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EVALUATION OF A GENERAL CURRICULUM
PROGRAM FOR ACADEMICALLY HANDI-
CAPPED STUDENTS AT FOREST PARK
COMMUNITY COLLEGE, ST. LOUIS, MISSOURI.**

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EVALUATION OF A GENERAL CURRICULUM PROGRAM FOR ACADEMICALLY
HANDICAPPED STUDENTS AT FOREST PARK COMMUNITY COLLEGE
ST. LOUIS, MISSOURI

by
Duane Donald Anderson

A dissertation submitted in partial fulfillment
of the requirements for the degree of
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Doctoral Committee:

Professor Raymond J. Young, Chairman
Professor Loren S. Barritt
Professor Todd H. Bullard
Professor Benno G. Fricke

ABSTRACT

EVALUATION OF A GENERAL CURRICULUM PROGRAM FOR ACADEMICALLY
HANDICAPPED STUDENTS AT FOREST PARK COMMUNITY COLLEGE
ST. LOUIS, MISSOURI

by
Duane Donald Anderson

Chairman: Raymond J. Young

This study attempts to describe and evaluate a non-college credit program designed to provide post-high school education for academically handicapped students in a community college. "Academically handicapped" students in this study are those who enrolled at the St. Louis, Missouri, Forest Park Community College campus for the fall semester, 1965, and scored at or below the tenth percentile on a standardized aptitude test or whose somewhat higher test scores coupled with inferior past academic records identified them as being likely to have difficulty competing in the regular community college program.

The problem investigated was whether a special general education approach is more effective than a traditional one in satisfying the needs of academically handicapped students who aspired to education beyond high school at the Forest Park Community College campus, St. Louis, Missouri.

The research design called for data to be collected on a study group of 133 students identified as academically handicapped. A comparison group of 150 comparably weak students were identified on the basis of post admission SCAT scores. These were students who had not taken the aptitude test

prior to admission and therefore were not informed of the special program.

The treatment consisted of three related parts: (1) an integrated, personal enrichment, no college credit, general education program taught in a team-teaching format using subject matter specialists; (2) a programmed instructional learning laboratory to present basic skill instruction on an individual basis; and (3) a structured counseling and guidance program designed to assist students in developing goals consistent with their tested abilities.

The four major criteria of effectiveness were student placement, retention, quality of performance, and attitudes toward the college experience. Data on placement and attitudes were obtained by using a follow-up questionnaire; 83 percent of the students in the general curriculum and 52 percent in the comparison group responded one year after entrance. Retention and quality of performance analyses were made from student grade records.

Chi-square and "t" tests were made to determine the significance of the difference between the values for the two groups.

The results led the writer to conclude that:

1. A greater proportion of the students in the general curriculum were found in an educational setting, while a greater proportion of the students in the regular program were employed, one year after college entrance. A significantly greater percentage of the students in the general curriculum group remained in college during the study year than did the students in the comparison group.

2. Students enrolled in the general curriculum obtained significantly

higher grades in their courses than students enrolled in regular college classes. However, when comparisons were made of matched pairs of general curriculum and comparison students enrolled in regular courses only, no significant differences were observed.

3. Despite the fact that students enrolled in the general curriculum indicated significantly more often than the comparison group students, that this was not the program of their choice and that their parents did not approve of their being enrolled in it, they did express nearly as favorably attitudes toward the program as a whole (44.9 percent compared to 48.8 percent) as did the students in regular programs and expressed significantly more favorable attitudes toward their instructors' concern for their success.

4. The general education value of their college experience was perceived somewhat differently by students in the general curriculum and comparison groups and by the groups when observed by sex. On only one of three questionnaire items (of a total of 22), on which the groups showed a significant difference in response, did the general curriculum group indicate a more positive and a less negative attitude. On both of the other two items which did discriminate between groups, the general curriculum students responded more often in the negative category as well as in the positive category.

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The writer is also indebted to the pioneering staff members of the instructional teams and the counselors who cooperated, under trying conditions, with the writer during the final year of the program.

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CONTENTS

	Page
ACKNOWLEDGMENTS	ii
LIST OF TABLES	vi
Chapter	
I INTRODUCTION	1
Background of the Problem	3
The Problem	5
Hypotheses	6
Assumptions	7
Method and Procedures of Research	8
Research Design	9
Definitions of Terms	17
The Need and Importance of the Study	18
Scope of the Study.	19
Limitations of the Study.	20
Overview of the Study	23
II REVIEW OF RELATED RESEARCH	24
Status Studies.	25
Evaluation Studies Using Quantitative Criteria . .	27
Evaluation Studies Using Non-Quantitative Criteria.	31

	Investigation of On-Going Programs	34
	Summary.	42
III	DESCRIPTION OF STUDENTS IN THE STUDY GROUPS	44
	Characteristics of the Study Groups.	44
	General Curriculum Student Profile	52
IV	ANALYSIS AND PRESENTATION OF FINDINGS	61
	Introduction	61
	Placement.	61
	Retention	64
	Quality of Academic Performance.	67
	Student Perception of Program Value.	72
	Other Views and Conclusions.	78
V	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	86
	Summary of Findings.	86
	Conclusions.	91
	Recommendations.	94

	<u>Page</u>
APPENDIX A	
TABLES CONTAINING DATA COLLECTED WHICH DID NOT DISCRIMINATE BETWEEN GENERAL CURRICULUM AND COMPARISON GROUPS.	97
APPENDIX B	
NOTIFICATION OF THE GENERAL CURRICULUM SENT TO STUDENTS WHO QUALIFIED FOR THE PROGRAM.	101
APPENDIX C	
CONSULTANT REPORTS ON THE PROPOSED GENERAL CURRICULUM . . .	103
APPENDIX D	
A DESCRIPTION OF THE EXPERIMENTAL PILO PROGRAM CONCERNING THE EDUCATIONALLY DISADVANTAGED.	162
APPENDIX E	
STUDENT ATTITUDE QUESTIONNAIRE REGARDING THE COMMUNITY COLLEGE PROGRAM.	180
BIBLIOGRAPHY	184

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	NUMBER OF STUDY AND COMPARISON STUDENTS BY PERCENTILE SCORE ON THE SCAT	46
2	MEDIAN SCAT SCORES OF THE STUDY GROUPS	49
3	SEX OF THE STUDY GROUPS.	50
4	AGE OF THE STUDY GROUPS.	51
5	HIGH SCHOOL RANK OF THE STUDY GROUPS	52
6	MARITAL STATUS OF THE STUDY GROUPS	53
7	FAMILY CHARACTERISTICS OF STUDENTS IN THE GENERAL CURRICULUM GROUP.	54
8	NUMBER OF STUDENTS IN THE GENERAL CURRICULUM GROUP ACCORDING TO HOURS WORKED	55
9	NUMBER OF STUDENTS IN THE GENERAL CURRICULUM GROUP BY RACE	55
10	COMMUNITY COLLEGE PROGRAM STUDENTS PLANNED TO ENTER. .	56
11	NUMBER OF YEARS OF COLLEGE STUDENTS PLANNED TO ATTEND.	57
12	STUDENTS CERTAINTY OF SUCCESS IN THEIR EDUCATIONAL PLANS	58
13	STUDENTS BELIEF ABOUT THE DIFFICULTY OF THE WORK IN THE PROGRAM	59
14	READING LEVEL SCORES OF STUDENTS IN GENERAL CURRICULUM GROUP	60
15	PLACEMENT CATEGORIES OF STUDENTS BY STUDY GROUPS . . .	63

LIST OF TABLES (Con'd.)

<u>Table</u>		<u>Page</u>
16	COMPARISON OF STUDY GROUPS BY RETENTION IN PROGRAM . .	66
17	FIRST SEMESTER GRADE POINT AVERAGE (GPA) OF THE STUDY GROUPS.	68
18	SECOND SEMESTER GRADE POINT AVERAGE (GPA) OF THE STUDY GROUPS.	69
19	FIRST YEAR CUMULATIVE GRADE POINT AVERAGE (GPA) OF THE STUDY GROUPS.	70
20	EQUATED PAIRS OF STUDENTS ENROLLED IN REGULAR COURSES ONLY.	72
21	DIFFERENCES IN ATTITUDE WHICH DISCRIMINATED BETWEEN GENERAL CURRICULUM AND COMPARISON GROUPS.	75
22	COMPARISON OF STUDENT ATTITUDES TOWARD SPECIFIC ASPECTS OF THEIR PROGRAM.	79
23	COMPARISON OF STUDENT OVERALL RATINGS OF THEIR RESPECTIVE PROGRAMS	81
24	COMPARISON OF STUDENT ATTITUDES TOWARD SPECIFIC ASPECTS OF THEIR PROGRAM.	82-83
25	ITEMS FROM PART A OF THE ATTITUDE QUESTIONNAIRE WHICH DID NOT DISCRIMINATE BETWEEN GENERAL CURRICULUM AND COMPARISON GROUPS.	98-100

CHAPTER I

INTRODUCTION

A distinguishing feature of the community junior college has been its open door admissions policy. It is no coincidence that the development of this institution has paralleled the growing emphasis upon higher education for the masses. The popularization of higher education has resulted in an influx of students whose achievement and ability levels are lower than those traditionally accepted for college work. These students, who are often referred to as marginal students, view the junior college as a logical extension of the secondary school. The junior college staff is torn consequently between the necessity of maintaining standards to guarantee the employability and transferability of its graduates and the knowledge that the college constitutes the last formal educational opportunity most of the students will ever have.

The problem of the marginal student is particularly acute in urban areas such as St. Louis where poverty and de facto segregation result in the junior college having a large number of educationally disadvantaged students who lack preparation for even the least rigorous technical programs offered.

Students incapable of benefiting from traditional junior college programs constitute a significant percentage of many institutions' total pop-

ulation. Reference to several studies emphasize this point. Edinger and Bell¹ reported that over 49 percent of all freshmen enrolled in Florida public junior colleges in the fall, 1961 were categorized as ineligible for admission to the State University system. Studies by Young and Gold² at the Los Angeles City College have shown that of the 7,000 annual applicants for admission approximately 20 percent scored below the eleventh percentile on national college freshmen norms for School and College Ability Test Battery. Further evidence of this type of student enrolling in college comes from the Monroe³ study of the Wilson Branch of the Chicago City Junior College District. His figures indicate that, on the average, each semester for the years 1959-1961 over 32 percent of all freshmen scored in the lowest tenth on the admissions battery administered by the district and were placed in the basic curriculum program. Cross⁴ reported that data gathered from the new School and College Ability Test II, which was administered to high

¹Oscar H. Edinger, Jr., and Max D. Bell, "Observations on Opportunity," Junior College Journal, XXXIII (January, 1963), 5.

²Edwin A. Young, and Ben K. Gold, "An Experimental Program for 'Low Ability' Students," Counseling Center Research Study #64-15, Los Angeles City College, (December, 1964).

³Charles R. Monroe, "The Basic Curriculum of Wilson," (revised report) Chicago, (April, 1964), (Mimeographed).

⁴K. Patricia Cross, "The Junior College Student: A Research Description," Educational Testing Service, Princeton, New Jersey, (1968), p. 12.

school seniors in the spring of 1967, indicate that 25 percent of the students who enrolled in junior colleges scored in the lowest third on the test. If one were to extrapolate these figures to the total group who apply annually for admission from culturally disadvantaged areas to the nation's junior colleges, the numbers would run into the hundreds of thousands.

Rising attrition rates, student dissatisfaction, and cliches like the "revolving door," have placed pressure upon the junior college administrator to make adaptive responses to the problem. A review of the literature indicates that these responses have taken a variety of forms. They are accompanied frequently by unverified statements regarding the effectiveness of the programs that have been designed to meet the enrollment pressure of these "academically handicapped" students. An attempt must be made to evaluate such programs on the basis of realistic objectives, to identify the traits possessed by students enrolling in them, and to enable better predictions on the placement destinations of such students. At the same time an effort must be made to evaluate the reactions of students, since the ultimate success of these programs will depend upon their acceptance by the students enrolled.

Background of the Problem

Administrators and faculty of the St. Louis Junior College District, St. Louis, Missouri, particularly those on the new Forest Park Campus, had become aware, prior to the fall of 1965, of deficiencies in the col-

lege offerings which they considered serious. Such deficiencies became apparent when an admissions office report showed that over 50 percent of the students on that campus were in some form of academic difficulty, and over one-third were on probation. A preliminary examination of School and College Ability Test (SCAT) scores revealed that 32 percent of all enrolled students scored below the tenth percentile, using University of Missouri norms. This information, coupled with data regarding an alarming number of dropouts, prompted the campus staff and the central junior college district administration to consider a more appropriate type of educational experience for students who were unable to compete successfully in the regular college course offerings. Simultaneously, college administrators were forced to consider the expenditure of human and material resources on programs for increasing numbers of students at all ability levels. Value judgments based on some empirical evidence had to be made concerning what constituted a legitimate program responsibility of the college. Although it was obvious that costs of physical facilities had increased sharply in recent years, it was equally obvious that expending resources for programs that could not be shown to serve the needs of students while curtailing admissions to proven curriculums was not likely to be tolerated.

Concern of administrators and faculty for a community colleges' social responsibility to provide universal educational opportunity led them to consider what they termed a General Education Program approach for the academically handicapped students. It was decided that such a program would be implemented during the fall semester 1965 and last through the

spring semester 1966. The investigator was employed to assist in implementing the program and in evaluating the short term results for the students who were in the program for one or both semesters, so administrative decisions could be made.

The Problem

The problem to be investigated was whether, at the Forest Park Community College of St. Louis, the no college credit general curriculum approach was a more effective means, than the traditional one, of satisfying the needs of the academically handicapped students who aspired to education beyond high school. The study of effectiveness consisted of several major dimensions; namely, student placement, retention, quality of performance, and attitudes toward the program. Specifically, the following questions arose:

1. Will there be a significant difference between groups with regard to the placement categories one year following their enrollment in their respective programs?
2. Will there be a significant difference between groups in proportion of students completing one year in the community college program?
3. Will there be a significant difference between groups in mean cumulative grade point average (GPA) at the end of one semester and one full year of college work?
4. Will there be a significant difference between groups in mean

grade point averages (GPA) on just the second semester of regular college course work?

5. Will there be a significant difference between groups in terms of how valuable they felt their college program was in helping them in specific ways?
6. Will there be a significant difference between groups in their inclination to recommend a community college program to a younger sibling with abilities and interests similar to theirs?
7. Will there be a significant difference between groups as to their willingness to enroll again in the program had they known as much about it at their initial registration as they knew one year later?
8. Will there be a significant difference between groups in feelings about whether instructors were concerned about their success in the program?
9. Will there be a significant difference between groups in attitude about their college program?

Hypotheses

The writer hypothesized that:

1. Students enrolled in the General Curriculum program would be found in significantly different placement categories one year following their entry into the program than would a roughly comparable group of academically handicapped students; it was thought that more would be em-

ployed at appropriate activities.

2. Students enrolled in the General Curriculum program would remain in an educational setting significantly longer than would a comparison group.

3. Students enrolled in the General Curriculum program would achieve a significantly higher grade level of performance than would a comparison group.

4. Students enrolled in the General Curriculum program would hold significantly more favorable attitudes toward their program than would a comparison group toward theirs.

Assumptions

This study is based on several assumptions regarding the "academically handicapped" student and programs designed specifically for him at the junior college level. Among the more important of these were:

1. The desire and need for some form of post-high school education, in order to compete successfully in the social and vocational world, will increase in the years ahead.
2. With a greater percentage of each year's college age population enrolling in some form of post-high school educational institution, a greater number of students with lower academic aptitude will be present in the college population.
3. Four-year colleges and universities will become more selective as applications for admissions increase, therefore the open-door

community college will be assigned a larger responsibility for the less able student.

4. Students with academic handicaps will not be able to compete successfully in traditional college transfer, or technical programs at any post-high school institution.
5. The present programs, in which the "academically handicapped" students are enrolled, are not adequate to the task.
6. The attitudes expressed by "academically handicapped" students toward the programs provided for them are important to the effectiveness of these programs.
7. The 133 students subjected to the General Curriculum were assumed to constitute a random sampling of a larger population of academically handicapped youth who would have been and will be seeking post-high school education over a span of several years in the St. Louis area.
8. The students in the comparison group were assumed to constitute a random sampling of academically handicapped youth from the same total theoretical population as the General Curriculum group.

Methods and Procedures of Research

The first step was to survey the research and literature on community college education for the academically handicapped student. Next, the investigator wrote to 291 of the largest public community college in the

United States to inquire if such programs were or had been in existence. If programs had been developed, the writer requested any information available on such programs and replies were obtained from 36 percent of institutions contacted. From a number, materials were received, and are reviewed in Chapter II. At the time of the investigation the writer probably had the most extensive amount of information in existence on such programs.

To test the hypotheses of this study, a group of students were subjected to a specially designed curriculum designated the General Curriculum program and compared to a roughly comparable group which followed the regular traditional curriculum.

Students identified by the college counselors, on the basis of test scores and low high school achievement, were informed of the availability of a specially designed program and strongly encouraged to enroll in it. Students did not know the program had been specially designed. Counselors informed all students who scored at or below the tenth percentile on the School and College Ability Test, University of Missouri norms, and whose high school achievement was low, that the non-college transfer General Curriculum program was the only one in which they could enroll on a full time basis. These students were then informed of "The General Curriculum" which was described to them as a non-college transfer program in which they would be allowed to enroll on a full-time basis. This notification is found in Appendix B. In addition to the students identified by SCAT scores at or below the tenth percentile, twenty students with somewhat higher

percentile scores coupled with low high school rank in class, were added to the program.

The 133 students in the study group constituted the total group enrolled in the initial semester of the General Curriculum Program, with the exception of two students originally identified with the program but on whom no information was collected, and they were eliminated from this study. A number of additional students were enrolled during the second semester of the study year and while they have been included in studies of the General Curriculum Program made by others, they were excluded from this one. The decision was made to use roughly equated groups of subjects rather than attempt to assign students randomly to two different groups because of the administrative difficulties encountered in the latter option.

Many students enrolling in the Forest Park Community College in the fall of 1965 did not pre-register or take the SCAT prior to the opening of classes. A comparison group was selected from this group of students for whom no pre-registration data were available and who were found later to have roughly comparable abilities. Because the study was being conducted in an ongoing situation it was not possible to match the groups exactly on any of the critical variables; however, students in both groups shared similar low level test scores and high school class rank that identified them as "high risk" students in regular college programs. It was from among these students that 150 were selected as the comparison group. All students selected were enrolled full time in a regular college program.

The students in both the General Curriculum and comparison groups attended classes from 4:00 p.m. to 10:00 p.m. during the same school year at the Forest Park campus.

The variables on which the two groups were compared were general aptitude as measured by the total score on the School and College Ability Test, sex, age, and full-time enrollment. In attempting to equate the groups as closely as possible on both the ability and sex variables it was necessary to accept into the comparison group all students identified by the computer with scores at or below the 10th percentile on SCAT and also students to represent the 20 additional students placed in the general curriculum group. Inability to match these additional students on both variables resulted in more students being selected for the comparison group than were found in the general curriculum group and more females than males. Composition of the group however, was such that group characteristics were similar to those of the study group. Comparisons made of the performance, retention, attitudes, and placement of the subjects must be viewed in light of the fact that the selection procedures did not result in exactly equated groups. The degree to which the groups were equated on these variables is presented in Chapter III.

Development of the General Curriculum Program. The investigator assisted in designing and placing into operation during the 1965-66 year at the Forest Park Community College campus, St. Louis, Missouri, a general education curriculum for academically handicapped students. In May of 1965, the Danforth Foundation of St. Louis provided funds for a study of

the feasibility of developing a special curriculum of a general education nature for disadvantaged students. Subsequently, seven consultants were identified to assist in the study phase of the project. Some of the unique aspects of the treatment suggested for academically handicapped students in the St. Louis Junior College district program included the use of subject matter specialists from various institutions of higher education to suggest appropriate objectives for the program. Consultants recognized as authorities in their field were obtained from Southern Illinois University in the area of the core curriculum, the University of Missouri in the humanities curriculum, the University of Chicago in the mathematics curriculum, and the St. Louis County Junior College district in the social science curriculum. The consultants' reports are included in Appendix C. A two-day conference was held in June, 1965 at which time the consultants identified the major objectives of the program and suggested items to be included in the follow-up study. During the summer of 1965, a faculty was identified and employed by the Junior College district to execute the program.

To implement the first major aspect of the program, the decision was made to organize the students into groups and to use an integrated team-teaching approach in the personal enrichment phase of the program. The basic vehicle for this area of academically handicapped student development was a one year general curriculum program designed to provide them with a stimulating and successful classroom experience under the guidance of an instructor who possessed a real interest in low ability students and

who also had demonstrated competency in a subject-matter field. These instructors devoted all of their time and energy to the general curriculum program.

This aspect of the treatment consisted of ten hours weekly of general education courses including three hours of contemporary English, three hours of modern basic science or modern basic mathematics, three hours of consumer economics or basic sociology, and one hour of music and art appreciation for each of the two semesters. The courses were planned and taught by the subject-matter specialists working closely in teams to develop a unifying theme or to develop relationships between the subject areas wherever possible. The courses were designed to provide at the college level a stimulating educational experience for students who would otherwise experience only frustration and failure. The courses carried credit only in the general curriculum area, and concepts taught were couched in practical terms which could be put to immediate use by the students. No prerequisite course work, understanding, or reading level was established for course entrance. The student's progress was measured in terms of his own level of development, and no attempt was made to relate this progress to a traditional set of norms.

The second aspect of the program, that of instruction in basic skills, was offered through the use of programmed instruction. A prototype program, a material learning laboratory modeled after similar programs in North Carolina, was part of the program. Several important principles made the program materials approach extremely promising in terms of dis-

advantaged college students. First, instruction was individualized; each student was tested then worked on material at the level identified where he had the greatest chance of succeeding. Each proceeded at his own rate without having to devote time to areas with which he was already familiar. In addition, each had to pass periodic examinations spaced for maximum reinforcement at an acceptable level. Then they were provided with an opportunity for re-study of the same material. Because a student was required to define his objectives at the time he entered the laboratory, he could be told his achievement status and how far he must proceed to reach his objectives. The burden of responsibility for assimilating material was placed on the student. He was required to take an active part in the learning process rather than sitting back passively while the teacher did the work. Finally, he could see his progress toward defined objectives on a day-to-day basis. It was assumed by the program consultants that this feature would be important to the disadvantaged student.

The third treatment area, that of adjustment to self and society, was developed with the help of two additional Danforth consultants, one from St. Louis University on human relations and the other from Indiana State University in the area of counseling. The program of counseling and human relations dealt with the core and the purpose of the general curriculum's existence. The most significant set of objectives postulated for the general curriculum involved assisting the student to identify his reasons for being there and to aid him in planning how to implement most effectively those reasons. It was hypothesized that through the counsel-

ing program those objectives might be accomplished. The counseling program was community rather than institutionally centered. By this it was implied that the counselors would be trained to know intimately all facets of the community so that its total resources would be at the disposal of the disadvantaged student. Workshops were conducted during which college staff members and representatives of other community agencies discussed the problems in a carefully structured setting. The counseling staff worked closely with public school personnel to develop adequate understanding of the program and to modify their traditional attitudes concerning what was acceptable higher education. Social workers were employed as part of the counseling staff to provide a continuing bridge of understanding between the students' home environment and programs that were developed for him. A low student-counselor ratio insured that students would be seen weekly if necessary. The counselors and the social workers had the responsibility for conveying to other staff members the personnel point of view and for teaching human relations skills. In addition, they assisted in coordinating the efforts of other team members through case conferences and the collection and presentation of data concerning students' characteristics. The counseling staff members were also responsible for developing, testing, and reporting methods appropriate for the disadvantaged students. Recognition of the fact that many students for whom the general curriculum program would be most appropriate had financial difficulties, even with the modest fees charged by the Junior College district, prompted the college to extend loans and grants to students who normally were excluded because

of their high risk category. Students enrolled in the program were encouraged to identify with the regular collegiate atmosphere by being made eligible to participate in intramural or inter-collegiate athletics, student government, and other student activities such as the college chorus and dramatic productions.

A detailed description of the courses included in the General Curriculum are found in Appendix D.

Collection of Data. The criteria used to evaluate the General Curriculum for academically handicapped students included retention, quality of academic performance, placement, and measures of student perceptions about the value of the program. Data regarding retention in the program and grades earned were gathered from the students' permanent record files at the conclusion of the 1965-66 school year. A follow-up study was conducted during the fall, 1966 one year after entry into the program to determine the students' placement status and their opinions concerning value of their program.

To procure this information a questionnaire was developed and mailed on October 1, 1966 to the 283 students. A follow-up mailing of questionnaires was made two weeks later to non-respondents. Two weeks after the first follow-up mailing an attempt was made to telephone all non-respondents. Of the total group contacted 82.7 percent of the general curriculum students and 52 percent of the comparison group, or 66.4 percent of both groups, returned questionnaires.

Definitions of terms

Academically handicapped students, as used in this study refers to students who score at or below the tenth percentile on the School and College Ability Test or whose somewhat higher test scores coupled with past academic records identified them as being likely to have difficulty competing in regular community college programs. The cause of their disability is probably not as simple as the measure by which they were identified. It may be the result of a poor educational experience during the developmental period. It may be due to physical factors, such as malnutrition, eye or ear defects, or disease. It may be due to the lack of motivation caused by the socio-economic status and orientation of the family, or racial status, or some genetic deficiency, generally referred to as lack of native ability or intelligence. The cause in most cases is probably some combination of these factors.

Placement, refers to the status of the students one year after their initial enrollment. The placement categories used in this study were college transfer program, post-high school occupational program, community training program, full and part-time employment, including military service for both males and females, and homemaking for the females; or unemployed.

Study or General Curriculum Group, refers to the 133 students enrolled full time in the pilot, no college credit, general curriculum program on the Forest Park Community College Campus of the St. Louis Junior College District, in the fall of 1965. A detailed description of this group is

presented in Chapter III of this report..

Comparison Group, refers to a group of 150 students, selected from the Forest Park Community College on the basis of their low academic aptitude test scores or low high school achievement. These students were allowed to enroll in regular courses only because they did not take the SCAT prior to enrolling in the Forest Park Community College and were, therefore, not enrolled in the General Curriculum program.

General Curriculum, refers to the specially designed, no college credit program in which 133 students were enrolled during the fall semester of 1965 at the Forest Park Community College.

The Need and Importance of the Study

The concept of college programs for academically handicapped students is a fairly recent one. American society has begun to demand more than a high school diploma in order that its members may compete successfully in the social, as well as the vocational world.

The need for data on which to develop junior college programs for academically handicapped students, as they are defined in this study, has become a matter of urgency during the last three decades. Early attempts to develop such programs and criteria used to determine their success, will be reviewed in Chapter II. The rationale for the development of special programs designed for low ability students stems basically from the community college's commitment to the open-door policy. This policy, although accepted in varying degrees by two-year institutions in the coun-

try, differs in the several states. It is important to admission officers and curriculum consultants alike that data be gathered relating to how "academically handicapped" students will react to special placement-oriented programs. The high attrition rate of academically handicapped students in regular curricula attests to the need for some type of program which will meet their needs and at the same time be perceived by them as academically respectable and ego supporting.

The open-door policy, a basic concept of the two-year college, is being challenged from many quarters. Without data to show the value of programs for the academically handicapped students it is possible that students with limited academic aptitude will be excluded from college campuses. If the philosophy which now seems to permeate national thinking truly means an equal educational opportunity for all citizens, it follows that "placement" in the appropriate program must come to replace "selection and rejection" which may be the denial of an opportunity. The need for a better understanding of the effect of placement on the attitude of the student is important and deserves study.

Scope of the Study

This study dealt with a limited sample of the total population of "academically handicapped" students in the United States. More precisely, it included all those students on the Forest Park Community College campus, who were enrolled in the General Curriculum program for both semesters and a portion of those who were later identified as academically handicapped

from which a comparison group was selected. The study was limited to students enrolled during the 1965-66 school year. The total number of students enrolled in the General Curriculum program in the fall of 1965 was 133. Although additional students enrolled for the second semester, only the 133 students originally enrolled were subjects of study.

Limitations of the Study

It is important that the reader know some of the conditions which may have had an impact on the findings reported here. It was impossible for the groups to be matched in terms of the critical variables, therefore the comparison group possesses only roughly comparable characteristics. Since the students were not randomly assigned to the two groups, there remains the possibility that variables not controlled or measured, such as motivational factors, in addition to the fact they were not identically matched may have affected some of the findings. It is important to know that subjects in the two groups had to meet different academic performance standards to remain in school. Also, grading standards for students in the two programs may have been different. Another limiting condition was that students in the study group were enrolled in a program for which they would receive no college credit and which was not their original choice, while students in the comparison group were working in their chosen area and had the incentive of college grades. Perhaps the one year interval was insufficient time to determine the long-range effects of any treatment and insufficient time for students to re-

flect on the value of such an experience to their total lives. The short range evaluation, however, was necessary for administrative decisions involving thousands of dollars which had to be made prior to any long range evaluation. The fact that the General Curriculum program operated within the context of an ongoing situation prevented strict experimental controls from being imposed upon the study that would have made it possible to generalize to a much larger population. However, this should not be construed to mean that no value can be derived from this type of study.

The classroom obviously lacks many of the controls desirable under ideal experimental conditions; and yet, research in the classroom is necessary to provide a test of the various hypotheses concerned with the effectiveness of a different instructional approach such as the General Curriculum approach. DuBois⁵ stated in this regard that "...actually there is reason to believe that per erg of research energy expended, studies in ongoing situations are just as productive as investigations carried out in a highly organized experimental framework." He asserted that, "In the typical ongoing instructional situation service demands are primary and only occasionally does one find the combination of energy, insight, and integrated effort that is necessary for constructive inquiry on fundamental problems. We think, however, that there is an extensive range of educational questions that can be answered through the substitution

⁵Philip H. DuBois, "Educational Research in Ongoing Situations," Adult Education, XII (Summer, 1962), 218-222.

of statistical controls."⁶

Several writers have mentioned the need for developing specialized instruments for measuring educational growth, rather than using standardized achievement tests. This was particularly relevant to the situation at the Junior College District since the stated aims of the General Curriculum were not so much actual changes in quantity of knowledge as broader changes in attitudes toward the learning situation.

Collection of data was complicated by the fact that one of the basic premises of the program under study was that some of its major outcomes would be unamenable to evaluation by standardized measures. The most effective instructional innovations, however, are deemed effective experimentally to the extent that the outcomes of instruction are adequately and accurately measured. Adequate evaluation of instruction remains one of the most elusive tasks, especially on a short term basis. First of all, the instructional program involves the whole individual over a long period of time, and the behavioral outcomes extend into a variety of areas. Secondly, none of these areas, such as academic achievement, personality development, or attitude change, lend themselves easily to measurement. They are outcomes which must be measured inferentially from other overt behaviors. Finally, the use of the culture-laden standardized tests used to acquire data, the Hawthorne effect of the special treatment, and the temptation

⁶Ibid., p. 220.

of students to give socially acceptable responses relating to attitudes toward the programs in which they were enrolled, are further limitations to the study.

Overview of the Study

Chapter II will contain a review of the literature. Chapter III will include a detailed description of the subjects. Chapter IV presents the results of the study and Chapter V contains the conclusions reached and recommendations for further study.

CHAPTER II

REVIEW OF RELATED RESEARCH

New urgency was exhibited by authors writing about programs beginning in the 1960's for the academically handicapped, or low ability student, when greatly increased numbers of students enrolled in colleges. Most of the research was normative in nature, and provided information on how many programs of different types were being offered. Current efforts to resolve the problem of the low ability student centers around remedial or developmental courses the function of which is almost exclusively to repair deficiencies in basic skills so that he may then successfully enter and compete in college transfer or technical courses.

Roueche⁷ reviewed 147 reports concerning how effectively junior colleges were educating the disadvantaged low aptitude students. He defined developmental programs as those dealing with the development of skills and attitudes that might not have anything to do with making a student eligible for another program. On the basis of this extensive survey, he reported that "Research on developmental programs is virtually nonexistent. The programs are too recent in origin for a body of research

⁷John E. Roueche, "Salvage, Re-direction, or Custody? Remedial Education in the Community Junior College," ERIC Clearinghouse for Junior College Information, American Association of Junior Colleges, (1968), (Monograph Series).

to be available."⁸ Thus, most research reviewed here is concerned with "remedial" objectives, and it has limited value to the study under consideration. A review of all bibliographical sources, including the ERIC Clearinghouse for Junior College Information, failed to produce reference to other studies with objectives exactly like this one.

Status Studies

The Brooks⁹ published results of a survey of 64 California junior colleges regarding programs for students with achievement problems. Less than half, 43 percent, had programs in progress; while, another 10 percent had programs under consideration. The types of programs found indicated that they were predominantly remedial in nature and others had a vocational emphasis. Less than 10 percent of all types could be identified as opportunity programs.

Schenz¹⁰ reported that junior colleges followed various practices in identifying and admitting students with low ability, and he offered recommendations supporting varying practices in admitting such students. He

⁸Ibid., p. 8.

⁹Sheilagh T. and Richard H. Brooks, "Handicapped Students in the California Two-Year College," Junior College Journal, XXXIII (September, 1962), 52.

¹⁰Robert F. Schenz, "An Investigation of Junior College Courses and Curricula for students with Low Ability," (Unpublished Doctoral Dissertation), Los Angeles: University of California, School of Education, (1963).

found that, of the vast majority of junior colleges admitting students with low ability, only 40 percent recognized the potential of such students by admitting them on probation. He found that junior colleges not only follow various curriculum practices, but they also offer recommendations supporting varying practices in the provision of special courses and curriculums for low ability students. Even though 91 percent of the junior colleges were found to admit such students, he found that only 20 percent had designed special courses and curriculums for them. Colleges were found attempting to meet the needs of low ability students by making remedial courses available which were provided for all students.

Schenz also found that 55 percent of the 111 public junior colleges studied either required or recommended remedial courses for students of low ability, while only 12 percent required them, and 9 percent recommended a special program of courses for these students. When asked for their recommendations regarding curriculum practices for these students 46 percent of the administrators indicated that they would recommend special courses and curriculums for students identified as academically handicapped. Bossone¹¹ reported that in 1965 from 40 to 60 percent of the students enrolled in remedial English courses in California's public junior colleges earned a grade of D or F and that only 20 percent later enrolled in college

¹¹Richard M. Bossone, "Remedial English Instruction in California Public Junior Colleges: An Analysis and Evaluation of Current Practices," Sacramento, California, (September, 1966), (Mimeographed.)

credit courses. Roman¹² found that of 35 California junior colleges surveyed all offered some type of remedial English course, that two thirds offered remedial mathematics courses, that 11 had social science remedial courses, and that 5 offered remedial courses in the business area.

Evaluation Studies Using Quantitative Criteria

Studies undertaken to evaluate the effectiveness of special remedial programs to improve the future performance of academically handicapped students have, in general, produced little evidence to support the hypothesis that they have improved their performance. The principal approaches utilized in providing remedial programs for academically handicapped students have consisted of core programs, study skills classes, programmed instruction, work-study, or special counseling.

Freeman and Lenzo¹³ examined the long-time effect of counseling on low ability students at the State University of Iowa. Using a control and experimental group of college freshmen scoring in the lowest decile on the Iowa qualifying examination in 1925-26, they concluded that the grade point average was practically the same for the two groups. While 20 of the subjects were dropped from the control group and only 17 from

¹²Paul A. Roman, "A General Studies Program for Low-Achieving Students," (Seminar Paper), Los Angeles, California, (June, 1966), (Mimeographed.)

¹³Homer J. Freeman, and James Lenzo, "Final Report of the Long-Time Effect of Counseling Low Percentile Freshmen," School and Society, XXXVIII (September, 1933), 382.384.

the experimental group during the first year, suspension came later for most of those dropped from the experimental group. This represented both an economic and social loss to the students concerned. Only one more student graduated from the experimental than from the control group.

Blake¹⁴ evaluated the college level study skills program at the University of Maryland and other similar programs in operation throughout the United States and its possessions. He concluded that most programs offered services to a limited segment of the schools' population and that the remedial aura still surrounded and plagued study skills programs. He found that program planning with students was conspicuously missing, research was being poorly performed, and over one-half of the programs did not give academic credit for participation in the formalized part of the program. Staff members, according to the study, were inadequately trained for the programs, and the study skills programs were not publicized adequately. Blake¹⁵ also evaluated the compulsory University of Maryland study skills program. In this study he investigated the academic performance of students during and following the training given and the students' opinion of the program. Findings on the students' academic performance as a result of the program were conflicting. The sociology

¹⁴Walter S. Blake, Jr., "Are Compulsory Study Skills and Reading Training Good?", Junior College Journal, XXV (December, 1954), 231-234.

¹⁵Walter S. Blake, Jr., "College Level Study Skills Programs--Some Observations," Junior College Journal, XXV (November, 1954), 148-150.

grades of 128 probationers, after training in study skills programs, averaged 70.47 for one semester as compared with 75.6 for 122 members of a control group. He also found that the average reading speed of 129 probationers was 247.3 words per minute before training and 406.0 words per minute at the conclusion of the reading courses. Students' opinion of the program indicated that only 5.8 percent felt that they received "little or no help".

Jones, compared matched pairs of probation and "B" students at the University of Buffalo, and concluded that "...chances of survival are tripled if probation students are counseled and that the majority can be lead to improve significantly."¹⁶ Fahey and Ball¹⁷ found that more students in a special freshman core curriculum eventually graduated and that those students achieved as well as, and sometimes significantly better than, students in the regular curriculum. In review of 22 reports concerned with college study skills and reading courses, Entwisle¹⁸ indicated that a majority of reports showed that courses in how to study helped students to raise grade point averages. Magoon and Maxwell¹⁹ evaluated a reading study skills

¹⁶Edward S. Jones, "The Probation Student: What He Is Like and What can be Done about It," Journal of Educational Research, XLIX (October, 1955), 101.

¹⁷G. L. Fahey, and J. M. Ball, "Objective Evaluation of a Program in General Education," Journal of Educational Psychology, LI (1960), 144-151.

¹⁸Doris Entwisle, "Evaluation of Study Skills Courses: A Review," Journal of Educational Research, LIII (March, 1960), 243-251.

¹⁹Thomas Magoon, and Martha Maxwell, "Evaluation of a Reading and Study Skills Program for Marginally-Achieving College Applicants," Research Report No. 8-62, University of Maryland, (1962), pp. 13-14.

program for marginally achieving college applicants at the University of Maryland. Of the students studied, 70 percent indicated the program resulted in improved grades, 70 percent improved study efficiency, and 76 percent said that their attitudes toward their school work had improved. Furey²⁰ found that a program consisting only of course load reduction produced as much improvement in the grade point average (GPA) as did the program of guided studies at the University of Miami. A reduced course load of 12 credits resulted in as much improvement in the GPA of failing students there as a reduced course load of 9 credits. A second semester of reduced course load resulted in as much increase in GPA of failing students as a second semester in a program of guided studies at the University of Miami.

Other investigators attempted to evaluate the success of special programs in improving the grade earning ability of academically handicapped students. These studies, including one by Thelen²¹ conducted on some of the same students constituting the experimental subjects for this study seemed to contribute little to the central thesis of this research.

²⁰Mary Z. Furey, "A Comparative Study of the Effect of Selected Procedures on the Improvement of Quality Point Averages of Failing Students at the University of Miami," (Unpublished Doctoral Dissertation), Coral Gables, Florida, (1963)

²¹Alice Thelen, "A Study of Academic Characteristics of General Curriculum Students After One Semester, One Year in the General Curriculum Program," St. Louis, Missouri, Forest Park Community College, (September, 1966), (Mimeographed).

Evaluation Studies Using Non-Quantitative Criteria

Non-Traditional criteria of success for low ability students have been used in few studies. Several programs have attempted to provide a learning experience for students that were not dependent upon their acquiring traditional academic skills in the process. Students enrolled in such programs were evaluated in terms of grade point average and scores on standardized achievement tests. While these statistical type measures seem necessary, many times the value of such a program may be obscured by the findings and discontinued because of misinterpretation.

The need for developing specialized instruments for measuring program success rather than standardized achievement tests has been mentioned in several study reports. This need is particularly relevant to evaluation of a general education curriculum since the stated aims of this curriculum are not so much actual changes in quantity of knowledge but broader changes in the attitudes toward the learning situation.

Kowitz and Hausdorff²² reported on a large scale research project in New York State for which \$200,000 was appropriated by the state legislature to support research in improving public school instruction, specifically in the areas of science, mathematics, gifted students, English, and foreign language. They found the program did not produce satisfactory results even though all projects were carefully planned to adhere to ex-

²²Gerald T. Kowitz, and Henry Hausdorff, "Research to Improve Instruction," Phi Delta Kappa, XLV (June, 1964), 465.

perimentally adequate conditions. The authors attributed the short-comings of the program not to values in the experimental programs, but to failures in evaluation. Evaluating instruments used were not relevant to the behavioral objectives of the courses taught. Evidence of success for programs specifically designed to provide a non-remedial oriented program for academically handicapped students is rare.

Kibler²³ found no significant differences between the retention rate and grade point averages earned by students in a special curriculum when compared with students in a program utilizing increased counseling and a remedial approach. Both groups were exempt from the threat of involuntary dismissal. The value of the program; however, was based on the traditional criteria of success, namely retention and GPA. The attitude which a low ability student develops toward an educational experience, or at least expresses when asked about it, has not received much attention as a criterion of program success. Several research studies have contained recommendations referring to importance of a student's attitude toward the instruction offered.

Dr. Kenneth Hoyt, past president of the American Personnel and Guidance Association, stated the belief "...that a strong student desire to learn and personal student conviction regarding the importance of that which is being taught are vital factors affecting the success of any educational en-

²³Robert J. Kibler, "A Two-Year Report on an Experiment with Three Freshman Programs," Southern Illinois University, (November, 1964), pp. 434-435.

terprise. Such factors are of relatively greater importance than instructor qualifications, instructional materials, or physical facilities."²⁴

Parkinson²⁵ stated that any experiment designed to compare instructional programs must have a test which is suitable for testing the hypothesis under study, and conditions must have been chosen which truly represent the differences sought. An example is cited of research in which mathematics teaching in New Zealand and the United States was compared but different educational goals of programs were not taken into account.

Proponents of the General Curriculum approach, while not disregarding the need for instruction in basic skills, do advocate the necessity of integrating such training in a program of general education. One of the major objectives of this approach is to provide the individual with and educational experience which he recognizes as valuable, regardless of whether or not he is able to eventually meet the requirements for admission to a technical or transfer program. Since the General Curriculum is a global approach to education, the criteria for measuring program success are not as simple to identify as for programs having specific, quantifiable goals.

²⁴Kenneth B. Hoyt, "Education as Preparation for Employment," The President's Commission on Technology, Automation, and Economic Progress, (October, 1965), p. 7.

²⁵H. J. Parkinson, "The Comparison of Educational Programs: A Methodological Proposal," School Review, LXX (Autumn, 1962), 314-331.

A review by Kowitz and Hausdorff²⁶ of the first four years of research from numerous studies conducted in New York showed that basic skills, i.e., reading and study skills could be taught in many ways. They further concluded, from one study of a program for underachievers, that "even though positive changes could be effected in attitudes and personality, no subsequent gains in achievement were recorded."²⁷ Similar results were found in other studies of programs designed to enhance pupil achievement.

Probably the most notable achievement of such remedial courses has been to salve the institutional conscience while procedures are implemented for weeding out those who are unprepared.

Investigation of On-Going Programs

A preliminary survey of program directors for low ability students conducted by the investigator in the fall of 1965 showed that 23 percent of 105 institutions offered some type of program for students judged incapable of succeeding in a traditional program. The degree of success experienced in these programs varied. In general, the reports indicated that current practices were not notably successful.

It was reported about one program involving only 25 students that, "...the results, showing approximately one-fourth of the students survi-

²⁶Op.Cit., pp. 464-466.

²⁷Ibid., p. 465.

ving, is misleading. Upon release from the close scrutiny of the program, all six students were subsequently disqualified. The program has since been discontinued."²⁸ A possible reason for the apparent lack of program success may be found in the first words of the four program objectives which were, "to identify...", "to remove...", and "to eliminate..."²⁹

One of the other programs reported on by the directors, operated for four years and although, according to the Dean of Student Personnel at the college, it "...did provide real assistance to students of low ability, it did not meet the needs of those who wanted to be "college students".³⁰ The Dean of that college reported that 70 percent of the students who finished the special semester earned passing grades and were eligible to enroll in academic courses. The drop-out rate among special program students was 29 percent compared to 45 percent of regular program control group students with similar SCAT scores. The drop-out rate in the total student body was 17 percent during that same period of time. The investigator concluded that the special program provided for a significant increase in retention. The special program, according to the study, had perhaps provided an opportunity for the students to achieve .2 of a

²⁸Summary Sheet, "Basic Entrance Program," Reedly College, Reedly, California, (1965), p. 2.

²⁹Ibid., p. 1.

³⁰Marie Lantagne, "In Retrospect: The Basic Entrance Program," Santa Barbara City College, (1964), p. 3.

grade point higher than those students who did not have the remedial work. In light of inconclusive evidence on success of the special program, the faculty of this institution voted in the Spring, 1963 to drop the program.

An experimental program for low ability students at the Los Angeles City College, using a special block program approach, was shown to produce a more favorable attitude toward the college, better student retention, and higher grade point averages in the experimental group when compared with a control group. Machetanz,³¹ in evaluating the threshold program at the Los Angeles Valley College found that questionnaires administered at the end of the semester showed students were generally satisfied with the program. Students felt they had made major gains in their reading and writing skills and that their proficiency in speaking was much higher. Retest with the California Reading Test and the Diagnostic Reading Test showed modest improvement in achievement levels. In a second program report, morale of students in the threshold classes was reported as excellent. Although the standardized achievement test results did not show a statistically significant gain, the author offered as explanation the belief that these instruments were not valid as measures of achievement in terms of course objectives. By the fourth semester after entrance, 11.7 percent of the threshold group and 6.5 percent of the con-

³¹Frederick A. Machetanz, "Evaluation of the Threshold Program at Los Angeles Valley College". (Second Report) Los Angeles Valley College, Van Nuys, California, (October, 1966).

trol group were still in school. Relatively few of either group achieved a 2.0 GPA.

Quinn³² analyzed the educational program of Group I students at San Bernardino Valley College, and his report on the records and questionnaire survey results for the 267 special program students enrolled during 1963-64 revealed several things about the program. He found that 38 remained for four semesters and that the high school GPA was not helpful as a predictor of success in this program. In a follow-up study Quinn reported that, for the 30 percent who returned questionnaires, employment was the reason given most often for leaving college. He also reported that the most difficult aspects of the program for a majority of students were English and mathematics. Nearly all respondents reported having had benefits accrue to them as a result of their college attendance.

A progress report³³ on a Contra Costa College attempt to improve services to the educationally disadvantaged and/or low ability students, indicated that the experimental core program had met with little real success. Tutoring was used in an attempt to meet the needs of low-achieving students in both the subject matter and personality areas. The report

³²Hugh H. Quinn, "An Analysis of the Educational Program of Group I Students at San Bernardino Valley College". (Seminar Paper) San Bernardino, California, (1963 and 1964).

³³Contra Costa College, Research and Planning, "A Progress Report on Contra Costa College's Attempt to Improve Its Service to the Educationally Disadvantage and/or Low-Ability Student". Contra Costa, California, (December 23, 1965), (Mimeographed).

indicated that in spite of the lack of traditional evidence of success, faculty interest remained high.

A report by Powell³⁴ on the curriculum for low ability students at Los Angeles City College, showed it to have only a moderate degree of success in raising student reading levels. The success level was not sufficient enough to enable these students upon completion to enter regular college programs. The program, originally started in the Spring of 1964 with 64 students, utilized a block time arrangement consisting of a 3 unit English fundamentals course and a 3 unit introduction to psychology course. The two courses, neither carrying transfer credit, were taught by subject matter instructors from the English and Psychology departments in a two hour block of time daily. The experimental group advanced from a reading grade level of 8.6 to 9.4 on a timed basis and from 8.3 to 9.3 on a power basis. On the English Expression Test, the average student increased his reading score from the 4th percentile on college freshmen norms to the 14th percentile by the end of the first semester. Of the 64 experimental students, 91 percent completed the semester averaging 9.4 units attempted, and 34 percent earned grade averages of C or above. It was anticipated that during the Fall of 1966 over 1,000 students would be enrolled in the program. According to the Powell report, the focus of the program

³⁴Hope M. Powell, "Administrative Procedures Involved in Stimulating, Developing, and Implementing a Curriculum for Low Ability Students at Los Angeles City College". Los Angeles City College, California (January, 1966).

was being shifted from remediation to general education.

Specific research findings from a pre-vocational training program for undereducated and unemployed adults at the Modesta Junior College indicated that gains could be made in basic academic skills if academic approaches were materially modified and if students' attitudes about the program and its goals could be developed. The report of "The New Hope Program" indicated that in a period of four months the adult with less than four years of schooling could be expected to advance about one school year. Rhodes³⁵ also found that an adult with four to nine years of schooling could be expected to advance between two and three years.

The Bakersfield College Program "O" Curriculum has been in operation for many years and according to a report by Luke,³⁶ "...There had been a consistent rate of increase in completion of the program." The success of this program has been measured by its ability to provide special classes for those students who may hinder progress of more able students in the regular college program. The following are excerpts from evaluations which have been made of the existing program:

1. Program O instructors report that their students are conscien-

³⁵Harvey B. Rhodes, "The New Hope Program", an inovative approach to teaching the special students in the Junior College. (Paper presented to A.A.J.C. panel meeting), (March 2, 1967), San Francisco, p. 175.

³⁶Oral S. Luke, "A Ten Year Report of an Experimental Program for Low Ability Students", Bakersfield College, California, (June, 1966).

tious and motivated. They feel that many of them are working at maximum effort.

2. The tenth percentile seems to be a reasonable cut-off point.
3. Attention and general attitudes in Program 0 classes are felt to be as good as in most classes.
4. Ability is only one of the critical criteria of success with this group, however, an I.Q. of 90 or above seems, in general, to be correlated with academic success.
5. It is felt that the general fund of knowledge and skills of these students have been increased. Deficiencies have been repaired and some students have been salvaged.
6. The program is highly dependent on sensitive and competent counseling and instruction. To select and place on the basis of test scores without intensive counseling and dedicated teaching would be grossly unfair to the students involved.

Kipps³⁷ reporting on the "Level I" program at Compton College stated, "It might be well to keep in mind that the success or failure of a particular educational program may not so much reflect strength or weaknesses in the program itself, as the similarity or dissimilarity between the gross personality traits and educational objectives of the student body and the characteristics and goals of the college." She did find evidence of some success of the Level I program as indicated by a comparatively low student drop-out rate and relatively high attendance record. Faculty enthusiasm was also cited as a sign of success.

³⁷Carol Kipps, "Progress Report of the First Semester of the Level I Program at Compton College". Compton, California, (1965)

Hostrop³⁸ reported that an attempt was made at College of the Desert, Palm Desert, California, to provide basic instruction in the language arts, mathematics, and family life. Success of the program was judged by the fact that student enthusiasm necessitated the extension of evening class periods and the employment of an additional instructor.

In evaluating the success of the Basic Curriculum at Wilson Branch of the Chicago City Junior College, Monroe³⁹ stated that, "...so far as the faculty is concerned there is general support for the program, even though at first there was not." After it had been in operation for some time the faculty realized what the basic curriculum had done to upgrade the quality of work in the regular classes, because the lowest one-third of the students had been siphoned off into the basic program. Over a period of five semesters for which records were available, only 17 percent of the students who had been admitted to the regular program survived four semesters of college work. Of all the students tested and placed in the basic program, only 4 percent were found to have completed four semesters of college work. Monroe concluded, "...it is not easy to measure the value of the Basic Curriculum for its students. It is certain that 80 percent of the Basic students had an opportunity for one year in the Basic Program

³⁸Richard W. Hostrop, "Educational Programs Offered by College of the Desert for the Culturally Disadvantaged". (Seminar Paper), College of the Desert, Palm Desert, California, (June, 1966).

³⁹Charles R. Monroe, "The Basic Curriculum at Wilson". (Revised Report), (April 3, 1964).

when it is almost certain that they would have been dropped at the end of one semester in the regular program. If 4 to 5 percent are salvaged even as minimum level students, then there is at least that small profit to the credit of the Basic Curriculum."⁴⁰

The success of the Wright Junior College program⁴¹ was investigated by an ad-hoc committee, and a report of results was prepared. The data indicated that 8.66 percent of the 323 Basic students studied were doing acceptable work in college level courses in the winter of 1963. No distinction, however, was made between college level remedial courses and college credit courses and this would have tended to inflate the 8.66 percent salvage rate. The report re-emphasized the terminal nature of the Basic Program which at the same time provided opportunity for the "late bloomer" to acquire the necessary prerequisites for transfer and competition in one of the regular college curriculums.

Summary

A summary of the research relating to the success of programs for low-ability students would seem to indicate that in isolated instances some programs have produced a modest improvement in the performance of

⁴⁰Ibid., p. 6.

⁴¹John Queenan, chairman Ad-Hoc Committee, "Report on the Basic Program at Wright Junior College". (Unpublished Report) Chicago, (February, 1964), p. 3, (Mimeographed).

previously identified academically handicapped students. There is little evidence however, to support the belief that any remedial treatment covering one, two, or four semesters, will accomplish to any degree the task of preparing the academically handicapped student for a traditional college program. The lessening of a student's academic load and providing him with ego support appear to be as effective as any special content or structured programs which have been developed.

A basic recommendation found in some of the research reports calls for the development of more appropriate criteria to be used in evaluating programs designed for academically handicapped students. Several studies seem to indicate that retention in a program with the corresponding opportunity of influencing the student's long range behavior patterns might prove to be an acceptable objective for this type of program.

The basic concept of universal post-high school education and the community-junior colleges' open door admission policy is dependent upon the satisfactory development of a program for students who are currently unable to compete successfully in any existing community college program.

CHAPTER III

DESCRIPTION OF STUDENTS IN THE STUDY GROUPS

This chapter presents a description of the students for whom the General Curriculum Program was designed. The two study groups were compared on those variables which were felt to have a possible influence on the effect of the special treatment program. These variables included academic ability, sex, age, high school rank, and marital status. The data presented illustrate the degree to which the two groups were drawn from the same population of academically handicapped students at the Forest Park campus. In addition, a more complete profile of the General Curriculum group is presented from data collected in an extensive testing program. These data present other characteristics of academically handicapped students found at the Forest Park Community College.

Characteristics of the Study Groups

Subjects for the study were selected because of their assumed academic handicaps, as shown by Cooperative School and College Ability Test scores. This test battery is composed of four sub-tests: sentence understanding, numerical computation, word meaning, and numerical problem-solving. All four parts consisted of multiple choice items where subjects were asked to select the best answer from among five choices. According to the manual for inter-

preting the scores, "...the school and college ability tests aid in estimating the capacity of the student to understand the academic work of the next higher level of schooling. They measure the two kinds of school related abilities which are most important in the greatest number of school and college endeavors: verbal and quantitative."⁴² The total score for all four parts of the test was the major criterion for selection of subjects in the general curriculum and comparison groups.

Evaluation of a portion of the General Curriculum's effectiveness was based on the assumption that the two groups involved in the study, although found to be statistically different on ability test scores, represented the same general group of low ability students.

Shown in Table I is the distribution of both groups by total percentile scores on the SCAT. One can see, for example, that 18 males and 16 females from the general curriculum group as compared with 8 males and 20 females from the comparison group scored at the first percentile. Students scoring in this lowest percentile account for 20.9 percent of the males in the general curriculum group and 10.3 percent of the males in the comparison group, as well as 34 percent and 27.4 percent, respectively, of the females. From these data it can be determined that over four-fifths of the students in the general curriculum group and two-thirds in the comparison group scored at or below the tenth percentile, the primary

⁴²SCAT Publication, Manual for Interpreting Scores, Educational Testing Service, Princeton, New Jersey, (1957), p. 5.

TABLE I
NUMBER OF STUDY AND COMPARISON STUDENTS
BY PERCENTILE SCORE ON THE SCAT

Group	N	SCAT Percentile Scores																	
		01	02	03	04	05	06	07	08	09	10	12	14	16	18	21	24	27	34
General Curriculum																			
Male	86	18	11	8	5	8	16	2	3	0	2	6	2	2	0	2	0	1	0
Female	47	16	7	3	2	7	4	1	1	0	0	1	1	1	0	1	1	0	1
Total	133	34	18	11	7	15	20	3	4	0	2	7	3	3	0	3	1	1	1
Comparison																			
Male	77	8	2	9	4	5	2	5	2	0	5	14	4	6	7	2	0	2	0
Female	73	20	7	5	4	3	3	2	2	0	12	4	4	2	2	1	1	0	1
Total	150	28	9	14	8	8	5	7	4	0	17	18	8	8	9	3	1	2	1

basis for inclusion in the program. Eighty-five and 87 percent, respectively, of the males and females in the general curriculum group scored at this level compared to 55 and 79 percent, respectively, in the comparison group. The large number in each group, scoring at these low levels, indicate the severity of the group's academic handicap. This apparent low level of ability plays a marked role in the development of programs for academically handicapped students.

Since percentile scores were recorded and the conversion to standard scores would have required making arbitrary decisions in order to compute means and to perform t-tests, it was decided to test whether the two groups were drawn from the same population using the Kolmogorov-Smirnov two-sample test. This test is sensitive to any kind of difference in the distribution from which the two samples were drawn. The formula used to determine the difference in distribution is

$$D = \text{maximum } S_{n_1}(X) - S_{n_2}(X)$$

where $S_{n_1}(X) = K/n_1$, where K = the number of scores equal to or less than X . And where $S_{n_2}(X)$ = the observed cumulative step function of the other sample, that is, $S_{n_2}(X) = K/n_2$.

At the .01 level, the value of D necessary to reject the hypothesis that the two groups were drawn from the same population in terms of ability was .1942. Differences were found which exceeded this critical value, therefore, it must be assumed that on this variable the two groups did not have the same distribution of SCAT scores. The critical value of D

for males, at the .01 level, was .2556 and for females .3049. In both instances differences were found in the SCAT score distribution which required the rejection of the hypothesis that the groups had similar distributions. To determine whether the differences in distribution were significant, a chi-square test was performed using the formula

$$\chi^2 = 4D^2 \frac{n_1}{n_1 + n_2} \frac{n_2}{n_1 + n_2}$$

It has been shown (Goodman, 1954) that the above formula has a sampling distribution which is approximated by the chi-square distribution with $df = 2$. The significance of an observed value of D , may be determined by solving the formula for the observed values of D , n_1 , and n_2 , and referring to the chi-square distribution with two degrees of freedom. The chi-square of 26.71 for the total group was significant well beyond the .001 level and the chi-square of 21.88 for the males was likewise significant, however, the distribution for the females, showed a chi-square of 3.75 which was not significant at the .01 level.

The median percentile scores for the two groups were examined to determine the comparability of the groups on the ability variable. The data in Table II indicate that the median SCAT total percentile scores of the general curriculum and the comparison groups, 03 and 07, respectively, would place the majority of students of both groups at a level which would classify them as "low ability students". The general curriculum and comparison males with median scores at the 4th and 10th percentiles, respectively, were slightly higher on this variable than the females who

scored at the 2nd and 5th percentile. While the groups cannot thus be

TABLE II
MEDIAN SCAT SCORES OF THE STUDY GROUPS

Group	N	Median Percentile Scores
General Curriculum		
Male	86	04
Female	47	02
Total	133	03
Comparison		
Male	77	10
Female	73	05
Total	150	07

considered equal in intelligence the difference in favor of the comparison group was considered by the writer to be small enough to use the groups in this study of the effectiveness of the General Curriculum Program.

A very serious limitation was imposed on this study by the inability of the researcher to match the two groups exactly on the basis of sex. Since sex differences have sometimes been found to account for substantial amounts of the variance in educational experiments and because the general curriculum group contains almost 30 percent more men than women (i.e., 64.7 versus 35.3) and the comparison group contains less than 3 percent

more men than women (i.e., 51.3 versus 48.7) separate results for males and females (as well as the total) will be given in tables in this chapter and in Chapter IV that contain comparisons between the groups.

The sex of the subjects is shown in Table III. A chi-square test with one degree of freedom yielded a value of 5.128 which was significant at the .05 level of confidence.

TABLE III
SEX OF THE STUDY GROUPS

Group	Men		Women		Total	
	Number	Percent	Number	Percent	Number	Percent
General Curriculum	86	64.7	47	35.3	133	100
Comparison	77	51.3	73	48.7	150	100

The age distribution of the subjects in both groups was very similar, as shown in Table IV. Analysis revealed a mean of 19.9 and a standard deviation of .42 for the general curriculum group; and a mean of 20.2 and a standard deviation of .49 for the comparison group. The writer accepted this as evidence that subject matching according to age was satisfactory, and a significance test was not made.

The two groups were not equated in a systematic manner with respect

TABLE IV
AGE OF THE STUDY GROUPS

Group	Number by Age							Total Number
	17	18	19	20	21	22-25	26+	
General Curriculum								
Male	7	41	24	8	3	3	0	86
Female	4	20	3	10	2	3	5	47
Total	11	61	27	18	5	6	5	133
Comparison								
Male	7	20	31	13	2	3	1	77
Female	4	23	24	9	4	2	7	73
Total	11	43	55	22	6	5	8	150

to their high school percentile standing, however, data for most subjects were available and is summarized in Table V. The mean high school rank of 117 students in the general curriculum for which data were available fell at the 33rd percentile, while the comparison groups' mean high school rank for 140 students for which data were available was at the 38th percentile. The computed t-value of 1.927 was found to reach only the .30 level of significance. No significant differences in high school rank were observed when the groups were compared by sex, however, the females in the general curriculum and comparison groups with mean high school ranks at the 42nd and 43rd percentile, respectively, were found to have a higher high school rank than the males who ranked at the 29th and 34th percentiles.

TABLE V
HIGH SCHOOL RANK OF THE STUDY GROUPS

Group	N	Mean	Standard Deviation
General Curriculum			
Male	76	29	21.36
Female	41	42	20.84
Total	117	33	22.18
Comparison			
Male	73	34	19.74
Female	67	43	24.04
Total	140	38	22.36

Data on marital status of subjects are presented in Table VI. Only 1 of the males in the general curriculum and 3 in the comparison group were married at the beginning of the study year, while of the females, 7 in the general curriculum and 10 in the comparison group held this status. Substantially the same large percentage of students in both groups were unmarried during the 1965-66 school year. The two groups were therefore not felt to differ significantly on this variable.

General Curriculum Student Profile

The treatment designed for this study was developed on the basis of several assumptions concerning the characteristics of low ability students. Data were gathered and are presented here to enable the reader to examine

TABLE VI
MARITAL STATUS OF THE STUDY GROUPS

Group	N	Single		Married	
		Number	Percent	Number	Percent
General Curriculum					
Male	86	85	98.8	1	1.2
Female	47	40	85.1	7	14.9
Total	133	125	94.0	8	6.0
Comparison					
Male	77	74	96.1	3	3.9
Female	73	63	86.4	10	13.6
Total	150	137	91.3	13	8.7

the treatment in light of this information. In order to obtain a more complete description of the students in the general curriculum program, data were gathered concerning the students' background, educational goals and aspirations, and current activities. The descriptive data reported in this section were not gathered for the comparison group and no attempt to compare the groups on such data was made. It is an assumption of the study that these data are typical of the academically handicapped students for which the General Curriculum program was designed.

The data reported in Table VII show that over three-quarters of the students in the general curriculum program came from homes where both parents were in residence. The unemployment of over 15 percent for the male parent was well above the national average. Nearly one-half of the

mothers of the students were employed.

TABLE VII
FAMILY CHARACTERISTICS OF STUDENTS IN THE
GENERAL CURRICULUM GROUP

Item	<u>Male</u> Yes	<u>Female</u> Yes	<u>Total</u>	
			Yes	Percent
Parents Living Together	68	37	105	78.9
Father Employed	72	40	112	84.2
Mother Employed	36	26	62	46.6

According to data in Table VIII over one-half of the students in the general curriculum group were found to work 10 or more hours per week, and nearly 15 percent were employed full time.

The data in Table IX indicate that 57.4 percent of the students enrolled in the general curriculum program were white and 42.6 percent black. A much larger percentage of the black students were female (68.9) as compared to the white students (14.1). It is unfortunate for purposes of this study that such information was not collected by the institution on students enrolled in the regular program. However, federal policies at that time did not encourage this type of breakdown. The General Curriculum program was not designed to provide special emphasis on black cul-

ture or to meet the special needs of any specific ethnic or racial group.

TABLE VIII
NUMBER OF STUDENTS IN THE
GENERAL CURRICULUM GROUP ACCORDING TO HOURS WORKED

	N	Hours Employed Per Week					
		0	1-9	10-19	20-29	30-39	40+
Male	86	26	4	10	21	9	18
Female	47	27	5	4	8	1	2
Total	133	51	9	14	29	10	20

TABLE IX
NUMBER OF STUDENTS IN THE
GENERAL CURRICULUM GROUP BY RACE

Group	White	Negro	Total
Male	67	19	86
Female	7	40	47
Total	74	59	133

When asked in which community college program they had intended to

enroll, nearly 60 percent of the students, as shown in Table X, indicated a liberal arts or pre-professional choice. Only 14.3 percent indicated

TABLE X
COMMUNITY COLLEGE PROGRAM STUDENTS PLANNED TO ENTER

	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Occupational	12	13.9	7	14.9	19	14.3
Liberal Arts	21	24.5	13	27.7	34	25.6
Pre-Professional	24	27.9	21	44.7	45	33.8
Undecided	29	33.7	6	12.7	35	26.3
Total	86	100.0	47	100.0	133	100.0

an occupational curriculum which would appear to be more consistent with their abilities. It would appear from the data presented, that as a group academically handicapped females were more prone to enter pre-professional programs than were males and that fewer, 12.7 percent compared to 33.7 percent of the males, were undecided about a program.

When asked how many years they planned to attend college in order to reach their career objectives nearly two-thirds of the students, as shown in Table XI, indicated that they planned to spend at least four years. Only one student indicated that she intended to spend less than

TABLE XI
NUMBER OF YEARS OF COLLEGE STUDENTS PLANNED TO ATTEND

	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Less than 2 yr.	0	0.0	1	2.1	1	.8
2 yr.	15	17.4	11	23.4	26	19.5
4 yr.	39	41.9	16	34.0	52	39.1
Grad. School	19	22.1	14	29.8	33	24.8
Undecided	16	18.6	5	10.7	21	15.8
Total	86	100.0	47	100.0	133	100.0

two years in college. Again the females were less undecided than the males, 10.7 percent as compared to 18.6 percent, concerning the length of time they anticipated attending college.

Students in the general curriculum program, as indicated in Table XII, failed to express much uncertainty concerning how successful they expected to be in their college program. Over 50 percent were either very certain or somewhat certain that they would be successful, while less than 10 percent were doubtful. Females expressed greater certainty of success in their educational plans than did males, 63.9 compared to 55.8 percent. Females also indicated a greater degree of doubt, 10.6 compared to 5.8 percent. As in many of the other comparisons made be-

tween males and females in this study, the males were more undecided about this item than were the females.

TABLE XII
STUDENTS CERTAINTY OF SUCCESS IN
THEIR EDUCATIONAL PLANS

	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Very	10	11.6	9	19.2	19	14.3
Somewhat Certain	38	44.2	21	44.7	59	44.4
No Idea Yet	33	38.4	12	25.5	45	33.8
Somewhat Doubtful	3	3.5	4	8.5	7	5.2
Very Doubtful	2	2.3	1	2.1	3	2.3
Total	86	100.0	47	100.0	133	100.0

Two-thirds of the students in the general curriculum program, as shown in Table XIII, expressed the feeling early in the program that the work in the General Curriculum was too easy for them. Only three students at this time felt the work to be too hard. Females in the study indicated that the work was too easy only slightly more often than males, 66.0 compared to 65.2 percent, and about right significantly more often,

23.4 to 15.1 percent. Males were more than twice as often undecided in this regard as females.

TABLE XIII
STUDENTS' BELIEF ABOUT THE DIFFICULTY OF
WORK IN THE PROGRAM

	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Too hard	2	2.3	1	2.1	3	2.3
About right	13	15.1	11	23.4	24	18.0
Too easy	56	65.2	31	66.0	87	65.4
Undecided	15	17.4	4	8.5	19	14.3
Total	86	100.0	47	100.0	133	100.0

Reading level scores earned on the SRA Reading for Understanding Test were converted to grade level equivalents and presented in Table XIV. The mean reading grade level of 6.6 for the total group and the range of reading scores from third to tenth grade establishes an additional dimension of this group's academic handicap. The females in this group of academically handicapped students were found to have a slightly higher reading grade level than males, 7.0 compared to 6.4. The low reading levels of these students limited the amount of material available

to implement a general curriculum program and necessitated the writing of original material by the instructors in the program.

TABLE XIV
READING LEVEL SCORES
OF STUDENTS IN GENERAL CURRICULUM GROUP

	N	Grade Level							
		10th	9th	8th	7th	6th	5th	4th	3rd
Male	86	0	1	6	35	32	9	2	1
Female	47	1	4	13	13	10	5	1	0
Total	133	1	5	19	48	42	14	3	1

CHAPTER IV

ANALYSIS AND PRESENTATION OF FINDINGS

Introduction

This chapter contains the findings of the study of effectiveness of the General Curriculum program for academically handicapped students at the Forest Park Community College, St. Louis, Missouri. The data which were selected, analyzed and reported in this chapter are: (1) the placement categories in which the subjects were found during the year following the treatment year, (2) attendance records for both general curriculum and comparison groups, (3) the subjects' grade point averages for first and second semester terms, and (4) the attitudinal rating scores of each group regarding their perception of the value of the program. Chi-square and t-tests were used to analyze most of the data collected. Statistically significant findings at the .01 level of confidence were considered necessary to sustain the hypotheses.

Placement

Presented here are data on placement of general curriculum and comparison group students at the beginning of the 1966-67 school year. Respondents were asked to indicate one of six possible placement categories. The categories included: (1) in college, (2) in and out-of-college training program, (3) employed, (4) in military service, (5) housewife, and

(6) unemployed; looking for work. Due to few responses in the training program category, the data were collapsed from the original six to five categories by combining the first and second choices into an educational program category.

One of the hypotheses of the study was that there would be a significant difference in the placement categories of the students in the two groups. The data in Table XV indicate that very little difference between the two groups existed in the placement of students in the military service, housewife, or unemployed categories. The chi-square test including all five categories yielded a value of 10.243 which was not statistically significant at the .01 level of confidence. There seemed to be a major difference in two categories: more of the general curriculum students were in an educational program and more of the comparison students were employed. Of the general curriculum and comparison groups, 51.9 and 34 percents, respectively, were found to be in an educational program one year after entrance to Forest Park Community College. The difference of 17.9 percent in favor of the general curriculum group yielded a t-ratio of 3.01 which was statistically significant at the .01 level of confidence. Even with the emphasis placed on appropriate employment of students in the General Curriculum program, fewer than one-fourth of these students as compared with 37 percent of the comparison group, were found to be employed during the follow-up. The difference of 14.0 percent in favor of the general curriculum group yielded a t-ratio of 2.74 which was statistically significant at the .01 level of confidence.

TABLE XV
PLACEMENT CATEGORIES OF STUDENTS BY STUDY GROUPS

	N	Educational Program		Employed		Military Service		Housewife		Unemployed	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
General Curriculum											
Male	86	43	50.3	21	24.4	19	22.1	0	0.0	3	3.5
Female	47	26	55.3	10	21.3	0	0.0	5	10.6	6	12.8
Total	133	69	51.9	31	23.3	19	14.3	5	3.8	9	6.7
Comparison											
Male	77	25	32.5	23	29.9	24	31.1	0	0.0	5	6.5
Female	73	26	35.6	33	45.2	0	0.0	7	9.6	7	9.6
Total	150	51	34.0	56	37.3	24	16.0	7	4.7	12	8.0

The two groups, when separated by sex, were found in the educational program category in approximately the same percentage as when they were observed in combined groups. In each group the females were found to be slightly higher represented than the males. Sex of the subjects was found to be a very important variable in the employment category. While approximately the same percentages of men in the general curriculum and comparison groups were employed, the percentages for women are quite different. Only about one-fifth of the women in the general curriculum group (i.e. 21.3 percent) and almost one-half of the women in the comparison (45.2 percent) were employed. This difference in favor of the comparison women was statistically significant at the .01 level of confidence.

Data relating to the placement of students one year following their entry into the program partially supported the study's hypothesis. Further examination of the data in Table XV revealed that a smaller percentage of males from the general curriculum group than the comparison group, 22.1 compared to 31.2, were found in military service. A smaller percentage of the general curriculum males were also unemployed, 3.5 compared to 6.5, while a larger percentage of the general curriculum females were unemployed, 14.9 compared to 9.6, than females in the comparison group. None of these differences, however, were significant at the .01 level of confidence.

Retention

The data presented in this section deal with student retention in either the General Curriculum program or the regular college courses during

the year the program was being studied. The data found in Table XVI indicate that a very significant difference exists between the retention patterns of the two groups. Sixty-nine and two-tenths percent (69.2 percent) of the general curriculum students either completed a second semester in the General Curriculum or in the regular college program into which they were promoted following one semester in the General Curriculum. This compared with only 46.7 percent of the comparison group completing their second semester of work at the Forest Park Community College. A chi-square value of 59.867 was significant at the .001 level of confidence. Using the statistics available, it would appear that the General Curriculum program had the effect of retaining students in the educational setting for a significantly longer time than the regular offering in which the comparison group enrolled. However, it should be noted that a larger percentage of the comparison than the general curriculum group stayed in the program they entered (46.7 to 36.1 percent). As was noted earlier a larger proportion of the comparison group were employed one year after entry and this may partly account for a smaller percentage being retained for two semesters. Also, it is pertinent to note that the general curriculum subjects did not receive college credit before leaving.

To further determine the degree to which retention was a result of the sex difference between groups, analyses were made using sex as a variable. The much larger percentage of males who were retained in the general curriculum group, 69.8 compared to 39.0 in the comparison group, resulted in a chi-square of 15.59 which was significant at the .01 level of confidence.

TABLE XVI
COMPARISON OF STUDY GROUPS BY RETENTION IN PROGRAM

	N	Completed Year Same Program Number Percent	Completed Year Changed Program Number Percent	Did Not Complete Year Number Percent	Completed Year Either Program Number Percent
Experimental					
Male	86	34 39.5	26 30.2	26 30.2	60 69.8
Female	47	14 29.8	18 38.3	15 31.9	32 68.1
Total	133	48 36.1	44 33.1	41 30.8	92 69.2
Comparison					
Male	77	30 39.0	0 0.0	47 61.0	30 39.0
Female	73	40 54.8	0 0.0	33 45.2	40 54.8
Total	150	70 46.7	0 0.0	80 53.3	70 46.7

The difference between females in the two groups of 14.4 percent, however, was not significant at that level.

In any event, on the basis of the above data the second hypothesis of this study, that there would be a significant difference between groups with regard to the number of students completing one year in the community college program is accepted. This total group difference was due primarily to the retention among males in the general curriculum group.

Quality of Academic Performance

To attempt to ascertain the degree to which the general curriculum helped academically handicapped students achieve a higher level of performance as measured by earned grade point averages, the two groups were compared on this variable at the end of the first and second semesters of the year covered by the study. The first full year cumulative GPA's of the two groups were also compared. The results of the analysis of these data are reported in the next three tables.

Comparison of first semester GPA. The data in Table XVII indicate that the mean first semester GPA's of the general curriculum and comparison groups, 1.794 and 1.128 respectively, were significantly different at the .01 level of confidence in favor of the general curriculum. The t-ratio of 6.124 was high enough to sustain the hypothesis that there was a significant difference between groups in terms of their first semester grade point averages. It is entirely possible, of course that the grading standards imposed by instructors in the general curriculum and regular programs were sufficiently

different to account for the observed differences. This possibility, however, was not determinable from the available data. When data were examined using sex as a variable, females in both groups were found, as was expected, to have earned higher mean first semester grade point averages than males. The difference of .703 of a grade point between the males in each group, as well as the difference of .65 of a grade point between females resulted in t-ratios which were significant at the .01 level of confidence.

TABLE XVII
FIRST SEMESTER GRADE POINT
AVERAGE (GPA) OF THE STUDY GROUPS

	Number of Students	Mean GPA	Standard Deviation
General Curriculum			
Male	86	1.764	.853
Female	47	1.848	.888
Total	133	1.794	.867
Comparison			
Male	77	1.061	.992
Female	73	1.198	.889
Total	150	1.128	.946

Comparison of second semester GPA. To determine whether second semester grade point average differences existed between the two groups, grade reports were analysed for students remaining in the general curriculum and

comparison groups during that time.

Second semester mean GPA's of the two groups dropped in both instances as shown in Table XVIII. The comparison groups' second semester GPA's showed a smaller standard deviation than the general curriculum group, and

TABLE XVIII
SECOND SEMESTER GRADE POINT
AVERAGE (GPA) OF THE STUDY GROUPS

	Number of Students	Mean GPA	Standard Deviation
General Curriculum			
Male	60	1.247	1.128
Female	32	1.033	.964
Total	92	1.171	1.078
Comparison			
Male	30	.639	1.038
Female	40	.862	1.036
Total	70	.748	1.043

this may have been the result of a higher attrition rate than was found in the general curriculum group. The mean GPA of 1.171 for the general curriculum group and .748 for the comparison group resulted in a t-ratio of 3.345. This was significant at the .01 level of confidence and sustained the hypothesis that there would be a significant difference between groups in terms of their second semester grade point averages. Analysis of second semester mean GPA's by sex revealed that although both males and females

in the general curriculum group earned higher average grades than did their counterparts in the comparison group, only the males' differences resulted in a t-ratio which was significant at the .01 level of confidence. The t-ratio of .90 between females was not significant at that level. The significant difference found between total groups was due primarily to male differences.

Comparison of Full Year GPA. The mean cumulative grade point averages shown in Table XIX indicate that both groups had first year mean averages which fell below the normal 1.5 GPA required for retention and 2.0 GPA required for graduation. However, the differences between the group mean scores resulted in a t-ratio of 5.214 and were significantly different

TABLE XIX
FIRST YEAR CUMULATIVE GRADE
POINT AVERAGE (GPA) OF THE STUDY GROUPS

	Number of Students	Mean GPA	Standard Deviation
General Curriculum			
Male	60	1.505	.891
Female	32	1.441	.780
Total	92	1.483	.854
Comparison			
Male	30	.850	.904
Female	40	1.030	.868
Total	70	.938	.891

at the .01 level of confidence in favor of the general curriculum students. Data in Table XIX indicate that mean first year cumulative grade point average differences between males and females in the two groups resulted in t-ratios of 4.62 and 2.60 respectively. The difference between male GPA's was significant at the .01 level, however, that of the females did not reach that level of significance.

The hypothesis that there would be a significant difference between groups in terms of their first year cumulative grade point averages was therefore sustained for the groups as a whole and the difference can be attributed primarily to the difference between GPA's of males.

Comparison of Paired Groups Taking Regular Courses. The grade point averages of thirty-six roughly equated pairs of general curriculum students enrolled in regular course work during the second semester and students from the comparison group who were enrolled in similar regular courses were examined to attempt to determine the effect the different first semester experiences had on the ability of the students to earn grades during the second semester. It was possible to equate 36 pairs of students, 21 pairs of males and 15 pairs of females, in terms of both sex and total SCAT score, who were enrolled during the second semester in regular course work (i.e., not the General Curriculum program). Although all 72 students were in fact enrolled in the regular college program, the courses taken by them were not necessarily the same, consequently comparison of their GPA's must take into consideration those possible differences. Data found in Table XX indicate that the difference between the mean GPA scores of all the paired groups

of .287 resulted in a t-ratio of 1.22 which was found to be significant at only the .30 level of confidence. Both the males and the females in the general curriculum group earned higher mean GPA's than did the matched pairs in the comparison group, however, the differences between the groups of .407 and .218 respectively, were not statistically different at the .05 level. It therefore cannot be shown in this case, that a semester spent in the General Curriculum program would enable the academically handicapped student to earn a higher grade point average in regular college courses.

TABLE XX
EQUATED PAIRS OF STUDENTS
ENROLLED IN REGULAR COURSES ONLY

Groups	Number of Pairs	Mean GPA	t-ratio
Males			
General Curriculum	21	1.859	1.22
Comparison	21	1.452	
Females			
General Curriculum	15	1.307	.37
Comparison	15	1.189	
Total			
General Curriculum	36	1.629	1.22
Comparison	36	1.342	

Student Perception of Program Value

The questionnaire administered to both groups of students a year

following their entry into their respective programs attempted to determine whether students enrolled in the special program held significantly different attitudes, views, and conclusions about the value of the college experience than students who were allowed to enroll in the program of their choice.

A 25 item, five category attitudinal scale was used asking students to indicate their perception of the value of the college program they had pursued. The choices offered included very valuable, valuable, of some value, of little value, of no value. In analysing the data a more meaningful pattern emerged when the "very valuable" and "valuable" categories were identified as positive responses and the "of little value" and "of no value" categories as negative responses. This is the manner in which the data are presented in this section.

A copy of the questionnaire used to gather data presented in this section is found in Appendix E. The first section of the questionnaire concerned the students' attitudes toward the value of the general education aspect of his college experience.

That part of the treatment was designed to provide the student with a satisfying intellectual experience without any prerequisite background in the discipline area being studied or a reading level normally necessary for serious investigation in an academic field. It is that aspect which makes the general education approach in St. Louis different from most other programs developed for the academically handicapped student. The conditions under which the General Curriculum was developed and operated created some

problems in selecting an appropriate measure by which the program could be evaluated. Paul Dressel⁴³ in discussing the problems of evaluating general education said that, "...the attitudinal structure and the values of individual students either promote or interfere with their development..." The fourth hypothesis of this study was concerned with the value that the academically handicapped student would place on his course of study and his attitude toward such a program compared to students in a comparison group.

The data in this section indicate the responses made by the students to several questions on how valuable they felt their college program was in helping them in specific ways. Differences in attitudes between the two groups on three of the 25 items were found to be significant at the .01 level by a chi-square test of significance. Data for these 3 items are given in Table XXI. Data for the 22 items which did not produce significant differences are shown in Table XXV, Appendix A.

On the first item, that relating to the assistance rendered by the college in helping the student to speak in front of a group, a larger percentage of the general curriculum group than the comparison group responded in the positive category, 46.8 compared to 37.2 percent. Further investigation of this item indicates that the general curriculum group also responded more frequently in the negative category than did the comparison group. The

⁴³Paul L. Dressel, "Problems in the Evaluation of General Education," paper presented to The Ninth National Conference on Higher Education, Chicago: (March 4-5, 1954), p. 289.

TABLE XXI

DIFFERENCES IN ATTITUDE WHICH
DISCRIMINATED BETWEEN GENERAL CURRICULUM AND COMPARISON GROUPS

Type of help from College Program	Group	N	Positive		Neutral		Negative	
			Number	Percent	Number	Percent	Number	Percent
Being able to speak in front of a group	Gen. Curriculum*							
	Male	68	26	38.2	15	22.1	27	39.7
	Female	41	25	61.0	4	9.8	12	29.3
	Total	109	51	46.8	19	17.4	39	35.8
	Comparison							
	Male	32	8	25.0	15	50.0	8	25.0
	Female	46	21	45.7	13	28.3	12	26.1
	Total	78	29	37.2	29	37.2	20	25.6
Being more at ease with members of the opposite sex	Gen. Curriculum*							
	Male	68	25	36.8	7	10.3	36	52.9
	Female	42	15	35.7	8	19.0	19	45.2
	Total	110	40	36.4	15	13.6	55	50.0
	Comparison							
	Male	32	4	12.5	8	25.0	20	62.5
	Female	46	14	30.4	17	37.0	15	32.6
	Total	78	18	23.1	25	32.1	35	44.9
Becoming a more intel- ligent buyer and con- sumer of goods	Gen. Curriculum*							
	Male	68	39	57.4	13	19.1	16	23.5
	Female	42	27	64.3	7	16.7	8	19.0
	Total	110	66	60.0	20	18.2	24	21.8
	Comparison							
	Male	32	9	28.1	13	40.6	10	31.3
	Female	46	19	41.3	9	19.6	18	39.1
	Total	78	28	35.9	22	28.2	28	35.9

*Statistical significance of difference at the .01 percent level

greatest difference between groups on this item occurred in the neutral category, where significantly fewer students in the general curriculum group, 17.4 percent, responded in the neutral category as compared to 37.2 percent in the comparison group. The chi-square value of 9.370 with 2 degrees of freedom was significant at the .01 level of confidence.

When the data were analysed by sex it was found that both males and females in the general curriculum group responded more often in both the positive and negative categories than did members of the comparison group. Thirty-eight and two-tenths percent of the general curriculum males compared to 25.0 percent of the comparison males responded in the positive category while 39.7 and 25.0 percent of each group responded negatively. Sixty-one percent of the general curriculum females compared to 45.7 percent of the comparison females responded in the positive category while 29.3 and 26.1 percent of each of these groups responded in the negative category. The category which indicated the greatest difference in attitude between the two groups on this item was the neutral category, which was selected by 22.1 percent of the general curriculum males as compared to 50.0 percent of the comparison males and by 9.8 percent of the general curriculum females as compared to 28.3 in the comparison group.

The responses made by the two groups, when asked whether they perceived their college program as being helpful to them in being more at ease with members of the opposite sex, indicated a significantly larger percentage of students in the general curriculum group held positive attitudes about the value of their program in this area than did the members of the

comparison group. The general curriculum students as a group also responded more often in the negative category than did the comparison group. It was in the neutral category again that the greatest differences between total groups occurred, 13.6 compared to 32.1 percent. A chi-square value of 10.136 showed a statistically significant difference between total group responses at the .01 level of confidence. Males in the general curriculum group expressed less negative attitudes toward this item than males in the comparison group, 52.9 compared to 62.5 percent, while females in the general curriculum group expressed more negative attitudes than members of that sex in the comparison group, 45.2 compared to 32.6 percent.

The third item which discriminated between the attitudes members of the two groups held toward their respective programs, was concerned with whether their experience had been of value in helping them in being more intelligent buyers and consumers of goods. Sixty percent of the general curriculum students compared with 35.9 percent of the comparison students indicated a positive attitude on this item, while 21.8 and 35.9 percent of the respective groups held negative attitudes. The chi-square value of 10.626 was statistically significant at the .01 level of confidence. When responses of male students were examined on this item it was found that a greater percentage of the general curriculum group (57.4) than the comparison group (28.1) indicated a positive attitude and a smaller percentage of the general curriculum males (23.5) than the comparison males (31.3) held negative attitudes. The same significant differences were observed between females of the two groups, where 64.3 percent compared to 41.3 per-

cent held positive attitudes and 19.0 percent of the general curriculum females compared to 39.1 percent of the comparison females held negative attitudes.

Other Views and Attitudes

In attempting to determine the students' evaluation of their program using a different approach, both general curriculum and comparison groups were asked a number of specific questions. Each student was asked if he or she would recommend the program they had just taken to a younger brother or sister who had similar abilities and interests. The data in Table XXII indicate that a majority of both groups would have recommended their respective programs to a sibling, with 68.8 and 76.9 percent of the general curriculum and comparison groups, respectively, answering "yes". The chi-square value of 1.492 was not statistically significant at the .01 level of confidence, so it cannot be concluded that the comparison group was more pleased with their program and more willing to recommend it to a sibling. In both groups males responded positively to a lesser degree than did females to this item. The t-ratio's of .57 and .23 indicate that responses analysed by sex were not statistically significant at the .01 level of confidence.

To determine more specifically the students' judgment of the program in which he had either enrolled or been assigned, each was asked if he would have enrolled in the program had he known as much about it at the time of registration as he knew at the time he completed the questionnaire. On

TABLE XXII

COMPARISON OF STUDENT ATTITUDES
TOWARD SPECIFIC ASPECTS OF THEIR PROGRAM

Subjects' reaction toward program	Group	N	Yes	
			Number	Percent
Willingness to recommend their college program to a younger sibling	General Curriculum			
	Male	67	43	64.2
	Female	42	32	76.2
	Total	109	75	68.8
	Comparison			
	Male	32	23	71.9
	Female	46	37	80.4
	Total	78	60	76.9
Willingness to re-register in their respective program	General Curriculum			
	Male	66	40	60.6
	Female	39	26	66.7
	Total	105	66	62.9
	Comparison*			
	Male	32	26	81.3
	Female	46	37	80.4
	Total	78	63	80.8

*Statistical significance of difference at the .01 level

this rather basic matter a smaller percentage of the general curriculum group than the comparison group responded affirmatively, 62.9 percent compared with 80.8 percent, and a smaller percentage of the general curriculum males than the comparison males so responded, 60.6 percent compared to 81.3 percent. The differences in both instances were statistically significant at the .01 level. The differences between the females in the two groups, although found to be in the same direction, were not statistically significant at the .01 level of confidence. This was perhaps one of the most surprising findings of the study for the writer since he thought that the general curriculum group would be more satisfied.

When the students from both groups were asked to give an overall rating of the value of their college program, 11.9 percent of the general curriculum students as compared with 16.7 percent of the comparison group, as shown in Table XXIII, were highly favorably impressed. Nearly 13 percent of the general curriculum students as contrasted with 5.1 percent of the comparison students indicated that they were very disappointed in their program. When males' and females' responses were analysed very few deviations from the total group norms were observed. General Curriculum males expressed more disappointment in their program than did males in the comparison group, 37.3 percent to 28.2 percent, and were less favorably impressed, 40.3 to 40.6. Nearly 29 percent (28.6) of the females in the general curriculum group expressed disappointment with their program as compared with 23.9 percent in the comparison group, while 52.4 percent of the general curriculum females were favorably impressed compared to 54.3 percent of the comparison group. A chi-square value of 3.975 for the total group responses

TABLE XXIII

COMPARISON OF STUDENT
OVERALL RATINGS OF THEIR RESPECTIVE PROGRAMS

Categories	General Curriculum				Comparison			
	Male		Female		Male		Female	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	12	17.9	2	4.8	14	12.8	3	9.4
Very disappointed							1	2.1
							4	5.1
Slightly disappointed	13	19.4	10	23.8	23	21.1	6	18.8
							10	21.8
What expected	15	22.4	8	19.0	23	21.1	10	31.2
							10	21.8
Favorably impressed	22	32.8	14	33.4	36	33.1	10	31.2
							15	32.5
Highly favorably impressed	5	7.5	8	19.0	13	11.9	3	9.8
							10	21.8
Total	67	100.0	42	100.0	109	100.0	32	100.0
							46	100.0
							78	100.0

TABLE XXIV

COMPARISON OF STUDENT ATTITUDES
TOWARD SPECIFIC ASPECTS OF THEIR PROGRAM

Subjects' reaction toward College Program	Group	N	Yes	
			Number	Percent
Belief in their instructor's concern for their success	General Curriculum*			
	Male	65	63	96.9
	Female	42	41	97.6
	Total	107	104	97.2
Comparison	Male	32	19	59.4
	Female	46	30	65.2
	Total	78	49	62.8
Understanding of the objec- tives of their program	General Curriculum			
	Male	67	58	86.6
	Female	42	35	83.3
	Total	109	93	85.3
Comparison	Male	32	29	90.6
	Female	46	38	82.6
	Total	78	67	85.9
Whether this was the program in which they intended to enroll	General Curriculum			
	Male	67	5	7.5
	Female	42	2	4.8
	Total	109	7	6.4
Comparison*	Male	32	23	71.9
	Female	46	25	34.3
	Total	78	48	61.5

*Statistical significance of difference at the .01 level

TABLE XXIV "continued"

Subjects' reaction toward College Program	Group	N	Yes	
			Number	Percent
College friends located in the same program	General Curriculum*			
	Male	68	24	35.3
	Female	40	23	57.5
	Total	108	47	43.5
	Comparison			
	Male	32	7	21.9
	Female	46	13	28.3
	Total	78	20	25.6
Whether parents approve of their college program	General Curriculum			
	Male	67	49	73.1
	Female	42	26	61.9
	Total	109	75	68.8
	Comparison*			
	Male	32	30	93.8
	Female	46	45	97.8
	Total	78	75	96.2

*Statistical significance of difference at the .01 percent level

was not significant at the .01 level of confidence, therefore, the hypothesis that there would be a significant difference between groups with regard to their overall rating of their attitude toward their college program must be rejected.

Data in Table XXIV which was concerned with specific aspects of the program, indicate that significantly more students in the general curriculum group than in the comparison group felt that their instructors were concerned about their success. These data possibly indicate the most important contribution of the general curriculum approach. Of the students in the general curriculum group 97.2 percent held a positive attitude about their instructors' concern for them as compared with only 62.8 percent of the students in the comparison group. The chi-square value of 37.266 was significant well beyond the .01 level of confidence. Both males and females in the general curriculum group responded to this item significantly more favorably than did their counterparts in the comparison group. Statistically significant differences at the .01 level of confidence were found between both the males and females of the two groups.

Almost exactly the same percentage of each group responded affirmatively when asked if they understood the objectives of their program. A chi-square test indicated no significant difference existed either between groups as a whole or when the data were analysed by sex.

As could be expected, when the students were asked whether this was the program in which they originally wanted to enroll, 6.4 percent in the general curriculum group indicated it was, while 61.5 percent of the com-

parison group gave that answer. The chi-square value of 66.526 was significant well beyond the .001 level of confidence. The same high level of difference was found when these data were examined using sex as a variable.

When asked whether most of their college friends were enrolled in the same program the groups responded quite differently. While 43.3 percent of the general curriculum students responded in the affirmative, only 25.6 percent of the students in the comparison group did so. This difference was statistically significant at the .01 level of confidence. The difference between females on this item (57.5 percent compared to 28.3 percent) accounted for a substantial amount of the difference between groups. While this factor cannot be considered a very important feature in determining the success of the program, it might have had some bearing on the retention variable.

The students' perception of their parents' attitude toward the program indicated that while 68.8 percent of the general curriculum group felt that their parents approved of the college program in which they were enrolled, 96.2 percent of the students in the comparison group held this attitude. This difference, as shown by a chi-square value of 21.243, was significant at the .01 level of confidence. The same level of significance was observed when the data were analysed by sex. Slightly over 73 percent (73.1) of the general curriculum males compared to 93.8 percent in the comparison group responded affirmatively as did 61.9 percent of the general curriculum females and 97.8 percent of the comparison females.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter includes a summary of the findings, conclusions drawn from the data, and recommendations for additional research and curriculum changes.

Summary of Findings

The findings of this study are reported under four major headings: placement, retention, academic progress, and student reactions about the value of their program.

Placement. Findings regarding the effect of the general curriculum treatment on student placement failed to result in statistically significant differences between groups when all five of the placement categories were included in the comparison. However, differences at the .01 level of significance were found when comparisons were made between groups in the "educational program" and "employed" categories. Even though concentrated effort was made to inform the general curriculum students of their opportunities in employment areas not requiring further college education, a statistically significantly smaller percentage (23.3 of the general curriculum students as compared with 37.3 percent of the comparison group were found to be employed at the time of the follow-up study. This difference

between groups can be attributed primarily to the statistically significantly greater percentage of females who were employed in the comparison group than in the general curriculum group. It was also found that 51.9 percent of the general curriculum students as compared with 34.0 of the comparison group were found to be enrolled in some type of educational program. The difference of 17.9 percent in favor of the general curriculum group was statistically significant at the .01 level of confidence. The data regarding the placement of students from the general curriculum and comparison groups only partially support the hypothesis.

Retention. Results of comparing the two groups in terms of their retention show that 36.1 percent of the general curriculum students remained in their original program for the entire year and that 46.7 percent of the comparison group remained in theirs. An additional 33 percent of the general curriculum students were allowed to transfer to a regular program in the college and thus completed the year. Although slightly more than half the students in the comparison group (53.3 percent) did not complete the academic year, as noted above, a high percentage of them became employed. Only 30.8 percent of the general curriculum students did not remain enrolled for the full academic year. A difference in favor of the retention of students who enrolled in the general curriculum group was statistically significant at the .01 level of confidence. This difference was primarily due to the retention of males in the general curriculum group.

Academic Progress. The results from examining the students' grade records indicate that, as a group, the students in the general curriculum program

earned higher grade-point averages during their first and second semesters than did the students in the comparison group. Both the .606 first semester GPA difference and the .323 second semester GPA difference were sufficiently large to be statistically significant at the .01 level of confidence. It must be noted however, since college credit was not given for work in the general curriculum program, grading standards might not have been comparable. The cumulative mean grade point average of neither group was sufficiently high to indicate that, as a group, retention in a regular college program was advisable. Results of this part of the study indicate that differences between groups, in terms of their level of performance as measured by earned grade point averages at the end of the first semester were statistically significant in favor of the general curriculum group for both sex. Second semester GPA's were statistically significant at the .01 level of confidence in favor of the general curriculum males, however, the difference between females was not statistically significant at that level. The reader is cautioned to recall that when equated pairs of general curriculum and comparison students were compared in regular college classes during the second semester, the difference between the earned GPA's were not significant at the .05 level of confidence.

Student Reactions About the Value of Their Program. The major findings of the follow-up questionnaire administered to the students of both groups, one year following entry into their respective programs, included the fact that there were statistically significant differences in attitude expressed by the two groups on only 3 of the general education objectives, at the

.01 level of confidence. On one of those items, help in being able to speak in front of a group, the students in the general curriculum group responded more often in both the positive and negative categories than did the students in the comparison group. It was in the neutral category that the groups differed most significantly. Only 17.4 percent of the general curriculum students as compared with 37.2 percent of the comparison group so responded. Comparisons made by sex revealed this same pattern.

The second item, being more at ease with members of the opposite sex, was responded to more often in both the positive and negative categories by general curriculum students than by comparison students, however, when examined by sex it was found that general curriculum males responded more often in the positive and less often in the negative categories than did males in the comparison group, while general curriculum females responded in both positive and negative categories more often than did comparison females.

The third significant item, becoming a more intelligent buyer and consumer of goods, was responded to by the total general curriculum group and by the males and females of that group more often in the positive category and less often in the negative category than by the corresponding comparison groups.

A second group of findings from the questionnaire indicated that 68.8 percent of the students enrolled in the general curriculum program as compared with 76.9 percent of the students in the regular program were willing to recommend their program to a younger sibling. This difference was not

statistically significant at the .01 level of confidence. An equally important and perhaps surprising finding was that a significantly lower percentage of the general curriculum students than the comparison students (62.9 versus 80.8) said they would willingly enroll in the same program again. Differences were statistically significant for both sex. One area where the general curriculum program was considered to be of more value than the regular program was disclosed by responses about the concern the teachers had for the students' success; 97.2 percent of general curriculum students felt their teachers were concerned while only 62.8 percent of the comparison students sensed such concern. Differences between responses of both men and women in each group were statistically significant in this matter.

Probably the main finding of the study was that when students were asked for their overall attitude of their junior college program nearly half of both groups, 44.9 percent of the general curriculum students and 48.8 percent of the comparison students said they were either favorably or highly favorably impressed. This finding, as well as all others concerning the attitudes of the students in the two groups, should be interpreted in light of the fact that according to the follow-up questionnaire only 6.4 percent of the 107 students from the general curriculum group who responded, indicated that the program they were in was the one in which they had originally intended to enroll, while 61.5 percent of the 78 comparison students so replied. This difference was statistically significant well beyond the .01 level. A further finding of the study was that 68.8 percent of the students in the general curriculum group felt that their parents

approved of the program in which they were enrolled as compared with 96.2 percent of the students in the comparison group. This difference was statistically significant in favor of the comparison group at the .01 level of confidence. Slightly over 85 percent of each group, 85.3 percent of the general curriculum group and 85.9 percent of the comparison group, indicated that they understood the objectives of their program. The small difference between groups was not statistically significant at the .01 level of confidence. It was found that a larger percentage of the general curriculum students indicated that their college friends were located in the same program then did the comparison students, 43.5 percent compared to 25.6 percent. This difference was statistically significant at the .01 level of confidence. The difference was due primarily to the responses of the general curriculum females, 57.5 percent so indicated, compared to 28.3 percent of the comparison females.

Conclusions

The overriding question of the appropriateness of the inclusion of special programs for academically handicapped students in the offering of the community-junior college remains unsettled. The long range effect that such programs will have on the academically handicapped student has not been determined by this study. Data gathered in this study regarding the placement of academically handicapped students only partially supported the hypothesis that students enrolled in the general curriculum program would be found in significantly different placement categories one year

following their entry into the program than would a roughly comparable group of academically handicapped students and that more would be employed at appropriate activities. It must therefore be concluded that the general education approach, as developed on the Forest Park campus, will not result in significantly greater percentages of the academically handicapped student making employment choices one year following their experience than students enrolled in regular college courses. It would appear from the available data that academically handicapped students, after being exposed to a specially designed general education program, will be found in educational programs significantly more often than will comparably handicapped students exposed to the regular junior college curriculum.

To retain the student in an educational setting for an extended period of time, which it appears this type of program tends to do, may have implications which could be both advantageous and detrimental to the best interest of the student and society. The findings of this study tend to support the hypothesis that students enrolled in the general curriculum program would remain in an educational setting significantly longer than would a comparison group. It is therefore concluded that retention is one of the effects of the general curriculum program.

The hypothesis that students enrolled in the general curriculum program would achieve a significantly higher grade level of performance than would a comparison group, is supported by the data regarding the earned GPA's of the two groups during the study year. The effect of this program in the area of quality of academic performance leads the writer, however,

to conclude that in spite of the evidence of significant difference in grade point average being shown in favor of students enrolled in the general curriculum program, it should not be assumed that an answer to remedying academic deficiency has been found. The level at which both groups performed would indicate that student deficiencies were not being remedied to the extent that would allow the student to make normal progress in regular college courses and that these programs cannot be justified on that basis.

The emotional and psychological effect on students, who were enrolled in a program which was forced upon them and for which they received no college credit nor advance standing in occupational training programs, may well determine the eventual appropriateness of providing this type of curriculum in the community college or other post-high school institution. The hypothesis that students enrolled in the general curriculum program would hold significantly more favorable attitudes toward their program than would a comparison group toward theirs was only partially supported by the results of this study. The findings relating to student attitudes toward the programs in which they were enrolled appear to hold the greatest promise for future program development. Research has shown, in different settings, that student attitudes are in various ways related to achievement. Evidence acquired in this study would indicate that programs for academically handicapped students can be designed which are acceptable to this type of student, that he will see as valuable, and which he reacts to in as favorable a manner as comparable students react to regular community college programs.

It must be concluded that students are aware of the concern which faculty members feel for their success and that this may be a major contribution of such a program as the General Curriculum. It may also be concluded, from the results of the questionnaire administered to students, that parental support for programs which do not carry regular college credit is apparently lacking even though the parent himself has not attended college or even completed high school.

Recommendations

The writer would recommend that an intensive nation-wide study be conducted in the community-junior college on programs for academically handicapped students. On the basis of this study it is recommended that instructors who understand the problems of the academically handicapped student and who have the patience and skill to work with him be given specific training in order that they might achieve the goals of these special programs. Preparation programs for community college English instructors for example, should contain work in remedial reading, adolescent psychology, theory of learning as it relates to low ability students, and an opportunity to become familiar with the entire spectrum of student abilities through internship experiences. It is recommended that further research be conducted to determine the independent effects of various instructional techniques and curriculum approaches such as programmed instruction, team teaching, core or integrated courses, and tutoring. The use of discussion approaches in remedial courses where students are deficient in verbal communication

skills need special attention.

In light of the findings of this study, it is recommended that follow-up studies on eventual student employment be conducted to determine any possible residual effects of the program on future employment patterns of this type of student. Vocational rehabilitation services which are available to most students classified as academically handicapped should be utilized to a greater extent. Studies of environmental and peer influences and parental attitudes need to be researched and could well add a dimension to the understanding of this type of student and lead to an improvement in the orientation of the student and his parents to this type of program. Orientation programs need to be designed which include the teacher, the student, and his parents in a setting where the anxieties of all three can be minimized. Among the other topics needing extensive amounts of research regarding programs for academically handicapped students are methods of identifying students for whom specialized programs are appropriate. More valid techniques of evaluating student success in programs with non-traditional objectives must be discovered. The placement of students in special programs on the basis of standardized aptitude and achievement test scores needs to be re-examined and more appropriate methods sought. Methods of structuring the program and grouping the students needs further attention. It is also recommended that means of developing student motivation and the development of curriculum material designed for these types of students be investigated.

Emperical evidence needs to be gathered which will help new institu-

tions design programs to meet the needs for academically handicapped students. The evidence which currently exists would lead the writer to conclude that programs designed solely to remediate academic deficiency are not likely to succeed to the extent that these programs will continue to receive support from the public. The trend toward providing general education experience and social skills for all citizens seems quite clear. During this time when emphasis is placed on the individual, even occupational training programs and job placement must be coupled with a concern for those activities all people share in common.

APPENDIX A

TABLES CONTAINING DATA WHICH DID NOT
DISCRIMINATE BETWEEN GENERAL CURRICULUM AND COMPARISON GROUPS

TABLE XXV

ITEMS FROM PART A OF THE ATTITUDE QUESTIONNAIRE
WHICH DID NOT DISCRIMINATE BETWEEN GENERAL CURRICULUM AND COMPARISON GROUPS

Type of help from College Program	Group	4		3		2	
		Positive		Neutral		Negative	
		Number	Percent	Number	Percent	Number	Percent
Understanding their academic strengths and weaknesses	Experimental Comparison	86	78.2	17	15.5	7	6.4
		59	75.6	13	16.7	6	7.7
Improving work and study habits	Experimental Comparison	78	71.6	22	20.2	9	8.3
		48	61.5	20	25.6	10	12.8
Expressing themselves more effectively in writing	Experimental Comparison	81	73.6	19	17.3	10	9.1
		46	59.0	23	29.5	9	11.5
Becoming more mature	Experimental Comparison	74	67.9	18	16.5	17	15.6
		44	56.4	26	33.3	8	10.3
Reading with more understanding	Experimental Comparison	72	65.5	29	26.4	9	8.2
		45	57.7	24	30.8	9	11.5
Becoming more tolerant of people with different backgrounds	Experimental Comparison	67	60.9	23	20.9	20	18.2
		45	57.7	21	26.9	12	15.4

TABLE XXV "continued"

Type of help from College Program	Group	4		3		2	
		Positive		Neutral		Negative	
		Number	Percent	Number	Percent	Number	Percent
Understanding the concepts of democracy and freedom	Experimental Comparison	56 39	51.4 50.0	28 28	25.7 35.9	25 11	22.9 14.1
Being able to solve every- day mathematical problems	Experimental Comparison	55 26	50.5 33.3	31 23	28.4 29.5	23 29	21.1 37.2
Understanding their emotions and feelings	Experimental Comparison	40 26	36.7 33.3	28 23	25.7 29.5	41 29	37.6 37.2
Using the scientific method in their daily lives	Experimental Comparison	36 22	33.0 28.2	32 26	29.4 33.3	41 30	37.6 38.5
Choosing more interesting and wholesome leisure-time activities	Experimental Comparison	35 21	32.1 26.9	22 29	20.2 37.2	52 28	47.7 35.9
Understanding and appreciating new forms of music	Experimental Comparison	36 16	32.7 20.5	26 15	23.6 19.2	48 47	43.6 60.3
Selecting a marriage partner	Experimental Comparison	31 17	28.2 21.8	16 13	16.7 16.7	48 48	61.5 61.5
Selecting more appropriate clothes styles	Experimental Comparison	27 15	24.5 19.2	18 15	16.4 19.2	65 48	59.1 61.5
Understanding the operation of a common household appliance	Experimental Comparison	16 3	14.5 3.8	26 17	23.6 21.8	68 58	61.8 74.4

TABLE XXV "continued"

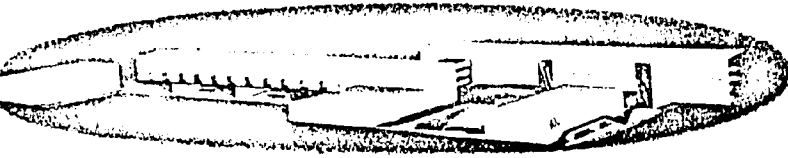
Type of help from College Program	Group	4 Positive		3 Neutral		2 Negative	
		Number	Percent	Number	Percent	Number	Percent
Understanding how their government operates	Experimental Comparison	27 34	24.5 43.6	36 19	32.7 24.4	47 25	42.7 32.1
Understanding and practicing better health habits	Experimental Comparison	36 28	33.0 35.9	20 19	18.3 24.4	53 31	48.6 39.7
Reading about current events in newspapers and magazines	Experimental Comparison	49 43	44.5 55.1	30 18	27.3 23.1	31 17	28.2 21.8
Being better prepared to make a living	Experimental Comparison	62 49	56.4 62.8	25 16	22.7 20.5	23 13	20.9 16.7
Increasing their speaking vocabulary	Experimental Comparison	71 52	64.5 66.7	21 16	19.1 20.5	18 10	16.4 12.8
Preparing themselves to go on to college	Experimental Comparison	77 55	70.0 70.5	25 19	22.7 24.4	8 4	5.1 5.1
Reaching their occupational goals	Experimental Comparison	55 43	51.4 55.1	22 22	20.6 28.2	30 13	28.0 16.7

APPENDIX B

**NOTIFICATION OF THE GENERAL CURRICULUM
SENT TO STUDENTS WHO QUALIFIED FOR THE PROGRAM**

FOREST PARK COMMUNITY COLLEGE

3185 GRAVOIS • ST. LOUIS, MO. 63118 • PR 1-8850



A review of your application material (test scores and high school achievement) indicates that you will probably have considerable difficulty with many of the programs that we offer. To improve your chances of success at the Forest Park Community College you are being admitted on "academic probation". Students on "academic probation" are limited to a maximum load as determined by the counselor during the course planning interview.

For your information, we are enclosing a description of a new program being offered on the Forest Park Campus called "The General Curriculum." This is a non-college transfer program designed to give students with weak academic backgrounds an opportunity to be successful in college-level courses. If you enter the General Curriculum, during the first semester you will have the advantage of being enrolled in small classes where every attempt will be made to identify and correct conditions that have caused you difficulties in the past. At the end of the semester your progress will be reviewed to determine whether you qualify for admission to other college programs. You will also be provided with counseling assistance to help you with your future employment and educational planning.

Please call PROspect 1-8850, Ext. 35 for a counseling appointment to plan your schedule for the Fall Semester.

Sincerely,

Samuel L. Stone
Associate Dean - Registrar

EMR/nm

APPENDIX C

CONSULTANT REPORTS

- C₁ A PROPOSED PROGRAM FOR UTILIZING
CORE CONCEPTS IN THE DEVELOPMENT
OF THE GENERAL CURRICULUM
- C₂ A PROPOSED PROGRAM IN HUMANITIES FOR
THE GENERAL CURRICULUM
- C₃ A PROPOSED PROGRAM IN SCIENCE FOR THE
GENERAL CURRICULUM
- C₄ A PROPOSED PROGRAM IN MATHEMATICS
FOR THE GENERAL CURRICULUM
- C₅ A PROPOSED PROGRAM IN SOCIAL SCIENCE
FOR THE GENERAL CURRICULUM

**A PROPOSED PROGRAM FOR UTILIZING CORE
CONCEPTS IN THE DEVELOPMENT OF THE GENERAL CURRICULUM**

Nelson L. Bossing

Danforth Consultant on Core Curriculum

Southern Illinois University

INTRODUCTION

As we approach this critical problem of the disadvantaged junior college-age student, it is essential that we examine carefully our educational program and what our responsibilities are for these students. Are we concerned mainly with the preparation of youth for college, or, basically, is it our first responsibility to give every youth full opportunity to reach his potential so that he may live as fully as possible and become a useful contributing citizen?

Sometimes, the reflectively minded are inclined to suspect that many so-called educators have fallen victim to the older European concern for the brilliant, the elite, and only incidentally with those of low academic interest or ability. As a recent speaker observed: "We do not have an educational system, we have a scholastic system." Certainly the post-Sputnik period has given every indication that the primary concern of many has been for the student of demonstrated superior ability.

The wide-spread extolling of such nebulous terms as "quality", "standards", and "hard subjects" has led to the rigorous development of the curriculum without regard to the student's interests, understanding, or needs, and even calculated to remove curriculum areas likely to arouse in themselves student interests or values. Consequently, there has been a sharp increase in dropouts and failures in secondary schools and colleges. It would appear that the present curriculum offerings of our upper schools, particularly, are unadjusted to the needs and abilities of at least the lower third of our students.

The acceptance by the faculty and leadership of the Junior College District of General Education as a form of curriculum program most likely to provide a satisfactory plan of content organization to awaken interest and meet the needs and abilities of the disadvantaged youth of this community seems promising. It appears to be a question of how rigorously the program is to be designed to meet the needs of this group that will determine its effectiveness.

It is the purpose of this paper to address itself to this problem. There are two major approaches to the development of general education programs. The older in point of use is the modification of the time-honored subject curriculum through what is known as a broad fields approach. The second is based upon a complete break with the subject-centered approach and moves to a new center of organization designed to provide the curriculum with more functionality.

Historically, there has been at least a three stage evaluation of the attempt to break away from the completely separated and isolated subject curriculum, such as American history, trigonometry, or English composition.

1. Correlation:

In this approach, two subjects such as American colonial history and English literature might be taught separately but relatedly. When discussing certain periods of American colonial history, the English literature class would use literature materials that corresponded to that period, as: Cooper's Leather Stocking Tales, Knickerbocker's History of New York, poetry, and other literature that vivified life in that historical time and place. Or the art class might study some of the art developments of that period.

2. Fusion:

Many educators felt that correlation was inadequately done. Subject specialists were not interested in each other's subjects, or found it difficult to work together. An advanced procedure was to merge two or three subjects together. For example, American colonial history and geography might be combined so that when considering New England history, the same class would study the geography of the area and its relation to the historical development of the region. This would be repeated in the study of other areas of colonial history; or other subjects might be merged together under one teacher.

A more advanced form of fusion combined the content of two or three subjects around problems that drew upon the content of each. A teacher of high school physics and chemistry decided to combine these subjects and organize them around practical problem situations that drew upon the content of each; as, "How Can I Air-Condition My Home?", or "What's Wrong with the Photograph?" as he presented a kodak picture out of focus and fading.

3. Broad Fields:

When the attempt is made to pass beyond the combining of two or three subjects into one course and integrate several subjects into a single course, by either of the methods illustrated above in fusion, it is usually called a broad fields approach at curriculum reorganization. There are two general patterns employed in the broad fields (general education) approach. The first brings together

- (1) Language Arts
- (2) Social Studies
- (3) Science and Mathematics
- (4) Health and Physical Education
- (5) Fine Arts and Music

This broad fields pattern maintains the centrality of the subject curriculum but does provide more flexibility to give interrelatedness and to provide the possibility of otherwise inert subject matter becoming meaningful to the learner. As has been discovered, this form of the general curriculum very often has led only hesitatingly in the direction of a vitalized curriculum. It enables the tradition-bound specialist or the timid teacher to remain close to the subject framework with little dynamics to his teaching.

The second type of broad fields curriculum organization can be illustrated clearly on the proposal to organize the curriculum into functional patterns focusing attention upon broad areas of

living without reference to any subject field. Very early in its serious curriculum deliberations the North Central Association of Colleges and Secondary Schools suggested the following broad fields or general education pattern:

- (1) Health and Physical Fitness
- (2) Leisure Time
- (3) Vocational Activities
- (4) Social Relationships¹

Such an organization of the general studies program into the type of broad fields devinitely encourages the teachers to think in terms of broad functional areas and to develop their teaching around meaningful aspects of these areas. When this form of broad fields is used the school may be far removed from the traditional curriculum. It may not be far from the core curriculum organizational concept.

May we now consider the core approach as a vital functional pattern of curriculum development for the disadvantaged members of The Junior College District? In the statement made available to members of The Junior College District Consultation Committee on the Educationally Disadvantaged Student, June 11, 1965, at St. Louis, I drew attention to some of the pertinent psychological principles or ideas underlying the Core Curriculum concept:

1. The core approach is completely committed to the psychological principle that all learning comes to the individual through his experiences;
2. The interpretation or meaning the individual gains from these experiences will vary with each learner dependent

1. Lewis W. Webb and Others. High School Curriculum Reorganization. Ann Arbor: North Central Association of Colleges and Secondary Schools, 1933; Lewis W. Webb, "Ten Years of Curriculum Planning by the North Central Association," Curriculum Journal. 8:23-238, October, 1937.

upon the total background of his previous experiences. Each learner brings to a new situation a particular experience set which is the resultant of all his previous experiences. Thus his reaction to the interpretation of the meaning of this confrontation with a new situation will be made in conformity with this particular total experience background which he has had. Learning from a given confrontation in the classroom or elsewhere will be different for each student. Thus the important principle of individual differences becomes crucial in any learning experience;

3. The core theory is based upon the psychological principle that learning is the change in behavior that results from each new experience or series of similar experiences;
4. Core also is based upon the principle that learning involves the reaction of the total organism;
5. Core is based upon the Organismic-Field theory of learning;
6. Growing out of the Organismic-Field theory of learning is the principle that motivation is essential to learning, and that motivation arises from the definite purpose or goal seeking of the learner;
7. With the acceptance in Core of the Organismic-Field theory of learning with its emphasis upon purposiveness and goal seeking in learning, "Problem solving" and "critical thinking" become central in learning.

A CORE PROGRAM

The definition of the Core Program quite generally accepted among Core leaders may be stated as follows:

The Core Program refers to the total organizational activities of that part of the school curriculum devoted

to the determination of the personal and social competencies needed by all and the procedures, materials, and facilities by which the school assures the adequacy of the learning experiences essential to the development of these competencies.

This definition of the Core Program based upon the psychological concepts referred to above lead inevitably to the characteristics which set the Core apart as it is placed into operation within the school. The list of characteristics of Core which are given below are typical of numerous lists that have been developed by the leaders of the Core Curriculum as observed in school practice and as these characteristic behavioral practices are considered natural outcomes of the psychological and philosophical foundations of Core. Consequently, these statements should be pertinent to the consideration of the problems involved in setting up a valid educational program for the disadvantaged of this community, and possibly of other communities.

CHARACTERISTICS OF CORE

1. The Core idea is based upon the fundamental psychological principle that learning involves change in behavior which is brought about through experience; and that the curriculum consists of those types of learning experiences most likely to produce desirable behavioral change.
2. The Core is organized around those type problems of personal and social concern common to all youth in our democratic society.
3. It seeks to draw upon a wide range of informational sources, materials, and appropriate activities necessary for the solution of these vital problems of personal and social concern. Whatever in the total environment will contribute to the solution of these problems is considered "grist for the mill" by the alert discerning teacher. It involves a complete disregard of existing subject matter lines or subject matter emphasis.

4. The Core emphasises the utilization of genuine problem solving procedures and techniques in the solution of personal-social problem situations.
5. The Core involves and provides for a wide range of teacher cooperative curriculum planning. The Core curriculum activities must be seen and planned for as a whole, and by all teachers as a group as well as individually. In the Core, teachers do not function as "prima-donnas" within their own preempted areas, but as a part of a professional team contributing their general and special skills to the common goals of helping boys and girls develop in minimal degree those competencies for successful living.
6. The Core involves the joint planning of pupils and teachers for the solution of vital problem situations.
7. The Core makes individual and group guidance an integral part of teaching; accepting as the basic responsibility of the Core teacher many of the major functions now assumed by guidance specialists and counselors in the more traditionally organized schools with a subject matter type compartmentalized curriculum. In the Core idea teaching and guidance become largely synonymous terms.
8. The Core idea involves a recognition of the over-all organization of the curriculum into two highly integrated and interrelated divisions; namely, (1) the Core program devoted to the types of problems common to all youth and the common competencies all must possess to function successfully in our democratic society, and (2) the section of the curriculum devoted to the development of the special concerns of the pupils in which individual interests, aptitudes, and abilities are explored and the requisite skills for each are provided an opportunity for development. Both divisions of the curriculum are based squarely upon the recognition that the same principles of learning, teaching methods, and problem organization are equally essential and effective for both.

9. Administratively important to the success of the Core idea is the provision of large blocks of time in the day's schedule to facilitate the maximum use of problem solving processes, guidance and use of community resources.
10. Administratively important to the success of the guidance function of the Core idea is the need to provide for longer intervals of time association between Core teachers and pupils in order that teachers may know the pupils better, their environmental backgrounds, their interests, abilities, and learning development. Some schools are experimenting by allowing teachers to remain as advisors to a group for two or more years.

ORGANIZATION OF CORE

There is a definite form to the organization of Core. It is important at the very beginning to see that organization in its consistent pattern and note how it differentiates itself from the subject discipline pattern which also follows a logical sequence of form though basically different. It should become clear that a basic cleavage is present both in concepts and the sequential development of each. Further, it should become obvious that there are implicit in either, radically different educational procedures which may have far reaching educational implications for the disadvantaged group.²

1. Roland C. Faunce and Nelson L. Bossing. Development of the Core Curriculum. Second Edition. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1958, pp. 59-60.

2. From our point of view, these implications are valid for the rest of the student body. However, they can get by as they are; the disadvantaged cannot. The upper level students are not an issue here.

OBJECTIVES

The difference between the Core and subject curriculum concepts comes quickly to light in the statement of objectives. The well-known lists of objectives, except those put in by one educational agency, have shown the implications of the subject emphasis upon the curriculum. The early, more curde type of objectives statement was likely to be cast in a memory form. Indeed, most of the examinations of a former generation were largely informational in form as it was true that at the turn of the century the school curriculums and textbooks were compendiums of information. Even today few would deny that much of what we hold out for students to learn and later evaluate them upon is informational in character. Our schools are giving emphasis to the acquisition of information-knowledge which can be reacted to on a pencil-paper examination with a maximum of memory and a minimum of thinking or evidence of change in behavior. There is almost no evaluation of behavioral change principally because our objectives have not required behavioral change.

It was not until 1938 that one of our very influential national education organizations startled the educational world by publishing a list of objectives cast in the form of behavioral change. This set of objectives was based upon a new theory of learning and the objectives were consistent with the basic learning principle of Core "that learning takes place through experience," and that "experience results in change of behavior."

This set of objectives was the first prominent list of objectives stated in an active behavioral form and thus a logical set of objectives for Core arising out of the same psychological and philosophical thinking that gave rise to the Core idea. This famous statement of objectives is given below in full. Unfortunately the Commission did not maintain throughout a complete active behavioral statement form though this form of statement is implied.

THE PURPOSES OF EDUCATION IN AMERICAN DEMOCRACY

THE INQUIRING MIND: the educated person has an appetite for learning.

SPEECH: the educated person can speak the mother tongue clearly.

READING: the educated person reads the mother tongue efficiently.

WRITING: the educated person writes the mother tongue effectively.

NUMBER: the educated person solves problems of counting and calculating.

SIGHT AND HEARING: the educated person is skilled in listening and observing.

HEALTH AND KNOWLEDGE: the educated person understands the basic facts concerning health and disease.

HEALTH HABITS: the educated person protects his own health and that of his dependents.

PUBLIC HEALTH: the educated person works to improve the health of the community.

RECREATION: the educated person is participant and spectator in many sports and other pastimes.

INTELLECTUAL INTERESTS: the educated person has mental resources for use of leisure.

AESTHETIC INTERESTS: the educated person appreciates beauty.

CHARACTER: the educated person gives responsible direction to his own life.

THE OBJECTIVES OF HUMAN RELATIONSHIPS

RESPECT FOR HUMANITY: the educated person puts human relationship first.

FRIENDSHIPS: the educated person enjoys the rich, sincere, and varied social life.

COOPERATION: the educated person can work and play with others.

COURTESY: the educated person observes the amenities of social behavior.

APPRECIATION OF THE HOME: the educated person appreciates the family as a social institution.

CONSERVATION OF THE HOME: the educated person conserves family ideals.

HOMEMAKING: the educated person is skilled in homemaking.

DEMOCRACY IN THE HOME: the educated person maintains democratic family relations.

THE OBJECTIVES OF ECONOMIC EFFICIENCY

WORK: the educated producer knows the satisfaction of good workmanship.

OCCUPATIONAL INFORMATION: the educated producer understands the requirement and opportunities for various jobs.

OCCUPATIONAL CHOICE: the educated person has selected his occupation.

OCCUPATIONAL EFFICIENCY: the educated producer succeeds in his chosen vocation.

OCCUPATIONAL ADJUSTMENT: the educated producer maintains and improves his own efficiency.

OCCUPATIONAL APPRECIATION: the educated producer appreciates the social value of his work.

PERSONAL ECONOMICS: the educated consumer plans the economics of his own life.

CONSUMER JUDGMENT: the educated consumer develops standards for guiding his expenditures.

EFFICIENCY IN BUYING: the educated consumer is an informed and skillful buyer.

CONSUMER PROTECTION: the educated consumer takes appropriate measures to safeguard his interests.

THE OBJECTIVES OF CIVIC RESPONSIBILITY

SOCIAL JUSTICE: the educated citizen is sensitive to the disparities of human circumstances.

SOCIAL ACTIVITY: the educated citizen acts to correct unsatisfactory conditions.

CRITICAL JUDGMENT: the educated citizen has defenses against propaganda.

SOCIAL UNDERSTANDING: the educated citizen seeks to understand social processes.

TOLERANCE: the educated citizen respects honest differences of opinion.

CONSERVATION: the educated citizen has a regard for the nation's resources.

SOCIAL APPLICATION OF SCIENCE: the educated citizen measures scientific advance by its contribution to the general welfare.

WORLD CITIZENSHIP: the educated citizen is a cooperating member of the world community.

LAW OBSERVANCE: The educated citizen respects the law.

ECONOMIC LITERACY: the educated citizen is economically literate.

POLITICAL CITIZENSHIP: the educated citizen acts upon answering loyalty to democratic ideals.¹

AREAS

As the older statement of objectives implied a curriculum base that made possible the amassing of encyclopedic information--knowledge, and lead most naturally to a curriculum composed of compendiums of this information-knowledge organized into handy subject discipline areas, so the Core concept of learning also requires a radically different curriculum with logically consistent areas within which learning experiences can take place -- they do not take place in disciplines of rigid compendiums of unrelated facts-knowledge. The Core curriculum areas must be consistent with the psychological and philosophical basis of the Core concept. Logically, too, this behavioral learning required by Core must be behaviorally functional. Meaningless behavior obviously

1. The Educational Policies Commission, *The Purposes of Education in American Democracy*. Washington D.C.; The National Educational Association, 1938. It is of interest to recall that the same Commission six years later, 1944, was one of the major educational organizations to set up the Core Curriculum as an ideal for American secondary schools, in the now famous publication, *Education for All American Youth*. Washington, D.C.: The National Education Association, 1944 Revised 1952.

is ridiculous. Learning does not take place in a vacuum nor in irrelevant situations.

It might not be out of place here to observe that the old concept of the curriculum as subject matter, subjects, or courses of study is now obsolete in modern educational and curriculum thinking. Rather, the curriculum is now defined as the total environmental matrix provided by the school in which the learner has experiences and from which it is hoped desired behavior patterns will result. In other words, the school now is confronted with the necessity of evaluating the learning situations it tries to set up with the behavioral patterns or competencies that result.¹

ORGANIZATION PATTERNS OF THE CORE CURRICULUM

1. Virginia

Major functions of Social Life:

1. Protection and conservation of life, property and natural resources.
2. Production of goods and services and distribution of the returns of production.
3. Consumption of goods and services.
4. Communication and transportation of goods and people.
5. Recreation.

1. Further see Harl R. Douglas, Editor. The High School Curriculum. Third Edition. New York: The Ronald Press, 1964. pp. 23-24. Vernon E. Anderson, Principles and Procedures of Curriculum Improvement. Second Edition. New York: The Ronald Press Company, 1965, pp. 6. For discussions of the modern conceptions of the curriculum.

6. Expression of aesthetic impulses.
7. Expression of religious impulses.
8. Education
9. Extension of freedom.
10. Integration of the individual.
11. Exploration.

II. Mississippi

Major Areas of Human Activities:

1. Protecting life and health.
2. Home making.
3. Conserving and improving material condition.
4. Cooperating in social and civic action.
5. Getting a living.
6. Securing an education.
7. Expressing religious impulses.
8. Expressing aesthetic impulses.
9. Engaging in recreation.

III. Santa Barbara

Basic Functions of Human Living:

1. Developing and conserving personal resources.
2. Developing and conserving resources other than personal.
3. Producing distributing and consuming goods and services.
4. Communicating.
5. Transporting.
6. Re-creating and playing.
7. Expressing and satisfying spiritual and aesthetic needs.
8. Organizing and governing.

IV. Stratemeyer

Persistent Life Situations:

1. The family.
2. Civic social activities .
3. Work.
4. Leisure.
5. Spiritual Life.

References

1. Tentative Course of Study for the Core Curriculum for the Virginia Secondary Schools, Grade VIII, Richmond, Virginia: State Department of Public Instruction. P. 15-24.
2. Mississippi Program for the Improvement of Instruction Curriculum Reorganization in the Secondary School. Grades 7 - 12, Bulletin No. 7, Jackson Mississippi: State Department of Education, 1939.
3. Experimental Curriculum in the Santa Barbara City Schools , Bulletin No. 1, Revised Edition, November, 1941, pp. 22-63.
4. Florence B. Stratemeyer and Others, Developing a Curriculum for Modern Living, New York: Bureau of Publications, Teachers College, Columbia University, 1947, p. 22, revised Edition, 1957, Chapter 6.
5. A discussion of the Mississippi list is to be found in O. I. Frederick and Lucille Farquear, "Areas of Human Activities." Journal of Education Research , XXX, PP. 672-279, May, 1937.

To seek changed behavior, or learning through the kinds of experience situations to which the student is exposed requires that the school and the teacher reverse the processes of traditional teaching. Now attention

must be focused upon the educational ends desired and secondly upon the means. Concern must be with goals, the behavioral competencies desired of the learner, and then the means by which these are to be attained. The traditional disciplines are no longer in primary focus. Obviously the behavioral competencies which youth should achieve are to be focused in the areas of living environment where living naturally takes place, and in harmony with the psychological concepts of learning which underlie the Core idea, goal seeking for the learner must center around the personal, social-societal problems that concern the individual. Unless thus motivated, the learner is not challenged, learning does not take place, and we are confronted with the well-known results of dropouts and failures in school. Much worse, the competencies urgently needed with which to function in life are not attained.

To meet this situation, the Core approach organizes the school program around the recognized personal, social-societal problems that confront youth. So that these be genuine and vital problems to the immediate learners, it is essential that the students and teacher together determine what these are. These problems are then developed into units for instructional purposes by teachers and students working together, as part of the learning process for students.

The problem when organized into a unit represents basically the broad outlined steps in problem solving, since, in fact, the unit is the planned attempt to solve a genuine problem, and, thus, develops skills in problem solution. ¹

1. For more detailed discussion of the unit idea see: Roland C. Faunce and Nelson L. Bossing, Developing the Core Curriculum. Second Edition, Englewood Cliffs, N. J.; Prentice-Hall, Inc. 1958, chapters 6, 10, 11. Harl R. Douglas, Editor, The High School Curriculum, Third Edition, New York, The Ronald Press Company, 1956, Chapter 12. Nelson L. Bossing, Teaching in Secondary Schools. Third Edition. Boston: Houghton Mifflin Company, 1952, Chapter 3.

A PLAN OF OPERATION

From what has been indicated in this paper, there is a basic difference between the subject and Core approaches. It is the firm conviction of this consultant that the Core approach offers many advantages in moving toward solution of the problems faced by The Junior College District in its attempt to meet the educational needs of its disadvantaged youth.

The traditional subject discipline organized curriculum has failed, here as it has failed throughout the country, and I am convinced will continue to fail because it does not have the answer to the problems of the disadvantaged.

On the other hand, there has been presented in this paper the attempt of those who hold to the subject type curriculum to overcome some of their difficulties through some form of a "broad fields" pattern of curriculum organization. The most extreme type of organization that has been set up, as described, in reality abandons the subject curriculum in its organization. This second type of broad fields organizations would be a compromise approach to the solution of the problem of The Junior College District because it moves in the direction of Core. Its weakness lies in its attempt to hold on with one hand to the old and with the other hand grasp the new. Some good probably would result, it is better than the old, and in it some approach could be made to the needs of the disadvantaged. It is the contention here that only a clear cut recognition of the unique educational problem that confronts us and the acceptance of an educational plan that has inherent within itself the possibility of solving it, is worthy of the consideration of the staff of The Junior College District.

In order to experiment with the application of Core concepts to the development of the General Curriculum program, it would be necessary to make arrangements for a consultant to work closely with all consulting teams and junior college staff. Perhaps the major reason that Core has not been tried previously on the college level rests with the strong subject matter orientation of college instructors. A considerable amount of in-service training would be required to even move in the direction of a Core approach.

**A PROPOSED PROGRAM IN HUMANITIES
FOR THE GENERAL CURRICULUM**

William C. Hamlin

Danforth Consultant on Humanities Curriculum

University of Missouri at Normandy

INTRODUCTION

From what I have been able to gather concerning programs for low-level and remedial college students, I would suggest that most such programs are rather heavily oriented toward somewhat experimental rather than traditional methods and curricula. For instance, team teaching is widely employed, and there seems to be a much greater emphasis upon the use of various audio-visual media including tape recorders, record players, films, slide projectors, overhead projectors and the like. Also, there is an emphasis upon programmed materials in the basic skills.

The college curricula is likewise less traditional, more experimental. Old subject-matter boundaries are being hurdled or by-passed. New wider, and more-encompassing programs are being offered in their stead in the hope, surely, of creating an atmosphere in which it is or will become possible to relate and assimilate knowledge rather than view it in a vacuum. These programs attempt to define man's place in the universe by demonstrating not only its diversity, but its immediate accessibility.

Various programs in the sciences, social sciences, and the humanities have been geared to involve the student in his world, to challenge the mystery of the learning process, and to measure real achievement. Of course, most such curricula are in the process of development and results are not complete. It is to be hoped that these programs will remain in the process of development, that results will never be complete, but that student improvement and student confidence will be clearly observable.

The primary philosophy behind most of the programs I have encountered is two-fold: One purpose seems to be to salvage the student for further academic training and the other to salvage him for society. The emphasis varies according to the school, but I would suggest that our purpose in this proposal go one step farther and attempt to salvage the student for himself. This may appear to be a naive and somewhat romantic notion, but I assure you that there is more to the process of individual fulfillment than making acceptable grades in college and being accepted by

society. A man spends a good part of his life by himself, and unless he can contend with his own personality and his own abilities and his own interests, he is likely to wind up with anxieties and frustrations that do not necessarily correlate with either his academic or social standing.

With specific reference to a Program in General Education for the Educationally Disadvantaged, it would be the principal purpose of the Humanities Curriculum to provide the atmosphere conducive to self-discovery. It is clear that people do develop interests in subjects they know something about. The Humanities Curriculum would seek to involve the student in the necessity for thought, the obligation to learn, and the satisfaction of achievement.

The more a man knows, the better off he is, the richer his life becomes. If he knows the basic principles of logic, he is better equipped to understand his own position in the world. If he knows the basic principles of design, he is better able to understand and appreciate the myriad functional and esthetic forms by which he is surrounded. The same is true for music, for the challenge of philosophical thoughts, for literature. The man who can read and think, view with pleasure, and listen with satisfaction, is the man who will benefit most from his private hours. And it is here that a large part of his character is developed.

A HUMANITIES PROGRAM

In this proposal for a General Humanities Program for the Educationally Disadvantaged, it should be established at the outset that it is my firm belief that there are certain areas and aspects of the human personality which can never be tested or measured with any accuracy. One of these is the matter of simple satisfaction or pride. T. S. Eliot has stated with perfect awareness that there is no possible way to communicate emotion directly. One cannot look at his friend and say, "I am happy", or "I am grieved", and hope to transfer his own feelings. It takes more. It actually takes

metaphor for any degree of success. Similarly, the man who discovers something in literature or art or music for the first time in his life, who can generate a real interest in reading or looking or listening for its own sake; this man will be a difficult subject to "measure". Unless he, like Keats, can recreate the "emotion" of discovery, we must be content with observable advancement in performance or technique, but we must also remember and remain aware that people are more than packages of conditioned responses, and that if we could test and measure them completely, there would be little cause for concern with our present problem. The way would surely be clear.

The objectives for the General Humanities Program, as previously stated, are here restated as follows:

- a. The student will be brought to understand that he has the personal responsibility to develop his intelligence and his talents.
- b. The student will be brought to understand the necessity for the development of consistent, logical thought and study patterns and that they are fundamental to the learning process.
- c. The student will be brought to understand the necessity for effective communication.
- d. The student will develop the ability to improve the effectiveness of his own written and spoken language.
- e. The student will be brought to understand the cultural advantage derived from a knowledge of art, music, literature, and philosophy.
- f. The student will assimilate the basic principles of art, music, literature, and philosophy through exposure to and participation in a systematic, inter-disciplinary learning program.

- g. Finally, the student will develop the awareness that his existence and his personal responsibility are one; that he represents an organic segment of society; and that his conduct must reflect a commitment to work toward self-attainment for his own satisfaction as well as for the improvement of society in general.

With the assurance of more repetition, I will again state that the General Humanities Program as I foresee it should provide an integrated, inter-disciplinary offering in reading, writing, speaking, music, art, philosophy, and logic. Since the entire program for the Educationally Disadvantaged is to be taught by teams, there may be some confusion as to actual semester "hour" requirements, but in any event, I suggest that in the one-year sequence, the student takes the equivalent of at least twelve semester "hours" in General Humanities. Included within this "hour" load will be the English Composition sequence. I mention this particularly since I would like to propose a departure from the conventional approach to composition. Not only is composition frequently taught in an outmoded, frigid, deadly-dull fashion, it is also many times taught in a vacuum that bears no resemblance to anything familiar to the student. Whimsical instructors ask students to write on impossible subjects. Imagine being asked to write 500 organized, coherent words on "America Today," or "Man's Place in the Universe," or "Motherhood." Such marvelously general abstractions have about as much relevance for the average student, not to say the educationally disadvantaged student, as the rituals of Eskimo courtship might have for a cat. So much time is wasted simply because writing is not related to reality, to the tangible here and now.

One more egregious example of near universal nonsense in composition program is the hallowed ceremony of the research paper. Why is it that one is led to believe that the apotheosis of writing competence is achieved at the moment one can finally follow a style sheet and get all the commas in the right places? Of course, there should be more than this to the research exercise and there usually is, but the simple fact is that although the research paper may be helpful in instructing the beginning student in research, it rarely, if ever, teaches him the slightest thing about writing.

My suggestion at this point is that during both semesters of the Program in General Education for the Educationally Disadvantaged, the Humanities offering be oriented toward intensive training in reading, writing, speaking, and logic; as well as in art, music, and philosophy to a somewhat lesser degree. The difference between the first and second semesters would be not in kind but in degree. There would simply be progress in the sophistication of materials and hopefully of response. If possible, I would like to see the program organized either on a daily basis or in two-hour sequences, three days a week; for the student who is an extremely low tester in verbal capacity, I suggest a fundamental learning laboratory with programmed instruction. This, however, should be extra, and the student should participate as well in the regular Humanities program.

The fundamental direction of the Humanities program is toward awareness. This necessitates thought, and thinking people have a way of demanding communication. Through the integration of reading materials including essays, plays, stories, novels, and poetry; through an introduction to basic principles of logic and philosophical concepts, through exposure to art and music, the student may be brought to understand that communication has many media, that communication or the desire to communicate is innate in man and that the ability to communicate should and must be developed. From this beginning we should make use of every means available to create and hold interest in the program.

I think that the way to do this is to place the student in a living context with people like himself. I think that the students should learn to share the errors of others and to appreciate improvement. I think that the more spirit the teaching team can develop, the greater success the program will have. One means of developing enthusiasm is by using every audio visual device which has any utility whatsoever. We can make extremely productive use of records, slides, tapes, films and transparencies of the student's own work. Another means of establishing rapport is actually to compile and print, perhaps in workbook form, the collection of student themes. Another is to provide for independent study space. Another is to involve the students themselves in classroom presentation

beyond merely listening or answering a question now and then. Literally, there are as many ways to generate and maintain interest as the good, imaginative teacher is willing to try.

Here I should mention that although I do not believe in coddling students, I do believe that a sensible, one-step-at-a-time approach should be established, especially at the beginning of the program. One does not teach a child to speak words by giving him a phonograph record of Hamlet, and neither does one teach an educationally disadvantaged student about art, music, literature, or anything else by plunging him up to his ears in tradition. The educationally disadvantaged student is not ready for Oedipus Rex. He may be ready for Death of a Salesman, or Streetcar Named Desire, or Come Back Little Sheba, but he is not ready for Sophocles. He is not ready for Shakespeare either. The language is too difficult. The student is frustrated by terms, places, by history itself. Place him first in the present. Orient him to the literature, the art, the music, the ideas of his own time; help him achieve an interest in communicating not only his reactions to ideas but his own ideas. Do not be concerned at first with style; look for simplicity, directness, accuracy. One step at a time toward whatever degree of sophistication the student can attain.

**A PROPOSED PROGRAM IN SCIENCE
FOR THE GENERAL CURRICULUM**

Carl Kisslinger

Danforth Consultant on Science Curriculum

St. Louis University

INTRODUCTION

As with every part of the curriculum to be developed for the educationally disadvantaged, the science program is to be designed to meet the special needs of this group. Unfortunately, at this time no one really knows what their needs are, and indeed, the identification of these needs will be one of the substantial contributions of the experimental program. We must, therefore, formulate objectives of the program which seem to be appropriate in view of our present impression of the needs of these students, with the understanding that sufficient flexibility is to be allowed so that changes in approach, subject matter, and even the objectives themselves can be instituted if experience indicates the original concepts were unrealistic.

The likelihood of any of the students in this program eventually becoming scientists or engineers is so remote as to be negligible. The objectives of the science program, therefore, become those of the science programs in all general or liberal education curricula, but somewhat altered by the special problems of these students. The program will contribute to the general cultural background of the student, to help prepare him to function as an informed citizen in a technologically oriented society. But in addition the program will take advantage of whatever natural curiosity the student has about his environment to stimulate his general academic performance. The guiding philosophy has been stated by Eric N. Rogers (1948):

"In general education, ...we need not try to equip everyone with a lot of scientific knowledge (that can be stored in books or left to the professionals); but we do need to give an understanding of science and its contribution to the intellectual, spiritual, and physical aspects of our lives."

The following objectives are postulated as desirable and capable of fulfillment in the science program. Upon completing the science program, the student should be able:

1. to recognize that his total environment is made up of both visible and invisible components, and to describe his environment in terms of these components;
2. to recognize the universal variability of the components comprising his physical environment and to discuss some observed changes in terms of the laws of physics and chemistry;
3. to interpret changes in his environment in terms of the interaction between components, with the principles of conservation of mass and energy as unifying elements;
4. to trace the history of the development of a few important ideas in science in terms of a sequence: observations, empirical laws, formulation of a question, further observations, formulation of an hypothesis, tests of the hypothesis, further observations, etc. Example: planetary motions and the structure of the solar system, the universal law of gravitation, the atomic structure of matter, the dual nature of electromagnetic radiation, genetics and the transmission of characteristics to offspring;
5. to establish mathematical models of simple physical systems and use mathematical operations on these models to derive conclusions about the systems. He should be able to recognize the role of simplifying assumptions in the establishment of mathematical models, and be able to distinguish between assumptions, conclusions, and generalizations (Dressel, 1954);
6. to read with comprehension popular articles on some aspects of science and to use library facilities to find background on interesting articles on unfamiliar subjects;

In addition to these specific objectives, the students should come to appreciate science as one valid method of seeking the truth, one method of solving problems. He should recognize that the conclusions

of science are always tentative, and that scientists should be prepared to revise their conclusions as new data become available.

Since 1958, a great deal of effort has gone into the development of new teaching materials and new approaches to science education in the elementary and secondary schools. The most obvious result of this effort is the development of new secondary school science courses, for example, PSSC physics, BSCS biology, and ESCP earth science. Although these new programs have not met with unanimous approval, they have gone a long way toward changing the content and approach of science programs to be more in correspondence with the needs of today. The Keynote of these programs is investigation. The students are given the opportunity to discover conclusions of science from their own observations; they are not submerged under a flood of unrelated facts.

There has been no comparable organized effort at the college level. Colleges have slowly come to recognize that a meaningful science experience is essential to a liberal education, but the development of suitable programs is far from complete. Many institutions are experimenting with the content and approach of science courses for non-science majors.

Advances in the development of such courses are of interest to the Junior College District program, but they cannot provide the complete solution for the special type of student being considered here. The courses in physical science being developed are aimed at the average to above average college student, not the educationally disadvantaged. They can, however, provide useful guidelines for the Community College program, though the depth and breadth may have to be reduced.

The results of the Community College experimental program will be, in turn, of interest to college faculties and administrations working on the development of science programs for non-science majors. Even though this program is directed to the needs of a specific population, conclusions applicable to a much wider group should be obtained.

One tangible evidence of the attention that science education for the general college population is receiving is to be found in the number of new text books that have appeared in recent years. These books attempt to give an overview of physical science as a unified discipline. The best of these books are more than "surveys" of science. Selected concepts from physics, chemistry, astronomy, and geology are presented as separate topics, but an effort is made to show the essential interrelation of these traditionally distinct disciplines. Some of these use the investigative and historical approach which is to be employed in the Community College science program, and one of them might be suitable as the basis of the course. None of these books includes biology, and if topics from the life sciences are to be included, other materials will be required.

The following are recent books of the type that has been described. All are written at the college freshman level.

- 1) Anfinson, Olaf P., Understanding the Physical Sciences, Boston: Allyn and Bacon, Inc., 1963.
- 2) Cleveland, John M., Physical Science, Columbus, Ohio: C. E. Merrill Books, Inc., 1964.
- 3) Miles, Voden W., Phelps, Everett R., Sherwood, G. Ray, and Parsons, Willard H., College Physical Science, New York: Harper and Row, 1964.
- 4) Rosen, Sidney, Siegfried, Robert, and Dennison, John M., Concepts in Physical Science, New York: Harper and Row, 1965.

The laboratory investigations developed for the new secondary school science programs can be readily adapted to the Community College experimental program. These investigations do not emphasize laboratory technique or the manipulation of elaborate equipment. The emphasis is on the interpretation of data by the student. In many of the

The choice of the particular topics to be included in the program is not very important. They should be significant scientific problems that illustrate the evolution of knowledge referred to above. The choice can best be left to the individual instructor, depending on his special interests. At least some of the topics should relate to the student's immediate environment. Material from meteorology and geology lends itself well to direct observations by the student. Meaningful observations of the motions of the sun, moon, and planets can be made by students, enabling them to conclude, under guidance, something about the structure of the solar system. Part of the research under the program will be directed to the determination of the broad areas of science of greatest interest to these students. The initial choice of topics should be broad enough to permit a test of this question.

A PLAN OF OPERATION

It is likely that one of the freshmen level texts listed above, or the equivalent, can be used initially as the basis of the science program. The books will have to be examined for reading level, in view of the difficulties of the student group involved. A sequence of laboratory investigations will have to be developed, and these investigations should be the basis of class discussion, lectures and other classroom activities wherever practical.

The laboratory manuals of the new physics, chemistry, biology, and earth science curricula for secondary schools will be valuable source of ideas for suitable investigations. A new laboratory manual will be developed as part of the experimental program. Audio-visual aids such as motion pictures, film strips, and film loops are readily available for all important areas of science.

The most obvious interdisciplinary opportunity is that relating the programs in science and mathematics. The students should be required to use the mathematics at their command throughout the science program, and some problems in the mathematics program should relate directly to the topic studied in science. In this way, the students will be given added motivation for learning mathematics; and will come to understand the quantitative nature of science. The students should also come to realize that much of mathematics was invented because it was needed to describe the world in which men live. From counting,

investigations the student does not know how the experiment is supposed to come out, and he is not trying to prove that something he has been told beforehand is true. The advantage of this approach in developing attitudes of open-mindedness and intellectual honesty is obvious.

A SCIENCE PROGRAM

As stated above, an investigative approach to scientific knowledge is to be employed. Strong emphasis will be given to the evolution of man's understanding of the universe and his immediate environment.

An investigative approach requires much time for the development of a single major idea. This, in turn, implies that only relatively few topics will be included in the program, and no attempt will be made to "cover" in detail all of any branch of science. It is felt that this approach will best serve to impart to the students a feeling for the methods of science. These students do not need a large number of scientific facts at their disposal. They can be given the rewarding experience of enjoying the excitement of discovery of the operation of some aspects of the world they live in.

The intent of the historical approach is to encourage the students to be critical in their reading about scientific discoveries. They will learn that accepted scientific theories are the end product of long and often painful effort by many investigators. Our knowledge of science does not spring fully grown from the foreheads of infallible geniuses. If they come to associate advances in science with individual men, men who made mistakes and men who were often misled by preconceived notions, they will develop a healthy skepticism concerning some of the sweeping pronouncements they are likely to encounter later. On the other hand, they will come to appreciate even more the tremendous accomplishment represented by the great scientific discoveries of the past and the present. We do not need citizens who stand in awe of science; we need a population that appreciates the world in which they live.

to land measurement, through the study of motion and the behavior electrons in atoms, mathematics and science have grown together. This viewpoint in no way will detract from the importance of pure mathematics.

The historical approach to be adopted lends itself well to the interrelation of the physical sciences and the social sciences and history. The students are growing up in a world in which the impact of new scientific knowledge on society is immediate and of utmost importance. The importance of the great shortening of the time interval between the discovery and the application of new knowledge in the last fifty years or less can be emphasized.

Scientific discoveries have had great impact on philosophy and attitudes toward religion. These areas offer another opportunity for relating the science and humanities parts of the curriculum.

REFERENCES

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**A PROPOSED PROGRAM IN MATHEMATICS
FOR THE GENERAL CURRICULUM**

Alfred L. Putnam

Danforth Consultant on Mathematics Curriculum

University of Chicago

INTRODUCTION

We are dealing here with a population rated as the lowest third of entrants to The Junior College District. All will have graduated from high school, but in absolute terms their academic performance has been disappointing. Yet all will have voluntarily undertaken a further experience in learning. This group comprises students of innately low ability, slow learners, the culturally disadvantaged, and some under-achievers. It is doubtless not possible at admission to distinguish sharply which of these categories a given student actually belongs to; moreover, the classifications themselves are doubtlessly overlapping. It may be expected, however, that in the course of the year's program in the General Curriculum most students will tend to sort themselves out into one or another of these categories.

There are a number of variables affecting this population, bearing on the design of any program in mathematics, which relate to the experience of the students with mathematics, e.g., the extent of school and possibly other work in mathematics, the knowledge and skills effectively available as a consequence of that work, the quality of the experience with mathematics and the attitudes this has engendered. While it is not prerequisite to the establishing of an effective mathematics program that all such variables be evaluated for all students, it is important for the progressive modification and improvement of the program that as much information as possible about students be accumulated from the achievement tests, aptitude tests, psychological assessments, and the like. In short, a part of the record of every student should be a profile relative to mathematics.

The most significant learning occurs, it may be reasonably supposed, when the learner addresses himself to some pursuit aimed at advancing purposes which he apprehends and largely accepts, and in which he involves his brains, feelings and other capacities. One plausible argument for including mathematics in the General Curriculum is its probable usefulness, in such guises as shop mathematics or business mathematics, in the occupations in which students may be presumed ultimately to be engaged. Indeed, this view acquires added force

from the undeniable concern of students that what they study should be of some demonstrable utility. Without in the least discounting the validity of this position, however, a good case can be made for the even greater potential utility of a mathematical way of looking at problems and a mathematical way of going about their resolution. It is this approach to mathematical method, exemplified in a variety of situations, which is the purpose adopted for the mathematics component of the General Curriculum for The Junior College District.

The general aim, then, is to provide an organized and genuine experience in mathematics which:

1. Centers on a series of perhaps half a dozen significant and relatively self-contained problems capable of mathematical formulation, though usually not already occurring in that form.
2. Develops particular mathematical principles and techniques within the context of their actual relevance to solutions of these problems, even partial ones.
3. Seeks explicitly, and with progressively greater emphasis, to identify and exploit deeper mathematical elements shared among the principles (and techniques) evolved to handle seemingly desperate problems.
4. Places limited demands on detailed mathematical knowledge and skills presumed to have been acquired from the study of mathematics in school, and, over and over, calls upon a few basic principles in arithmetic, algebra, or geometry which are applicable in a variety of situations.
5. Does not obstruct further study of mathematics in standard courses.

It may perhaps be said that this is a much too abstract view of mathematics. It is abstract, to the extent that it is only by considerable abstraction that we can sufficiently separate a principle or technique from the particulars of its original exemplification to render it applicable, and therefore useful, in some new situation. Furthermore, it may be noted that there is some evidence that for the culturally disadvantaged, mathematical abstractions (and symbolism), which - because of the special language--do not have to meet a conflicting common language in the students' homes and social environment, are more successfully dealt with than are literary or other subjects in which a less specialized language is used.

A MATHEMATICS PROGRAM

The program in mathematics must meet two basic conditions: It should make limited demands on detailed knowledge and skills derived from school studies, to minimize the impact on students of any cumulative deficit in mathematical learning; it should provide during the year for a number of clearly marked fresh starts on new problems, to guard against the negative effect on students of cumulative failure in mathematics. What precisely is studied in this year of mathematics is, to a considerable degree, less significant than the way it is studied, though it by no means follows that all mathematical topics therefore have an equal claim for inclusion in the program. The topics presented as units for the course are offered in a sequence which is planned to establish at the beginning a certain framework in descriptive set theory and elementary logic and to reach at the end an analysis of one concept of great mathematical power, that of function. As for the conceptual structure and methodology of mathematics, these should become progressively more evident as they are made to emerge from their exemplifications in the different problems which are treated. (It is further hoped that some mathematical models fruitful for the natural and social sciences and humanities can be carefully developed.)

Following is the proposed list of mathematical topics. It is to be emphasized that these are intended to be presented as problems which offer prospects for consequential mathematical analysis. Standard expositions should occur relatively rarely.

1. Sets and elements of logic: From an initial conception of a set as a collection of objects, the aim will be first to establish a useful language of sets, in terms of which relations between sets and operations on sets can be formulated. Some problems in comparing and counting sets can be investigated. The work in logic will aim at an analysis of the simple logical structure of sentences in terms of truth and falsehood and the compounding of sentences by means of logical connectives considered as operations (e.g., conjunction, denial). Relations of equivalence and implication between sentences will be considered in investigating how to tell in some cases when two sentences mean the same thing logically or when one logically follows from another. The intention throughout this whole unit is not to teach sets or logic as such but rather to introduce mathematical concepts which will recur over and over in succeeding units, and by exhibiting their fruitfulness to establish them as parts of each student's working mathematical equipment. Neither sets nor logic will have the appearance of being just like school mathematics, and this can be a substantial advantage. Sources: Notes (There are many sources from which this material can be adapted, one being Kemeny, Mirkil, Snell, and Thompson, Finite Mathematical Structures, Prentice-Hall, 1959).
2. Coordinate geometry: The unit will open with the problem of locating points on a surface (e.g., street addresses, maps) and introduce the concept of coordinate system. Coordinate systems on lines will be considered and therewith the representation (graph) of a set of numbers as a set of points. Coordinate systems in planes will follow and be specified to a rectangular

Cartesian system. Distance between points can then be treated in terms of coordinates. Sets of points representing sets of ordered pairs of numbers obtained from equations or other sentences will be examined. The converse problem of finding for a given set of points an equation or other sentence which yields that set of points will also be considered. Circles and lines in particular will be dealt with. Sources: Taylor and Wade, Subsets of the Plane: Plane Analytic Geometry (John Wiley, 1965).

3. Computation: First to be considered in this unit are some simple properties of numbers in decimal form (e.g., "casting out nines," representation by repeating decimals). Representation of numbers in bases other than ten can then be studied. Substantial experience with computation with approximate numbers will be a large part of the unit, including construction of a table (e.g., square root, sine). The aim here is to promote a more active and flexible attitude to calculations with numbers by exhibiting these in new ways. Opportunities for "educated guessing" can be provided at many places. Sources: Courant and Robbins, What Is Mathematics? (Oxford, 1941); School Mathematics Study Group, Mathematics for Junior High School (Yale 1961);
4. Area: The problem here is to arrive at a usable and mathematically satisfactory concept of area for at least a certain class of plane regions which includes all polygons. The point of departure is the principle that one region is considered to have the same area as another if the first can be cut into a finite number of pieces which can be assembled to form the second region. The analysis can be carried toward the point of defining area for regions not exclusively bounded by straight lines as a limit of successively more refined polygonal approximations. The area of a circle can be found in this way. Sources: Boltyanskii, Equivalent and Equidecomposable Figures (D. C. Heath, 1963); Archimedes, Measurement of the Circle (in The Works of Archimedes, Dover, 1956);

5. Probability: In this study an orderly analysis of chance events which has predictive power will be achieved. Here the earlier descriptive set theory comes powerfully into play, events being considered as sets of outcomes in a space consisting of all possible outcomes. In addition to standard problems (e.g., coin tossing), some less familiar ones can be considered (e.g., projecting the behavior of a thumbtack which is repeatedly tossed, setting bets, dissolving a partnership equitably). Sources: Goldberg, Probability: An Introduction (Prentice-Hall, 1960); Mostelier, Rourke, and Thomas, Probability with Statistical Applications (Addison-Wesley, 1961).
6. Motion in a straight line: The plan of this unit is to study linear motion with the aim of supplying a suitable mathematical model for it. Some mention of the history of the problem can usefully be made. A study of falling bodies and of the inclined plane will be included. Approximate computation, graphical presentation of data, curve fitting, and use of formulas to express results will all be important in these investigations. Sources: Physical Sciences Study Committee Texts (Heath, 1963).
7. Functions: A function will be explained as a rule which associates with the members of one set uniquely members of another set. One form in which a function can be presented is graphical: a function can be identified as a certain set of ordered pairs. Graphs of functions will be studied to analyze the behavior of the functions represented. A second form in which a function can be presented is through an equation: values of the function can be computed for assigned values of a variable. Formulas which specify functions will be studied in this connection. Throughout the unit there will be ample opportunity to draw from the preceding units many and varied examples of functions. The aim will be to exhibit the power of the concept of function to organize a great range of mathematical phenomena, and to show the applicability of functions.

Sources: There are many sources which can be adapted, one being College Mathematics Staff of the University of Chicago, Concepts and Structure of Mathematics (Chicago, 1954).

To recapitulate, from the abundant problem areas in which mathematics can figure significantly, those outlined give the intended scope and approach of the year's program. By beginning with problems, and moving through tentative to more exact mathematical formulations, the planned sequence could evoke in students a more active response to situations in which mathematical analysis may be productive. Furthermore, there is ample opportunity to exhibit purely abstract mathematical forms and structures as these are progressively identified. Finally, the suggested units include a good range of what is conventionally regarded as standard mathematics.

Major anticipated behavioral outcomes of this mathematics program are specified below. These are to be understood as represented in behavior which can be observed, or as capacities which can be inferred from observed behavior. As such they should, therefore, be open to testing:

1. Knowledge of certain mathematical concepts and facts (e.g., inclusion (sets), graph of a set, locus (geometry), order (arithmetic), error (arithmetic), value of a function);
2. Ability to use directly in relatively simple application mathematical skills and techniques (e.g., finding the connective pattern of a sentence (logic), transforming equations into equivalent forms (algebra), constructing the graph of a sentence (geometry), adding and multiplying decimal approximations of numbers (arithmetic), computing the value of a function);
3. Ability to identify in a situation not too complex, elements capable of some mathematical analysis, to formulate out of these a problem to be treated, to carry this treatment some considerable way toward a solution of the problem, and to check the solution obtained against the problem as stated.

A PLAN OF OPERATION

In the 1940's, at a number of colleges and universities, there were successfully developed mathematics courses in programs of general studies, which more adequately reflected the nature of mathematics and its relevance to other disciplines than did the then traditional freshman and sophomore courses. Notable in this undertaking were Yale, Chicago, Reed, Haverford. In the 1950's, efforts were initiated to improve the secondary school mathematics program by bringing it more into touch with developments in mathematics, and especially by bringing into evidence more of mathematical structure, by providing new text material, and by providing for in-service training of teachers in new ways of doing school mathematics. Some of the innovations in elementary undergraduate mathematics of the 1940's became prominent in these school programs. The University of Illinois Committee on School Mathematics and the School Mathematics Study Group have had the greatest impact and continue to do so.

Now in the 1960's there have been many reviews of the relationships between secondary school and undergraduate mathematics. The Committee on the Undergraduate Program in Mathematics, the Cambridge Conference on School Mathematics, and the School Mathematics Study Group have made recommendations and will do more along these lines-regarding the mathematics which spans the late secondary school and early undergraduate years. Moreover, there is growing concern for the educationally disadvantaged school population. Here is where the mathematics component of The Junior College District General Curriculum fits, and it is from the new school or college programs so far achieved that materials can be found for the program. Among possible sources are the series "Topics in Mathematics" produced in English-language adaptation by the Survey of Recent East European Literature in School and College Mathematics (published by D. C. Heath), the series "New Mathematical Library" produced by the School Mathematics Study Group (published by Singer), Polya's "Mathematical Discovery", and a number of series of mathematical expositions (published by Heath, Webster, and others). None of these may quite meet the requirements at The Junior College District for presentations of material in mathematics, but they can certainly be of value in providing material which can be modified appropriately.

The provision of mathematical material (not excluding any of the various forms in which it is technically feasible to present it today) is a major necessity for the mathematics program outlined. At first, however, it seems desirable to keep matters relatively simple, and anything short of outright standard expositions could be tried. What is wanted is enough in the way of presentation in a suitable form to get students really involved with a problem. Where the inquiry may then lead is not easily predictable, and should most emphatically not be rigidly specified. The greatest responsibility rests with the teachers, for if they are clearly competent, are excited about what they are doing, and are prepared to guide rather than direct, then even with rather spotty materials the work is bound to progress favorably.

Not to be forgotten is the necessity to assess the progress of the students in their work, the effectiveness of the design for teaching, and the extent to which the course is achieving the ends set for it. It is certain that special tests will need to be devised to do this job satisfactorily.

In order to supply necessary direction and support in mathematics for the program, at least one consultant will need to be available regularly. More desirable still would be a group of three consultants, with one as principal, to provide greater range and to insure that the program will not reflect too much the personality of one man. Under such a plan, the group of three consultants might meet twice a year, once near the beginning to see the program in motion, and once at the end to review the operation with the teaching staff. The principal consultant should be available before points of transition from one unit to another during the year, to assist the teaching staff with certain mathematical background and to plan with the staff the presentation of the unit to come.

**A PROPOSED PROGRAM IN SOCIAL SCIENCE
FOR THE GENERAL CURRICULUM**

Steven Vago

Danforth Consultant on Social Science Curriculum

**The Junior College District - St. Louis, St.
Louis County, Missouri**

INTRODUCTION

It is not possible to adequately consider the handling of a general education program without raising some basic questions about the purposes and nature of education at the Junior College District.

The task is not conceived as one of establishing some sort of balance among fields and departments, rather, to find fundamental ingredients of education which may concern more than one department, just as one department may seek to supply more than one ingredient, thus at the level of general education, the student of biology needs to learn not simply biology but something of the meaning of scientific method and of man's dependence upon other forms of life. In these matters the concern of the teacher of a biological science will be shared by teachers in other scientific, and even non-scientific disciplines. This single illustration could, of course, be duplicated in many other fields.

The fact that a fundamental educational ingredient may be implied by several fields in no way insures that a student will get conscious possession of it. The hero of Moliere's Le Bourgeois Gentilhomme was greatly surprised to find that he had been speaking prose all his life. Some students might be equally surprised to discover that certain well-known scientists, artists, and political figures about whom they receive information in their various classes were contemporaries and were influenced by common problems. They might enjoy the opportunity to learn that teachers in different disciplines are really talking about similar issues, but by failing to understand issues which pervade many of the things they study, the students are not able fully to utilize what they have learned.

It is often said that good teachers in each discipline try to point out interdisciplinary relevance. There is evidence, however, that able students do graduate without a sense of the total meaning of the educational experience.

The determined effort made since the establishment of the Junior College District to develop an outstanding faculty has met with a great deal of success, but some of the courses given are still too scattered and fragmentary. The author feels that we must institutionalize processes which will give the work of strong teachers the greatest possible educational impact. One goal is to make it possible for teachers in related disciplines to become aware of what other teachers are doing, so that the gaps and undesirable overlapping can be eliminated. With the proper structure, all teachers can make a concentrated effort to meet educational needs which are now met only accidentally and only now and then. Student initiative must be encouraged, but it is no more reasonable to expect students to see how their courses fit together than it is to expect them to pick up basic mathematics or language by simply taking courses like history and chemistry in which those basics are used.

The work of cooperative planning is, of course, in no conflict whatever with eventual specialization. They are two poles of genuine education. It is not possible to pursue specialization at its highest levels without basic competence in areas of learning common to all specialties. It is a waste of time after specialization has begun for the specialist teacher -- even if he is competent to do so -- to double back to impart to the student skills and information he should be able to assume.

Assumptions about the contexts in which education takes place must also be made. The Junior College District accepts the responsibility of a tax-supported institution to serve the community which supports it. In addition to the personal development which they have a right to expect from the college, the students must be equipped, stimulated, and trained to give a greater return to society than they could give if they did not attend. The Junior College District has fully accepted its responsibility for contributing to the culture and economy of the region which surrounds it. It attempts its best to supply the area with skills which it needs. But it must be sure that it is meeting equally well the need for mature and responsible citizenship. Physicians, engineers, teachers, nurses, merchants, farmers, musicians, -- in short all who qualify themselves for any

profession or vocation -- find themselves inextricably involved in community organizations and activities; in the duties, burdens, and pleasures of parenthood; in one or more leisure and recreational activities. It is simple folly to assume that, because one is equipped within a narrow definition to earn a living or practice a profession, he is also equipped to manage all these other matters wisely and well.

All of us know too well physicians who have attained admirable skills and knowledge within a special field but who are also intellectual snobs or windbags. The Babbitt-like businessman, clever and expert in business but bored and unhappy in his personal life, is a familiar spectacle. The expert engineer who can build magnificent bridges, highways, skyscrapers, automobiles, and planes, but who cannot successfully raise and educate his own children is much too common. Lawyers, farmers, and teachers who are cripplingly ignorant and bigoted outside their specialty can be noted in every community.

The failure to educate fully mature citizens might have been noted at any earlier period in any other society. But today both the need and the consequences of our failure are greater. Technology has given even some of the least-privileged Americans the facilities to enjoy the riches of world culture. Shorter work weeks and greater longevity mean that a more significant proportion of our lives will be spent apart from our jobs. Enormous improvements in facilities for communication and travel coincide with the end of the colonial age. This happens also to be the age when the United States has had to assume the great responsibilities of political and military power. Even if, in the face of towering new enrollments, we should continue to educate the many as well as we have the few, this would not be good enough. We must give our students technical skills, but we must also help students to know what to do with them. They must use such skills to enrich their lives, not make life an assembly-line exercise in boredom and selfishness. And we must help our students to see the world-wide arena and the revolutionary intensity of the changes which will occur during their lifetime.

Pressure upon educational institutions becomes greater because of the apparent weakening of the influence of other social institutions during this time of our greatest need. The family has suffered a great deal from the social mobility of recent years. Many no longer look to churches for standards of moral value. If the schools do nothing toward supplying those human needs which go beyond information and skills alone, it would seem that for many these needs will not be met. Indoctrination is neither possible nor desirable in a pluralistic society like our own, but the College must do all it can to help the young people entrusted to it to develop some sense of total meaning to their educational experience and some ability to evaluate social policy and personal choices. In doing this, perhaps the College will strengthen those other institutions which should have at least an equal concern for social conservation and progress. It does us no good to bemoan the complexity of our task or to long for an age when the task of education was precise and narrow. As teachers, we must give to education itself some of the ingenuity and energy we have devoted to the parking problem and to research within our own specialties.

A SOCIAL SCIENCE PROGRAM

Critical thinking is one of the skills above all others which seems to be demanded by citizenship in a democratic society. The development of this critical ability is one of the primary goals of social science courses, and topics covered in general education courses should be organized in such a way to arouse this critical capacity.

The critical abilities can be broken down as follows:

1. To identify central issues. One of the basic skills in critical thinking is the ability to identify the central issue or main theme. The thesis may be perfectly clear; it may be hidden in a mass of verbiage; or it may be unstated. Until the student has identified the central issue, an analysis of the information cannot proceed on a sound basis:

2. To recognize underlying assumptions. An argument is always based upon certain assumptions. These assumptions may be generally accepted; they may be subject to grave doubt; or they may be absolutely untenable. The validity of many arguments depends upon the validity of the assumptions upon which they are based. An individual whose analysis does not go beyond the argument and into the assumptions will seldom arrive at a truly satisfactory insight into any social science issue.
3. To evaluate evidence or authority:
 - A. To recognize stereotypes and cliches. Social science materials contain abundant illustration of faulty thinking in the form of stereotypes and cliches. Everyone is familiar with popular concepts of "the American clubwoman", "the tired businessman", "the absent-minded professor", "100 percent Americanism", and "the good old days". Many people who accept these at face value may be victimized by skillful propaganda techniques;
 - B. To recognize bias and emotional factor in a presentation, the validity of any presentation should depend upon only such factors as the soundness of its reasoning and its factual basis. Many presentations, however, neglect reason and fact and substitute highly colored words or appeals to prejudice. This practice is frequently an admission that there is very little substance supporting the presentation. Since bias refers to opinions or attitudes based on prejudice and preconception rather than upon fact and reason, it bears no constant relation to truth and is as likely to be favorable as it is to be unfavorable. To detect bias is not to impute dishonesty, for many biases are unconscious. Recognizing bias, conscious or not, is the important thing. Awareness of the part one's own biases may play in the process of analysis and decision is also an important factor in critical thinking;

- C. To distinguish between verifiable and unverifiable data. An early step in determining the verifiability of a proposition is the distinction between material which is of a factual or verifiable nature and that which is not. Sweeping generalization, value judgments, beliefs, and opinions are usually unverifiable. Material of a factual nature, on the other hand, is capable of proof or disproof, although frequently the data necessary to verify it may not be available.
- D. To distinguish between relevant and non-relevant. To analyze social situations and problems adequately, an individual must be able to distinguish between those facts that have a bearing upon the solution and those that do not. One should ask, "Does this statement define, illustrate, or bear upon the problem?" This ability is less complex than the one which follows, because it does not require the individual to judge the degree of relevancy, but only to sort the aspects of a situation into those which do or do not have a bearing upon it.
- E. To distinguish between essential and incidental. Those facts which are essential to a given situation are often confused with other facts which are present but are not a necessary part of that situation. Relevant data is not necessarily essential to an interpretation and may be of only secondary importance.
- F. To recognize the adequacy of data. An appreciation of the connection between adequate facts and a valid conclusion is an essential ability in critical thinking. A judgment made on the basis of fragmentary evidence is likely to be of little value. In dealing with social issues, it is particularly important that judgments be based upon sufficient information. It is also important to be able to detect that significant data have been ignored or omitted. The omission may have been unintentional, but

often the additional evidence has been purposely suppressed in order to strengthen the argument advanced. In many cases consideration of neglected material will destroy an argument completely;

- G. To determine whether facts support a generalization. Facts may be relevant, essential, and adequate, but still not support a generalization. Furthermore, poorly selected facts occasionally contradict and seem to disprove a generalization. Also, in some cases the support furnished by one fact is stronger than that furnished by another;
 - H. To check consistency. All arguments must be checked for internal consistency. Identification of a major inconsistency may invalidate a presentation, and in any case an argument cannot be considered as a logical whole when it is based upon contradictory elements. If an argument withstands the test of internal consistency, it still must be submitted to a check for consistency with other known data. Having recognized the external consistency or inconsistency of the argument, one is ready to draw a conclusion;
4. To draw warranted conclusions. The drawing of a warranted conclusion involves making an inference. An inference is a truth or proposition drawn from another which is admitted or supposed to be true; a conclusion, a deduction. An individual needs to realize that certain facts not explicitly stated may be inferred as true or untrue. It is also important to realize the limitations of the inferences which can be made from given data. Many statements at first glance appear plausible, but if the inferences are properly drawn their meanings may change.

THE OBJECTIVES FOR THE SOCIAL SCIENCE PROGRAM MAY BE
SUMMARIZED AS FOLLOWS:

1. To aid the student in understanding the major social forms of which he is a part, and in making satisfactory personal, social, and civic adjustments to our time;
2. To place emphasis on critical thinking based on observation and accumulation of data. No controversial issue, no matter how fraught with emotion and bias should be buried or hushed up as too difficult to handle. To ignore such issues, we feel, performs a distinct disservice for the student. If any enlightenment is to come to a student on a particular issue, it will not be when that issue is buried in the dark cellars of an institution too cowardly to face it;
3. To achieve a real appreciation of human values and problems, their origin, development, and possible solution;
4. To achieve a meaningful appreciation and understanding of our own culture, our strengths, weaknesses, present problems, and possible future;
5. To achieve a significant understanding of the interdependence and vulnerability of all peoples in a shrunken world in an atomic age;
6. To think clearly and critically about social, political, and economic issues, on the basis of the best available information;
7. To enable students to cope with prejudice, bigotry, intolerance, narrow dogmatism, and provincialism, and to wear away these restrictive attitudes by attrition through the presentation of facts;

8. To be concerned with learnings basic to our democratic way of life;
9. To understand the principles and concepts common to the social sciences;
10. To enhance the student's ability to use certain skills, e.g., reading charts, graphs, statistics; critical thinking (weighing evidence); detection of propaganda; use of library aids;
11. To enhance the student's ability to solve problems, i.e., not to solve problems in the mathematical sense, but to be able to utilize means and methods of meeting issues and problems;
12. To encourage attitudes of competent citizenship in a democratic society: tolerance, delayed judgment, respect for the expert, recognition of individual responsibility, etc.;
13. To aid the student to become an informed citizen with knowledge about major trends, issues, and problems such as civil rights, automation, foreign affairs, consumer economics, law, economic growth, etc.

In order to attain the goals and objectives mentioned above, the following course outline is proposed. It should be kept in mind that each unit is approximate and flexible and adaptable to any emergencies which may arise. The time allotted to each unit is left up to the instructor's discretion.

1. Introduction - Should include an introduction to sociology as well as a discussion of the requirements and procedures, and the desired personal attitudes and inter-personal relations within the class.
2. Psychology and Social Psychology - This unit describes the relationship between psychology and sociology. It discusses various types of human behavior (neurosis, psychosis, mental

deficiency, and anti-social personalities), showing how the discipline and psychology explains these phenomena, as well as the socio-cultural causeations of human behavior. Some of the basic tenets of social psychology and social process and social change should be discussed, with some work on propaganda analysis.

3. Social Structure and Class System - Here the work of Warner, et al., should be freely drawn upon. Moreover, the class may be asked to make an analysis of its own community with regard to social structure and class system.
4. The Family - This unit presents the history of the human family, with its sub-human forerunners, together with the various forms of human marriage and human family. Other topics of discussion may be the functions of the family, the American family in transition, mate selection and success in marriage, and preparation for parenthood.
5. Culture - This is really a presentation of the basic concepts of physical and cultural anthropology. Among the topics are organic and super-organic evolution, early human cultures, and the origins of civilization, racial classification and comparisons.
6. Social Problems - Emphasis in this unit is placed on the general state of our society with reference to its many social problems. Due to the fact that there will not be enough time to cover all the problems, selection should be made for formal presentation of such topics as crime and delinquency, inter-group relations and prejudice, world population, poverty, alcohol, gambling, and narcotics. Other problems should be brought out by students as a result of their research and oral reports in class.
7. Religion - This unit should be handled only when a background of sociological and anthropological knowledge have been accumulated. The beliefs of the major religions of the world should

be presented, along with the status of religion in our own society. Both the sociology and psychology of religion should be discussed freely and frankly from an academic as opposed to a sectarian point of view.

8. Social Reconstruction - This unit should be concerned with a brief history of utopian thought, current ideas concerning social and economic planning and reconstruction, and an appraisal of past and present plans and theories.
9. Mass Society - This unit should deal with aspects of urbanization, mass production, consumer behavior, economic growth, the basic features of the legal structure in addition to specific issues such as automation, foreign affairs, civil rights, communism in theory and practice, etc.

A PLAN OF OPERATION

Social Science courses should be designed to interest and excite the student. Faculty members will be given wide latitude in selecting material and arranging the sequence of experiences. Major emphasis will be placed on the meaningfulness and stimulating effects of the subject matter. Basic skills will be offered as incidental to participation in the experience rather than as goals in themselves. The new curriculum which should be developed for students in the program is:

1. The readings for the Social Science courses will be chosen partly to help students to learn the mode of inquiry of the social sciences. In each course a number of lessons will be devoted primarily to the mode of inquiry with subject knowledge on those days receiving a secondary emphasis. In addition, teachers will help to develop the mode of inquiry as a secondary emphasis on those days when subject emphases are paramount.
2. The materials developed will be designed for inductive teaching. The courses will consist of readings, each with an

introduction, a few study questions, and the article itself. Some of the articles will be from source materials and texts, others will be obtained from current news media and professional journals (reprints). The audio-visual components of the courses will also be designed with inductive teaching in mind. In addition, emphasis will be placed on class discussion, reports, and field experiences. From all these materials students will be expected to develop their own conclusions and to link one generalization to another. Student initiative and participation will be highly encouraged and the instructor is to act as a democratic rather than an authoritarian leader of the group. Abandoning the sterile textbook in favor of material from which students can discover insights for themselves will mark a significant departure from most teaching procedures on the under-graduate level. Moreover, the democratic classroom atmosphere will be both conducive and encouraging to scholarship.

3. The material within each course and from one course to the next will be organized sequentially. Each major subject and skill objective will be ordered to give adequate opportunity for reinforcement of learning and to permit learning to build upon what has gone before.
4. Materials will rely heavily on audio-visual aids which are to be designed specifically for particular tasks within particular courses. A reservoir of audio-visual aids - tapes, slides transparencies, film-strips, and photo-essays - will be explicated. These materials will engage the full perceptual apparatus of the student. They will also provide a welcome change of pace to both teacher and student.
5. Teachers will be given the opportunity to develop independent projects for their students in the form of class project, research paper and "learning by doing".

6. There will be two types of evaluation. The first will consist of written weekly tests within each course and alternative objective tests every other week. The majority of the questions will be designed specifically to assist the teacher to measure student mastery of a particular objective rather than to rank the students. The other sort of evaluation will attempt to assess the achievement on a comparative basis among the various classes.

A team of at least three consultants will be needed to work in conjunction with Social Science instructors from the Junior College District to properly develop the program. Ideally, the consultants should represent varied backgrounds from the areas of history, political science, sociology and psychology. The function of their consultants will be to participate in program development and evaluation. Assistance should also be provided in the selection and possible construction of instructional aids.

APPENDIX D

A DESCRIPTION OF THE EXPERIMENTAL PILOT PROGRAM CONCERNING THE EDUCATIONALLY DISADVANTAGED

MODERN BASIC SCIENCE

H. Michael Delgado

INTRODUCTION

The biological topics chosen from the program are designed primarily to better inform the individual of his biological self, his inherent limits and capabilities, and the biological compatibility with his environment.

The manner of presentation will represent a slight departure from the traditional concepts of teaching biology in that it will emphasize an appreciation of the general concepts of man and his environment rather than the technical aspects of biology.

The basic guiding philosophy centers on the theory that the better a person understands himself the more adaptable and rational he will be to the changing conditions so characteristic of our times.

To supplement the classroom activities, communications with the following agencies have been established:

1. Missouri Botanical Gardens
2. Museum of Science and Natural History
3. The McDonnell Planetarium
4. St. Louis Zoological Gardens

Further attempts will be made to locate areas or activities which will be conducive to learning and supporting this area of study.

1. General Course Objective:

The visualization of the individuals biological self as a member of an interesting, highly complex society.

2. Specific Topic Objectives:

- a. **Genetics and Eugenics:**
To become aware of the implications genetics has on the development of the individuals physical and psychological self.
- b. **Reproduction and Development:**
To familiarize the student with the essential mechanics involved in the formation of a living being and the uniqueness of this phenomenon.
- c. **Parasitology:**
To familiarize the student with the existing relationship of man and pathogenic organisms and how they influence individual behavior.
- d. **Ecology:**
To expose via student to the physical environmental factors which play an active role in his development as a member of the community.
- e. **Cytology:**
To present a general consideration of the basic unit of life; the cell; its forms and structure; its physical make-up of man.
- f. **Organic Evolution:**
An exploration into the factors contributing to change among living and past organisms with special emphasis on the evolution of man.

COURSE OUTLINE

GENETICS & EUGENICS

- I. **Genetics defined:**

- a. Objectives
- b. Scope
- c. Eugenics - its role in directing human lives

2. History:

- a. Theories (BC)
- b. Medieval Superstitions
- c. Mendel's discovery
- d. Modern day misconceptions

3. Transmission of Hereditary Factors:

- a. What is a factor, trait; characteristic
- b. The gene as the particulate unit of inheritance
- c. Genes on the chromosomes
- d. Specificity of chromosomes and their numbers
- e. Effects of abnormal chromosome numbers
 - (1) Klinefelters Syndrome
 - (2) Downs Syndrome
 - (3) Turner Syndrome

4. Mechanics of Transmission:

- a. Meiosis - normal cell division
- b. Meiosis - the secret to variation and sexual reproduction

5. Independent Segregation and Assortment of Genes:

- a. Via the single chromosome
- b. Via crossing over
- c. Assortment of geno- and phenotypes

6. Sex Determination:

- a. Role of the female
- b. Role of the male
- c. Expected and observed ratios of male and females

7. Sex-linked Inheritance:

- a. Traits inherited by sex
- b. Other sex-linked traits
- c. Sex-limited inheritance

8. Parenthood and Heredity:

- a. Genetic Counseling
- b. Twins identical vs. fraternal
- c. Inherited diseases
- d. Dwarfism

9. Inheritance of Acquired Characteristics:

- a. Pre-genetic concepts
- b. Lamarckism
- c. Evidence against theory
- d. Clarification of theory

10. Polygenic Inheritance:

- a. Many genes influencing a trait
- b. Inheritance of pigmentation
- c. Mechanism of transfer

11. Multiple Gene Inheritance:

- a. More than one possible gene of a locus
- b. Characteristics
- c. ABO blood groups

REPRODUCTION AND DEVELOPMENT

1. Definitions:

- a. Reproduction
- b. Development
- c. Universal phenomenon

2. Reproductive Organs - Male:

- a. Form and structure
- b. Function
- c. Spermatogenesis - Sperm production
- d. The male germ cell

3. Reproductive Organs - Female:

- a. Form and structure
- b. Function
- c. Oogenesis - egg production
- d. The female germ cell

4. Fertilization:

- a. Characteristics
- b. Mechanics
- c. Twin formation (identical and fraternal)

5. Implantation:

- a. Characteristics
- b. Significance
- c. Influencing factors

6. Early Embryonic Development :

- a. Zygote
- b. Cleavage
- c. Differentiation

7. Fetal Stage:**8. Parturition:**

- a. Characteristics
- b. Physiological changes in female
- c. Afterbirth
- d. Significance of placenta

PARASITOLOGY

1. Parasitology Defined:
 - a. Objectives
 - b. Scope
2. Kinds of Symbiotic Relationships:
 - a. Mutualism
 - b. Commensalism
 - c. Parasitism
3. Bacterial Parasites:
 - a. Descriptions
 - b. Life cycles
 - c. Pathogenic effects
 - d. Precautions
4. Viral Parasites:
 - a. All viruses are parasites
 - b. Description - general
 - c. Pathogenic effects
5. Insect Borne Parasites:
 - a. Kinds
 - b. Life cycles
 - c. Vectors vs. carriers
 - d. Pathogenic effects
 - e. Precautions
6. Other forms of Parasitism:
 - a. Pseudo-Parasites
 - b. Host-parasite relationships
 - c. Future implications

ECOLOGY

1. Ecology Defined:
 - a. Topic objective
 - b. Scope
 - c. As it relates to man
2. Characteristics:
 - a. Definitions
 - b. Factors of the environment
 - c. Major habitats
3. Human Populations:
 - a. Population dynamics
 - b. Population history
 - c. Malthus and Darwin
4. Varieties of Man:
 - a. Man as a species
 - b. Human races
 - c. The meaning of race
 - d. Race and Culture
5. Domestication
 - a. Man's Relation with other organisms
 - b. Origin of Cultigen
 - c. Modification of Cultigens
6. Agricultural Biology:
 - a. The man made community
 - b. Pest control
 - c. Crop improvement

7. Science, Man and Nature:

- a. The scientific revolution
- b. The two cultures
 - (1) Scientific
 - (2) Humanistic
- c. Values of Biology

CYTOLOGY

1. Cells in General:

- a. Shapes
- b. Sizes
- c. All cells basically similar

2. Structure of Cells:

- a. Cell boundary
- b. The nucleus
- c. Endoplasmic reticulum
- d. Mitochondria

3. The Cell in Development:

- a. Growth
- b. Differentiation

4. Cell Continuity:

5. Tissue Cells:

- a. Muscle
- b. Connective
- c. Blood
- d. Nerve
- e. Epithelial

6. Some Physical Properties of Cell Functions:

- a. Osmosis
- b. Cell permeability
- c. Synthesis of food materials
- d. Gaseous exchange of cells

EVOLUTION

1. The origin of life:

- a. Probably activating forces
- b. Necessary elements of 'life'
- c. Replicating mechanisms

2. Natural Selection:

- a. Survival of the fittest
- b. Selective forces
- c. Over-breeding
- d. Artificial vs. natural selection

3. Adaptation:

- a. Basis for adaptation
- b. Adaptive changes in populations
- c. Evolutionary changes in populations
- d. Simple examples of adaptation

4. Similarities and dissimilarities of Species:

5. Changes in Gene Frequencies

- a. Factors inducing change
- b. Conditions influencing changes
- c. Hardy-Weinberg Law
- d. Genetic death of genes

6. Gene Frequencies in Human Populations:
 - a. ABO blood groups
 - b. Sickle cell anemia frequencies
 - c. Albino frequencies in Latin American Populations
7. Evidence for evolution:
 - a. Paleontological
 - b. Bio geographical
 - c. Comparative anatomy
8. Evolution of Man:
 - a. Man's evolutionary history
 - b. Culture
 - c. Man's future as a species – speculation
 - d. Uniqueness of man as a species

BASIC SOCIOLOGY

Clare Heyne

Basic Objective: To awaken in the student an awareness of how social interaction has influenced his development; to illustrate this interaction with others in the community (family, peers, employment, social groups, etc.). By so doing, to illustrate individual importance, and self-improvement, socially, thus making the student a "better" asset to the community.

Why is this important? Can only contribute to the community, if aware of the forces operating in society. This can be accomplished by insight into basic similarities, differences, attitudes, values, etc.

How will this be approached? By discussion of selections from the basic text, Sociology Through Literature, Coser, Prentice-Hall, cost \$4.25. Additional topics will be suggested by science and English instructors. In addition, a list of sociological definitions will be distributed; the purpose of this list is to serve as a common basis for understanding for all students. For outside reference, copies of Sociology, (Paul H. Landis), shall be on reserve in the library.

TENTATIVE TOPICAL OUTLINE FROM SOCIOLOGY THROUGH LITERATURE

I. The Individual:

- a. My First Goose
- b. Shooting an Elephant
- c. The Soft Touch of Grass
- d. The Egg
- e. Arrangement in Black and White
- f. Art of Marking Differences
- g. What Makes a Peer
- h. The Doom of Nobility
- i. The Lower Class Smell

- j. Shame
- k. The World of Migratory Workers
- l. An Other Directed Man
- m. The Natural History of a Mob
- n. Mob Passion

2. The Family:

- a. The Matriarch Arranges a Wedding
- b. When Six Wives Squabble
- c. Shino and Hamaji or When Duty is Stronger Than Love
- d. On the Importance of Having a Son
- e. The Perils and Dilemmas of Marital Choice
- f. A Happy Family
- g. An Authoritarian Father
- h. I Want to Know Why

3. Social Problems:

- a. Race Relations
 - (1) The Price of Keeping One's Place
 - (2) Learning Submission
 - (3) To Be A Negro
 - (4) On the Margin: Life Between Two Racial Worlds
 - (5) Huck Breaks the White Code
 - (6) "The Negro After Watts" Time, August 27, 1965
- b. Deviant Behavior
 - (1) Suicide
 - (2) The Monkey on the Back
 - (3) The Insane
- c. Urban Sociology
 - (1) Paris, The Scene and the Setting
 - (2) Other selections
 - (3) Post-Dispatch and specifics of St. Louis

MODERN BASIC MATHEMATICS

Thomas Iverson

The emphasis will be on concepts and not skills. Try to demonstrate a logical reasoning pattern, using math as the prime example. Introduce them to new ideas and concepts in mathematics; not something they will have had over and over before.

1. Other Numeration Systems:

- a. Babylonian
- b. Egyptian
- c. Other Bases

2. Set Theory:

- a. Explain that it is basic to all mathematics
- b. "Define" a set, finite sets and infinite sets - empty set
- c. Cardinality of sets, one-one correspondence
- d. Operations with sets.
 - (1) Unions, intersections, compliments
 - (2) laws of operation
- e. Applications, arithmetic, algebra, geometry, logic

3. Logic:

- a. Necessity - Senses and experimentation not enough.
- b. Connectives, 'or', 'and', implies negation, equivalence
- c. Statements, sentences
- d. Truth tables
- e. Syllogism

4. Probability:

- a. Sample space
- b. Permutations

- c. Combinations
- d. Independent and Dependent events
- e. Applications

5. Statistics:

- a. Sampling
- b. Arithmetic mean
- c. Median, mode
- d. Standard deviation
- e. Interpretation of graphs and charts
- f. Bell Curve

6. Math Systems:

- a. Finite Systems
 - (1) Clock arithmetic
 - (2) Groups
- b. Fields, our number system

SOURCES:

Exploring Mathematics on Your Own

Johnson, Glenn, Donovan

Introduction to Mathematics

Meserve & Sobel

Mathematics A Cultural Approach

Morris Kline

CONSUMER ECONOMICS

H. Mellone

Objectives:

1. Understand the concept of free enterprise, how The American Economic System operates, and how dependent we are upon business to satisfy our economic wants and needs.
2. To understand the application of business procedures to personal and family problems relating to earning an income, money management (savings or expenditures).
3. Understand the economic principles that are essential for participation as a citizen and voter in resolving local, state and national issues.

Description of American economic system and its effect on the consumer citizen:

1. Consumer in a free enterprise system
2. How business is organized and operated

Forms of government protection for the consumer:

1. Government Functions that affect consumers
2. Specific Aids and protection provided by government agencies

An understanding of Bank Services, use of loan and credit services :

1. Using Bank Services
2. Understanding and using credit
3. Buying on the installment plan

Earning and Spending a management plan:

1. Managing on finances
2. Saving Program (Investment)
3. Buying and Spending Wisely

Protection through insurance:

1. Principles of insurance protection
2. Buying Life Insurance
3. What social security means to us.

The problem of obtaining a home:

1. Renting or buying a home
2. Financing the purchase of a home

Broad applications of economic principles as they relate to individuals, business and government:

1. Our share in National Income
2. The importance of money and credit
3. Values and prices and what they mean to us.
4. Problems of taxes, tariffs and public fines.

CONTEMPORARY ENGLISH

Joel Margulis

The course will not be directed to the small number of those students who seemingly possess college ability. The course, as a whole, will be directed toward enriching the students in their daily lives, through their acquaintance with literature of all types. The main course objective will be to correlate the literary experience with the individual life of each student, and, when possible, with related subjects within the team, in this case, sociology and biology.

Each student must be prepared to narrate orally the events of assigned pieces of literature, that is, be able to tell what happened in the story or play. This gives the student practice in speaking before a group, just as taking part in class discussion will give the student practice in speaking within the group.

With regard to the student of high ability, written assignments will give him ample opportunity to show writing capability, the most important single aspect for success in any regular college English course. A student showing the possibility for success will be assigned extra work and be given extra attention to supplement his work in the learning lab. Thus, such a student will not only be culturally enriched through his experience with literature but also given practical help in his step forward into regular English.

APPENDIX E

STUDENT ATTITUDE QUESTIONNAIRE REGARDING THE COMMUNITY COLLEGE PROGRAM

STUDENT ATTITUDE SURVEY OF THE COMMUNITY
COLLEGE PROGRAM

Name _____ Student No. _____

College _____ Year: Freshman _____ Sophomore _____

Dear Student:

Your cooperation in answering this survey form will assist the College in evaluating its course offerings. Please answer each item as it relates to the total program you were enrolled in this last year and not to any one course or part of it. Your answers will be kept in the strictest confidence.

A. How valuable do you feel the college program was, in helping you to:

Place a check in the appropriate column following each statement. Check only one.	Very Valuable	Valuable	Of Some Value	Of Little Value	Of No Value
1. Prepare yourself to go on to college.					
2. Help you reach your occupational goal.					
3. Understand your academic strengths and weaknesses.					
4. Improve your work and study habits.					
5. Read with more understanding.					
6. Speak in front of a group.					
7. Understand how our government operates.					
8. Understand and practice better health habits.					
9. Choose more interesting and wholesome leisure time activities					
10. Be more at ease with members of the opposite sex.					
11. Understand and control your emotions and feelings.					
12. Solve everyday mathematical problems.					

A. Continued	Very		Of	Of	Of
	Valuable	Valuable	Some	Little	No
			Value	Value	Value
13. Understand the meaning of terms like democracy & freedom.					
14. Know the principle behind the operation of a common household appliance.					
15. Encourage you to read about current events in newspapers & magazines.					
16. Use the scientific method in your daily life.					
17. Be a more intelligent buyer & consumer of goods.					
18. Understand & appreciate new forms of music.					
19. Be more tolerant of people who have different backgrounds than yours.					
20. Express yourself more effectively in writing.					
21.. Choose more appropriate clothes styles.					
22.. Be better prepared to make a living.					
23. Select a marriage partner.					
24. Increase your speaking vocabulary.					
25. Become more mature.					

B. Would you recommend, to a younger brother or sister, who had abilities and interests similar to yours, the community college program you have just taken? Yes___ No___

C. If you had known as much at the time of registration as you know now about the College program you have been in this last year, would you have enrolled in it? Yes___ No___

D.

1. Do you feel that the instructors were concerned about your success in the program? Yes___ No___
2. Did you understand what the objectives of the program were? Yes___ No___
3. Was this the program in which you originally wanted to enroll? Yes___ No___
4. Were most of your college friends enrolled in the same program you were or are? Yes___ No___
5. Do your parents approve of the College program in which you were or are enrolled? Yes___ No___

E. How would you rate your overall attitude toward the junior college program that you were enrolled in this year? Please check one.

1. Very disappointed___
2. Slightly disappointed___
3. What I expected___
4. Favorably impressed___
5. Highly favorably impressed___

F. Which of the following best describes your present placement? Check one.

- ___ 1. In college. Which College? _____
- ___ 2. In a training program i.e. MDTA, Apprenticeship, etc. _____
- ___ 3. Employed. Job title? _____
- ___ 4. In military service. _____
- ___ 5. Housewife. _____
- ___ 6. Unemployed. Looking for work. _____

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