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ABSTRACT

In 1983-84, the Center for the Study of Community Colleges developed and field-tested an instrument, the General Academic Assessment (GAA), to assess community college students' knowledge in several liberal arts areas, including the sciences. The GAA was completed by a sample of 8,024 students at four large, urban community college districts. The scores were cross tabulated by selected student characteristic variables (e.g., age, ethnicity, native language, and reason for attending college) and selected educational background variables (e.g., the number of college units already completed by the student, and the number of science courses the student had taken prior to the GAA test). While there appeared to be a positive correlation between an increase in age and scores on the science portion of the GAA, the difference was slight. A comparison of the scores of students who had completed less than 15 college units with the scores of students who had completed 60 or more units indicated that there were no great differences among minority ethnic groups in the rate of gain in the science section. Students attending college to satisfy a personal interest scored higher on the science questions than those intending to transfer or receiving occupational training. There was a positive correlation between the number of science courses completed and the students' GAA scores in this area. (EJV)

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ERIC DIGEST

August 1984

STUDENT ASSESSMENT - SCIENCE

In an effort to assess community college students' knowledge of the liberal arts, the Center for the Study of Community Colleges developed and field-tested a student survey and general academic assessment. This General Academic Assessment (GAA) has representative numbers of items in the humanities, sciences, social sciences, mathematics, and English usage. In addition, it contains such background items about the students as age, the number of college credits earned, educational and occupational aspirations, self-assessment of their skills, and the number of liberal-arts courses taken.

During 1983 and 1984, a sample of 8,824 students at four large urban community college districts (Los Angeles, Chicago, Miami-Dade, and St. Louis) completed the GAA instrument. The sample was obtained by taking every twentieth eligible class section in each of the districts' schedule of classes. Only sections with academic transfer-credits were eligible; students taking remedial classes, vocational-technical classes, adult education, or community services courses exclusively were not included.

This ERIC digest examines how well the students did on the science portion of the GAA. The nature of the science test items is first discussed, followed by a series of tables that detail scores by ethnicity, age, and educational background.

Test items in the science section of the GAA assess student knowledge of the principles found in chemistry, biology, geology and physics. Examples are provided below:

When a cell of a plant stem divides, each new cell has

- (A) half the number of chromosomes as the parent cell
- (B) twice the number of chromosomes as the parent cell
- (C) the same number of chromosomes as the parent cell.

Identical plastic cubes are placed in 3 containers, each containing a different liquid, A, B, or C.



Which one of the materials is the most dense?

- (A) Liquid A
- (B) Liquid B
- (C) Liquid C
- (D) The plastic cube

colleges in Chicago, Dallas, Los Angeles, Miami, Phoenix, and St. Louis. A total of 59 items in the sciences was used on the five forms of the GAA. Scores on the sciences section were aggregated and converted to ten-point scale scores.

In the following tables, the GAA scores are cross tabulated by selected Student Characteristic variables and selected Educational background variables. Student characteristics encompass age, ethnicity, native language, and reason for attending college; Educational background variables include the number of college units already completed by the student, and the number of science courses that the student has taken prior to the GAA test. Each table shows, in rank order, the mean mathematics score on a scale of 1 to 10.

I. GAA Scores Cross Tabulated by Student Characteristics

A. Mean Scores by Student Age

While there appears to be a positive correlation between an increase in age and scores on the science section of the GAA, the difference between high and low scores is less than half a point.

Student Age	Mean	Number
Over 50	5.38	176
41 - 50	5.35	306
31 - 40	5.23	896
21 - 30	5.19	3,245
20 or less	5.16	3,215
Entire Population	5.19	7,838

B. Mean Scores by Ethnic Group

Data comparing the scores of students who had completed 0-14 college units with the scores of students who had completed 60 or more units indicate that, with the exception of whites, there are no great differences among ethnic groups in the rate of gain in the science section between students beginning college and those who have completed 60 or more units.

Ethnic Group	0-14 Units		60 or more units		Differential
	Mean	N	Mean	N	
Asian	4.31	166	4.99	138	.68
Black	4.12	558	5.01	278	.89
Hispanic	4.58	429	5.18	197	.60
White	5.65	936	6.75	567	1.09
Other	4.70	79	5.19	52	.49

The items were provided by the National Assessment of Educational Progress and selected by a panel of staff members from community

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C. Mean Scores by whether or not English is the Native Language

The native language of the student seems to be a factor in the science scores of the GAA. However, when examined by ethnic group, having English as the native language appears to be of least significance to Hispanics.

Ethnic Group	Mean/Yes	N	Mean/No	N	Differential
Entire Pop.	5.37	6,095	4.53	1,877	.84
Asian	5.16	200	4.33	549	.83
Black	4.37	1,894	3.88	111	.49
Hispanic	4.98	599	4.69	817	.29
White	6.13	3,027	4.97	265	1.16
Other	5.86	222	4.07	100	.99

D. Mean Scores by Reason for Attending College

Students attend community colleges for a variety of reasons. Those attending to satisfy a personal interest scored higher than those intending to transfer or receiving occupational training.

Reason for Attending	Mean	Number
Personal Interest	5.46	568
Transfer Interest	5.26	4,453
Advance in Occupation	5.16	702
Enter an Occupation	4.93	2,139
Entire Population	5.17	7,862

Students planning a career in the advanced degree professions scored higher than any other stated career aspirations with a score of 5.47.

E. Mean Scores by Self-Assessment of Science Comprehension

Students taking the GAA were asked to rate their own ability to understand the implications of scientific and technological developments as compared to other students at their college. Those who rated themselves highly also scored high on the science section of the GAA.

Rating	Mean	Number
Excellent	6.34	1,027
Good	5.25	3,640
Fair	4.81	2,749
Poor	4.44	522
Entire Population	5.19	7,938

II. GAA Scores Cross Tabulated by Educational Background

A. Mean Scores by Number of Completed College Units

In general, the more semester hours completed by the student, the higher the student's score on the science section of the GAA.

Number of Units Completed	Mean	Number
60 or more	5.84	1,265
45 - 59	5.27	1,035
30 - 44	5.25	1,396
15 - 29	5.05	1,635
0 - 14	4.89	2,213
Entire Population	5.21	7,564

B. Mean Scores by Number of Science Courses Taken

Not surprisingly, there was a positive correlation between the number of science courses taken and the students' GAA science scores.

No. of Science Courses	Mean	Number
Three or more	5.88	1,531
Two courses	5.38	1,076
One Course	5.26	1,636
None	4.88	3,195
Entire Population	5.23	7,438

The GAA is meant to assess students' knowledge of the liberal arts in community colleges. The science section, as well as the others, was designed specifically to assess the learning of cohorts of students, not individual students. The data from the GAA will be used as a tool to aid in program planning, curricular modifications, and to gauge institutional outcomes. More information about the GAA may be obtained from:

Center for the Study of Community Colleges
 Research Director: Florence B. Brawer
 1047 Gayley Avenue
 Los Angeles, CA 90024

Riley, Michelle. The Community College General Academic Assessment: Los Angeles District, 1983. Los Angeles: Center for the Study of Community Colleges, 1984. ED number not yet assigned.

Riley, Michelle. The Community College General Academic Assessment: Miami-Dade Community College District, 1983. Los Angeles: Center for the Study of Community Colleges, 1984. ED number not yet assigned.

ERIC Digests examining other sections of the GAA are available from the ERIC Clearinghouse for Junior Colleges; 8118 Math Sciences Building; UCLA; Los Angeles, California 90024.

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