

What Do We Know About Student Failures in College?

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The increasing number of high school graduates without a comparable increase in facilities for higher education has led to keen competition for college admission. Rising admission standards are having a pronounced effect upon the number and quality of students admitted to curriculums in agricultural colleges. Citations in educational journal literature report college drop-out rates averaging 60 percent¹ of the original freshman class by the end of the senior year. Since a smaller proportion of students are enrolling in agricultural curriculums than in other subject matter curriculums,² student performance is exceedingly important to directors of agricultural college teaching programs.

Since 1956 the author has been interested in the factors underlying student performance at the College of Agriculture.³ The level of ability of students admitted to this agricultural college has risen, as measured by quantitative criteria utilized by the admissions office and committee.

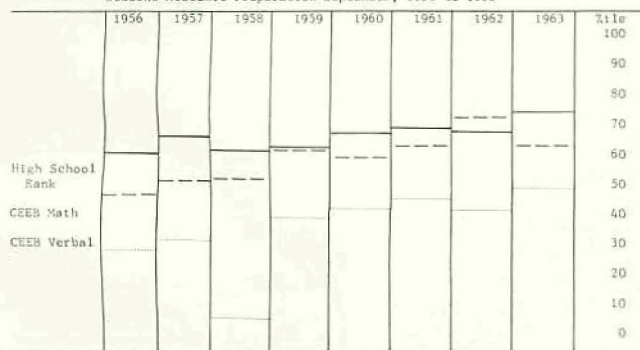
Table 1
Percentile CEEB⁴ Scores and High School Rank of Incoming Freshman Classes of Agricultural Students

| | Year of Entrance | | | | | | | |
|-----------------------------|------------------|------|------|------|------|------|------|------|
| | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
| Average %ile Score CEEB | | | | | | | | |
| Verbal | 29 | 30 | 11 | 45 | 46 | 50 | 46 | 53 |
| Math | 42 | 44 | 50 | 63 | 60 | 61 | 69 | 63 |
| High School %ile Class Rank | 60 | 64 | 61 | 64 | 65 | 67 | 66 | 72 |

Even though there are minor variations in the data year by year, there is a general ascending trend for each criterion: CEEB Verbal, +23 percentiles; CEEB Math, +19 percentiles; high school rank, +8 percentiles.

From this data may be drawn the conclusion that the students admitted to the College of Agriculture in 1963 have a potential for learning subject matter more complex than that taught in college in 1956.

Graph 1
Student Academic Preparation September, 1956 to 1963



Since the incoming freshman classes in the College of Agriculture have the potential for learning more complex subject matter, have the freshman service courses become more comprehensive and require greater student perseverance?

According to written minutes of meetings with directors and instructors of the freshman service courses and the advisers and administrators of the College of Agriculture, the content of the service courses taught to agricultural freshmen have become more comprehensive and difficult.

The content of the mathematics course previously included topics in algebra and trigonometry. The topics of the course now are "elementary calculus unified with analytic geometry; properties of various equations and loci are considered. Concurrently, the differentiation and integration of the elementary algebraic and transcendental functions are studied with various physical and geometrical applications."⁵

In 1956-57 the chemistry course taught to the agricultural freshmen was described as "A study of fundamental principles and of typical elements and their important compounds. Solution of problems."⁶ The content of the chemistry course laboratory was adjusted to include topics in "quantitative analysis employing semimicro techniques in the second semester."⁷

The biology service course topics are drawn currently from ecology, morphology, physiology, nutrition, and metabolic processes. Less time is spent in rote learning of the classification systems of animals and plants and more of the current course is directed toward the functions of the plant and animal cell, tissues, the body systems and symbiosis.

The English course no longer includes remedial work and involves instead compositions written on topics of greater sophistication based on poetry interpretation.

These four service courses of the freshman year; mathematics, chemistry, biology, and English have become more comprehensive and require greater student perseverance.

Table II
Median Grade Freshman at End of Freshman Year and Percent of Freshman Class Below Graduation Average at the End of the First Semester

| | Year of Entrance | | | | | | | |
|---|------------------|-------|-------|-------|-------|-------|-------|-------|
| | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
| Percent of Freshman Class First Semester Below Graduation Average | 52 | 50 | 53 | 45 | 50 | 54 | 51 | 40.6 |
| Median Grade of Class End of Freshman Year | 3.167 | 3.425 | 3.403 | 3.281 | 3.165 | 3.178 | 3.278 | 3.338 |
| Weighted Class Average End of First Semester | 3.121 | 3.492 | 3.553 | 3.125 | 3.186 | 3.350 | 3.069 | 3.134 |

Since the incoming freshman classes have the potential for satisfactory performance in more complex course work, the question may be asked, has the quality of student academic performance improved in concert with student preparation?

With the exception of the last academic year, 1963, there has not been a consistent major improvement in the quality of student performance. Even though the percent of students below the graduation average is smaller in 1963, the grades of that group are poor as indicated by the depressed weighted average and median.

The agricultural college faculty adopted several changes in the freshman agricultural year course programs to enable the students to improve their performance.

In 1954, the mathematics department contemplated a revised type of unified integrated course composed of elements of logic algebra, trigonometry, some phases of statistics and analytic geometry. The agricultural college faculty postponed mathematics to the sophomore year, sophomore physics to the junior year and reduced the graduation requirement by 6 credit hours.

The college in 1958 had the reputation of having the most difficult course of instruction in the University. This situation is reflected by the State Scholarship situation wherein this year (1958) only one out of 125 candidates is a candidate for agriculture. Agriculture once had from ten to fifteen percent.⁹ It was suggested that this "first year obstacle" (a heavy course load of twenty credit hours) be delayed in order to give the average freshman a fighting chance to continue in his college program. The following table lists the curriculum credit hour and grade changes.¹⁰

Table III
Freshman Year Curriculum Changes And Student Performance 1954-1962 College of Agriculture

| Year | Freshman Year 1st Semester | | Graduation Average | Curriculum Change |
|------|-------------------------------|---------|-----------------------|--|
| | Median | Average | | |
| 1954 | 3.133 | | 3.000 | Freshman year—20 credit hours |
| 1955 | 3.206 | | 3.000 | Freshman year—16 credit hours (Mathematics removal) |
| 1956 | 3.167 | | 3.000 | Freshman year—20 credit hours (Mathematics) returned |
| 1957 | 3.425 | | 3.200 | Graduation average reduced from 3.000 |
| 1958 | 3.403 | | 3.200 | Freshman year—16 credit hours (One 4 credit science removed) |
| 1959 | 3.281 | | 3.200 | Same as 1958 |
| 1960 | 3.275 | | 3.200 | Same as 1958 |
| 1961 | 3.448 | | 3.200 | Returned to 18 credit freshman year (ROTC no longer required) |
| 1962 | 3.278 | | 3.200 | Same as 1961 |

Variation of the freshman year credit hour load has not resulted in major improvement of the performance of the freshman classes. Some variation in performance resulted during the ten year period but the median grade for the class admitted in September, 1962 was .078 below the graduation level with 18 hours compared to the September, 1954 class, .133 with 20 hours.

The answer to student performance does not lie in reducing the scholastic requirements of the students. They apparently govern their activity within and without the classroom according to the expectations of the faculty.

In 1959 the freshmen in the College of Agriculture were interviewed to obtain data on the attitude of freshmen toward their college program and efforts applied in meeting the rigors of that program.

A structured interview was conducted by the Assistant Dean with each student below passing in more than two courses at the end of six weeks of college. The structured interview involved items concerned with study time and procedure; college routine of the students and any revisions of that routine; incentives for study; student's interpretation of the meaning of grades; and the student's reactions to the grades received. The conclusions drawn from the replies given by students during the interviews are classified into five general categories:

1. Students in difficulty had not intensified their efforts at college sufficiently to maintain themselves in a favorable scholastic position. Such answers were common and indicative as:

"I never had any trouble in high school."

"I never had to study very hard."

"It's not the time. I just don't study efficiently."

2. Students were not adapted to a concentrated protractive study program, under the student's own supervision. He includes numerous and relatively long breaks and other restful devices as substitutes for willed, self-directed concentration. "I just have to get up and walk around after a stint with mathematics," is a typical response.
 3. A student projects scholastic difficulty also to a personification other than himself. (The fact that the student's own study procedures are at fault does not seem to break through). The teacher is at fault; the high school didn't prepare him properly. The test or exams are not fair.
 4. A "D" grade or below average grade is not interpreted as serious by the student. He does not conduct a self-evaluation of his study program when warning grades are received. No marked changes resulted in study routine as a result of warning grades.
 5. Motivation during high school days was an external force applied by teachers and family or college admission requirements. After the student matriculates at college the external motivational forces cease. Internal motivation does not fill the void.
 6. The student does not include sufficient review of previous assignments in his day to day study routine. As a result a mass of material must be re-learned the night before a major test or exam. "I just can't take tests, I panic." "I was doing alright in my classwork and quizzes until the marking-period test." Poor test performance results.
- Directors of Resident Instruction must ask themselves important questions concerning policy in agricultural college teaching programs.

1. Should more be expected of college students

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es tell us we send them men well prepared technically but not very well prepared in communication skills. We have been lax in requiring attention to details, and have not demanded the best of our students in their communication of ideas, both written and spoken. Certainly a great share of the responsibility for effective communication rests upon the Department of English and the instructors in technical writing (where such courses are required for agricultural students). However, at a recent Agri-Business Conference held at the University of Nebraska, leaders in both industry and agricultural education agreed the problem of speaking and writing effectively should not be dumped into the lap of the Department of English and then forgotten. This makes sense. If students are to become aware of the importance of careful writing and speaking, they must be made aware that these skills are as necessary in an agronomy or plant pathology class as in English or journalism classes.

There are standards which might be set as minimum requirements for all tests and papers which agricultural students write and still allow flexibility of individual assignments. Assuming the students have had freshman English, technical writing and a semester or two of speech, these requirements are:

1. Questions should be answered in complete sentences. This seems too fundamental to need comment, but the sad fact is, many students do not recognize sentence fragments. Assuredly, we think in fragments, speak casually in fragments; but if we are to transmit an idea it can best be done by the use of clear, concise, and complete sentences.

2. Correct use of reasonable amounts of punctuation should be required. Punctuation marks should be essential aids to clarity of meaning. Any good dictionary may be used for reference.

3. Careless spelling must not be condoned. Students expect their English teacher to mark misspelled words but it means much more when other instructors comment upon spelling. Many students do not spell well at all, others are merely careless. Neither group will do anything to improve spelling habits as long as they can "get by." They must realize careless errors in mechanics may indicate to the reader or listener a tendency toward carelessness in thinking, logic, or presentation of facts. When they realize this they will work to correct spelling errors, and use their dictionaries.

4. The use of accepted grammatical forms must be insisted upon. The errors students make in grammar are relatively few, such as: form of verbs, changing tense of verbs, agreement of pronoun and antecedent, use of the relative pronouns, etc. If they are persuaded such errors detract from meaning they will proofread to eliminate them.

5. Wide reading in their field and related fields should be encouraged. This will not only broaden the students' interests but is one way they can improve skills in the use of their language, if they read critically.

Three ways to bring attention to the mechanics mentioned are:

- a. Instructors may take off 5 or 10% for a paper with many errors in spelling, grammar or punctuation. Or, if an abstract or paper (other than a test) is revised, a bonus added to the grade gives incentive to revise. The first paper must be returned and show careful revision before such a bonus is given, however. Obviously, instructors do not have time to mark every error but they can indicate errors exist on a paper and show disapproval.

- b. More essay-type examinations give students practise in writing under pressure. They have to present facts clearly in an orderly manner to have a correct answer. Again this takes more time to correct. Perhaps one or two essay questions might be used rather than all objective questions. The practice given the students in organizing ideas is worth the extra effort.

- c. Stimulating participation in class discussion gives a student a chance to express himself orally. If discussion is skillfully handled he will learn to defend his ideas when his peers question them.

Most of our agricultural students come to us with a background of judging experience. This is invaluable to them, but we must insist upon standards of excellence so they will transfer that training to their thinking, writing and speaking in the classroom.

What Do...

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as pre-admission criteria indicate a greater ability to learn?

2. Are the admission criteria selecting students effectively? Are the criteria admitting limited potential mature students and keeping out of college the larger potential later maturing students?
3. Has your college or university conducted any research into behavior patterns that portend depressed student quality college course work.
4. What is known about the effect upon student behavior of dormitory accommodations, scholastic standing committee actions, fraternity affiliation and co-curricular or extra-curricular activities?
5. Is separation from college a part of the maturing experience essential to the growth of some of the capable but poor performing students?
6. What other admissions criteria, in addition to or instead of test scores and high school rank, might be used to separate those students ready for college from those who are not?

1. *New York Times*, August 2, 1964, p. E7

2. U. S. Office of Education, *Agriculture College Enrollment Reports*

3. The College of Agriculture, Rutgers-The State University, New Brunswick, New Jersey

4. College Entrance Examination Board Scholastic Aptitude Test

5. Rutgers College Announcement, 1964-65, p. 264

6. Rutgers College Announcement, 1956-57

7. Rutgers College Announcement 1964-65 p. 200

8. From a sample of the 1956 freshman class

9. Remark of a member of the University Scholarship Committee to the agricultural faculty, February 27, 1958.

10 These changes were preceded by committee discussions and faculty approved administrative action.