Example: "ELI5 (Explain Like I'm 5)", "Use bullet points only"
- ⊙ Unlimited customization

Include Slide Context

- ⊙ **Checkbox** (enabled by default)
- ⊙ When enabled:
 - Detects the **current lecture slide** when the user asks a question.
 - **Groups** each Q&A by the corresponding slide.
 - **Follow-up questions** on the same slide stay in the same group.
 - If the **slide changes**, a **new group** is created.
 - The AI uses only the **context from the current slide's group** (user messages + replies).
 - Keeps Q&A **focused and relevant** to each slide.
- ⊙ When disabled:
 - The AI uses the **full conversation history** as context.
 - Q&A is **not grouped** by slides.

Include Timestamps in Answers

- ⊙ **Checkbox** (disabled by default)
- ⊙ When enabled:
 - AI references timestamp locations from transcript
 - Example: "At 2:34, the professor explains..."
 - Reduces hallucination by making the AI verify what the professor actually said.
 - Helps students fact-check AI responses more easily.
- ⊙ When disabled:
 - No timestamp references
 - More direct answers

> Feature-Specific Settings

AI Marking [QUIZ]

- ⊙ **Checkbox** (enabled by default)
- ⊙ Controls quiz answer grading
- ⊙ When enabled:
 - AI intelligently marks text-based answers
 - Accepts logically equivalent answers
 - Example: "H2O" = "water" = correct
- ⊙ When disabled:
 - Exact string matching only (not ideal)

Prefer Object Detection for Image Extraction [Summary]

- ⊙ **Checkbox** (enabled by default)
- ⊙ Controls PDF image extraction method
- When ENABLED (AUTO MODE):**
- ⊙ Automatically analyzes PDF structure
- ⊙ Detects if PDF is flattened (scanned document)
- ⊙ Decision logic:
 - **Not Flattened** → Object Detection (Backend)
 - Applicable **only** to PDFs with true embedded images
 - Faster processing
 - Local backend server
 - Privacy-focused
 - **Flattened** → Machine Learning (MinerU)

- › Applicable **to all** PDFs with images
- › More expensive
- › Cloud-based
- › Better quality for scans

When DISABLED (FORCED MODE):

- ⦿ Always uses Machine Learning (MinerU)
- ⦿ Skips flattening detection
- ⦿ No backend required
- ⦿ Consistent cloud processing

Cache Behavior:

- ⦿ Separate caches for each method → Don't have to reprocess images for multiple summary generations using the same slide
- ⦿ Switching setting uses appropriate cache

› **Accessibility Settings**

All accessibility features persist across sessions.

Large Font

- ⦿ **Checkbox**
- ⦿ Increases all text sizes
- ⦿ Helps users with visual impairments

High Contrast

- ⦿ **Checkbox**
- ⦿ Enhanced color contrast
- ⦿ WCAG AAA compliance
- ⦿ Better visibility in bright environments

Colorblind Mode

- ⦿ **Checkbox**
- ⦿ Instructs the AI not to use colors when describing concepts or explaining images from slides.

Reduce Motion

- ⦿ **Checkbox**
- ⦿ Disables animations:
 - Instant transitions
 - No fade effects
 - No spinner animations
- ⦿ Helps with motion sensitivity/vestibular disorders

Keyboard Navigation

- ⦿ **Checkbox**
- ⦿ Enables full keyboard control
- ⦿ Full compatibility across all features (e.g., drag-and-drop quiz questions and other interactive components).

> Theme & Appearance

Theme Selector Dropdown with options:

1. Default (Pink)

- ⦿ Matches Echo360's theme
- ⦿ Original LeQtire branding

2. Dark

- ⦿ Classic Dark mode
- ⦿ Helpful for late night sessions!

3. Light

- ⦿ Classic Light mode
- ⦿ Bright, optimistic

Translucency

- ⦿ **Checkbox** (enabled by default)
- ⦿ Controls panel transparency
- ⦿ When enabled:
 - Semi-transparent background
 - Modern glass-morphism effect
- ⦿ When disabled:
 - Solid background (no transparency)
 - Better text readability
 - Helpful for people with visual issues
- ⦿ **Note:** Automatically disabled with High Contrast mode

2 Learning Features

► Chat & Question Answering

➤ Basic Chat

How It Works

1. User types question in input field
2. Optional: Include slide context (if enabled in settings)
3. Click Send or press Enter
4. AI processes with selected model
5. Response appears in chat area with formatting

Context Awareness Slide Context (when enabled):

- ⦿ Described above

Conversation History:

- ⦿ Maintains full chat history
- ⦿ AI references previous questions/answers (depending on Slide Context state)
- ⦿ Clear button resets history

Response Features

- ⦿ Markdown Rendering
- ⦿ LaTeX Math
- ⦿ Code Highlighting

➤ Special Features

Stop Generation

- ⦿ Red "Stop" button appears during generation
- ⦿ Click to cancel current request
- ⦿ Can immediately ask new question

Rate Limiting


- ⦿ Automatic detection of API rate limits
- ⦿ Shows dialog: "⚠ Rate Limited"
- ⦿ Options:
 1. **Try Again Later**: Cancels request
 2. **Use Flash Model**: Retries with faster model
- ⦿ Preserves question and context

Error Handling

- ⦿ Network/API errors: Displays error message
- ⦿ Invalid AI responses: Automatically retries

> File Upload System

Upload Process

1. Click  Attach button
2. Select file(s) from dialog
3. Shows upload progress
4. Files available to AI immediately

File Management

- ⦿ **Caching**: Files cached until Clear button
- ⦿ **Multiple files**: Can upload multiple PDFs/images
- ⦿ **Re-upload**: Can replace files anytime
- ⦿ **Clear**: Removes all uploaded files

▶ Quiz Generation

Generates interactive quizzes from lecture content.

> Quiz Types

The quiz intelligently mixes question types:

1. Fill in the Blank

- ⦿ Tests recall and conceptual knowledge
- ⦿ Logically equivalent answers accepted if AI Marking is enabled in settings

2. Drag & Drop

- ⦿ Interactive drag-and-drop interface
- ⦿ Matches options with corresponding targets

3. Multiple Choice Questions (Single Correct)

- ⦿ One correct answer from multiple options

4. True/False

- ⦿ Simple binary choice format

5. Match Statements

- ⦿ Pairs related statements, terms, or concepts

6. Multiple Choice Questions (Multiple Correct)

- ⦿ Multiple correct answers possible
- ⦿ Partial credit available

7. Rearrange Sentences

- ⦿ Requires reordering jumbled sentences into correct sequence
- ⦿ Drag-and-drop interface for reordering

8. Identify Incorrect Step

- ⦿ Step-by-step solution to a problem is provided
- ⦿ Identify the step that contains an error or incorrect reasoning

9. Debate Question

- ⦿ Two individuals present differing viewpoints on the same topic
- ⦿ Identify the person with the correct claim
- ⦿ Provide a brief explanation supporting your choice

10. Mixed Fill-in-the-Blank Paragraph

- ⦿ Paragraph with multiple blanks inserted throughout
- ⦿ Requires selecting or typing appropriate words to complete the text meaningfully

Extensible Types

- ⦿ Additional question types can be added with minimal effort

> Quiz Completion

Results Screen

- ⦿ **Final Score:** "8/10 (80%)"
- ⦿ **Retake Option:** Retry Quiz or Generate new quiz

Feedback **Correct Answer:**

- ⦿ ✓ Green checkmark
- ⦿ "Correct!" message
- ⦿ Typed answers checked via AI for logical equivalence

Incorrect Answer:

- ⦿ ✗ Red X
- ⦿ "Incorrect" message

In both cases:

- ⦿ Side-by-Side comparison of their answer with correct answer

▶ Flashcards System

Generates spaced repetition flashcard decks from lecture content.

> Flashcard Generation

- ⦿ **User inputs required number of flashcards**

> Flashcard Interface

Card Display

- ⦿ **Front Side** (Question)
- ⦿ **Back Side** (Answer)
- ⦿ Can render Markdown/LaTeX

Keyboard shortcuts

- ⦿ **Left Arrow (←):** Previous card
- ⦿ **Right Arrow (→):** Next card
- ⦿ **Space/Enter to flip**

> Study Modes

1. Normal Mode (Default)

- ⦿ Study cards in order
- ⦿ Flip to see answers
- ⦿ Navigate freely

2. Test Me Mode

- ⦿ Quiz-style flashcard review
- ⦿ Match each Question flashcards with the correct Answer flashcard out of 5 options

Options:

1. **Review Incorrect:** Study missed cards
2. **Retry:** Restart Test Me with all cards / Generate again
3. **Exit:** Return to normal flashcard mode

➤ Flashcard Features

Shuffle

- ⦿ **Shuffle button:** Randomize card order
- ⦿ Helps prevent memorization of sequence
- ⦿ Can re-shuffle anytime

Export to Overleaf

- ⦿ Print-friendly format


▶ Checklist Feature

Generates comprehensive study checklists from lecture content.

Interactive Checkboxes

- ⦿ **Unchecked:** ☐ Empty square
- ⦿ **Checked:** ☒ Checkmark
- ⦿ Click to toggle
- ⦿ State persists during session

Smart Doubt Assistant

- ⦿ **Icon:**  question mark beside each checklist item
- ⦿ **Action:** Click to indicate doubt about where the topic was covered
- ⦿ **Output:** Returns slide numbers and approximate timestamps where the lecturer discussed the item

Export to Overleaf

- ⦿ Print-friendly format



► Summary Generation

Generates comprehensive lecture summaries in LaTeX or HTML format.

➤ Format Selection

When user clicks "Summary" button:

Format Choice Screen:

- ◉  **LaTeX**: For Overleaf, academic documents. Bonus: Save as PDF.
- ◉  **HTML**: For web viewing, sharing. Bonus: Ask Questions Interactively.

➤ Summary Options Screen

After selecting format, shows customization options:

Select Extras

1. **LeQtire Theme** - professional theme with clean formatting and non-generic visual style
2. **Additional Worked Examples** - adds 2–3 detailed examples with full solutions to illustrate key ideas
3. **Checklist at the End** - creates a summary checklist for quick review and self-assessment
4. **Concise** - short, focused summary highlighting only key concepts and essential information
5. **Detailed** - expands explanations with context, reasoning, and examples for thorough understanding
6. **Reference Timestamps** - shows approximate timestamps from the lecture to locate explanations easily and combat hallucination
7. **New Page Per Subtopic** - starts each major subtopic on a new page for better organization and readability

Custom Instructions

- ◉ **Text Area** - optional field to add specific guidance or preferences for summary generation

Include Images from Lecture Slides

- ◉ **Checkbox** - when enabled, extracts and embeds relevant images from slides into the summary

➤ Summary Repair Feature (LaTeX Only)

When LaTeX compilation errors occur:

Repair Process

1. **User clicks "⚙️ Repair LaTeX"**
2. **AI Analysis:** Sends broken LaTeX to AI
3. **Button Updates:**
 - ⦿ New: "🌿 Open Repaired in Overleaf"
 - ⦿ New: "🌿 Open Original in Overleaf"
 - ⦿ Allows comparison
 - ⦿ User can retry repairing an unlimited number of times

Common Repairs

- ⦿ Missing `\end{environment}`
- ⦿ Unescaped special characters
- ⦿ Invalid math syntax
- ⦿ Missing packages

Switching Versions Button appears after summary generation if image extraction was selected:

- ⦿ "⚡ Switch to Object Detection Version"
- ⦿ "☁️ Switch to Machine Learning Version"
- ⦿ Instant switching
- ⦿ Both versions preserved
- ⦿ Can compare quality

📖 3 System Operations

▶ Background Generation Support

🔄 Feature

Quizzes/Flashcards/Checklists/Summaries/Overleaf (+repairs) continue generating even if user exits the screen.

Benefits:

- ⦿ Don't wait for completion

- ⦿ Multi-task during generation
- ⦿ No blocking
- ⦿ Better UX

► Rate Limit Recovery

Trigger: API returns 429 (rate limited)

Dialog:

You have been rate limited by the API. You can either try again later or proceed with the Flash model, which may result in significantly degraded quality for the summary.

Try Again Later

Use Flash Model

"Try Again Later":

- ⦿ Cancels current generation
- ⦿ Restores UI
- ⦿ User can retry manually later

"Use Flash Model":

- ⦿ Sets `forceFlashModel = true`
- ⦿ Preserves all settings and extracted images
- ⦿ Retries with Gemini Flash
- ⦿ Continues generation seamlessly
- ⦿ User doesn't lose progress

Saved State:

- ⦿ Format (LaTeX/HTML)
- ⦿ Selected extras
- ⦿ Custom instructions
- ⦿ Include images setting
- ⦿ Extracted images (if already extracted)

Result:

- ⦿ Summary completes with Flash
- ⦿ Slightly lower quality
- ⦿ Avoids complete failure
- ⦿ Better than nothing

4 Conclusion

LeQtire is a revolutionary lecture companion that uses generative AI in a truly **non-generic** way - transforming lectures into interactive, intelligent learning experiences. It goes far beyond standard AI tools, offering **quizzes**, **flashcards**, **checklists**, and **summaries** that are deeply unique and directly tied to the lecture content. With features like paraphrased testing, diverse question types, timestamp-linked clarifications, and image-embedded LaTeX outputs, LeQtire **uniquely enhances learning engagement and long-term information retention**.

Additionally, it includes comprehensive **accessibility options** - such as large fonts, high contrast, colorblind mode, and full keyboard navigation - ensuring that every student can learn effectively and comfortably.