Marketing
Student Learning Objectives

#1 apply knowledge
#3 contemporary issues
#4 broad education
#5 multi-disciplinary teams
#6 professional and ethical responsibility
#7 communicate effectively
Overview

• Core Competence
• Dominant Design
• Acceptability
• Adaptability
• SWOT Analysis & Application
• Lesson Plan Development
Core Competence

- Primary area of specialization
- Knowledge acquisition
- Collective learning
- Coordination of skills and technology
- Example – Radiator Company
  - Brazing of aluminum
Test for Core Competence

• Providing access to a wide variety of markets
• Adding to the benefits of the end product as viewed by the customer
• Discouraging imitation by competitors
Core Competence

- Stay focused
- Predict future of field
- Innovate beyond customer needs
Describe a car.
Dominant Design

- Standard model
  - Perception
  - Function
  - Cost
Acceptability

- Functional performance
- Acquisition cost
- Ease-of-use characteristics
- Operating cost
- Reliability
- Serviceability
- Compatibility
Acceptability for K-12 Project

- Functional performance
  - Have fun, learn, awareness
- Acquisition cost
  - Keep materials inexpensive, reusable
- Ease-of-use characteristics
  - Instructional manual and lesson plan
- Operating cost
  - Class time
Acceptability for K-12 Project

- **Reliability**
  - Pilot test, make sure it works (glue drying, stale marshmallows)

- **Serviceability**
  - Provide extra resources and reference for future facilitation

- **Compatibility**
  - Fit to curriculum standards
  - Fit into classroom (lesson plans before and after)
Adaptability

• Identifying target market
  – Demographics
    • Geography
    • Socioeconomic status
    • Usage: need versus want

• Expanding demographic
Adaptability for K-12 Project

• Target entire K-12 spectrum
  – Make more simple for lower grade levels
  – Make more complex for higher grade levels

• Round out concepts
  – History class
  – English class
SWOT Analysis

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Create a strategy for success.

<table>
<thead>
<tr>
<th>Internal</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths</td>
<td>How do you leverage your strengths to benefit from opportunities?</td>
<td>How do you use your strengths to minimize the impact of threats?</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>How do you ensure your weaknesses will not stop you from opportunities?</td>
<td>How will you fix weaknesses that can make threats have a real impact?</td>
</tr>
</tbody>
</table>
Lesson Plan Development

• Lesson goals
  – What should students know at the end of the lesson?

• Lesson objectives
  – Match to curriculum standard.

• Pedagogical strategy
  – How are you going to teach?

• Student assessment
  – Measure *if and to what extent* the students learned the lesson.
Differentiate Between Grading and Assessing

- **Grading**
  - Failed to put parenthesis in calculator resulting in an order of operations error when calculating $R_{\text{parallel}}$
  - Receives grade reduction

- **Assessing**
  - Chose correct equation
    - Substantially met: an ability to identify, formulate, and solve engineering problems
  - Made mathematical error
    - Failed to meet: an ability to apply knowledge of mathematics

\[
\begin{align*}
R_{\text{series}} &= R_1 + R_2 + \ldots + R_n \\
R_{\text{parallel}} &= \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \ldots + \frac{1}{R_n}}
\end{align*}
\]
Conclusion

- Core Competence
- Dominant Design
- Acceptability
- Adaptability
- SWOT Analysis & Application
- Lesson Plan Development
SLO #1: apply knowledge of mathematics, science, and engineering

- Describe examples of when you have applied each component
- Mathematics
  - Calculations, equations, procedures
- Science
  - Theories, principles, laws
- Engineering
  - Application, iteration, process