Logic Matrix Puzzles:
A Learning Strategy for Transforming Unstructured Data to Structured Data in Support of Decision Making

The BCHS Lab*

Presenters:

Janell Blazovich

Suzanne Shoukfeh

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ima®

The Association of
Accountants and
Financial Professionals
in Business

*This project is from The BCHS Lab.
Founding members are Drs. J. Blazovich,
H. Carrasco, J. Huston, and S. Shoukfeh

Featured Presenters

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Associate Professor
University of St. Thomas

Suzanne Shoukfeh
Assistant Professor of Practice
Texas Tech University

Agenda

- ❑ Introduction – Logic Puzzle Case
- ❑ Case Objectives
  - ▪ Critical Thinking Skills
  - ▪ Data Transformation Skills
  - ▪ Gamification Environment
  - ▪ Introduce IMA Competency Framework
- ❑ Demonstrate Part 1 – See One
- ❑ Discuss Part 2 – Do One
- ❑ Discuss Part 3 – Teach One
- ❑ Participant Feedback

Poll Question 1: Have you ever used logic puzzles as a learning tool in accounting courses?

a) Yes, frequently.
b) Yes, occasionally.
c) No, but I'm interested in trying.
d) No, and I don't see the value in using them.

Primary Objectives

1. Develops critical thinking skills

2. Emphasizes the importance of data transformation

Secondary Objectives

3. Engages learners using gamification

4. Introduces learners to IMA's Competency Framework

Importance of Developing Critical Thinking Skills

- To develop critical thinking, students need maturity and educational training.

- Critical thinking skills can be difficult to teach in a classroom setting.

- As educators we have a responsibility to provide students with opportunities to learn and practice critical thinking skills, including in the context of data analysis.

Critical Thinking – Logic Puzzle Case

Goals*

- Demonstrate ability to apply logical thinking to interpret and create conditional statements and apply relational concepts.

- Recommend a course of action by developing relevant questions and comparing and engaging alternative and iterative analyses.

Learning Objectives*

- Apply relational logic concepts to answer questions.

- Interpret conditional logic statements.

- Create a condition statement.

- Compare alternative analyses.

- Engage in iterative analyses.

*Adapted from the AICPA/NASBA CPA Evolution Model Curriculum.

Importance of Data Transformation

- Data transformation involves the conversion of raw or unprocessed data into a usable format.

- Unstructured data may seem overwhelming to work with due to the lack of familiar organization.

- Transforming unstructured data into structured data is a critical skill that is essential to the decision-making process and requires higher-order thinking.
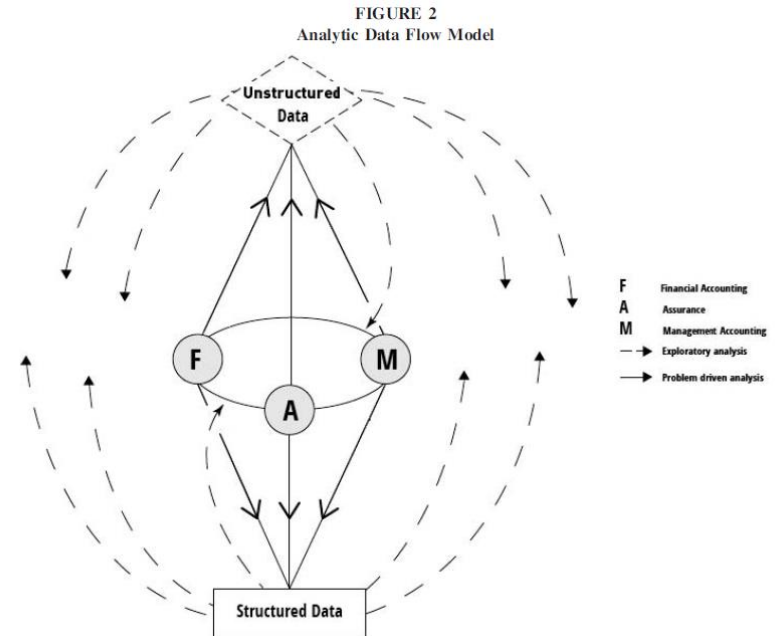
FIGURE 2
Analytic Data Flow Model

Unstructured Data

F   Financial Accounting
A   Assurance
M   Management Accounting
– – → Exploratory analysis
——→ Problem driven analysis

F   M
A

Structured Data

Figure from "Big Data Analytics: Opportunity or Threat for the Accounting Profession?" by Richins et al. *Journal of Information Systems* (2017) 31 (3): 63–79.

Unstructured Data in Business

- Invitations to bid for jobs
- Invoices
- Contracts in an email or word document
- Product catalogs
- Customer reviews
- Customer postings on social media
- Phone calls
- Email communication from clients
- Voice mail recordings

Data Transformation– Logic Puzzle Case

Goal*

- Demonstrate ability to transform unstructured data by applying appropriate method to transform.

Learning Objectives*

- Extract data for decision making from unstructured data.

- Apply data transformation techniques.

- Determine methods to transform raw data (structured and unstructured) to make it useful for decision-making.

Poll Question 2: How effective do you believe logic puzzles are in developing critical thinking and data transformation skills?

a) Highly effective
b) Moderately effective
c) Somewhat effective
d) Not effective at all

Importance of engaging students with Gamification

- Adds variety to teaching methods.
- Soft skills are being left out of the curriculum.
- Critical thinking skills are difficult to teach in a classroom setting.
- Promotes long-term retention of knowledge.
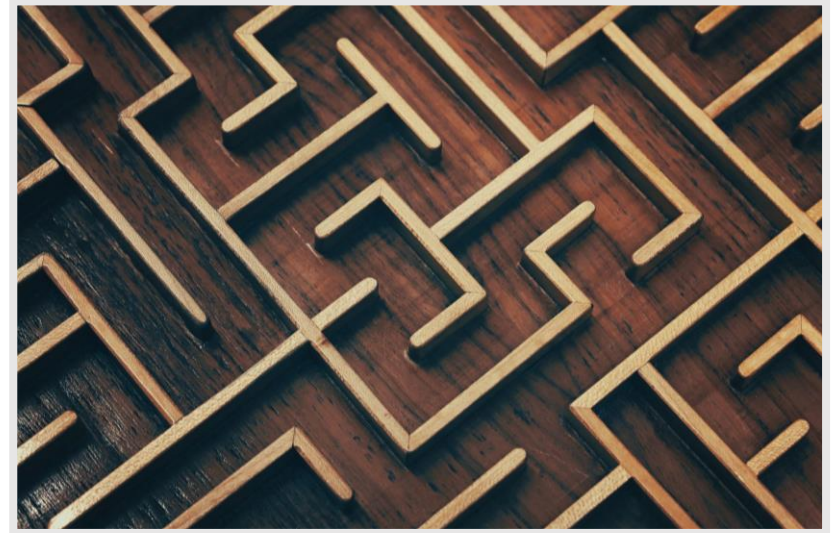
Importance of teaching the IMA's Core Competencies

- Serves as a comprehensive framework

- Designed to align with the evolving needs and demands

- Enables students to expand their career options and access a diverse array of opportunities

LEADERSHIP

STRATEGY, PLANNING & PERFORMANCE

TECHNOLOGY & ANALYTICS

PROFESSIONAL ETHICS & VALUES

REPORTING & CONTROL

BUSINESS ACUMEN & OPERATIONS

Source: https://www.imanet.org/en/Career-Resources/Management-Accounting-Competencies

Part 1 - See One:
Logic Puzzle

Puzzle Narrative

Source: https://depositphotos.com

The IMA's Core Competencies

Source: https://www.imanet.org/en/Career-Resources/Management-Accounting-Competencies

		José	Kai	Lyla	Veda	Technology & Analytics	Strategic Planning & Performance	Business Acumen & Operations	Reporting & Control
Graduation Date	May, 20X1								
	Summer, 20X1								
	December, 20X1								
	May, 20X2								
Top Strength	Technology & Analytics								
	Strategic Planning & Performance								
	Business Acumen & Operations								
	Reporting & Control								

Graduation Date	Student	Top Strength
May, 20X1		
Summer, 20X1		
December, 20X1		
May, 20X2		

Clues:

1	Veda is graduating in Summer 20X1.
2	The student, whose expected graduation date is December, 20X1, chose either Strategic Planning & Performance or Technology & Analytics as their top strength.
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6	The student named Kai, the student whose top strength is Technology & Analytics, and the student graduating in December 20X1, are all different students.

		Student				Top Strength			
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	May, 20X2				X	X	X	O	X
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	May, 20X2				X	X	X	O	X
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	December, 20X1		X		X	X	O	X	X
	May, 20X2				X	X	X	O	X
Top Strength	Technology & Analytics	X	X		X				
	Strategic Planning & Performance				X				
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	December, 20X1		X		X	X	O	X	X
	May, 20X2				X	X	X	O	X
Top Strength	Technology & Analytics	X	X	O	X				
	Strategic Planning & Performance			X	X				
	Business Acumen & Operations			X	X				
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	Summer, 20X1	X	X	X	O	X	X	X	O
	December, 20X1		X	X	X	X	O	X	X
	May, 20X2		X	X	X	X	X	O	X
Top Strength	Technology & Analytics	X	X	O	X				
	Strategic Planning & Performance			X	X				
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	Reporting & Control	X	X	X	O				

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	December, 20X1	O	X	X	X	X	O	X	X
	May, 20X2	X	O	X	X	X	X	O	X
Top Strength	Technology & Analytics	X	X	O	X				
	Strategic Planning & Performance			X	X				
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	Summer, 20X1	X	X	X	O	X	X	X	O
	December, 20X1	O	X	X	X	X	O	X	X
	May, 20X2	X	O	X	X	X	X	O	X
Top Strength	Technology & Analytics	X	X	O	X				
	Strategic Planning & Performance	O	X	X	X				
	Business Acumen & Operations	X	O	X	X				
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	December, 20X1	O	X	X	X	X	O	X	X
	May, 20X2	X	O	X	X	X	X	O	X
Top Strength	Technology & Analytics	X	X	O	X				
	Strategic Planning & Performance	O	X	X	X				
	Business Acumen & Operations	X	O	X	X				
	Reporting & Control	X	X	X	O				

Graduation Date	Student	Top Strength
May, 20X1	Lyla	Tech & Analytics
Summer, 20X1	Veda	Reporting & Control
December, 20X1	José	Strategic Plan. & Perf.
May, 20X2	Kai	Busi. Acumen & Ops.

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After Part 1 - *See One* Logic Puzzle:

- Part 2 - Do One

- Part 3 - Teach One

- Debrief

Poll Question 3: Which aspect of logic puzzles do you find most beneficial?

a) Problem-solving skills development
b) Critical thinking and analytical skills enhancement
c) Application of theoretical concepts in real-life scenarios
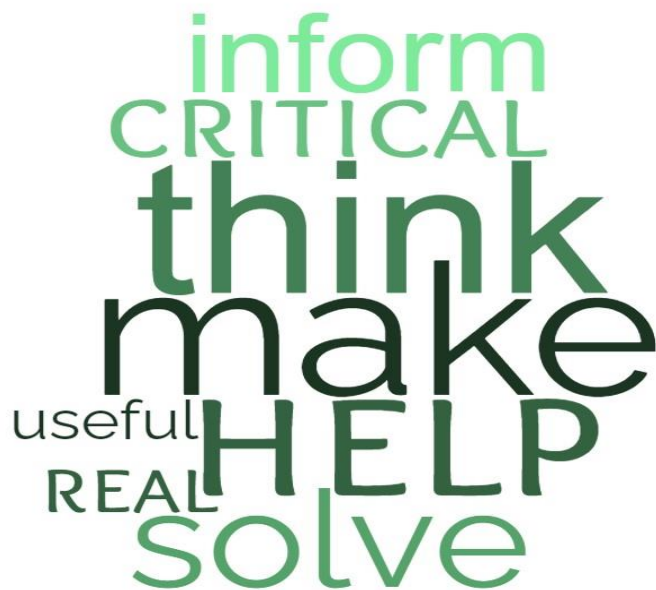d) Increased engagement and motivation

Word Cloud: Student Takeaways

Word Cloud: Student Perception of Real-World Application

What you can look forward to from The BCHS Lab...

Exploring Accounting Career Diversity

- Explore the Institute of Management Accountants' (IMA) website
- Review the IMA's Management Accounting Competencies
- Read and summarize two IMA articles related to one of the core competencies
- Recommend an IMA article to a friend – be creative!

Poll Question 4: Do you believe introducing career diversity to accounting students will effectively broaden their career choices?

a) Highly effective
b) Moderately effective
c) Somewhat effective
d) Not effective at all

Questions
and Answers
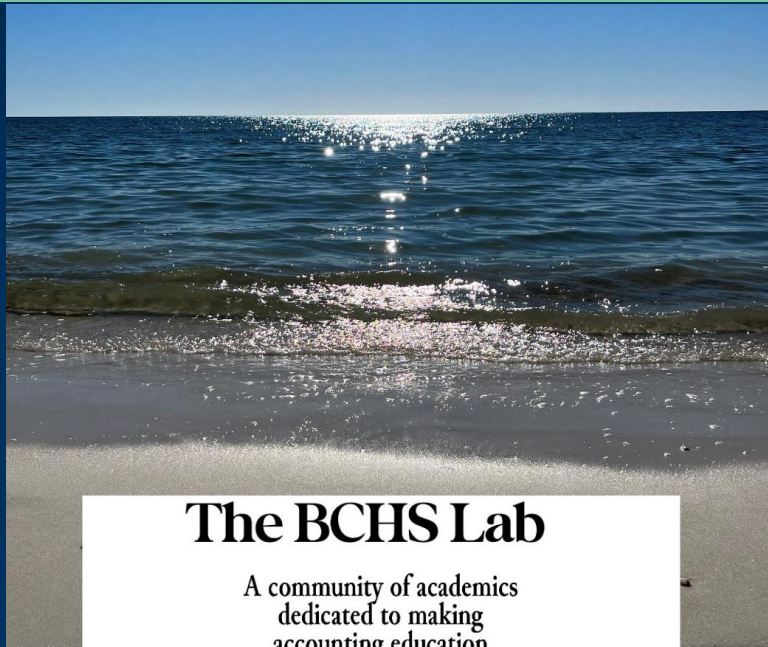
The BCHS Lab

A community of academics
dedicated to making
accounting education
more assessable,
while fostering
the development
of life long learners.

Thank you!