

DETERMINISTIC PROGRAMMING BASED

ADVANCED LESSON BUILDER

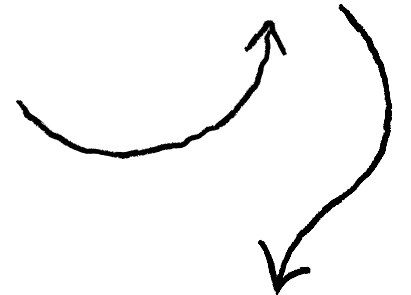
VISION BOARD

Automate



Collaborate

Validate



Innovate

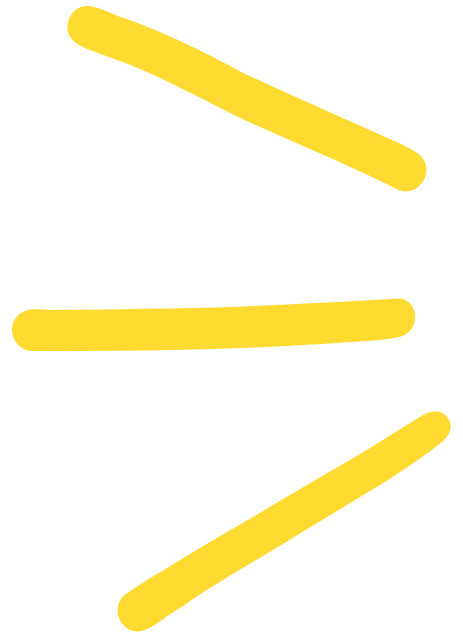


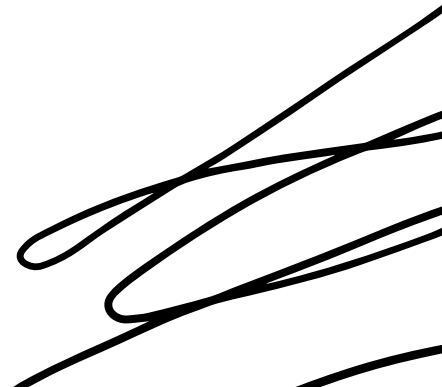
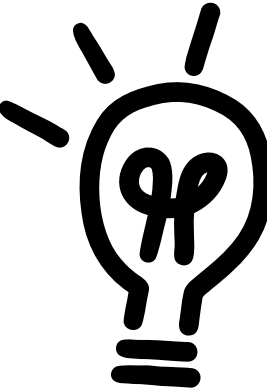
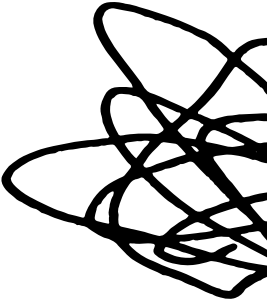
Let's speed up our production through innovation!





WORKFLOW

- 
- ① Onboarding and Content Input**
User Onboarding and Content Input
 - ② Structuring Content for Lessons**
Content Parsing and segmentation
 - ③ Screen Design**
Lesson Structure and screen Generation
 - ④ Storyboard Refinement**
Real-Time Editing for refinement
 - ⑤ Feedback and Verification**
Colab and Finalization
 - ⑥ Saving and Exporting**
Save to respective sharepoint



① ONBOARDING AND CONTENT INPUT – Version

I

1

Onboarding and Content Input

2

DP-Powered Content Analysis

3

Lesson and Screen Auto-Building

4

Storyboard Refinement

5

Validation and Compliance

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Saving and Exporting

User Onboards and inputs the content

Screen 1 - Login:

- Users log in to the platform using their credentials
- Role-based access (ID, Reviewer)

Screen 2 - Lesson Setup:

- Users creates a lesson by entering metadata
 - Course# and title (Manually entered by the ID)
 - Module# and title (Manually entered by the ID)
 - Unit# and title (Manually entered by the ID)
 - Lesson# and title (Manually entered by the ID)
 - Lesson objective (Manually entered by the ID)
 - Lesson type (Dropdown chosen by the ID)
 - Number of screens (Dropdown (6-8),(8-10))
 - Lesson duration (By default 15 Mins
(Will change in the final output based on the number of words))
 - Lesson banner image (Default)
 - Lesson alt text Content (Default)
- Optional (Blueprint Upload) (Check during Brainstorm session)

Screen 3 - Content Input:

- Users upload raw materials (e.g., textbook content, SME documents, PDFs, DOCX, or text files)
- 2 sections (Textbook & SME)
- Video Content (Check Box) (the tool will create video transcript on the generated screen during the auto build phase if this box is checked)
- Place to enter the content for Video
- Options to upload multiple Files
- User text Input space to enter content Manually
- Every screen and sections must provide discrete information to the ID to let them know what they need to do and why! (Any forms or any buttons)

Content guidelines: (Do's and Don'ts)

Screen 1

- Na

Screen 2

General guidelines include :

- No rephrasing of the content from the Textbook, but it can be jumbled (logical flow of progression in the lesson is required)
- The SME content and additional inputs from the user can be rephrased and used throughout the lesson as required.
- Video guidelines as per the sheet attached.
- Store the extracted text from the textbook (Blue) and SME content (green) and Highlight in (yellow) the text that the tool uses for context setting & transition sentences that is used to establish the flow or the structure between the content.



① **ONBOARDING AND CONTENT INPUT – Version**

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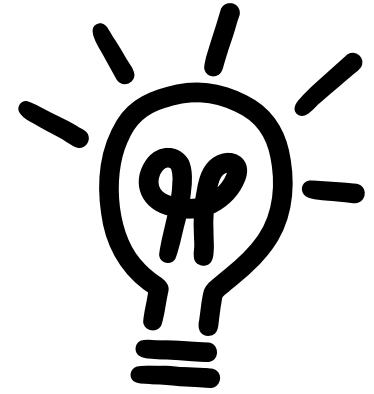
User Onboards and inputs the content

Screen 1 - Login:

- Users log in to the platform using their credentials
- Role-based access (ID, Reviewer, Admin)

Screen 2 - Lesson Assignment & Setup:

- The blueprint and the textbook pdf will be uploaded by the admin.
- The tool reads the Blueprint and stores the information mentioned in the blueprint to the DB and uses it when the SB is built.
- Admin can assign the lessons as per the Blueprint to the IDs to start working.
- Dashboard can show the details (...) and displays the progress.
- ID logs into the tool and sees the Lesson assigned and starts working.
- The tool based on the lesson assigned will pick the metadata and the raw content from the PDF (Textbook) and the Excel (SME Content & Additional Content) and considers as the input.



- Every screen and sections must provide discrete information to the ID to let them know what they need to do and why! (Any forms or any buttons)

② DP-POWERED CONTENT ANALYSIS

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Saving and Exporting

The Programming does a comprehensive analysis and plans the lesson

screen 4 - Content Parsing: (Python Programming)

- Tool uses deterministic programming to:
 - Do an OCR if Image and PDFs are loaded
 - Extracts key concepts, objectives, and learning goals
 - Identify logical content divisions for lesson screens
 - Ensures the textbook content is unaltered
 - Flag missing elements (e.g., lack of content and relevance)
 - Identifies for any content that needs SME intervention

Screen 5 - Screen Breakdown: (Python Programming)

- Tool segments the content into discrete lesson screens based on:
 - Logical flow (Introduction → Core Concepts → Activities → Reflection).
 - Word count and pacing (calculated to match the 15-minute target).
 - Analyses, aligns and plans for activities and content segments for each screen.

Content guidelines:

- Refer to CTE_Storyboard_Checklist_master file.
 - Pre-Storyboard Preparation
 - Template and alignment with blueprint

General guidelines include :

- No rephrasing of the content from the Textbook,
- The Tool can jumble the content to create a logical flow of progression in the lesson as required without changing the meaning.
- The SME content and additional inputs from the user/Blueprint can be rephrased and used throughout the lesson as required.
- Video guidelines as per the sheet attached.
- Tool must comply to the content guidelines for formatting and other specifics at any stage of its intervention.



③ LESSON AND SCREEN AUTO-BUILDING

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Saving and Exporting

The Tool builds the lesson draft and generates screens

Screen 6 - Lesson Structure Generation: (Tool)

- The Tool creates a draft lesson structure:
 - Title, type, and duration for each screen.
 - Suggested flow based on instructional design principles.
 - Tool will create the draft based on the Logical flow (Introduction → Core Concepts → Activities → Reflection).
 - Generates 8 to 10 screens judiciously as per the content provided.

Screen 7 - Screen Auto-Creation: (Tool)

- For each screen, the Tool generates:
 - Text Content: Condensed and structured content (headings, bullet points).
 - Highlight the text contents directly from the Textbook (Blue) and SME Content (Green)
 - Interactivities: Suggested activities like:
 - Reflective prompts.
 - Scenario-based decisions.
 - Quizzes (MCQs, T/F).
 - Multimedia Suggestions: Placeholder for videos, images, or diagrams.
 -

Content guidelines:

- Refer to CTE_Storyboard_Checklist_master file.
 - Template and alignment with blueprint
 - Scripting
 - Media Selection
 - Writing for Questions
 - Writing for Videos
 - Writing 'Think about this' (reflection screens in content lessons)
- Refer to Pearson CTE_Video Scripting Guidelines.
 - About Concept Animation Videos
 - About Teaching Videos
 - Format for visual storyboard
 - Visualization Guidelines
 - Voice Script Guidelines
 - Onscreen Text Guidelines
- Refer to Pearson CTE_Question item guidelines.
 - General guidelines
 - What makes a question a good question?
 - Writing Good Question Stems
 - Writing Open Form or Essay Questions
 - Writing scenario-based questions
 - Writing Call-to-Action (CTA) Text
 - Ensuring Accessibility and Compliance
- Refer to Starter_Guidelines_Interactivities_v1
- Refer to Interactivity_Repository.xlsx



④ STORYBOARD REFINEMENT

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Saving and Exporting

Interactive Storyboard for refinement

Screen 8 - Storyboard Generation: (Tool)

- The Tool presents the lesson structure in a visual storyboard interface:
 - Each screen is displayed as a tile or card below which the (Editor Interface) will be loaded for the ID to edit.
 - Tiles show:
 - Title, type, and duration.
 - Content summary.
 - Interactivity type (e.g., quiz, reflection).
 - Once clicked on the tile the UI (Editing panel) shows options to refine the content

Screen 9 - Refinement Features: (User & Gen Tool)

1 Screen-Level Editing

Editable Components:

Each screen in the storyboard has editable fields:

- **Title:** Allows quick adjustments for clarity and alignment with objectives.
- **Content:** Inline editing for text content, including:
 - Highlighting, bolding, and formatting options.
 - Adding or replacing text directly within the preview.

Interactivity: Options to:

- Add, remove, or change quizzes, scenarios, or reflections.
- Choose from a library of predefined interactivities.

Multimedia:

- Replace placeholder images/videos with real assets.
- Upload new files or link to online resources.

Live Preview:

Real-Time Updates:

- As the ID edits, changes are reflected in a live preview of the learner-facing screen.

2. Content Restructuring Options

Drag-and-Drop Reordering:

IDs can drag and drop screens to rearrange the lesson flow.

Flow Indicators:

Visual markers show dependencies between screens (e.g., adaptive branching paths).

Splitting and Merging Screens:

- **Split a Screen:**
 - Tool suggests breaking long screens into smaller ones.
 - Automatically carries over interactivities and adjusts pacing.
- **Merge Screens:**
 - Combine shorter screens to streamline the flow.
 - Tool ensures combined content doesn't exceed pacing limits.

3. Tool Suggestions Panel

Content Adjustments:

- Tool analyzes content and offers suggestions:
 - Simplify complex sentences for readability.
 - Rephrase for a more engaging tone.
 - Add missing elements, such as examples or scenarios.

Pacing Adjustments:

- Suggestions for:
 - Adding reflection prompts or interactivities to fill gaps in short lessons.
 - Trimming verbose content to meet duration limits.

Interactivity Enhancements:

- Tool recommends:
 - Transforming text-heavy screens into interactive formats (e.g., accordion, tabs, quizzes).
 - Adding gamified elements like drag-and-drop exercises or clickable hotspots.

4 STORYBOARD REFINEMENT

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Saving and Exporting

Interactive Storyboard for refinement

4. Branching Logic Customization

Conditional Navigation Options:

IDs can define learner paths directly in the storyboard:

- “If the learner answers this correctly, go to Screen X; otherwise, go to Screen Y.”

Visual flowchart representation of branching paths.

Predefined Path Templates:

The system provides templates for common branching scenarios:

- Beginner → Intermediate → Advanced progression.
- Scenario-based learning paths.

5. Content Import and Replacement

Bulk Content Updates:

- Upload revised content (e.g., updated SME input) and map it to existing screens.
- Tool automatically highlights differences and integrates the new content.

Placeholder Replacement:

- Replace placeholder images, diagrams, or videos with final multimedia files.
- Tool suggests alternate multimedia if none is uploaded.

6. Accessibility and Compliance Checks

Live Accessibility Feedback:

Tool flags accessibility issues in real time, such as:

- Missing alt text for images.
- Poor contrast between text and background.
- Content exceeding the target readability level.

One-Click Fixes:

IDs can accept Tool-generated fixes for:

- Simplified sentences.
- WCAG-compliant color schemes.
- Automatically generated alt text.

7. Interactive Templates Library

Customizable Templates:

IDs can replace existing interactivities with alternatives from a library, such as:

- Reflection questions.
- Scenario-based branching activities.
- Interactive tables or timelines.

Template Personalization:

Adjust the structure of templates to fit specific content needs:

- For a quiz template, change the number of options or add custom feedback for each choice.

8. Version Control and Comparison

Version History:

- The system stores all versions of the lesson.
- IDs can:
 - Compare changes between versions.
 - Revert to previous iterations if needed.

Change Suggestions Log:

- Track Tool and SME-provided suggestions separately, with timestamps.



⑤ VALIDATION AND COMPLIANCE

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Screen 10 – Reviewer Features: (Reviewer & Tool)

Role-Specific Reviewer Dashboard

Dashboard Overview:

- A reviewer-specific workspace displaying:
 - Assigned lessons pending review.
 - Progress indicators for each lesson (e.g., percentage of compliance checks completed).
 - Filters for lessons based on project, ID, or due dates.

Quick Access to Storyboard:

- Reviewers can open the lesson storyboard directly from the dashboard for validation.

Validation Checklist

A structured, interactive checklist ensures reviewers systematically validate the lesson.

Key Checklist Items:

- **Content Requirements:**
 - All screens have appropriate content (e.g., introductory, reflective, and activity screens).
 - Lesson duration aligns with the target (e.g., 15 minutes).
- **Interactivity Requirements:**
 - Each lesson includes the required number and type of interactivities.
 - Interactivities align with objectives and content.
- **Compliance Standards:**
 - WCAG 2.2 compliance for accessibility (alt text, readability, contrast).
 - Adherence to lesson flow principles (e.g., logical progression from introduction to reflection).
- **Pacing and Flow:**
 - Screen word counts and pacing fit within the expected duration.
 - Branching logic (if any) functions correctly.

Interactive Features:

- Check/uncheck items in the checklist.
- Leave comments for unresolved issues

Inline Comments and Suggestions

Commenting System:

- Reviewers can leave inline comments directly on individual screens or elements.
 - Example: “The reflection question here is unclear. Consider rephrasing to focus on application.”
- Comments are timestamped and tagged to the reviewer.

Tagging and Assignment:

- Assign comments to specific users (e.g., ID or SME).
- Notifications are sent to the assigned user for follow up.

Advanced Collaboration Features

Real-Time Editing and Notifications:

- Reviewers can make direct edits or suggest changes.
- Real-time notifications alert the ID or SME to changes or comments.

Version Comparison:

- View a side-by-side comparison of the current lesson version and previous iterations.
- Highlight differences for easy tracking.

Testing and Simulation Tools

Preview as Learner:

- Reviewers can simulate the learner experience:
 - Navigate the lesson as a student.
 - Test interactivities and branching logic.

Pacing Simulation:

- Simulate the lesson duration based on word count and learner actions.
- Verify if the lesson aligns with the 15-minute target.

⑥ SAVING AND EXPORTING

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Saving and
Exporting

Saving the Lesson

Versioned Saving

Save as Draft:

- Allow users to save interim drafts with version numbers (e.g., Draft v1.0, v1.1).
- Include metadata for each version:
 - Reviewer comments.
 - Date and time of saving.
 - Change summary (e.g., "Added reflection screen on Screen 5").

Finalized Save:

- After all issues are resolved and approvals are obtained, the lesson can be marked as **Final Version**.

Cloud Storage

Use a secure database (e.g., Firestore, PostgreSQL) to:

- Store lesson metadata (e.g., title, objectives, screen details).
- Save interactivities and multimedia links.
- Maintain a log of all previous versions for traceability.

Collaborative Save Logs

Track who made changes, when, and what was updated.

Include comments or feedback as part of the saved history for future reference.

