PowerPoint Presentations: Do They Really Work?

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Overview

• Objectives
• Background
  – Increased Interest in Education
  – Enhancing Engineering Education
  – Traditional Lecture Format
• Methodology
• Results and Discussion
• Summary and Conclusions
Objectives

• Conduct a study to determine the effectiveness of using PowerPoint Presentations to enhance student learning.

• Get student feedback on the likes and dislikes of using PowerPoint.
Primary Objective

• Answer once and for all, unequivocally and irrefutably if PowerPoint presentations enhance student learning.
Increased Interest in Undergraduate Education

- The public, industry, and state legislatures have scrutinized university educational systems in recent years.

- Engineering Criteria 2000 established by ABET to focus on the “product” of engineering education.
Methods for Enhancing Learning

- Multimedia presentations & Internet.
- Computers & software packages.
- CD-ROM PowerPoint Presentations.
Literature Focused on Format of PowerPoint Lectures

• Mechanics and formatting of PowerPoint Presentations primarily discussed.

• Assessment of PowerPoint presentations has not been well documented.
Traditional Lecture Promoted as Good Information Transfer Procedure

- **Good delivery**: clarity, pace, stimulation

- **Enthusiasm**: should impact both the listener and the lecturer.

- **Content command**: breadth and depth of knowledge of the given subject.
Methodology

- ANOVAs performed on students’ project, final exam, and overall final grades.

- Comparisons made for three course offerings: Fall 98 (11 students), Fall 99 (6 students), and Spring 00 (10 students).

- Subjective experience of students collected.
## Average Final Exam Grades

<table>
<thead>
<tr>
<th></th>
<th>Fall 98</th>
<th>Fall 99</th>
<th>Spring 00</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>3.32</td>
<td>2.25</td>
<td>2.60</td>
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ANOVA: Final Exam Grades

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<th>F</th>
<th>$F_{critical}$</th>
<th>df</th>
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<tbody>
<tr>
<td>2.59</td>
<td>3.40</td>
<td>2, 24</td>
<td>0.05</td>
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## Average Design Project Grades

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<th></th>
<th>Fall 98</th>
<th>Fall 99</th>
<th>Spring 00</th>
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<tbody>
<tr>
<td>Grades</td>
<td>2.45</td>
<td>2.83</td>
<td>3.70</td>
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### ANOVA: Design Project Grades

<table>
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<tr>
<td>6.60</td>
<td>3.40</td>
<td>2, 24</td>
<td>0.05</td>
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</table>
Average Overall Final Grades

<table>
<thead>
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<th>Fall 99</th>
<th>Spring 00</th>
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<tr>
<td></td>
<td>2.64</td>
<td>2.00</td>
<td>3.05</td>
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</table>
**ANOVA: Overall Final Grades**

<table>
<thead>
<tr>
<th>F</th>
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<tbody>
<tr>
<td>2.72</td>
<td>3.40</td>
<td>2, 24</td>
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</table>
Positive Comments

• Good for general information and when recollection is not required.

• Easier to follow along and comprehend with PowerPoint.
Positive Comments

• Dynamic presentations with sound and animation keep student’s interests.

• I spend most of the time trying to get all the notes when they are written on the board and do not always comprehend.
Positive Comments

• Easy for the presenter to use and cover a lot of material in a short time.

• Lectures clearly outlined and readable.

• Professor can print out handouts for the students to follow.
Negative Comments

• Not good for detailed information that must be learned and understood.

• Harder to understand when the teacher is explaining a long derivation on many slides.
Negative Comments

• Teacher does a better job of explaining the material when writing on the board.

• When reviewing, it’s not as easy to identify the most important points.

• Less attention is paid during the lectures since I have a handout to rely on.
Negative Comments

• When lights are dim during the presentations, students tend to get sleepy.

• There is not as much interaction between professor and students.
Summary

• Statistical assessment of the use of PowerPoint Presentations was made.

• Subjective assessment of the use of PowerPoint Presentations was made.

• A comparison of student grades on final exams, design projects, and overall grades was made when EVE 405 was offered with and without using PowerPoint Presentations.
Conclusions

• No significant difference in student grades on final exams and overall final grades when PowerPoint Presentations were used.

• Student performance on the design project improved when PowerPoint was used.

• Students liked PowerPoint, however, they learned and understood complex material better when traditional lecture was used.