

# Building Employability Skills in Math Course for Business and Economics Using UDL

JET - SET 2023

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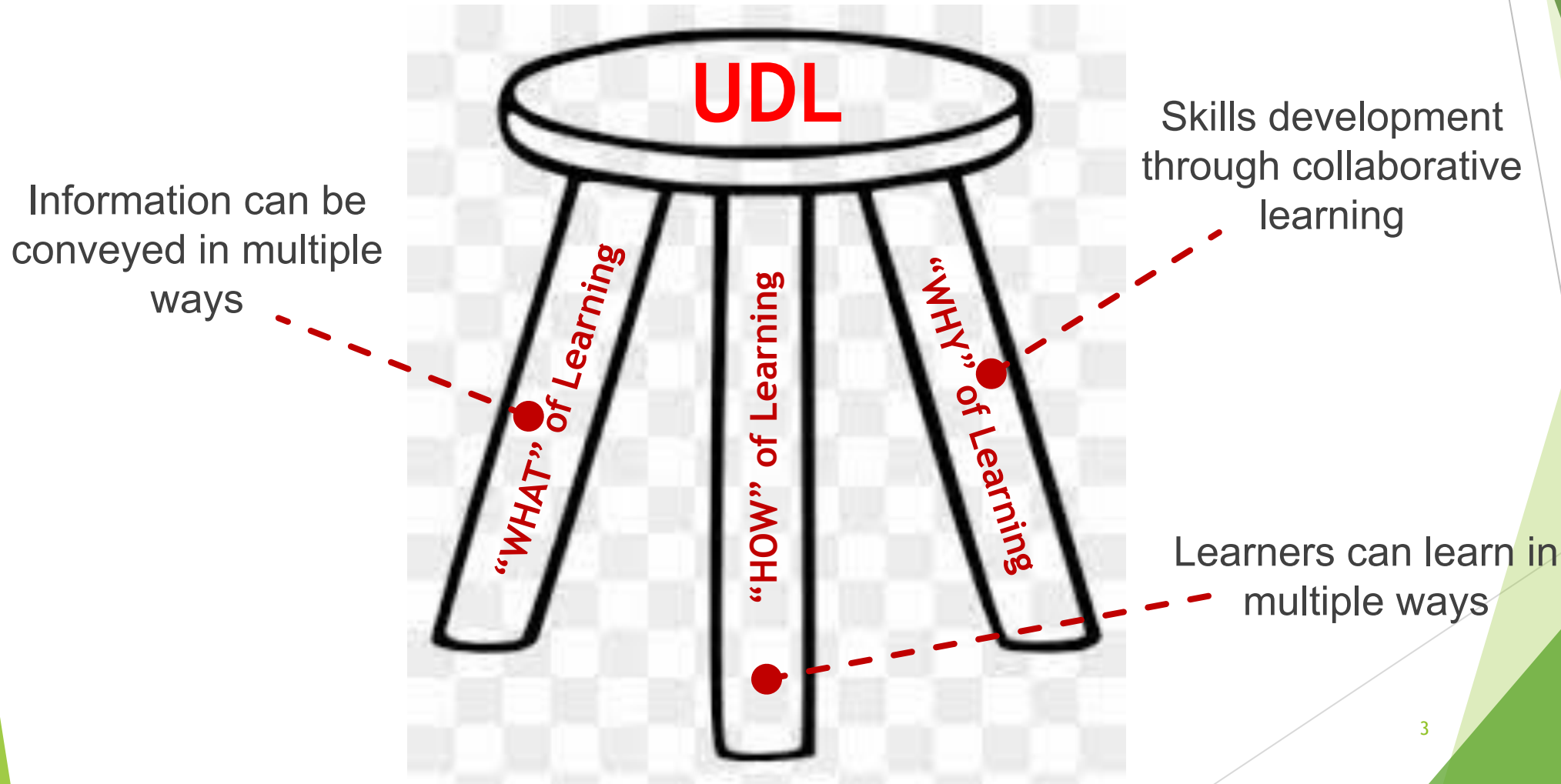
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# Agenda

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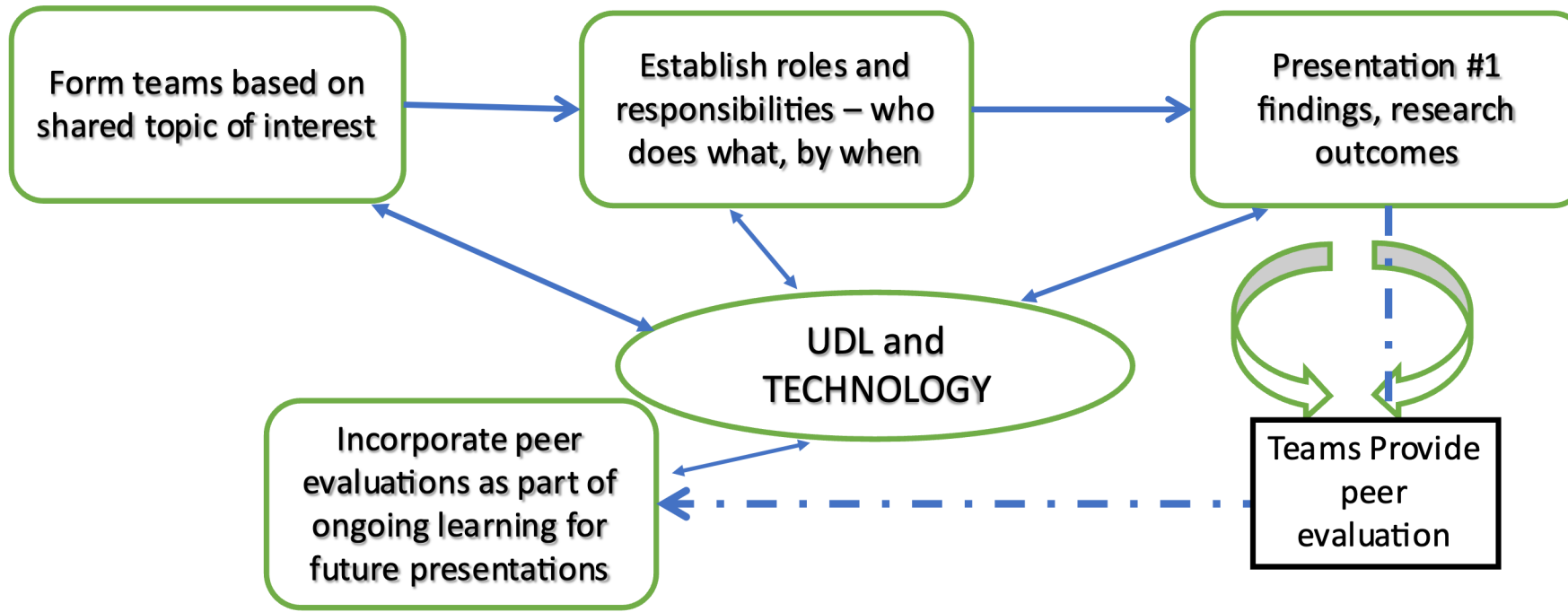
- UDL (Universal Design for Learning)
- Individual and Collaborative learning Models
- Employability Skills
- Results of UDL Application on Teaching and Learning
- Conclusion

# Three Pillars of UDL (Universal Design for Learning)



# Collaborative Project or Team Presentation

## *Collaborative Model of Learning with UDL and Technology*



# Current Study

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- **Where:** Bloomsburg University Campus of Commonwealth University of PA
- **Using:** General Education Courses
- **Specific Course:** Econ 156 – Foundational Math course for Business, Statistics, Finance and Economics Students

# UDL Question

The “What” of Learning – Multiple  
Methods of Representation

# “What” of learning: Multiple Methods of Representation- Individual and Collaborative Learning Models Learning

Chapter 1: Applications and More Algebra

44 Chapter 1 Applications and More Algebra

**Objective**  
To model situations described by linear or quadratic equations.

**1.1 Applications of Equations**  
In most cases, to solve practical problems you must translate the relationships stated in the problems into mathematical symbols. This is called *modeling*. The following examples illustrate basic techniques and concepts. Examine each of them carefully before going to the problems.

**EXAMPLE 1 Mixture**  
A chemist must prepare 350 ml of a chemical solution made up of two parts alcohol and three parts acid. How much of each should be used?

**Solution:** Let  $n$  be the number of milliliters in each part. Figure 1.1 shows the situation. From the diagram, we have

$$\begin{aligned} 2n + 3n &= 350 \\ 5n &= 350 \\ n &= \frac{350}{5} = 70 \end{aligned}$$

But  $n = 70$  is *not* the answer to the original problem. Each *part* has 70 ml. The amount of alcohol is  $2n = 2(70) = 140$ , and the amount of acid is  $3n = 3(70) = 210$ . Thus, the chemist should use 140 ml of alcohol and 210 ml of acid. This example shows how helpful a diagram can be in setting up a word problem.

**FIGURE 1.1** Chemical solution (Example 1).

**CAUTION!**  
Note that the solution to an equation is not necessarily the solution to the problem posed.

**Now Work Problem 5**

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Fig. 1a: Multiple Methods of Representation using Technology

# UDL Question

The “How” of Learning – Multiple  
Methods of Expression



# How of Learning-Multiple Means of Expression- Individual and Collaborative Learning Models

Econ 156 - 06 (1)

♦ Edit Homework

1 Start 2 Select Media and Questions 3 Choose Settings

Name HW chapter 0 review of algebra section 0.8

Book Haeussler: Introductory Mathematical Analysis, 13e [Review Individual Student Settings](#)

Availability Options

Available 01/26/2023 4:00 PM Current course time: 6:34pm  
Time zone: (UTC-05:00) Eastern Time (US & Canada) [Change...](#)

Due 05/05/2023 11:59 PM

Chapter Associations Display with assignments from chapters: 0 [Change...](#)  
Note: This assignment covers material from chapters 0

Scoring Options

Late submissions ☐ Allow students to work and change score after due date  
☐ Require password

☐ Require final submission

☐ Deduct late submission penalty From final score Penalty  %

☐ Apply only to questions scored after the due date

Partial Credit ☒ Allow partial credit on questions with multiple parts

Access Controls

Prerequisites None [Change...](#)

Attempts per question ☒ Limit number of times students can work each question to 5

Media Access ☒ Require students to work media before answering questions

Presentation Options

Lock Correct Answers ☒ Indicate and lock all correct answers after each Check Answer

Save Values ☒ Save question values and student answers

Printing ☒ Allow students to print this homework assignment

Learning Aids Help Me Solve This, View an Example, Animation, Textbook [Change...](#)

☒ Show in Review mode only

Graphing ☒ Allow students to move points by typing coordinates

Other

Importing ☐ Allow other instructors to import this assignment

Cancel

**Fig. 2:** Students Attempt Homework Multiple Times Before Final Submission

# UDL Question

The “Why” of Learning –  
Collaborative learning and  
Employability related Skills  
Development

# Transferable Skills and Measurable Metrics

Transferable Skill/ Core Competency	NACE (National Association of Colleges and Employers) Definition
<b>Career &amp; Self-Development</b>	<ul style="list-style-type: none"><li>• Proactive development through personal and professional learning</li><li>• Awareness of one's strengths and weaknesses</li><li>• Navigation of career opportunities</li><li>• Networking\build relationships within and without one's organization.</li></ul>
<b>Oral and Written Communication</b>	<ul style="list-style-type: none"><li>• Clear &amp; effective information exchange, incl. ideas, facts, perspectives</li></ul>
<b>Critical thinking</b>	<ul style="list-style-type: none"><li>• Logical analysis of relevant information</li><li>• Identify and respond to needs based on situational context</li></ul>
<b>Equity and Inclusion</b>	<ul style="list-style-type: none"><li>• Demonstrate the awareness, attitude, knowledge, and skills required to equitably engage and include people from different local and global cultures</li><li>• Engage in anti-racist practices that actively challenge the systems, structures, and policies of racism</li></ul>

**Source:** <https://www.nacweb.org/uploadedfiles/files/2021/resources/nace-career-readiness-competencies-revised-apr-2021.pdf>, last accessed 3/13/2023

# Transferable Skills and Measurable Metrics (contd.)

Transferable Skill/ Core Competency	NACE (National Association of Colleges and Employers) Definition
<b>Professionalism</b>	<ul style="list-style-type: none"><li>• Understand, and demonstrate effective work habits</li><li>• Act in the interest of the larger community and workplace.</li></ul>
<b>Leadership</b>	<ul style="list-style-type: none"><li>• Recognize and capitalize on personal and team strengths to achieve organizational goals</li></ul>
<b>Teamwork</b>	<ul style="list-style-type: none"><li>• Build and maintain collaborative relationships to work effectively toward common goals</li><li>• Appreciate diverse viewpoints and shared responsibilities</li></ul>
<b>Technology</b>	<ul style="list-style-type: none"><li>• Understand and leverage technologies ethically</li><li>• Enhance efficiencies, complete tasks, and accomplish goals</li></ul>

**Source:** <https://www.nacweb.org/uploadedfiles/files/2021/resources/nace-career-readiness-competencies-revised-apr-2021.pdf>, last accessed 3/13/2023

# Retrospective Student Responses

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Employability Skill	Number of Responses
Career & Self Development	26
Oral & Written Communication	24
Collaboration	18
Technology	17
Creativity	16
Critical Thinking	8
Leadership	2

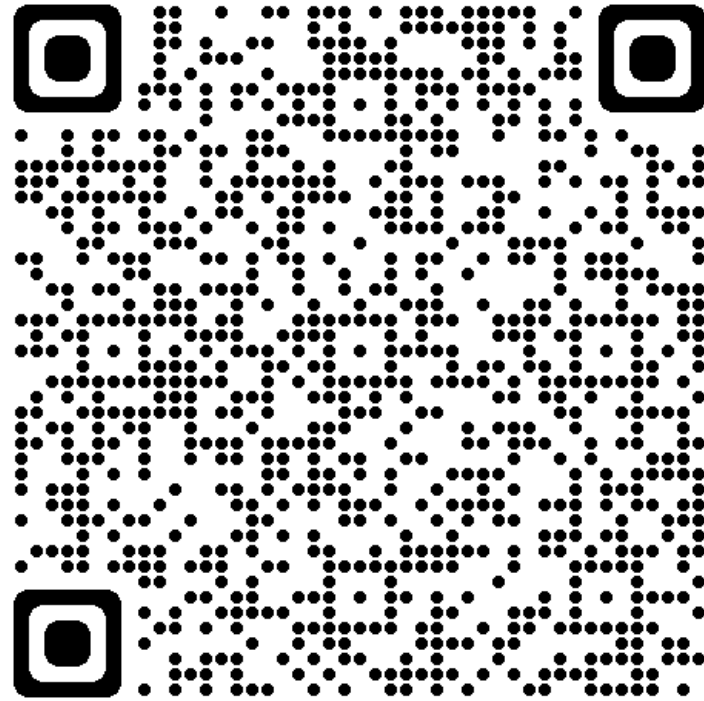
# Conclusions & Observations

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- Addressing What, How and Why of learning using UDL helps in honoring student variability
- In the process of engaging themselves in UDL based collaborative assessments in teams, students get the opportunity to practice and develop employability skills.
- Current research has been applied to economics courses which are general education courses in areas of Microeconomics and Macroeconomics.

# UDL Podcast Hosted by Lillian Nave

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Math, Finance, Economics and Employment Skills with Subhadra Ganguli  
#ThinkUDL

# TASKS FOR YOU

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- Revisit the session agenda and use this presentations as a template for your own UDL application to your courses
- Now, can you think of ways in which UDL can enhance your teaching and your students' learning process in a particular course or topic of a course?





THANK YOU

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