A COMPARATIVE STUDY OF THE EFFECTS OF INDIVIDUALIZED AND TRADITIONAL METHODS ON THE ACHIEVEMENT AND ATTITUDES OF GEOMETRY STUDENTS

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by
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This paper tests the hypothesis that the achievement of high school geometry students will not differ in a modified individualized instruction program as compared to a traditional program.

The paper also tests a sub-hypothesis that student attitudes will be slightly negative toward the individualized approach.

The study was conducted in Trumbull, Connecticut, for one month in the Fall of 1972 at Trumbull High School. Thirty-two geometry students were selected from two geometry classes, sixteen from each class, based on the availability of National Educational Development Test (NEDT) scores of these students. One class was given the traditional geometry approach while the other class was given a modified individualized instruction program. The basic difference of the two programs was that in the traditional program the teacher does the teaching, while in the modified individualized instruction program the student learns by himself using the available materials--textbooks, worksheets, and in addition, some interaction with the teacher or with other students. In the individualized instruction, the students were given three programs to choose from. These were called contracts or study agreements. The three programs differed in levels of difficulty, and students chose their particular program

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based on their NEDT scores, mathematical interest, motivation
and desires. The individualized group accepted their respon-
sibilities fully.

A t-test was done on the pretest (NEDT) scores yield-
ing a t value of 1.39 with 30 degrees of freedom. This t
value was significant at the .2 level. The writer interpreted
this as a significant difference in scores although there is
a 2 in 10 possibility that the difference was due merely to
chance. The writer notes that this means that the lower
scoring group really did not score that much lower and was
therefore not entitled to a large handicap in terms of an
analysis of covariance test. Since the pretest scores are
a part of the analysis of covariance test, the lower group
indeed did not receive a great handicap but rather a small
one. (The traditional group had the lower scores.)

An analysis of covariance test, a type of "handicap"
for the group with the lower scores, was then applied with
an F ratio of .038, which with 1 and 29 degrees of freedom
was much smaller than the 4.18 needed for significance at the
.05 level. Therefore the null hypothesis that there is no
statistical significance between the achievement results of
the two groups due to the treatment could not be rejected.
That is, the individualized treatment did not improve stu-
dent achievement results.

The sub-hypothesis about student attitudes toward
the individualized approach was tested after the treatment

by a questionnaire in which the students rated the individual-
ized program on a one (favorable) to five (unfavorable) basis.
Two chi-square tests were applied to these findings. The
first test assumed that the expected frequencies of response
would be equally distributed, and the finding was a chi-
square value of 5.5 which, with 1 degree of freedom, was
very significant at the .02 level. The finding was that
the individualized group reacted unfavorably to the individ-
ualized program.

A second chi-square test assumed that the expected
frequency of response would be in a normal distribution.
The chi-square value here was 4.92, which with 1 degree of
freedom was significant at the .05 level. This second chi-
square test still pointed to an unfavorable reaction to the
individualized program by the individualized group.

The writer notes that the NEDT, which was used as
the pretest, was found to measure the same quantities as
the geometry posttest. This was decided by the finding of
a high correlation coefficient (Pearson Product Moment Corre-
lation Coefficient) between the two tests. This means that
the NEDT was a good starting point from which to compare the
treatment results.