Note-taking as a Determinant of the Effectiveness of PowerPoint as a Lecture Aid

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Introduction
PowerPoint is a much used but little researched multimedia lecture aid. Few studies have shown that students appreciate PowerPoint assisted lectures, but rarely have demonstrated learning benefits. The most compelling finding to date is that PowerPoint enhances learners’ interest in the lecture; cognitive benefits have been less established. Our previous controlled studies have not found PowerPoint to enhance learning. However, before we conclude that these variables do not influence learning, we must consider difficulties we encountered. Participants’ lack of motivation could have been due to the fact that the extra cognitive benefits have been less established. Our previous studies may have yielded no effects because we manipulated only features of the PowerPoint presentation. However, students often take notes during PowerPoint facilitated lectures. Note-taking’s effects on immediate recall and knowledge retention have been widely documented. Finally, this study suffered the limitation of few participants.

Hypotheses
Learners who take notes will score higher on an immediate multiple choice test and on a true-false transfer test than will students who do not take notes, because they will enjoy the effects of note-taking.

Methods
Participants: Psychology students recruited at a comprehensive midwestern university
Predominantly white
Females=30 vs. Males=9

Materials
Informed consent form
Test of previous knowledge of neuron transmission
Scanntron sheet and #2 pencil
Two 10-minute lectures visually recorded on DVD (one with, one without PowerPoint slides) about neuron communication
PowerPoint slides gave brief outlines of associated lecture material
82 item multiple choice retention tests
24 item true/false transfer tests
Evidence of participation and debriefing forms

Procedure
We randomly assigned participants to one of the 4 conditions.
Students read and completed the informed consent form.
Students then completed the test of previous knowledge about neuron communication.
Participants viewed the recorded lecture projected on a screen in a standard classroom.
Participants either did or did not take notes.
After the lecture participants took a retention test and then a transfer test.
When finished, participants received evidence of participation and debriefing forms.

Results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Note Condition</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No PowerPoint</td>
<td>No Notes</td>
<td>18.00</td>
<td>4.16</td>
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<td>Notes</td>
<td>18.31</td>
<td>4.91</td>
</tr>
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</table>

Discussion

Discussion
There were neither main nor interactive effects of PowerPoint or note-taking. However, before we conclude that these variables do not influence learning, we must consider difficulties we encountered. Participants may not have been motivated to learn the material. Participants’ lack of motivation could have been due to the fact that the extra points offered were not contingent on their performance. The lecture material was dry and/or difficult to comprehend. Additionally, the PowerPoint slides may not have been optimally designed to highlight the conceptual structure of the lecture.

Finally, this study suffered the limitation of few participants. Despite these limitations, the consistency of the current findings with our previous work reinforces our growing conviction that variations in PowerPoint implementation do not influence students’ immediate recall of lecture material under these or other conditions.

Our research has looked only at variations of text-based functions of PowerPoint. Perhaps such variations in the use of PowerPoint have little effect on learning, but rather other features of PowerPoint, including tables, figures, and videos, may influence learning. In fact, a growing literature on multimedia learning has documented powerful effects of these aspects of teaching materials on retention and transfer.

References

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