

Effects of Note-Taking Methods on Learning

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BACKGROUND

- Effects of note taking on memory have demonstrated that note taking improves memory.
- Reviewing your notes after a note taking period scaffolds your memory abilities [10].
- Cognitive processes moderate learning outcomes [3].
- Large bodies of research have investigated the effects of note taking modality on memory of factual and conceptual material.
- Little replicable results came out of this research and the true nature of note taking modality's role in memory recall is still being uncovered [8].
- With technological advances, more notetaking modalities are forming, like taking longhand notes via tablet.

Research Questions

- How does note-taking affect ability to learn lecture material?
- Which note-taking method is most beneficial?

Hypotheses

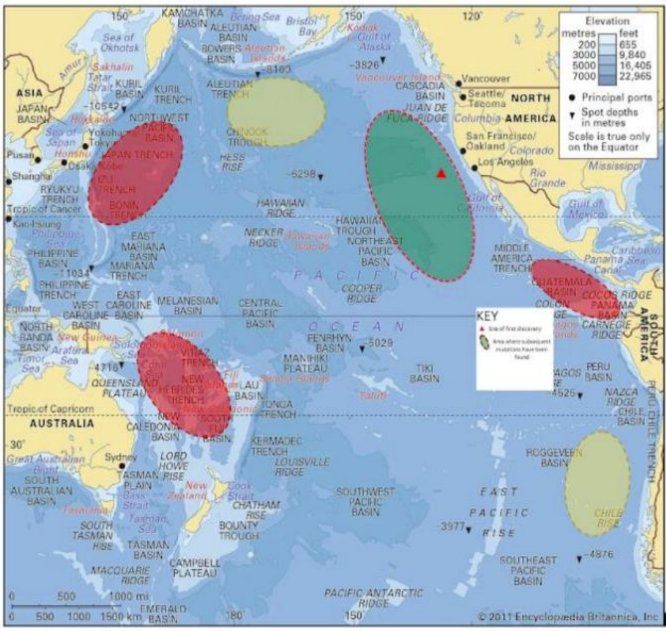
- Longhand and tablet conditions would perform best overall
- Questions on orally presented information would be harder than textually presented information
- Interaction between note-taking modality and type of test questions- laptop condition would have poor performance on the visually presented information

METHODS

- > Two independent variables (IVs)
 - > IV1 = Note taking modality (longhand, laptop, tablet, no notes)
 - > IV2 = Question type (visual, textual, oral)
- > Participants were randomly assigned to a condition (Laptop; Tablet; Longhand; No Notes). Participants watched a pre-recorded lecture and took notes.
- > A word search stimulus was distributed to minimize rehearsal of the material.
- > Participants were then given three minutes to review their notes.
- > Participants then played a Kahoot as a distractor task.
- > Participants were then given ten minutes to take a test on lecture material that consisted of different question types.
- > Participants then completed a post-test questionnaire on qualtrics and uploaded notes to Dropbox.

Predicted prevalence of Atlantium across the Pacific

The areas indicated in red are most likely to have Atlantium present due to similar environmental conditions to the area of discovery: all are within the temperate climate zones or tropical climate zones because Atlantium has a preference of warmer environments.



LEGEND

- HIGH possibility of Atlantium prevalence
- LOW possibility of Atlantium prevalence

As for the areas indicated in yellow, there's less likelihood of Atlantium being prevalent due to the fact that these areas are closer to colder environments.

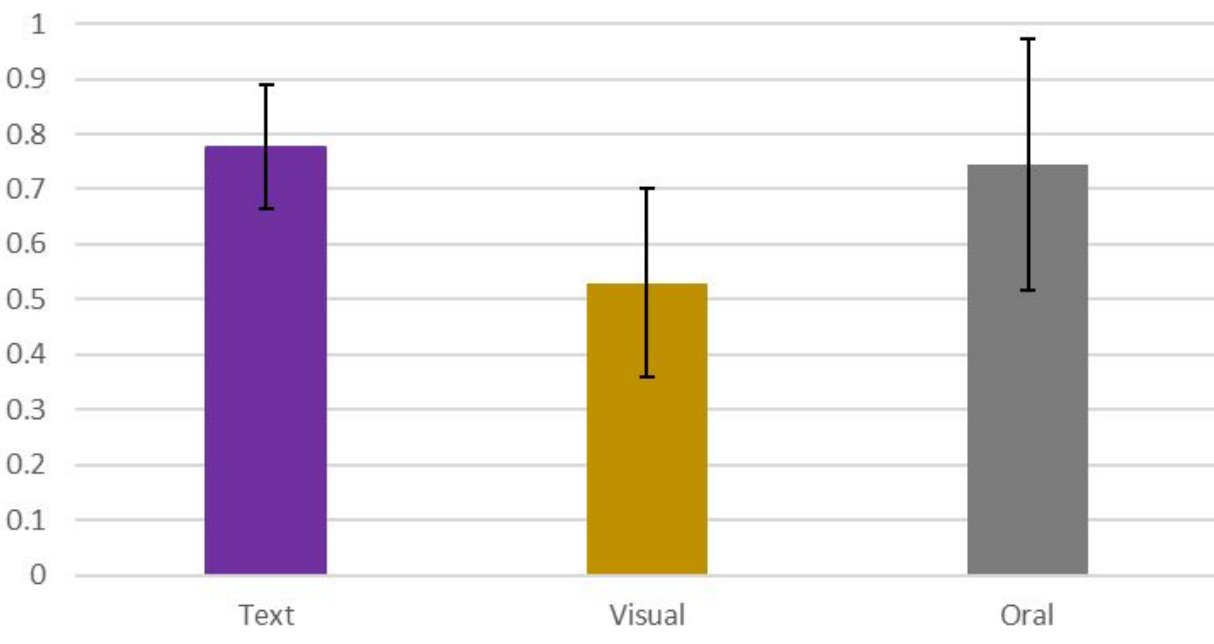
23. What city in California is closest to where Atlantium was discovered?

- a. San Francisco
- b. Compton
- c. Oakland
- d. Inglewood

RESULTS

- One-way ANOVA was conducted to assess note-taking modality, which was found to be not significant.
- One-way ANOVA was conducted on the question type, a pairwise comparison revealed that:
 - Questions on visual information had significantly lower performance than all other types
- Exploratory analyses demonstrated interesting trends within question type.
 - A comparison between longhand and no-notes group's performance on lecture questions showed a tendency towards better performance of longhand condition ($p=0.099$).
 - For graph questions, a difference between the longhand and laptop also showed tendency towards better performance of longhand condition.

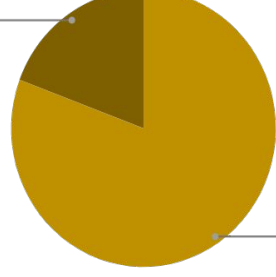
Exam Performance vs Question Type



Longhand

Inaccuracy

18.3%



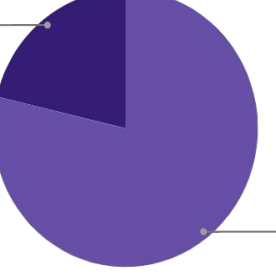
Accuracy

81.7%

Laptop

Inaccuracy

21.3%



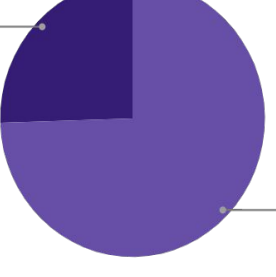
Accuracy

78.7%

None

Inaccuracy

25.5%



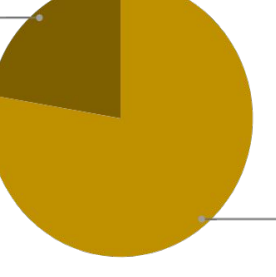
Accuracy

74.5%

Tablet

Inaccuracy

22.5%



Accuracy

77.5%

LIMITATIONS

- Longer time between study and test may be needed to find group differences
- Test questions also could have been revised to be more difficult or in the form of written questions
- This study was done on college students, so more studies could focus on building external validity by testing different age groups
- Results can be due to different sample sizes: Laptop had largest sample ($n = 36$) and Tablet had the smallest sample ($n = 11$)

CONCLUSIONS

- We were not able to replicate past findings of experiments investigating similar research questions.
- Certain cognitive factors of attention may play a significant role in information coding
- Information review may be less important than being attentive during the encoding period
- Future studies could 1) vary the time between study and test 2) further investigate learning of graphical information 3) evaluate these effects across ages.
- Result trends could show more and possibly be significant with a larger sample size

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