From Open Texts to Open Tools

Equipping Students to Build AI Study Aids from OER Materials for Indirect Instruction

Jordan O'Connell

Liberal Arts Chair

Northeast Iowa Community College

Missing Foundations

No Academic Rituals

We often assume students have "invisible" study habits, probably different from our own. For many students, these habits simply do not exist.

- No models for interrogating dense text.
- Limited experience developing deep reading skills.
- A widening gap between access (easy) and mastery.

The Three-Layer Model

OER serves as a clean source layer for AI processing without the restrictions of proprietary texts.

Source Layer

OER Content (Static, Accessible)

Transformation

AI Tools (Dynamic, Personal)

Validation

Faculty (Valid, Supported)

Open texts enable access. Open teaching offers validation. ***Open tools invite transformation.***

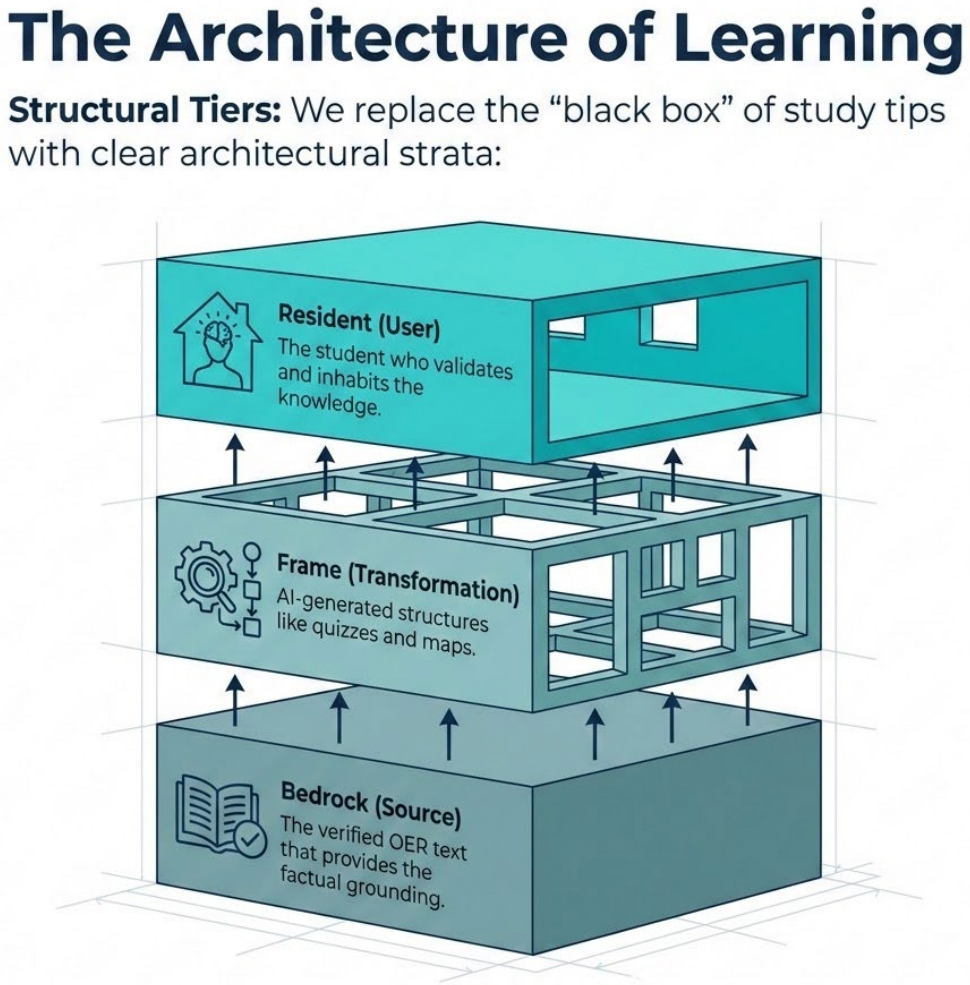
The Architecture of Learning

Structural Tiers

Source: The OER text that provides the factual grounding.

Transformation: Student uses AI-generated structures like quizzes and mindmaps using RAG

Validation: The student demonstrates and inhabits the knowledge.



Defining Study Scaffolds

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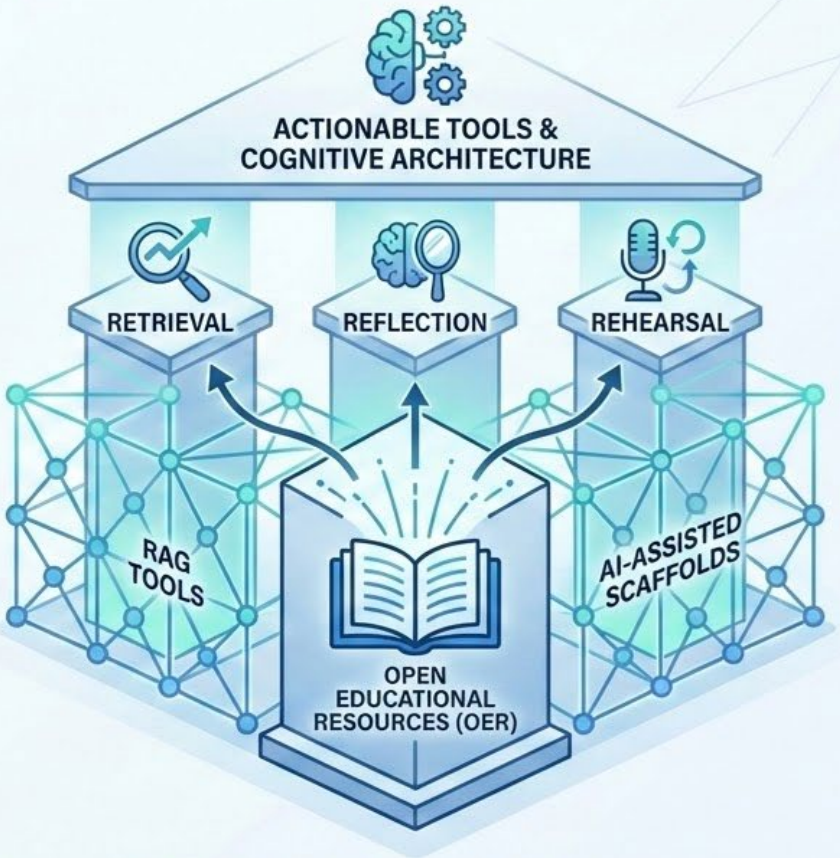
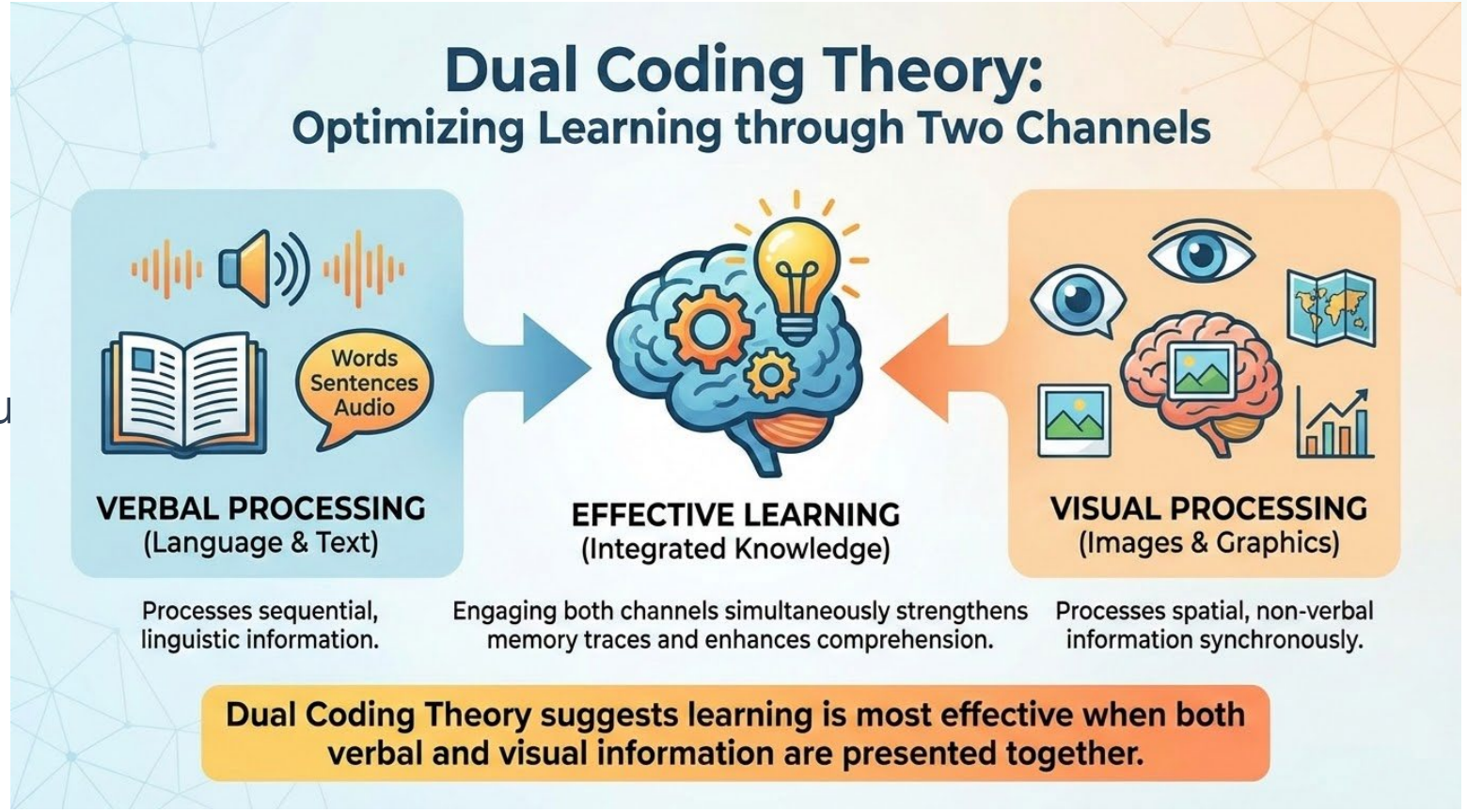
- Study scaffolds are structured, temporary supports that help students transform OER into actionable tools using RAG tools, LLMs, etc.
- They are the cognitive architecture required for modern retrieval, reflection, and rehearsal.



Dual Coding Theory

Double-Channel Processing

AI facilitates this by transforming dense verbal text (OER) into visu structures (tables, maps, or charts), reducing the cognitive load on the student.



Essential Study Tools

Reading Comprehension

Plain-language summaries and concept map descriptors.

Understanding Retrieval

Self-quizzing systems and misconception checks.

Practice Performance

Oral rehearsal prompts and glossary builders.

Tool Comparison (Google Workspace)

System Example	Ingestion Capabilities	Pedagogical Use Case
RAG: NotebookLM	Retrieval-Augmented Generation from Google Docs, PDFs, YouTube, websites etc.	Building source-bounded study aids from specific OER units (with footnotes).
LLM: Google Gemini	Multi-modal, live web access, file uploads, research, tasks	Brainstorming, deep research, data analysis, etc. Building a course-specific chatbot assistant.
Coding: Google AI Studio	Plain-language coding, software engineering, multiplier	Programming and sharing a creative app that teaches (or demonstrates mastery over) a significant concept.

OER+AI Onboarding

Technical Setup

- Create a shared course folder for OER materials (LMS)
- Walk through uploading the first chapter into an AI tool OR share directly
- Verify the first AI summary against the original text.

Setting Expectations

- Establish norms for responsible use and verification.
- Explicitly demonstrate "low-stakes" routines.
- Model how to cite AI-assisted study structures.

Individualized Learning Support

The Commuter

Converts OER text into audio summaries for the drive to campus. Talks aloud with the course AI chatbot to practice delivering stronger recorded essays.

The Multilingual Learner

Generates idiom-free explanations and dual-language glossaries as a personal study tool. Brainstorms pneumonia devices for new vocab.

The Working Student

Uses AI to break long OER readings into 15-minute "study chunks" and mind-maps with summaries.

The Skimmer

Goes to YouTube for everything (refuses to read) but will tolerate the NotebookLM Video Podcasts

The Group Studier

Uses digital flashcards and other guided learning activities to get others to help them prepare

The Overachiever

Converts class recording transcripts into notated podcast summaries are reposted for the class.

Demo Workflow: OER to Quiz

// STEP-BY-STEP

1.
2. Download OER Chapter PDF.
3. Upload to NotebookLM.
4. Prompt: "Generate MC 5 retrieval questions on the topic of X."
5. Cross-reference answers with PDF page numbers.
6. Copy questions into LMS quiz pool.

Next Level

Use the Algonquin Quiz Editor to generate quizzes in batches of 20.

Practical Impact

This workflow reduces the time required to build course-aligned materials, allowing faculty to focus on high-impact student interactions during office hours.

Governance and Design

Hallucinations

AI models can fabricate details with high confidence. We must train students to treat AI outputs as drafts that require verification against the primary OER source text. Teach students how to apply common sense.

The Substitution Risk

There is a constant temptation for students to substitute AI summaries for the labor of reading. Course design must incentivize the human struggle of synthesis rather than just correct outputs.

Data Privacy

Student data is a critical institutional asset that must be protected. Faculty should prioritize institutionally vetted tools that offer higher standards of privacy than consumer models.

Equity of Access

While AI can bridge gaps, it can also create new digital divides. We must ensure that the tools we recommend are accessible and compatible for all learners.

Co-Authoring the Path

Student Ownership

When students learn to build their own study aids, they move from being passive consumers of curriculum to active co-authors of their learning journey.

This shift builds the metacognitive skills that are required for success in a workforce increasingly defined by AI collaboration.

Open texts enable access.

Open tools invite transformation.

Open teaching offers validation.

Immediate Takeaways

- **Start Small:** One chapter, one unit, one scaffold.
- **Focus on Process:** Assess the thinking, not just the answer.
- **Prioritize Grounding:** Always bind the AI to course materials via instructions.
- **Model Use:** Show your own "messy" AI workflows in class.
- **Listen to Students:** Let them tell you which scaffolds work.

Let’s Try It

- Gemini Gem
- NotebookLM
- Google AI Studio

Source: Chapter 30 from the American Yawp (PDF)

I am a first-generation college student at a community college. How can you leverage your skills, tools, and abilities you help me successfully learn this material?

Questions?

Jordan O’Connell

Northeast Iowa Community College

oconnellj@nicc.edu