

High School Geography and College Grades in the Subject

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The inclusion of geography in the Army training program, while presenting numerous administrative and teaching problems, afforded at the same time an unusual opportunity for observation on various phases of the teaching of the subject, including, among others, the content of the course, the sequence of major topics, teaching methods and techniques, testing procedures, and the influence of various factors on student achievement in the subject.

This paper is an attempt to evaluate one of the last-named factors, namely, the influence of high school training in geography on college achievement in the subject. The final course marks are taken as the measure of achievement. The marks of students having previous geography training are compared with those made by students lacking such high school credit.

An Army unit of air corps students stationed at Indiana Central College, Indianapolis, furnished the bulk of the data; a chance observation had indicated that an unexpectedly high percentage of these men had previously studied high school geography. Marks in recent civilian classes in the subject at Central, plus those of two sections at McKendree College, previously taught by the writer, give a smaller number of records. It is possible that the marks of these civilian classes present a more nearly normal picture of the average college situation than do those of the Army trainees. In all, the records of approximately five hundred individuals were studied.

Both the Army and the civilian classes were given essentially identical courses as to subject matter, text, sequence of topics, and methods of instruction. The syllabus of the civilian course was modified but little to meet the outline (1) of the Army training program.

In general, the sequence and content of the work followed that of Finch and Trewartha (2). This text was used in both civilian and service classes. Methods of instruction varied with each class from an informal lecture to a recitation or quiz. No laboratory work was given but an effort was made to compensate in some measure for its absence by a brief study of rock and mineral specimens, reading of weather instruments, out-of-class assignment of topographic and weather map study, the use of films, slides and similar devices. The instruction was given by Dr. W. E. Stoneburner, Mr. Roy V. Davis and the writer in about equal amounts.

Several minor differences, however, did exist between the courses given the two groups of students. The class work of the Army men was concentrated into twelve weeks of daily classes while the civilian students met three times a week for one semester. The effects of this difference in spacing of classes is not known but may be of some importance as to the

amount of time available to the civilian students for study and reference reading.

Little reference work, other than that of atlas study, was expected of the Army students, while civilians were regularly given library reading assignments and this work was included in the reviews. Such additional reading opportunity may be somewhat significant since the lack of high school geography might be largely compensated for by individual library study and thereby reduce the difference in achievement between such a student and one with high school geography credit.

A third minor difference lies in the testing techniques. In general, the Army men were given short-form, "objective" tests; with the civilian students, both the short-form and the essay type of examinations were used. This difference appears to be of little importance.

While these three differences may account for minor variations in achievement between the civilian and the service student, it does not appear that any one or any combination of these factors is of significance for the purpose of this study.

Examination of the data of this problem show several sources of error which, while trivial, tend to lower the critical value of the inferences drawn. These factors are first, the total number of individual marks, approximately five hundred, is smaller than desirable for statistical accuracy. It is the maximum number, however, for which records are available in this particular course; it is probably sufficiently large to yield statistically significant data for this type of problem.

A second source of error lies in form of the Army student record; this did not always clearly differentiate between high school and college geography training. The number of such records involving geography are known to be few, however, and affect less than 3 per cent of Army marks.

Because of the transfer of Army students, several sections did not complete the entire work of the course; in these cases, the mark given is that of the quality of work done to the date of the withdrawal. These marks are, therefore, more significant for beginning portions of the course than for the later topics.

In the absence of any control technique, all other factors affecting achievement are left out of consideration. This factor is inherent in the problem as conducted, but it is believed that the number of individuals considered tends to off-set any selective effect and accumulation of error.

While these four items, and possibly others not considered, tend to lower the value of the data used, none of them are considered of sufficient importance to invalidate the findings that follow.

Data and Findings

A. Treatment.

In analyzing the data, an effort is made to avoid the terms and treatment of educational statistics and to present the materials in a less technical manner. Where letter marks were recorded, these have been given approximate but uniform equivalent percentages values. The term

"average" is used for the statistical term "mean." "Final grade" has previously been defined.

B. Data.

Of the 512 students whose final grades are considered in this paper, 204 had previously studied some phase of geography at the high school level; 308 had no such preliminary training. The first group is here designated as "plus students" and the latter as "minus students."

The entire number of students represent 17 classes of which 12 were service men; these dozen classes include approximately two-thirds of the total and it is in these classes that the most of the plus students are found.

The plus and minus students were not segregated in any of the classes; in fact, efforts to obtain this information were not begun until 1943 and the instructors did not know to which group a student belonged.

The average final grade of the 204 plus students is 80.6%; that of the 308 minus students is 72.9%. The difference in favor of the plus group is 7.7 percentage points; on the percentage basis, a difference of this magnitude is considered significant.

In 13 of the 17 classes, the plus students ranged in grades from 3.7 to 18.5 percentage points higher than the minus students. In three classes, the minus student average was from 0.5 to 2.4 percentage points higher than the plus group. One class included no plus students but the average of this group was below that of the other three just mentioned. This consistent showing in 13 of 16 classes indicates the persistency of the cause of the difference in achievement.

Of the 49 unsatisfactory grades recorded, 14 were made by the plus students and 35 by those from the minus group.

These three items—differences in average grades in the entire group, the showing of each group by classes, and the disproportionate distribution of failures between the two groups—are taken as the most significant items of the data. The mode and the mid-score show similar central tendencies; quintile groupings by grades give a preponderance of plus students in the upper fifths with the lower divisions containing an undue number of minus students.

Conclusions and Discussion

Within the limits of this study, it is concluded that

A. Students having high school training in geography, consistently obtain significantly higher grades in the college course than do students lacking this training at the high school level;

B. A significantly larger number of the latter do poor or failing work than do those of the first group;

C. This difference in quality of work persists throughout the course but appears, on the basis of incomplete evidence, to be more pronounced in the beginning portions;

D. Further investigation is needed to establish the basic facts and factors in the situation.

If other studies confirm in any major degree the conclusions reached above, several pertinent questions are at once suggested. Is the difference in achievement due to a carry-over of information from the high school course or is it due to some other factor? If the freshman course does duplicate in part the high school work, just what portions are repeated? Is it desirable or possible to avoid this duplication, particularly if "minus students" are in the class? Should the freshman geography enrollment be sectioned on the basis of high school credit as is frequently—and profitably—done in chemistry? If the plus students are segregated, how should the course for them be revised or arranged to articulate with the high school course? Should such a revised course treat geography as a factual or an interpretative study?

The answers given to these and similar questions by college teachers of geography may assume more than minor importance in guiding the anticipated development in earth science instruction (3) both at the high school and college level.

Bibliography

1. *Recommended Course Outline*, (1943), Army Air Forces, Headquarters Flying Training Command, pps. 13-14.
2. Finch, Vernor, and Trewartha, Glenn T. (1942). *Elements of Geography*, 2nd edition, New York.
3. Atwood, Wallace W. (Sept., 1944). Global or World Geography, *Journal of Geography*, **43**, No. 6, p. 202.