▲ PROBLEM-BASED LEARNING

Assessment and engagement in the age of AI

Assess the **thinking**, not the answer. Teach the lecture from inside a **real business problem**.

Mark Edmonds
medmonds@gmail.com
University of Alabama at Birmingham · TACTYC Virtual Conference

▲ CPE POLL 1 OF 4

What's your biggest challenge in your intro accounting course right now?

- Getting students engaged in class
- Assessing learning in the age of AI
- Fitting in more skills (analytics, AI, critical thinking)
- Making accounting relevant to non-majors

Answer in the Zoom poll

▲ TODAY

Two questions this session answers

1

How do we assess students when AI can produce the answer?

Move assessment to where the thinking happens: in the room, step by step.

2

How do we make class time worth showing up for?

Teach the lecture from inside a real business problem, so class time goes to deciding, not listening.

The answers to both questions are already in Edmonds Hub.

▲ CPE POLL 2 OF 4

How confident are you that your homework grades reflect what students can do without AI?

- Very
- Somewhat
- Not very
- Not at all

Answer in the Zoom poll

▲ THE ASSESSMENT PROBLEM

The answer is free now. The learning isn't.

Nearly every student uses AI, about half the time to get the answer, and the cost shows up in what they retain.

95%

use AI in their studies

94% use it on assessed work. AI text pasted straight into submissions went from 3% to 12% in two years.

~half

of conversations are "Direct"

"Solve this for me." "Write this for me." Finished answers with minimal engagement, across ~574K student conversations.

83%

couldn't quote their own essay

minutes after writing it with an LLM. MIT calls it **cognitive debt**: brain connectivity dropped with every layer of help.

If the graded thing is a final answer, **we're grading the AI.**

Sources: HEPI / Kortext Student Generative AI Survey 2026 (n=1,054); Anthropic Education Report (2025); Kosmyna et al., MIT Media Lab, arxiv.org/abs/2506.08872 (preprint, n=54)

▲ ANSWER 1 · ASSESSMENT

Assess the thinking, not the answer

AI can hand a student a finished answer at home. It can't stand in for them in the room while they reason through a problem in front of you.

WHAT WE USUALLY GRADE



The final answer

Correct or not, you can't tell who did the thinking.



Work done out of sight

Homework is where AI does the most work and you see the least.



Feedback days later

By the time it's graded, the misconception has set.

WHAT WE CAN SEE INSTEAD



Every step of the reasoning

You see exactly where each student's thinking broke.



Done live, in the room

The thinking happens where AI can't take it for them.



Feedback in the moment

Fix the misconception while the whole class is still on the problem.

▲ ANSWER 2 · ENGAGEMENT

The case is the lecture

Teach the chapter's concept from inside a real business decision. Critical thinking, data analytics and AI come with the case, so nothing gets added to your syllabus.

IN CLASS

The decision

A real business problem carries the concept. Groups make the call before they learn the terms.

An AI teammate

It recommends. Students question it, defend their own call, or improve on it.

Interactive assessment

Students work problems step by step. You see where reasoning breaks.

OUTSIDE CLASS

Textbook video library

Preview before class, review after.



▲ CPE POLLS 3 AND 4 OF 4

3 When was the last time you changed the way you teach lecture?

- This term
- Last year
- A few years ago
- Can’t remember

4 What’s the biggest barrier to trying something new in class?

- Prep time
- Covering the syllabus
- Class size
- Student pushback

Answer both in the Zoom poll

▲ NOW FOR REAL

Let’s run one. Live.

Grab your phone and join. An AI teammate will make a recommendation, and it’s your call whether to take it.

Then we'll come back to the slides and unpack what happened.

NOW RUNNING

Joint Ownership Inc.

live.edmondshub.com/joint-ownership

How that just assessed the room

Across 25 studies, the average PBL student out-scores **~86%** of traditionally-taught peers on critical thinking

1 **You saw the reasoning, not just the result**
Where the room's thinking broke, cell by cell, while it was happening.

2 **Nobody could outsource it**
The AI was arguing with the class, not doing the work for them. Students had to defend their own choices.

3 **Feedback landed while it still mattered**
Misconceptions and cognitive bias got named in the moment, in front of everyone.

4 **Understanding first makes AI useful instead of dangerous**
Students can only evaluate AI output on problems they understand. That's the skill worth assessing.

Source: Li, Mustakim & Muhamad, "A Meta-analysis of the Effectiveness of Problem-based Learning on Critical Thinking," European Journal of Educational Research (2025), eu-jer.com

How that just engaged the room

1. **Everyone answered, not just the front row**
   Every student had a decision to make and a reason to make it.

2. **A problem they own beats a problem they're assigned**
   No jargon up front. Students reasoned about something they understood, and the accounting language came after.

3. **Something talked back**
   The AI is cast to the lesson: a counterpart, a Socratic prompter, an analyst, even a live phone call. It reacts to what was typed seconds ago.

4. **Being wrong, loudly, was the point**
   Mistakes became the raw material for the lesson instead of a grade penalty.

▲ THE TOOLKIT

Built for both problems, ready today

PBL cases and interactive assessments are free at edmondshub.com, with more shipping regularly. The video library comes with your Edmonds textbook.



PBL cases

Student-life problems with an AI cast to the lesson. Students decide, defend, and get pushed back on.

▲ ASSESSMENT ▲ ENGAGEMENT



Interactive assessments

Step-by-step problems worked in class. You see each student's reasoning, not just the final answer.

▲ ASSESSMENT



Textbook video library

Included with every Edmonds textbook, for preview before class and review after.

▲ ENGAGEMENT

The class session

One repeatable structure, droppable into any course, any topic.



1 · Open with the PBL case

A student-life problem, no jargon. Groups propose solutions cold.



2 · Add the language

Introduce accounting terminology and the business version of the same problem.



3 · Work problems

In-class accounting problems, now anchored to a problem they understand.

▲ TAKE ONE BACK WITH YOU

Pick the chapter you teach next month. Run it cold, the way we just did.

Sign in at edmondshub.com, no cost, no phones required. We'd love to hear how it goes.

▲ THANK YOU

Reach out.

Want the case materials, the slides, or to swap notes on what's working in your classroom? We'd love to hear from you.

Mark Edmonds
medmonds@gmail.com

Or visit **edmondshub.com**

▲ APPENDIX

Sources

HEPI / Kortext Student Generative AI Survey 2026. Higher Education Policy Institute. 95% of students use AI; 94% on assessed work; 12% submit AI-generated text (3% in 2024). hepi.ac.uk/reports/student-generative-ai-survey-2026

Anthropic Education Report (2025). "How University Students Use Claude." ~574K anonymized conversations; four interaction patterns; ~47% Direct; CS 38.6% of conversations vs 5.4% of degrees. anthropic.com/news/anthropic-education-report-how-university-students-use-claude

Kosmyna et al. (2025). "Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task." MIT Media Lab preprint. n=54; EEG connectivity scaled down with external support; 83% of LLM users failed to produce a correct quote from their own essay in Session 1. arxiv.org/abs/2506.08872

Li, Mustakim & Muhamad (2025). "A Meta-analysis of the Effectiveness of Problem-based Learning on Critical Thinking." European Journal of Educational Research: 25 studies, overall effect size g = 1.08 (large), meaning the average PBL student scores higher than roughly 86% of traditionally-taught students. eu-jer.com

▲ APPENDIX · REFERENCE MATERIAL

Same event. Two ways to teach it.

EVENT During Year 1, Cato Consultants provided **$84,000** of consulting services. The work is done and the bills are sent, but no cash has been collected.

THE TRADITIONAL OPENING MOVE

Memorize the entry

```
Accounts Receivable   84,000
    Revenue             84,000
```

Debits and credits on day one. Students can produce this. **So can every AI tool they own.**

THE USER-APPROACH OPENING MOVE

Ask what it means

1 What did this event do to the company's **position**? — BALANCE SHEET

Assets, liabilities, equity: read straight off the first columns of the model.

2 Did the **owners** win or lose? — INCOME STATEMENT

Revenue flows to net income, and the model shows it landing in retained earnings.

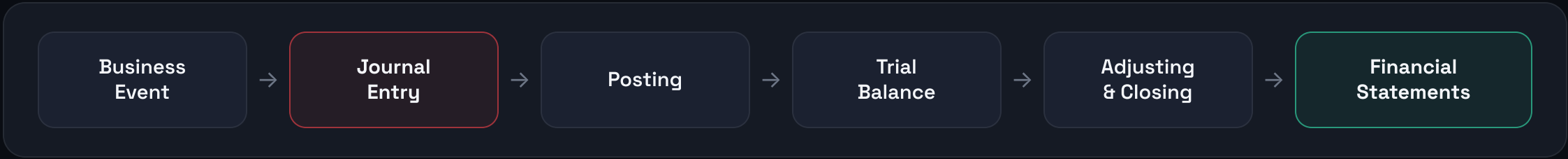
3 Where's the **cash**? — CASH FLOWS

Operating, investing, or financing, and the model shows when cash and earnings tell different stories.

▲ APPENDIX · REFERENCE MATERIAL

The accounting cycle: what you drill matters

Every financial accounting course walks students through the full cycle a few times. Then the semester becomes drill, and the question is **which step you drill.**



WHERE MOST COURSES DRILL

The first step: journal entries

A semester of reps on debits and credits, the mechanical step that **every AI tool now performs instantly.**

WHERE OUR TEXTS DRILL

The last step: financial statement impacts

Interpretation, judgment, and problem solving: **the critical-thinking end of the cycle.**

We still teach the full cycle. We just spend the drill time on the last step.

▲ APPENDIX · REFERENCE MATERIAL

One event, every statement at once



EVENT During Year 1, Cato Consultants provided **$84,000** of consulting services on account. Work done, bills sent, no cash collected.

FINANCIAL STATEMENT IMPACT

Balance Sheet									Income Statement					Stmt of Cash Flows
Cash	+	Accts Rec.	=	Liab.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	
NA	+	84,000	=	NA	+	NA	+	84,000	84,000	−	NA	=	84,000	NA

Assets up, equity up. Claims on the customer are real value, even before cash arrives.

The owners are better off. Revenue flows to net income and into retained earnings.

No cash moved. Accrual vs. cash becomes intuitive, not a rule to memorize.

Toggle the journal entry on or off. FFAC teaches it alongside the model; IFAB can leave it out entirely.

▲ APPENDIX · REFERENCE MATERIAL

Now a harder one: a deferral



EVENT On March 1, Year 1, Alvarado pays **$12,000** cash to lease office space for one year, beginning immediately.

FINANCIAL STATEMENT IMPACT

Balance Sheet								Income Statement				Stmt of Cash Flows
Cash	+	Prepaid Rent	=	Liab.	+	Com. Stk.	+	Ret. Earn.	Rev.	–	Exp.	=	Net Inc.	
(12,000)	+	12,000	=	NA	+	NA	+	NA	NA	–	NA	=	NA	(12,000) OA

An asset swap. Cash becomes a year of office space. Total assets unchanged, equity untouched.

No expense yet. The cost reaches the income statement month by month, as the space is used.

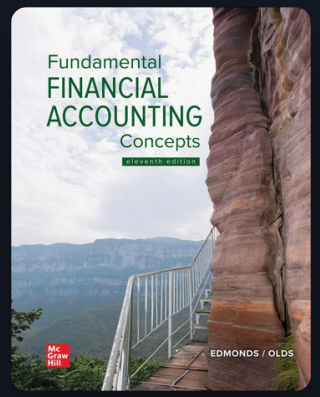
Cash left today. An operating outflow now. Students see the timing difference directly.

Later in the chapter, adjusting entries recognize the rent expense month by month as the space is used.

▲ APPENDIX · REFERENCE MATERIAL

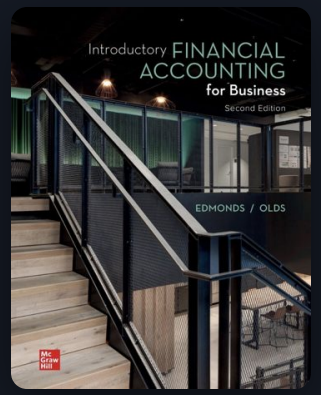
Two approaches to financial accounting

Both texts teach financial statement impacts, real-world examples, and data analytics. You choose when, or whether, to introduce debits and credits.



Fundamental Financial Accounting Concepts

- ✓ Financial statement impacts
- ✓ Real-world examples & data analytics
- ✓ **Debits and credits throughout**



Introductory Financial Accounting for Business

- ✓ Financial statement impacts
- ✓ Real-world examples & data analytics
- ✓ **Delayed or no debits and credits**

The approach is the same in both. The difference is when students meet the ledger.

Mark Edmonds · medmonds@gmail.com

▲ APPENDIX · REFERENCE MATERIAL

Chapter by chapter: one difference that matters



Fundamental Financial Accounting Concepts

1. An Introduction to Accounting
2. Accounting for Accruals and Deferrals
3. **The Double-Entry Accounting System** — CH 3 · EARLY
4. Accounting for Merchandising Businesses
5. Accounting for Inventories
6. Internal Control and Accounting for Cash
7. Accounting for Receivables
8. Accounting for Long-Term Operational Assets
9. Accounting for Current Liabilities and Payroll
10. Accounting for Long-Term Debt
11. Proprietorships, Partnerships, and Corporations
12. Statement of Cash Flows
13. Financial Statement Analysis *(online in Connect)*



Introductory Financial Accounting for Business

1. An Introduction to Accounting
2. Accounting for Accruals
3. Accounting for Deferrals
4. Accounting for Merchandising Businesses
5. Accounting for Inventories
6. Internal Control and Accounting for Cash
7. Accounting for Receivables
8. Accounting for Long-Term Operational Assets
9. Accounting for Current Liabilities and Payroll
10. Accounting for Long-Term Debt
11. Proprietorships, Partnerships, and Corporations
12. Statement of Cash Flows
13. **The Double-Entry Accounting System** — CH 13 · LATE & OPTIONAL
14. Financial Statement Analysis *(online in Connect)*

Same coverage, same order. The only structural difference is where the double-entry system lives: chapter 3 or chapter 13.