USE OF THE PROBABILITY-TABLE IN ELIMINATING POOR STUDENTS FROM TEACHERS COLLEGES

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Teachers' colleges are badly in need of an easily understood and easily manipulated plan for eliminating poor students. Any device that will meet this need should be scientific, but as these colleges are in general without research departments, it should be simple and not time-consuming. This study has attempted to build up such a device.

The major problem of the study is: How can teachers' colleges eliminate unpromising students early in their freshman year so that the time of the students and faculty may be conserved for more profitable use?

As all authorities on the subject agree that a combination of measures is better for predictive purposes than a single measure, and, further, that mental test scores, high school averages, and pertinent subject-matter tests all correlate positively with college success, these measures were used in this study. Furthermore, as teachers' college and normal-school success shows a significant, positive relation to teaching success, these measures can be used for prognosis such as this study aims to develop.

For four years the Northern Illinois State Teachers College at De Kalb has been testing its entering freshmen with standardized tests. At no time has the number of students tested been less than 200. After some experimenting with other tests, the results of the following tests were selected for use in this study.

1. Otis Self-Administering Tests of Mental Ability—Higher Examination.
2. Mills Selective Test on Fundamentals of Arithmetic.
3. Cross English Test.
4. Haggerty Reading Examination—Sigma 3.
5. Pressey-Richards Test on Understanding of American History.

High school grades, of course, were also available for use. High school averages were obtained by averaging English, foreign language, science, and history grades. The five sets of scores from the tests and these high school averages made six entering measures.

Composite scores were made of these mental test scores, achievement test scores, and high school averages. This was done by dividing the raw scores of each of the six measures into deciles directly and then finding the average number of deciles for each person. With this set of measures and students' honor points, at the end of their first quarter in college, a probability-table was arranged. The combined table for 1927 and 1928, using each measure divided into ten parts, follows:

TABLE I

Probability Table, Showing Relationship Between Combined Six Entering Measures and Honor Points Received First Quarter in College. 1927 and 1928, 515 Cases.

Average Deciles, Six Entering Measures	1	2	3	4	5	6	7	8	9	10
10	..	..	..	..	3	7	9	18	12	51
9	..	..	..	6	2	16	20	14	21	21
8	..	4	4	0	13	11	14	13	24	17
7	4	12	6	15	14	9	15	14	6	5
6	7	16	8	10	16	10	9	16	6	2
5	13	14	6	9	11	10	13	8	14	2
4	15	9	7	10	17	15	6	12	9	..
3	16	19	10	9	13	13	7	3	8	2
2	16	9	28	20	9	9	7	2	..	..
1	29	17	31	21	2	..	..	..	..	..

Deciles, Honor Points

Deciles on 6 Measures	Honor Point Deciles
10 = 8.3—10	10 = Above 8
9 = 7.5—8.2	9 = 8
8 = 6.8—7.4	8 = 7
7 = 6.1—6.7	7 = 6
6 = 5.3—6.	6 = 5
5 = 4.8—5.2	5 = 4
4 = 4.1—4.7	4 = 3
3 = 3.5—4.	3 = 2
2 = 2.5—3.4	2 = 1
1 = 1 —2.4	1 = 0 and Below

The table is interpreted as follows:

A student who stood in the highest decile (D_{10}) of his group in average deciles on the six entering measures has 51 chances in 100 of being also in the highest group (D_{10}) in number of honor points his first quarter in college; 12 chances in 100 of being in the second highest decile (D_9) of his group in honor points; 18 chances of being in the third highest decile (D_8) in honor points; 9 chances of being in the fourth highest (D_7); 7 of being in the fifth highest (D_6); and 3 of being in the sixth (D_5). He probably has no chance of falling below

D_5 in number of honor points at the end of his first quarter in college. Each row reads similarly. As D_5 in honor points indicates the minimum satisfactory amount of four honor points it represents the lower limit of satisfactory work in our college. Reading from the lowest row, 2 in 100 students made this satisfactory position (D_5) in honor points. The records for the students in the two lowest and the two highest deciles were followed through the second quarter. The entire group in the two lowest deciles in entering measures, made an average of 2.7 honor points for two quarters of college work. The group in the two highest deciles averaged 16 honor points for the same time.

It is clear that the two lower deciles in either case are not promising teachers' college material. If these students had been eliminated the first week of college, 36 students would have been dismissed the fall quarter of 1927 and 57 dismissed the fall quarter of 1928. Of the number, 93 for the two years, 13 according to the table could have made satisfactory records the first quarter in college. A detailed study of the record of these persons shows that of the 1927 group only two were given two-year diplomas and these two had a continuous struggle to keep their honor points up to the required standard. Of the 1928 group only two maintained a satisfactory average throughout the year and these two did not return to college for their second years' work. The history of this entire group in college throws suspicion upon the validity of the first term grades given them by instructors. On the whole the college would have been better off without these students. Some colleges will hesitate to eliminate so large a group. If the lowest decile only were eliminated only one student of the 48, considering the two years combined, would have had a chance of making a satisfactory college record. This student did not return the second year so was not given a two-year diploma. The case seems very clear: this college could eliminate all students making below $3\frac{1}{3}$ as an average decile position on the proposed entering measures and do the teaching profession a service thereby. It is certain that students below a $2\frac{1}{3}$ average decile position should be eliminated without hesitation.

A recommendation to similar institutions can be made from this experience. Gerberick, Kitson, and others have said that a probability-table could be built to forecast success in college. Their opinions were based upon general impressions, upon evident trends, or upon theory. This study has shown the working out of the theoretical speculation.

Any institution desiring an objective plan for eliminating unpromising students can follow the procedure outlined above and by a similar process build a probability-table for its own use based upon facts as they are found to exist. Faculties of teachers' colleges are aware of

the fact that they can make teachers who will succeed in the field, out of the average and higher groups among high school graduates. It is the lower group that is a source of anxiety to them. They will welcome an objective and simple plan for detecting the entering freshmen who have practically no chance of success in the teaching profession.