Mind mapping and outlining: Comparing two types of graphic organizers for learning seventh-grade life science

Abstract
Graphic organizers are frequently utilized by teachers to assist learning. Characteristics of graphic organizers include an organizational process, opportunities for brainstorming, planning, assessment, illustrations, visual stimuli, note taking, checking understanding, and allowing an instructor to effectively deliver instruction (Ausubel, 1969; Bromley, Irwin-DeVitis, & Modlo, 1995; Gregory & Chapman, 2002; Marzano, R.J., Pickering, D.J., & Pollock, J.E., 2001; Stronge, 2002). Mind mapping and outlining are specific instructional tools teachers utilize to improve learning. These instructional tools have the characteristics of graphic organizers and allow individuals to process information. Mind mapping and outlining allow individuals to foster and create meaningful learning, which is critical to the learning process (Ausubel, 1969; Novak, 1981). The purpose of this study was to determine effects of mind mapping and outlining on learning Life Science in the seventh grade. This study evaluated unit test scores, one-week delayed comprehensive posttest scores, and attitudes of students toward the strategy implemented on a Life Science Unit on cellular biology. Permission was obtained from the Texas Tech Institutional Review Board and Hobbs (NM) Municipal Schools to conduct this study. Consent was received and each participant was randomly assigned to one of three groups (control, outlining, and mind mapping) to assure equal distribution of difference between these groups (Gall, Borg, & Gall, 1996). A one-way ANOVA was conducted to determine effects of groups in unit test scores and one-week delayed comprehensive posttest scores. A MANOVA was utilized to evaluate effects of groups' attitude survey scores. Results of the study demonstrated a significant difference in means of unit test scores. A post-hoc test was conducted to evaluate which groups were different. A significant difference existed for students who used the outlining strategy to answer unit test questions on cellular biology when compared to the control and mind-mapping groups. In evaluation of one-week delayed comprehensive posttest results on cellular biology, a significant difference did not exist between groups. Attitudes toward the strategy being implemented differed between means of groups for survey questions two and seven. The mind-mapping group indicated significant agreement regarding the statement "I enjoyed creating an (outline, mind map, writing information) for the cell block." Ancillary data was compiled of basic and application questions of unit test and one-week delayed comprehensive posttest. In unit test basic questions, the outlining group performed significantly better than the mind-mapping group. In the one-week delayed comprehensive posttest, the outlining group performed significantly better than the control group. Limitations in this study involved students’ lack of engagement of the learning process, student diversity, classroom disruptions, student interactions, student resistance, and immediacy of feedback. Recommendations for further study include grouping students according to their developmental level using Piaget’s theory, modeling of note taking strategies by teachers, increasing the length of training sessions on graphic organizers, and selecting other areas of science content.
Mind Mapping And Outlining: Comparing Two Types Of Graphic Organizers For Learning Seventh-Grade Life Science. Unpublished PhD Thesis, Texas Tech University. Tucker, Joanne, M.; Armstrong, Gary, R.; Massad, Victor, J. (2008). The study sample consisted of two schools that were selected intentionally and included 117 students. The sample was divided into two groups, one experimental and one control group; the control group consisted of 33 male students and 27 female students, while the experimental group consisted of 30 male students and 27 female students. The third graphic organizer is a combination of two bubble maps and is called the double bubble, also commonly known as a Venn diagram. The double bubble map is a comparison map that defines differences and similarities between two topics. The two central circles contain the two main ideas. A tree map can be used as a visual outline for any type of written project like an essay or blog post. The title and introduction is placed at the top and the paragraphs branch out underneath. A practical way of using a tree map is to organize tasks for a large project. How will you use a graphic organizer the next time you are having a hard time organizing your ideas? Tell us in the comments if you already use graphic organizers and what your experience is with them. Webs, concept maps, mind maps and plots such as stack plots and Venn diagrams are some of the types of graphic organizers used in visual learning to enhance thinking skills and improve academic performance on written papers, tests and homework assignments. Concept Maps. Concept maps graphically illustrate relationships between two or more concepts and are linked by words that describe their relationship. Concept Map Example. Webs Brainstorming webs show how different categories of information relate to one another.