The Effect of Graphic Organizers as a Note-taking Strategy in an Undergraduate Biology Classroom

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Abstract
Note-taking is a strategy widely utilized to facilitate the learning process. Studies show that note-taking is related to improved course performance. However, most students tend to take notes in outlines, which restricts relational learning. This particular study introduces the use of graphic organizers in note-taking in a college-level biology classroom. We compared the effects of matrix-style notes to outline notes on test performance and surveyed students’ attitudes towards the use of graphic organizers as a note-taking strategy. Preliminary data show that graphic organizers yield positive results after an initial learning period.

Presentation Outline

1. Introduction
   a. Strengths and weaknesses of note-taking as a study strategy
   b. The SOAR Study Method
      i. Selection, Association, Organization, Regulation
   c. Graphic Organizers
      i. High computational efficiency (how quickly a display allows a reader to locate important information and to accurately infer relationships)
   d. Research Question: How effective are graphic organizers as a note-taking strategy in an undergraduate biology class?

2. Methodology
   a. Population: Undergraduate Biology class
   b. Outline notes are usually provided by the professor for each chapter
   c. Graphic organizers were developed in place of outline notes for two selected chapters
   d. Quantitative Analysis: achievement scores (based upon selected chapters)
      i. Utilized paired t-test to compare mean scores
      ii. Utilized one-way ANOVA to examine annotation/completion levels
   e. Qualitative Analysis: administered survey to assess student attitude and opinion

3. Results
   a. Quantitative Analysis
      i. Trial 1: outline notes yielded higher scores
      ii. Trial 2: graphic organizers yielded higher scores
      iii. Substantial annotation yielded higher scores in both trial 1 and 2
   b. Qualitative Analysis
      i. Most students had a positive perception of graphic organizers

4. Discussion/Conclusion
   a. Graphic organizers were helpful once students had already been exposed to them
      i. Significant, but small effect due to short study period
   b. Hypothesis: the continued use of graphic organizers will improve students’ scores more
      i. Novel study strategies require practice
   c. Future work could include:
      i. An extended study period with higher implementation into the curriculum
      ii. Improved graphic organizers (with higher computational efficiency)
Select Annotated Bibliography


This article outlined the SOAR study method, detailing and supporting each of the four different facets that are included therein. Additionally, the researchers included a study regarding the efficacy of the method, which tested the various sections of the method along with different combinations of the facets involved. Ultimately, the researchers were able to find that the SOAR study method led to great improvement in relationship learning. Of particular interest to my study was the section regarding organization, in which the subject of graphic organizers and why they are theoretically superior to outline format notes is elaborated upon.


This paper sought to outline the reasoning behind the effectiveness of matrix notes. Researchers were able to find that matrix notes were most effective when it came to learning facts and connections due to its ability to localize and organize related ideas and information. Additionally, this study was of particular interest due to the fact that it showed that certain matrices prove to be more useful than others, demonstrating that the localization of topics and categories within a matrix is oftentimes as crucial as the use of the matrix itself.


Examining the effect that note-taking can have on course performance, researchers were able to find by observing several undergraduate students that there is a strong relationship between the number of points recorded in notes and achievement in the course. This was relevant as the graphic organizers that are utilized in my study are intended to assist in the note-taking process.


This paper was particularly helpful in outlining the different types of graphic organizers as well as detailing the rationale behind each particular organizer. Introducing hierarchies, sequences, matrices, and illustrations, the author was able to give a thorough overview of the strengths and potential weaknesses of each specific form. This paper was useful in the development of the graphic organizer notes used for my study.


This study sought to investigate the types of information that graphic organizers help students learn. The researchers were ultimately able to observe that students who were allowed to study the graphic organizers for enough time were able to learn more hierarchical and coordinate relations. Additionally, the students who utilized these graphic organizers were able to apply and integrate that knowledge in an essay format more successfully than those who did not have the graphic organizers. This study is of particular relevance due to the fact that it seeks to simulate a more realistic classroom setting with a unique method of testing learning and comprehension.