

## THE MEASURING MOVEMENT AND THE COLLEGE STUDENT IN A SMALL COLLEGE.

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Quite recently the scientific and measuring movements in education have begun to reach the college field. Many signs of this could be cited. The widespread comment on "Research Adventures in University Teaching," a pioneer book by the Presseys, revealed how little in the way of scientific studies of the college existed except upon finance and administration. The courses just beginning to be offered in universities, such as Columbia, Chicago and Minnesota on college problems, the summer conferences on university problems, and the recent commission of the National Society of College Teachers of Education indicate this growing interest. This paper will try to indicate some of the activities of a group at Rockford College working intermittently and more or less individually. Only a small fraction of the statistical results are indicated here. We have thought of these activities as primarily exploratory. Most of them were made to throw light on some immediate practical difficulty. Next year the small group in a senior course in "Problems of Education" will work on college problems and some of the data now being accumulated will be worked up more fully.

### 1. *Studies of Intelligence.*

A brief group test of intelligence has been given to all Freshmen during Freshman Week for practical uses. To a limited extent tests have been given to such groups as the students in upper class courses in education, or mathematics club. In a limited way some retesting of students for variation has been attempted. The general distribution of intelligence, relationship with success and failure in academic, special (music, art and so forth), and athletic courses and their deviations, intelligence of the probation, problem, and "drop out" group have been studied. We are working on the different distributions of intelligence in the various sections, departments, and in the various groupings of honor students.

The college has a required orientation course for all Freshmen. Originally these students were grouped into sections alpha-

betically. Astonishing differences between the sections thus formed by chance were found. A careful study of the variation as to intelligence and marks between sections resulted this year in a grouping by which the high sixth of the students in intelligence test scores, along with equal numbers of average students, formed two sections and the low sixth, with equal numbers of average students, formed two other sections. This answered the difficulties from faculty preference for "high ability" rather than "low ability" sections, and the results are being studied. Next year a straight ability grouping is to be tried.

Space will forbid giving the statistical results, but a few may be given as samples. The median intelligence scores for the freshmen, (two years, Otis, S. A., twenty minutes) were 42,47, for the six sections in Orientation, chosen at random (alphabetically) 57.2, 46.8, 46, 47, 50.4, 43. For three groups of upperclassmen 47, 46, 49.5. By Otis' tables 47 is equivalent to an I. Q. of 1.18, and to a percentile rank of 94. The division points separating the five quintiles were 40, 45, 49, 54, representing I. Q. 109, 116, 120, 124 and percentile ranks 77, 90, 95, 97.8. Yet our previous marking systems had assumed sections were equal. The relationship between Otis scores and final mark in Orientation for the six sections gave coefficient of correlation  $.37 \pm .05$ , correlation ratios of  $.3795 \pm .046$  and  $.425 \pm .044$ , but for the two groups of three sections taught by the same instructors in rotation  $r = .124 \pm .075$  and  $.486 \pm .058$ , while the correlation ratios were  $.2176 \pm .073$  and  $.397 \pm .064$  against  $.4895 \pm .058$  and  $.5857 \pm .05$ . A comparison of orientation marks with all other marks that semester gave a coefficient of correlation of  $.53 \pm .04$  and correlation ratios of .85 and .78, and of Otis scores with general average gave a correlation ratio of  $.4858 \pm .042$ .

A great deal of time has been spent interpreting this material, using the correlations with marks by graph, scatter diagram, translations into approximate intelligence quotient and percentile rank equivalents. The cases of material deviation have been worked over with the Personnel Committee, the Adviser of Students, administrative officers and instructors interested. Analyses of this material in terms of probation students, girls dropping out for such reasons as poor academic work, disciplinary action, health, finances, transfer to other colleges, etc. have been made.

One method of interpretation has been to arrange a class into deciles in each of two sets of data and indicate those deviat-

ing markedly in their decile rank. This has been used most frequently.

## 2. *Marks.*

These studies merge imperceptibly with the others. Beside the routine analysis of marks given, such comparisons as between marks given and the normal curve, between departments between instructors, deviations between academic and special (music, art, etc.) marks, deviations between the average scholarship grade and average intelligence of the groups receiving the higher and lower marks in the various departments have been made. A system of having the faculty recommend a list of girls in terms of "general ability and scholarly interest" for yearly membership in our honorary society has been used to check against the regular method of selection by tabulating averages.

## 3. *Case Study.*

In four successive years four methods of personnel control, advising, and case study have been used. At the present time, a full-time adviser of students supplements the usual activities of the president (who acts as "dean of the college"), the dean of women, and the registrar. She is assisted by a large Personnel Committee, representing the various points of view and departments in the college. It includes as well members technically trained in applied psychology, social work, hygiene and statistics. By interlocking memberships, the committee cooperates very closely with the committees handling recommendation for teaching and other positions, graduate scholarships, etc. An elaborate rating blank has been worked out and is being brought into use. To explore the possibilities a small number of the girls was used as "cases" in a research by the life history method. Interviews of about an hour, each guided by a schedule of life history questions, immediately afterwards put down in shorthand and transcribed in full, were used as the method of getting the life history material. Other more or less experimental sources of material have been the use of English themes, and conference periods, autobiographical papers and term papers in advanced educational psychology courses, the gathering together of information from fellow students, (particularly dormitory corridor heads and student government officers) in a way possible only where practically the whole student community lives under one roof. As a control group for the study of the problems, interests and attitudes of business girls 75 upper class students filled out the elab-

orate questionnaire and provided comparable data on intelligence scores, etc. This material is now being worked up.

By a fortunate accident the city of Rockford was the location of the sanitarium of a well-known psychiatrist who was on the board of directors of the Illinois Society for Mental Hygiene. For next year an organization of the "psychiatric clinic" or "behavior study clinic" has been worked out under him, using members of the staff of the college for psychometric testing and a senior case worker of the local Associated Charities (now doing specialized graduate work in this field in New York) as psychiatric social worker. It is expected that this organization can be used to support the work of the Personnel Committee of the college and the "deans" in the local secondary schools.

#### 4. *Physical Efficiency Testing.*

The Brace Tests for Physical Efficiency have been used in the physical education department along with objective tests of various physical activities (apparatus work, tennis, archery, etc.) and the results correlated together and with measures of intelligence, college marks, high school and so forth. The correlations are relatively low.

The Brace motor ability scores given 332 students at beginning of winter term by Miss Fleming yielded a mean of 41, a range of 14.71. A scale score on Brace's test of basketball skill compared with motor ability score gave an accomplishment index, which correlated with the marks (of basketball, as winter sport, subjective marking)  $r. = .52 \pm .087$ . These course marks for winter sports were compared with general scholarship by finding the average mark in sports for the highest, middle, and lowest thirds in general scholarship, yielding  $+.86$ ,  $+.64$ ,  $+.73$  respectively on a scale in which C is 0.00 and B is 1.00.

#### 5. *Subject matter Abilities and Disabilities.*

In his book, Dr. Pressey indicates a close relationship between college failure and deficiencies in such fundamental elementary school activities as reading, composition, spelling, arithmetic and so forth. He suggests that very little relationship exists between college success and the subject matter and abilities dealt with in high school. At Rockford we have tried to check this by two efforts. The Stanford Achievement Test was given to an upper class group (prospective teachers in the education department) and a very much higher standard found than Dr. Pressey indicated. Possibly the difference between a college enrollment

rigidly limited to 400, drawing a large majority of its students from the upper third of the high school graduating classes as compared with a state university admitting any high school graduate explains the discrepancy. At the present time we are furnishing three groups of students as subjects for the standardization at the college level of the new Breslich-Reavis Arithmetic Tests. The norms are not available with which to compare the college groups, but a very wide variation in such a fundamental elementary school sphere as arithmetic computations is observed. The bearing of this upon college failures in such subjects as physics and accounting is obvious. Apparently almost no data exist on college performance in the elementary school skills. An elaborate study on arithmetic of students in some of the Illinois Teachers' Colleges is reported but has not been published.

As part of the Freshman week program, some of the Iowa placement tests have been tried (tests of capacity for, and of training in such fields as foreign language and mathematics). The Iowa tests in English, and Inglis vocabulary tests are being used alongside a very elaborate subjective test of English composition. Students of lower rank go into "training sections" of sub-college level English. Students of highest rank are exempted from the routine Freshmen courses and go immediately into the more advanced work. An elaborate speech test is given; students of lower ability are required to take remedial courses in speech. The work of setting up a system whereby proof of ability to make practical use of foreign language is substituted for the old requirement of "taking so many courses" in it in high school and college is under way. In connection with the work of the Speech Department the Seashore tests of musical talent are used.

#### 6. *Content Testing, College Courses.*

Less has been done with objective testing because of the small size of the classes, there being one instructor for each nine or ten students. The Waples-Reavis test of teaching technique has been used with education students. Some true-false testing and some measurement of attitudes are now going on with students of education and economics. An honors examination system using a chief examiner from an outside university plus the preparation of an extensive paper on a field not covered by courses gives an additional criterion of the accuracy of subjective marking.

7. Curriculum.

For a number of years the curriculum committee and the committees in charge of the orientation courses in science and in social science have been working intensively. In many cases weekly meetings throughout the semester have been used. Part of the work listed above is a result of questions raised in their discussion, but a report on their activities is hardly within the topic of this paper.