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

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Agenda

- 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)

- Information can be conveyed in multiple ways
- “WHAT” of Learning
- “HOW” of Learning
- “WHY” of Learning
- Skills development through collaborative learning
- Learners can learn in multiple ways
Collaborative Model of Learning with UDL and Technology

- Form teams based on shared topic of interest
- Establish roles and responsibilities – who does what, by when
- Presentation #1 findings, research outcomes
- Incorporate peer evaluations as part of ongoing learning for future presentations
  Teams Provide peer evaluation
Current Study

- **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

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

\[
2n + 3n = 350
\]

\[
5n = 350
\]

\[
\frac{n}{5} = 70
\]

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.

**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

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

The “Why” of Learning – Collaborative learning and Employability related Skills Development
<table>
<thead>
<tr>
<th>Transferable Skill/ Core Competency</th>
<th>NACE (National Association of Colleges and Employers) Definition</th>
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</thead>
</table>
| Career & Self-Development         | • Proactive development through personal and professional learning  
|                                   | • Awareness of one's strengths and weaknesses               
|                                   | • Navigation of career opportunities                        
|                                   | • Networking\build relationships within and without one's organization. |
| Oral and Written Communication    | • Clear & effective information exchange, incl. ideas, facts, perspectives |
| Critical thinking                 | • Logical analysis of relevant information                   
|                                   | • Identify and respond to needs based on situational context |
| Equity and Inclusion              | • Demonstrate the awareness, attitude, knowledge, and skills required to equitably engage and include people from different local and global cultures  
|                                   | • Engage in anti-racist practices that actively challenge the systems, structures, and policies of racism |

## Transferable Skills and Measurable Metrics (contd.)

<table>
<thead>
<tr>
<th>Transferable Skill/ Core Competency</th>
<th>NACE (National Association of Colleges and Employers) Definition</th>
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<tbody>
<tr>
<td><strong>Professionalism</strong></td>
<td>• Understand, and demonstrate effective work habits</td>
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<td></td>
<td>• Act in the interest of the larger community and workplace.</td>
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<td><strong>Leadership</strong></td>
<td>• Recognize and capitalize on personal and team strengths to achieve organizational goals</td>
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<td><strong>Teamwork</strong></td>
<td>• Build and maintain collaborative relationships to work effectively toward common goals</td>
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<tr>
<td></td>
<td>• Appreciate diverse viewpoints and shared responsibilities</td>
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<tr>
<td><strong>Technology</strong></td>
<td>• Understand and leverage technologies ethically</td>
</tr>
<tr>
<td></td>
<td>• Enhance efficiencies, complete tasks, and accomplish goals</td>
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Retrospective Student Responses

<table>
<thead>
<tr>
<th>Employability Skill</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career &amp; Self Development</td>
<td>26</td>
</tr>
<tr>
<td>Oral &amp; Written Communication</td>
<td>24</td>
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<tr>
<td>Collaboration</td>
<td>18</td>
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<tr>
<td>Technology</td>
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<tr>
<td>Creativity</td>
<td>16</td>
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<tr>
<td>Critical Thinking</td>
<td>8</td>
</tr>
<tr>
<td>Leadership</td>
<td>2</td>
</tr>
</tbody>
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Conclusions & Observations

- 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

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

- 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?
Suggestions?
Comments?
Questions?
THANK YOU

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