

AN EXPERIMENTAL STUDY ON THE EFFECTIVENESS OF MNEMONIC TECHNIQUES AND OF THE USUAL TEXTUAL TECHNIQUE IN TEACHING BIOLOGY CONCEPTS¹

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This study was conducted during the school year 1996-1997 on high school classes 2-C and 2-D of the Central Philippine University (CPU) Development High School. These were frequency-matched and were randomly assigned as the control and experimental groups. The control group used the usual textual version of four booklets on Taxonomy while the experimental group used booklets on the same subject matter, using the mnemonic techniques, Acrostics and Ridiculous Associations. The difference between the two groups' performance indicated the relative effectivity of the instructional materials/study guides in improving immediate and delayed recall.

Subanalyses were likewise conducted to determine which instructional material was more effective with different groups formed according to age, sex, I.Q., family income, and general average.

SUMMARY OF FINDINGS

The use of both the usual textual presentation and the mnemonic techniques resulted in significant student learning in immediate recall. However, Ridiculous Association was as effective as the usual textual presentation in only two out of four booklets on the last five animal phyla and the plant phyla. The use of the mnemonic technique Acrostics proved more effective in immediate recall than the usual textual version in two out of four booklets on the first five animal phyla and the plantlike protists and monerans.

The use of both Acrostics and Ridiculous Association proved more effective than usual textual version in aiding students' delayed recall (in the final exam given a week and another given two months after the last treatment).

¹ Abstract of a thesis submitted in fulfillment of the requirements for the degree of Master of Arts in Education at Central Philippine University.

Subanalyses on sex, age, I.Q., family income, and general average, showed that Acrostics was a far better technique than the usual text in aiding immediate recall of students.

In both groups, it was seen that the girls performed as well as the boys in the post tests in four out of four booklets. In the two final exams for delayed recall, there was no significant difference in performance of the girls and boys in the combined control and experimental groups; this means that sex or gender had no effect on students' performance and on the effectivity of the techniques.

In both groups, it was seen that the younger half performed as well as the older half in the post tests in four out of four booklets. In the two final exams for delayed recall, there was no significant difference in performance of the younger half and the older half in the combined control and experimental groups. This means that age had no effect on students' performance and on the effectivity of the techniques.

In both groups, it was seen that the lower income subgroups performed as well as the higher income subgroup in the post tests in four out of four booklets. In two final exams for delayed recall, there was no significant difference between the performance of the lower income and that of the higher income subgroups in the combined control and experimental groups; this means that per capita income had no effect on students' performance and on the effectivity of the techniques.

In both groups, control and experimental, it was seen that the lower general average subgroup performed as well as the higher general average subgroup in the post tests in three out of four booklets. In the two final exams for delayed recall, there was no significant difference in the performance of the lower general average subgroups in the combined control and experimental groups; this means that general average had no significant effect on students' performance and on the effectivity of the techniques.

In both groups, it was seen that the higher I.Q. subgroup outperformed the lower I.Q. subgroup in the post tests in four out of four booklets. In the two final exams for delayed recall, there was also a significant difference in performance of the higher I.Q. subgroup compared to the lower I.Q. subgroup in the combined control and experimental groups; this means that I.Q. had an influence on students' performance and on effectivity of the techniques.

Moreover, results of subanalyses showed that the two mnemonic techniques Acrostics and Ridiculous Associations proved more effective in aiding students' performance in delayed recall exams -- one given a week after and another given two months after the last treatment.

Subanalyses results also showed that the high I.Q. subgroup performed better than the low I.Q. subgroup in both immediate and delayed recall (four out of four booklets and the two out of two final exams).

CONCLUSIONS OF THE STUDY

Results of the study led to the following conclusions:

1. The usual textual presentation as well as the version using ridiculous association can assist immediate recall of students.
2. Comparing the relative effectivity of the usual textual version and the Acrostics, however, the latter was proven a far better mnemonic technique than the former in aiding students' immediate recall.
3. Exposure to Acrostics and Ridiculous Association assist students' long-term recall of Taxonomy lessons more effectively than the usual textual version.
4. The study showed that age, sex, I.Q., family income, and general average did not affect the effectivity of the mnemonic techniques.

RECOMMENDATIONS

The researcher presents the following recommendations based on the findings and conclusions:

1. Teachers of High School Biology should make an effort to prepare and use instructional materials employing mnemonic techniques like Acrostics and Ridiculous Associations to aid students' delayed recall.
2. Even before the experiment, the College Biology teachers consulted for critiquing, expressed their interest in having copies of the instructional materials; thus, since this study showed relative effectivity of the

materials which resulted in greater retention than the usual technique. their use on the tertiary level Taxonomy classes is recommended.

3. Teachers, curriculum planners, and authors of instructional materials in science as well as in other disciplines, should consider the use of more interesting and meaningfully organized material, if they hope to encourage students' interest in the sciences.
4. Teachers should encourage learners to create their own Acrostics and Ridiculous Associations by showing them how to do these in order to increase recall of the learning materials.
5. More teachers should be trained to prepare the more user-friendly materials to whet the appetite of the learners for their difficult subject.

RECOMMENDATIONS FOR FURTHER RESEARCH

1. Further research can be done on other mnemonic techniques suggested by Torres in his book, "How to Improve Your Memory in One Evening."
2. Similar studies should be made on the effectivity of the mnemonic techniques applied to other branches of Biological Science, such as Genetics, Ecology, Biochemistry, Anatomy, and others.
3. Further studies can be made of the use of mnemonics in other branches of knowledge, such as Math, Social Studies, Filipino, and others.
4. That the study be replicated with funding adequate for the preparation of more professional printing of instructional materials in color and in more creative illustrations.

"Research is a high-hat word that scares a lot of people. It needn't. It is rather simple. Essentially, it is nothing but a state of mind -- a friendly, welcoming attitude toward change. Going out to look for change, instead of waiting for it to come. Research, for practical men, is an effort to do things better and not to be caught asleep at the switch. The research state of mind can apply to anything. Personal affairs or any kind of business, big or little. It is the problem-solving mind as contrasted with the let-well-enough-alone mind. It is the composer mind, instead of the fiddler mind: it is the 'tomorrow' mind, instead of the 'yesterday' mind." -- C. F. Kettering