DOCUMENT RESUME

ED 141 470 UD 017 105

AUTHOR	Donovan, Richard A., Comp.
TITLE	Bronx Community College: National Project II Associate. Final Report for the Fund for the Improvement of Postsecondary Education.
SPONS AGENCY	Fund for the Improvement of Postsecondary Education (DHEW), Washington, D.C.
PUB DATE	May 77
GRANT	GOO-7502076
NOTE	85p.
EDRS PRICE	MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS	*Classroom Observation Techniques; Educationally Disadvantaged; Educational Opportunities; Educational Research; Higher Education; *Interaction Process Analysis; *Mathematics; Open Education; *Open Enrollment; Post Secondary Education; *Test Construction; Test Validity
IDENTIFIERS	*Bronx Community College; New York (Bronx); Project STIR; Project LINK; *Project Total Discovery

ABSTRACT

The three research papers in this document concern open admissions and student success in the classrooms of Bronx Community College. Together, these projects capture much of what is involved in a comprehensive open admissions program. The first research report explores the technical characteristics, and therefore, the feasibility for use with community college students, of a recently developed mathematics competency test. This study also attempts to develop an equivalent form of the test, and evaluates differential mathematics achievement over a four month instructional period, under two modes of instruction. The second research project develops an interaction analysis system, specifically designed to describe the interpersonal process in the classroom. The classroom activities paradigm presented in this report was a reliable process-descriptive instrument, capable of providing a check on program claims of innovative classroom interaction. The third project examined the functioning and the impact of Project Total Discovery (TD) over a three year period. In this report the three successive interdisciplinary programs implemented at Bronx Community College for remediation of underprepared freshmen are reviewed. It is shown that the evolvement of the interdisciplinary approaches to remediation from Project STIR to Project LINK to Project Total Discovery was marked by clearer objectives and more precise evaluation. Increased administrative control was also noted. (Author/AM)

Bronx Community College: National Project II Associate Final Report for the Fund for the Improvement of Postsecondary Education[1]

Richard A. Donovan, Comp.
Director

May, 1977

Essays by

Thea Fuchs Benenson
Robert F. Dennehy
Barbara Schaier

[1]These research projects were supported in part by a grant from the Fund for the Improvement of Postsecondary Education, Department of Health Education and Welfare, #G00-7502076.

Introduction

When one examines the programs of a college where 75% of the students require remediation in at least one discipline and where academic and extra-academic pressures combine to slow a student's progress so that he is more likely to graduate in eight semesters than in four, it is essential to isolate and describe the factors that influence student success in the classroom and persistence in college. For years, Bronx Community College's Office of Institutional Research (OIR), under the thoughtful and astute direction of Dr. Norman Eagle, has undertaken a staggering variety of evaluation tasks. In addition to annually conducting student opinion surveys which measure student attitudes on everything from classroom instruction to municipal transportation, OIR has systematically examined the probable relationships between different B.C.C. courses and analyzed the effect of B.C.C. support services on student performance. A few typical questions germane to underprepared students that the OIR routinely attempts to answer follow:

1. How well do freshmen in English composition perform when placed directly into the course as compared with comparable students who have first completed a required course in remedial composition?

2. For the group of students testing at the B.C.C. Nelson-Denny cut-off score, how effective is the College's Reading course in improving the probability of passing freshman English?

3. How much more do students gain in reading ability as a result of the college's two reading courses than they would gain merely by college attendance?

4. What are the relationships between Nelson-Denny Reading Test Scores and Mastery Test Scores and grades in remedial English, English composition and entry level courses in Communication Arts and Sciences, Psychology and History?

5. Do students entering a course in Survey of Mathematics via three different routes differ in the grades they earn in the course?

6. Do tutored students in Nursing Technology II do better than comparable students in the same course who do not receive tutoring?

Although further research into any of these areas or others would have been appropriate for National Project II, it was my opinion, along with that of Dr. Thea Benenson, the former Associate Director of Institutional Research, that our Fund sponsored research might best have two complimentary but different emphases: 1) an analysis of a recently developed mathematics competency test and 2) a close look at Project Total Discovery (TD), a pilot, interdepartmental approach to remediation. Together these research projects capture much of the flavor of a comprehensive open admissions program. With the willing collaboration of the Mathematics department -- and little in research is ever undertaken, let alone completed without willing collaborators' --

Thea examined and attempted to validate an alternative placement instrument for entering students in mathematics.

The second research project, also undertaken by Thea, was the development of an interaction analysis system. It was our hypothesis that something different was happening in TD classrooms and we wanted to be able to describe this interaction more fully and exactly. We felt that this information would be a necessary prerequisite for further analysis of a program that many of us felt suggested much promise.

The third essay, by Dr. Robert Dennehy of the Department of Psychology and Barbara Schaier of the NP II staff, examines the functioning and the impact of TD over a three year period, a study aided by Thea's earlier work. Bob and Barbara conclude that TD is different, that it does lead to better student performance and attitudinal changes in both students and faculty. Further, they document a special program's ability to modify itself in light of specific suggestions. The most recent data on TD, unavailable to Bob and Barbara at the time of their essay, shows that in Fall, 1976 only 5% of TD freshmen dropped out, a figure which contrasts very favorably with the 13.5% attrition rate for comparable non-TD students. TD seems to have evolved into a program which exhibits a sensitivity to both cognitive and affective needs of students.

I am most grateful for the counsel of Dr. Eagle, Director of Institutional Research at Bronx Community College, to

Dr. William Kleiber, Director of College Discovery, the parent organization for TD and to Dr. Erwin Just, Chairman of Mathematics. Deep thanks are extended to Bess Heyman and Fran Resto whose nimble fingers and quick eyes finished this project for us. Most importantly, gratitude is due Thea Benenson, Robert Dennehy and Barbara Schaier who during the past tumultous months for the City University of New York, under the most trying conditions, undertook and completed serious research.

DEVELOPMENT OF A MATHEMATICS COMPETENCY TEST

Thea Fuchs Benenson, Ph. D.

Preface

This portion of the Final Report for the Fund for the Improvement of Postsecondary Education has been prepared by Dr. Thea Fuchs Benenson, Consultant to Bronx Community College. Dr. Benenson was formerly Project Director for the research reported herein while Assistant Director of Institutional Research for Program Evaluation at the College. Secretarial services were provided by the Office of Institutional Research at the College.

New York

January 1977

TABLE OF CONTENTS

RESEARCH

INTRODUCTION

As mentioned previously, in 1970 the City University of New York inaugurated an "open admissions" policy, a guarantee of a college-place to every student who had successfully completed high school, or its equivalent. Although this policy was recently modified in June 1976, the research reported herein attempts to provide a service to all postsecondary institutions which enroll students who are under-prepared for college in the area of mathematics. Thus, the research described is probably not limited to "open admissions" institutions only; it is likely, however, that community or junior colleges will find it more useful.

Admittedly, standards vary. It is quite difficult to provide a definition of first-year "college level" mathematics which would satisfy faculties at, say, a community college, a fairly select four-year college, a large State University, or a select research University. However, there are certain basic mathematical competencies which must have been achieved, usually even at the community college level, or a student is classified as deficient in mathematical skills.

Generally, mastery of the basic mathematical operations usually taught in the elementary and middle schools, through grade 8, comprise the minimum level of acceptable competency. Translated into curricular topics, mastery of the following would be necessary: addition, subtraction, multiplication, division, and manipulation of fractions, decimals and percents.

Since nearly all students have been exposed to instruction in these areas previously, lack of mastery in these areas constitutes the need for actual re-teaching of these topics, or, as it is commonly referred to, for mathematics remediation. (The term "remediation", in this paper, will be confined to the re-teaching phenomenon just described.) These students usually constitute the first, or lowest, level of mathematics deficiency.

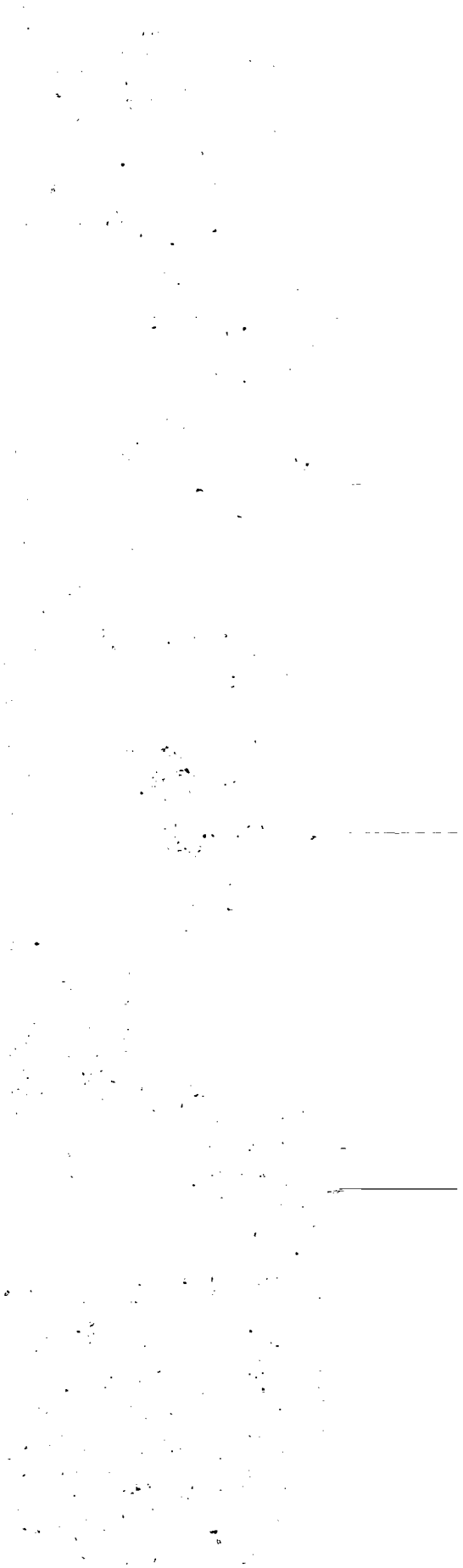
Since not all students presently in college were enrolled in a standard college-preparatory course of study in high school, some students additionally evidence a mathematics "curriculum gap". That is, smaller topics, such as exponents or square roots, or much larger topics, such as courses in plane geometry or elementary and intermediate algebra, were never taught previously to these students. Instruction usually occurs in these areas in grades 7 through 9 or 10, dependent on standards in a particular school or school system.

The curricular gap just described, in the geometry and algebra areas delineated, constitutes a second pre-college mathematics group, usually referred to as developmental. The instructional material is definitely pre-college in level, but its teaching occurs for the first time for a subset of college students. Community colleges usually also designate these students as mathematics deficient, but at a somewhat higher level than the group previously described, if the basic arithmetic material has been mastered.

Once agreement on what constitutes mathematics deficiency has been arrived at within an institution, a more serious problem emerges: accurate and reliable assessment of mathematics competency, or its deficiency, for course placement purposes. The problem of accurate and reliable assessment is especially pronounced at the lower end of the scale. A curriculum gap is usually fairly easy to establish, particularly in the areas of plane geometry or elementary and intermediate algebra, by inspection of high school records. However, the reliable assessment of mastery of previously taught basic material, from the basic arithmetic operations through elementary algebra, is problematic for community college students.

The difficulties are not inherent in the subject matter. Rather, the rapid educational, social and political changes of the 1970's which have culminated in the open admissions phenomenon have left the commercial test-developer somewhat behind. The combination of a postsecondary age group with an often elementary school level of mathematics competency has led to practical and technical problems, not all of which have been responded to by test-developers.

A critique of all available arithmetic/mathematics achievement tests is beyond the scope of this report. Technical guidelines concerning format, length, standardization and norms, appropriate level, reliability, validity, and the necessity for "curricular fit" in the case of achievement tests can be found in a variety of psychometric texts, at both introductory and advanced



levels (Thorndike, 1949; Davis, 1964; Cronbach & Gleser, 1965; Nunnally, 1967; Thorndike & Hagen, 1969; Cronbach, 1970; Thorndike (Ed.), 1971). Advanced treatment of statistical theories underlying test scores can also be found in a variety of texts (Gulliksen, 1950; Lord & Novick, 1968; Thorndike (Ed.), 1971).

Problems encountered in the selection of an appropriate mathematics achievement instrument for community college students are varied. Often test content will be appropriate, but the standardization sample and resultant norms do not include community college students; norms are available for much younger students only. The reverse is also true: community college students are included as a separate component in the standardization sample and resultant norms, but the test contains insufficient items on basic arithmetic operations and manipulations. In the test-developer's language, the "floor" of the test is too high, yielding a severely attenuated, chance score.

The research reported herein attempted to explore the technical characteristics, and therefore the feasibility for use with community college students, of a recently developed (Stolurow, 1975a) mathematics competency test.

SAMPLE

A two-part sample was studied:

1. N=52. All first-year students enrolled in the basic remedial MATH 05 course in an inter-disciplinary, block-programmed, daytime program reserved for CUNY

College Discovery students; the acronym TD (Total Discovery) was used for this program. Students remained with the same mathematics instructor for the semester. Results in this group may be generalizable to similar programs only.

2. N=88. All students enrolled in daytime Block A of the basic, regular remedial MATH 05 course, taught in a modular format. Block A is one of several daytime MATH 05 Blocks. Most students could expect to change mathematics instructors every three or four weeks; successive modules became more homogeneous with respect to mathematics achievement. Not all students were first-year; some College Discovery students were included. Results for this group may be generalizable to inner-city, open-enrollment, daytime community college students, particularly where mathematics is taught in a modular format.

The samples were chosen on the basis of availability. Random selection was not possible. MATH 05 was designed to cover the four basic arithmetic operations (addition, subtraction, multiplication, division), decimals, percents, fractions, exponents, square roots and elementary algebra. Only the elementary algebra topics and possibly exponents and square roots were new material for some students.

PROCEDURES

The first three subtests of the Mathematics Diagnostic Test (Stolurow, 1975a) were administered as a timed 45-minute pretest to all students in both samples in October 1975. Individual classroom instructors administered the test to students in the second sample; this author administered the test to students in the first sample. A standard, preprinted set of directions was read to all students. Students were instructed to show all work in the test booklets and to circle the correct answer; an effort was made to collect all unused test booklets. This original form of the test will be referred to as Form S.

An alternate form, Form A (Benenson, 1976), was then developed to provide a check on any training on Form S that might have occurred. In January 1976, all eight subtests of the original Form S and the new Form A were administered as a timed one hour posttest to both samples, again by classroom instructors and this author. Time of administration was immediately subsequent to the course final examination. Forms S and A were distributed alternately, as each student entered the classroom. Thus, on posttest, approximately one-half of each sample received each form.

All answers were then transferred to standard machine-scorable Opscan answer sheets by the Office of Institutional Research. Scoring and data analyses were then performed by computer. Descriptive statistics were augmented by analysis of variance procedures where indicated (ANOVA).

For purposes of clarity, a summary of procedures follows:

Oct '75 (Three Subtest Pretest)	Jan '76 (Eight Subtest Posttest)
TD MATH 05: Form S (N=52)	TD MATH 05: Form S (N=16) Form A (N=15)
Modular MATH 05: Form S (N=88)	Modular MATH 05: Form S (N=32) Form A (N=27)

INSTRUMENTS

Mathematics Diagnostic Test (Stolurow, 1975a). The original form of this test, Form S, contained 48 items, evenly divided into eight sequential subtests; each subtest contained six multiple-choice items with five answer options. Form S yielded both a total raw score, the number correct, and the following raw subtest scores:

1. Signed Numbers
2. Fractions
3. Decimals
4. Percents
5. Exponents and Square Roots
6. Basic Algebra I: Symbol-Number Substitution
7. Basic Algebra II: Factoring and Manipulation
8. Basic Algebra III: Multiplication

Previous work with this test (Stolurow, 1975b) was carried out on a heterogeneous group of undergraduates enrolled in a required introductory statistics course in a School of Allied Health Sciences. Internal consistency reliability coefficients between .93 and .95 were obtained for the total test; individual subtest internal consistency coefficients were .70 or greater. Item difficulty levels

ranged between .3 and .7; there were few chance scores and the score distribution was approximately normal. The instrument can probably be characterized as a well developed, norm-referenced mathematics achievement test, with homogeneous subtests.

Mathematics Diagnostic Test, Form A (Benenson, 1976): In an attempt to equate the two forms of the test as closely as possible, the only change made in Form A was the substitution of different numbers in the item stems. Only the correct answers were adjusted accordingly; serial position of the correct answer was also changed to guard against place learning.

RESULTS

1. Tables 1A, 1B, 1C: Item analysis data for Form S pretest (18 items) and Form S and Form A posttest (each 48 items), separately for the two samples. Included are:

   a. Item difficulty indices (col. 1) - the percent in each group answering each item correctly. For a norm-referenced test, values between .4 and .6 are desirable.

   b. Item discrimination indices (col. 2) - the point biserial correlation (r_{pb}) between the item response--correct or incorrect--and the total score. The point biserial coefficient is a product-moment coefficient and is therefore, interpretable as such; values above .6 are desirable.

   c. Item omits (col. 3) - the number in each group omitting an item. Supplementary information on item difficulty.

2. Table 2: The chance score frequency for Form S pretest and Form S and Form A posttest. Data was combined for both samples within each Form. Chance score frequency

was quite high, ranging from 21% to 29%. Succeeding and preceeding results should therefore be interpreted with caution.

3. Table 3: Summary descriptive statistics for all Forms, separately for the two samples. Sample statistics included are means, standard deviations, ranges and Cronbach's alpha reliability coefficient, a measure of internal consistency. Although obtained means were quite low, posttest internal consistency was high, especially in light of small sample sizes. The lower internal consistency coefficients obtained on pretest were probably attributable to the attenuated length of the test. No significant differences were found between the two samples (ANOVA).

4. Table 4: Comparisons between the two samples on the Form S pretest (ANOVA). The only significant difference found was on the Fractions subtest, $p < .05$, where TD students obtained somewhat higher scores. (Although statistically significant, the actual difference between the obtained means was only one-half a raw score point.)

5. Table 5: Comparisons between the two forms of the posttest for the TD MATH 05 sample (ANOVA). The only significant difference was on the Fractions subtest, $P < .01$, where obtained scores on Form S were somewhat higher than on Form A.

6. Table 6: Comparison between the two forms of the post-test for the Modular MATH 05 sample (ANOVA). No significant differences were found between the two forms of the test. Some preliminary evidence for the equivalence of Form S and Form A is therefore available, since sample size here was larger than in the TD sample.

7. Table 7: Comparisons between the two samples on post-test, data for Forms S and A combined (ANOVA). An extension of the pretest results discussed in section 4 above. The only significant difference found was on the Percents subtest, $p < .05$, where Modular students obtained somewhat higher scores. (Again, although statistically significant, the actual difference between the obtained means was only one-half a raw score point.)

8. Table 8: Comparisons between the two samples (ANOVA) on mean gain scores from pre- to posttest on the first three subtests of Form S. The number of intact score pairs showed considerable shrinkage, especially in the Modular group. There was no evidence for any gains over the instructional period. However, the small sample sizes and the chance score frequency previously discussed suggest caution in interpreting these results.

DISCUSSION

This study represented an attempt to investigate a recently developed (Stolurow, 1975a) mathematics competency test with community college students. The test in question showed nearly perfect "curricular fit" with the remedial MATH 05 course. Previous work (Stolurow, 1975b) with the test had established sound technical characteristics on a somewhat different population. It was the intention of this study 1) to extend the previous pilot technical investigation to a sample of community college students; 2) to develop an equivalent form of the test; and 3) to evaluate differential mathematics achievement over a four month instructional period, under two modes of instruction. Each research goal will be discussed separately below, followed by suggestions for further research.

Technical investigation: The high incidence of chance scores obtained is both disappointing and illuminating. Even when the subject-matter was basic arithmetic, over 20% of the sample obtained chance scores, even after four months of instruction. This 20% might represent a subgroup for whom college, even an open-admission community college, is not indicated at this time.

Despite the frequency of chance scores the Mathematics Diagnostic Test, Form S, evidenced high internal consistency coefficients with the two community college samples. Many of the 48 items showed both acceptable item difficulty and item discrimination levels. With the chance scorers removed, these indicia would probably improve further. Further work with the instrument, on larger samples, seems to be warranted.

Equivalent form: The results obtained on posttest with the Modular sample indicate that Form A can probably be considered a technically equivalent form to Form S. Again, further work is needed, on a larger and more heterogeneous sample, to corroborate these findings.

Program evaluation: The somewhat disconcerting shrinkage on posttest, attributable to non-appearance for a course final examination, represents attrition from the remedial MATH 05 course. This attrition was significantly less in the TD students; however, small remaining sample sizes and the Modular attrition rate precluded differential program evaluation in greater detail.

Suggestions for further research: In addition to suggestions made above, further research might well attempt to investigate the test-retest reliability of both Form S and Form A. Validation work could then proceed. However, this author would caution against the use of mathematics course grades in the validation and cross-validation procedures.

References

Thorndike, R. L. Personnel selection; test and measurement techniques. New York: Wiley, 1949.

Davis, F. B. Educational measurements and their interpretation. Belmont, California: Wadsworth, 1964.

Cronbach, L. J. & Gleser, G. C. Psychological tests and personnel decisions. (2nd ed.) Urbana: University of Illinois Press, 1965.

Nunnally, J. C. Psychometric theory. New York: McGraw-Hill, 1967.

Thorndike, R. L. & Hagen, E. Measurement and evaluation in psychology and education. (3rd ed.) New York: Wiley, 1969.

Cronbach, L. J. Essentials of psychological testing. (3rd ed.) New York: Harper & Row, 1970.

Thorndike R. L. (Ed.). Educational measurement. (2nd ed.) Washington: American Council on Education, 1971.

Gullikson, H. O. Theory of mental tests. New York: Wiley, 1950.

Lord, F. M. & Novick, M. R. Statistical theories of mental test scores. Reading, Massachusetts: Addison-Wesley, 1968.

Stolurow, A. Coleman. Mathematics diagnostic test. State University of New York at Stony Brook, School of Allied Health Sciences, 1975a.

Benenson, T. F. Mathematics diagnostic test, alternate form: City University of New York, Bronx Community College, 1976.

Stolurow, A. Coleman. Development of a mathematics diagnostic test. Paper presented at the Annual Meeting, New England Educational Research Organization. Provincetown, 1975b.

Table 1A

Item Analysis: Pretest Form S
TD Math 05 & Modular Math 05
(N. = 52;88)

	TD			Modular		
Item #	% Correct (p+)	Pt. Biserial (rpb)	# Omits	% Correct (p+)	Pt. Biserial (rpb)	# Omits
			Signed Numbers			
1	.50	.06	-	.50	.46	9
2	.33	.47	1	.41	.64	12
3	.21	.33	1	.22	.39	18
4	.46	.41	-	.32	.52	16
5	.15	.16	1	.10	.32	17
6	.58	.45	1	.36	.70	11
			Fractions			
7	.71	.14	1	.73	.36	4
8	.75	.20	-	.82	.25	1
9	.52	.25	-	.50	.30	4
10	.42	.44	6	.15	.36	36
11	.44	.52	-	.30	.66	19
12	.75	.52	-	.58	.42	22
			Decimals			
13	.10	.42	2	.20	.51	7
14	.54	.37	1	.28	.50	7
15	.13	.53	2	.19	.55	6
16	.37	.61	1	.36	.40	13
17	.19	-.14	3	.23	.25	13
18	.31	.33	2	.28	.25	9

Table 1B

Item Analysis: Posttest Form S
TD Math 05 & Modular Math 05
(N = 16;32)

Item #	TD % Correct (p+)	TD Pt. Biserial (rpb)	TD # Omits	Modular % Correct (p+)	Modular Pt. Biserial (rpb)	Modular # Omits
			Signed Numbers			
1	.50	.04	-	.31	.12	3
2	.69	.51	1	.38	.28	2
3	.50	.73	-	.28	.78	6
4	.38	.40	1	.34	.48	4
5	.13	.19	3	.09	.01	6
6	.69	.60	-	.41	.35	4
			Fractions			
7	.69	.17	2	.72	.09	1
8	.94	-.29	-	.81	.23	1
9	.63	.25	-	.53	.46	-
10	.50	.87	1	.34	.49	5
11	.50	.77	1	.41	.58	2
12	.63	.47	2	.59	.53	6
			Decimals			
13	0	-	1	.13	.29	3
14	.63	-.08	1	.34	.45	3
15	0	-	1	.13	.29	4
16	.50	.61	1	.50	.28	2
17	.13	-.41	3	.19	.34	6
18	.13	.56	1	.28	.38	3
			Percents			
19	.06	.05	3	.16	.38	1
20	.25	.00	2	.69	.37	2
21	.13	.01	3	.16	.52	1
22	.13	.45	1	.19	.42	2
23	.38	.17	3	.34	.23	4
24	.06	.29	-	.13	.29	2

Table 1B (Cont.)

Item Analysis: Posttest Form S
TD Math 05 & Modular Math 05
(N = 16;32)

Item #	TD % Correct (p+)	TD Pt. Biserial (rpb)	TD # Omits	Modular % Correct (p+)	Modular Pt. Biserial (rpb)	Modular # Omits
			Exp. & Sq. Roots			
25	.69	.54	-	.47	.52	2
26	.38	.73	1	.38	.51	3
27	.63	.71	-	.38	.58	3
28	.56	.69	1	.38	.64	3
29	.19	.66	3	.34	.32	4
30	.38	.55	7	.28	.36	12
			Basic Algebra I			
31	.63	.80	-	.41	.36	4
32	.56	.41	3	.44	.42	10
33	.31	.61	4	.31	.65	12
34	.44	.58	1	.28	.67	7
35	.38	.38	3	.31	.53	8
36	.31	.40	7	.09	.58	20
			Basic Algebra II			
37	.69	.62	2	.38	.30	6
38	.38	.23	2	.09	.18	9
39	.13	-.05	7	.13	.39	15
40	.19	.28	3	.03	-.06	12
41	.06	.32	6	.13	.34	19
42	.06	.32	4	.13	-.01	14
			Basic Algebra III			
43	.38	.32	2	.25	.43	7
44	.69	.68	1	.63	.61	7
45	.31	.70	3	.28	.73	15
46	.63	.67	4	.41	.50	10
47	.56	.77	3	.50	.58	7
48	.63	.62	4	.66	.68	6

Table 1C

Item Analysis: Posttest Form A
TD Math 05 & Modular Math 05
(N = 15;27)

Item #	TD % Correct (p+)	TD Pt. Biserial (rpb)	TD # Omits	Modular % Correct (p+)	Modular Pt. Biserial (rpb)	Modular # Omits
			Signed Numbers			
1	.40	.44	1	.33	.42	--
2	.53	-.05	2	.67	.43	2
3	.07	.12	1	.26	.21	6
4	.20	.08	-	.37	.57	1
5	.13	-.37	4	.30	.45	1
6	.67	.61	1	.56	.48	-
			Fractions			
7	.13	.55	-	.33	.30	2
8	.60	.37	-	.81	.17	-
9	.60	.23	1	.70	.44	1
10	.40	.41	3	.41	.46	5
11	.20	.66	2	.30	.61	3
12	.13	.38	3	.33	.61	2
			Decimals			
13	.20	.47	-	.19	.45	3
14	.33	.54	2	.26	.41	2
15	.27	.18	-	.26	.54	4
16	.07	.47	-	.41	.62	3
17	.20	-.12	2	.26	-.04	7
18	.13	-.02	1	.26	.47	5
			Percents			
19	0	---	1	.19	-.04	4
20	.27	.45	3	.41	.40	3
21	.13	.18	2	.15	-.17	3
22	.20	.10	2	.19	-.05	4
23	.13	-.17	4	.33	.33	3
24	0	---	1	.15	.43	2

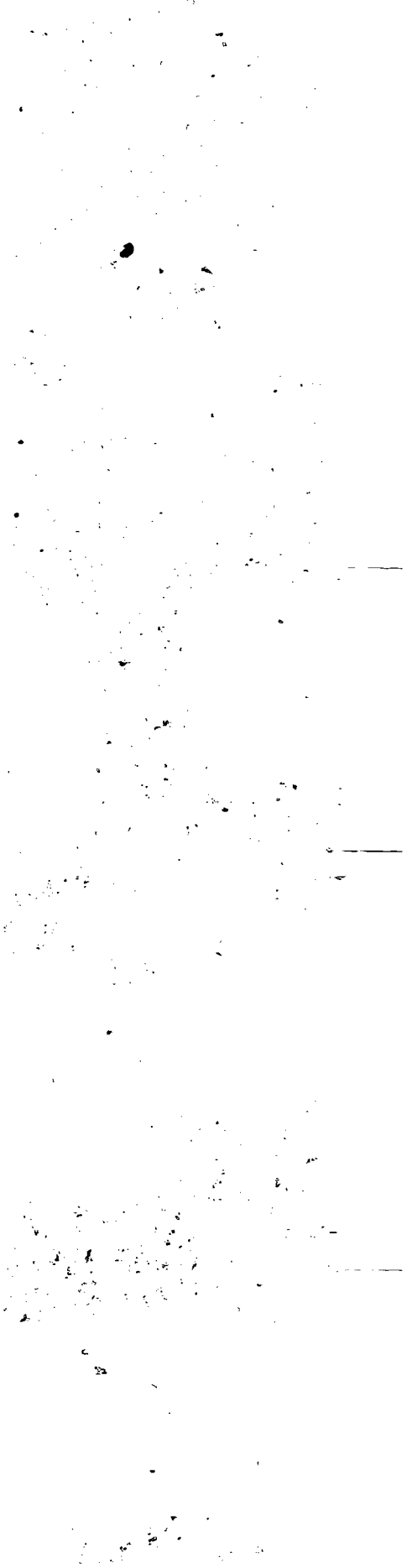


Table 1C (Cont.)

Item Analysis: Posttest Form A
TD Math 05 & Modular Math 05
(N = 15;27)

Item #	TD % Correct (p+)	TD Pt. Biserial (rpb)	TD # Omits	Modular % Correct (p+)	Modular Pt. Biserial (rpb)	Modular # Omits
			Exp. & Sq. Roots			
25	.53	.56	2	.52	.48	3
26	.47	.65	3	.52	.71	3
27	.33	.44	3	.41	.34	4
28	.53	.56	1	.30	.63	5
29	.27	-.30	2	.44	.56	4
30	.20	.47	3	.26	.51	7
			Basic Algebra I			
31	.53	.13	3	.44	.39	3
32	.67	.34	5	.56	.57	8
33	.33	.61	4	.30	.85	7
34	.40	.68	3	.37	.65	8
35	.27	.42	4	.37	.81	9
36	.13	.26	8	.15	.34	12
			Basic Algebra II			
37	.53	.67	6	.37	.40	6
38	.13	.29	4	.19	.25	6
39	.07	.51	5	.04	-.10	12
40	.07	.47	3	.22	.20	10
41	.07	.47	7	.07	.50	13
42	.33	.13	6	.15	.18	11
			Basic Algebra III			
43	.20	.66	5	.22	.66	4
44	.60	.49	4	.56	.36	4
45	.27	.36	6	.22	.66	6
46	.33	.48	4	.37	.17	5
47	.13	.46	4	.56	.71	3
48	.53	.75	4	.74	.58	2

Table 2

Chance Score Frequency: All Forms
(N = 140;48;42)

Test	# Items	Chance Score Criterion	# Cases	%
Form S Pretest	(18)	Partial Total ≦ 4	36	26%
Form S Posttest	(48)	Total ≦ 10	13	21%
Form A Posttest	(48)	Total ≦ 10	12	29%

Table 3

Summary Descriptive Statistics
(N as noted)

Group	# Items	$\bar{X}$	SD	Range Min-Max	Alpha Reliability Coefficient
Form S Pretest[a]	(18)				
TD (N=52)		7.5	2.7	2-14	.54
Modular (N=88)		6.5	3.5	1-16	.75
Form S Posttest	(48)				
TD (N=16)		19.3	8.6	7-34	.90
Modular (N=32)		16.1	8.7	0-35	.90
Form A Posttest	(48)				
TD (N=15)		13.9	6.9	2-27	.84
Modular (N=27)		16.7	9.1	5-38	.90

[a] $F = 2.667$, NS.

Note: No further inter-group comparisons made due to small sample size. See Table 7.

Table 4

Pretest Form S: TD Math 05 versus
Modular Math 05
(N = 52;88)

Subtest	# Items	TD $\bar{X}$	TD SD	Modular $\bar{X}$	Modular SD	F	P
1. Signed Numbers	(6)	2.2	1.3	1.9	1.6	1.475	NS
2. Fractions	(6)	3.6	1.3	3.1	1.3	5.151	$p < .05$
3. Decimals	(6)	1.6	1.3	1.6	1.3	.113	NS
PARTIAL TEST	(18)	7.5	2.7	6.5	3.5	2.667	NS

Table 5

TD Math 05 Posttest Comparisons: Form S versus Form A
(N = 16;15)

Subtest	# Items	Form S $\bar{X}$	Form S SD	Form A $\bar{X}$	Form A SD	F	P
1. Signed Numbers	(6)	2.9	1.5	2.0	1.0	3.600	NS
2. Fractions	(6)	3.9	1.4	2.1	1.5	11.350	$p < .01$
3. Decimals	(6)	1.4	.8	1.2	1.1	.263	NS
4. Percents	(6)	1.0	1.0	.7	.9	.593	NS
5. Exp. & Sq. Roots	(6)	2.8	2.1	2.3	1.7	.453	NS
6. B. Algebra I	(6)	2.6	1.9	2.3	1.5	.210	NS
7. B. Algebra II	(6)	1.5	1.0	1.2	1.2	.526	NS
8. B. Algebra III	(6)	3.2	2.1	2.1	1.6	2.579	NS
TOTAL TEST	(48)	19.3	8.6	13.9	6.9	3.362	NS

Table 6

Modular Math 05 Posttest Comparisons: Form S versus Form A
(N = 32;27)

Subtest	# Items	Form S $\bar{X}$	Form S SD	Form A $\bar{X}$	Form A SD	F	p
1. Signed Numbers	(6)	1.8	1.4	2.5	1.6	2.927	NS
2. Fractions	(6)	3.4	1.7	2.9	1.7	1.327	NS
3. Decimals	(6)	1.6	1.3	1.6	1.5	.035	NS
4. Percents	(6)	1.7	1.5	1.4	1.4	.447	NS
5. Exp. & Sq. Roots	(6)	2.2	2.1	2.4	1.9	.183	NS
6. B. Algebra I	(6)	1.8	1.8	2.2	2.1	.454	NS
7. B. Algebra II	(6)	.9	.8	1.0	1.3	.351	NS
8. B. Algebra III	(6)	2.7	2.0	2.7	1.9	.010	NS
TOTAL TEST	(48)	16.1	8.7	16.7	9.1	.075	NS

Table 7

Posttest Form S and Form A Combined: TD Math 05 versus Modular Math 05 (N = 31;59)

Subtest	# Items	TD $\bar{X}$	TD SD	Modular $\bar{X}$	Modular SD	F	p
1. Signed Numbers	(6)	2.5	1.3	2.1	1.5	1.056	NS
2. Fractions	(6)	3.0	1.7	3.2	1.7	.196	NS
3. Decimals	(6)	1.3	.9	1.6	1.3	1.237	NS
4. Percents	(6)	.9	1.0	1.5	1.4	5.593	$p < .05$
5. Exp. & Sq. Roots	(6)	2.6	2.0	2.3	2.0	.343	NS
6. B. Algebra I	(6)	2.5	1.7	2.0	1.9	1.361	NS
7. B. Algebra II	(6)	1.4	1.1	.9	1.0	2.887	NS
8. B. Algebra III	(6)	2.6	2.0	2.7	1.9	.013	NS
TOTAL TEST	(48)	16.7	8.2	16.4	8.9	.022	NS

Table 8

Form S Pre- to Posttest Gains for Intact Score Pairs Only:
TD Math 05 versus Modular Math 05
(N=16;18)

Subtest	# Items	TD $\bar{X}$	TD SD	Modular $\bar{X}$	Modular SD	F	p
1. Signed Numbers	(6)	.4	1.4	-.2	1.9	1.070	NS
2. Fractions	(6)	-.1	1.0	.6	1.3	3.336	NS
3. Decimals	(6)	-.4	1.3	-.2	1.4	.340	NS
PARTIAL TEST	(18)	-.1	2.4	.3	3.4	.156	NS

DEVELOPMENT OF AN INTERACTION ANALYSIS SYSTEM

Thea Fuchs Benenson, Ph. D.

Preface

This portion of the Final Report for the Fund for the Improvement of Postsecondary Education has been prepared by Dr. Thea Fuchs Benenson, Consultant to Bronx Community College. Dr. Benenson was formerly Project Director for the research reported herein while Assistant Director of Institutional Research for Program Evaluation at the College.

A preliminary form of the research reported herein was originally made possible by funds allocated to the College Discovery Program of Bronx Community College by the College Discovery Central Office of the City University of New York. The interaction analysis system was developed by Connie Hicks Weil and Jim Weil, both doctoral candidates in the Department of Anthropology at Columbia University.

Further work and dissemination of the research was supported in part by grant #G00-7502076 from the Fund for the Improvement of Postsecondary Education, Department of Health, Education and Welfare. Secretarial services were provided by the Office of Institutional Research at the College.

New York
February 1977

Table of Contents

RESEARCH

INTRODUCTION

The interaction analysis system described in this report was developed as a program evaluation tool, specifically to describe the interpersonal process in the classroom. The system is sufficiently detailed that its use in other than a classroom setting is also possible.

The system described was adapted from the interaction analysis techniques developed by Flanders (1965, 1970), modified by Amidon and Hunter (1970) and Hough (1970), and further modified and cast into a standard anthropological system of observation, notation, and scoring (Weil, Weil & Benenson, 1975). A reprint of the observational coding system is presented in Figure 1 of the Instrument section of this report.

The developed system would be of interest to those agencies and institutions eager to describe educational programs in terms of observed interpersonal processes or classroom management techniques. When both a "treatment" and a comparison (alternative or no treatment) group of classrooms is observed, programmatic claims to innovative classroom management can be assessed. Analysis of selected outcome characteristics such as student absence rates, attrition rates, and final course grades earned--again in a treatment group/comparison group format--would delineate concurrent differences on these outcomes.

It should probably be emphasized that the interaction analysis system is useful as a process-descriptive tool; it is not intended to describe the content of the teaching itself.

SAMPLE

A. Four remedial courses in a daytime, block-programmed, inter-disciplinary program restricted to remedial second-semester College Discovery students were observed, one classroom section per course. The program was entitled Total Discovery, with the acronym TD. Random selection of sections was not possible. It should be noted that these courses were taught, as were all TD courses, by largely self-selected faculty; results are therefore generalizable only to similar programs.

B. Four non-TD daytime classroom sections of the same remedial courses were also observed. Again, random selection was not possible. Under the faculty union contract, classroom visitation by other than the department chairperson is entirely voluntary. Results are therefore generalizable only to similar classrooms.

For each sample, the remedial courses observed were:

a. ENG 02: The second level remedial grammar and composition course.

b. MATH 05: The basic remedial mathematics course.

c. MATH 06: The second level remedial mathematics course.

d. RDL 02: The second level remedial reading course.

Each section was visited three times during the same three-week period, with the exception of the TD MATH 05 course which was visited twice. Thus, there were eleven observed 50 minute sessions for Sample A (TD) and twelve observed 50 minute sessions for Sample B (non-TD).

PROCEDURES

Data were collected by one of two observers according to a specified format during each of the twenty three 50 minute classroom visits. The

specified 25 category format is reproduced in the instrument description section (Figure 1) below.

An observation of the prevailing classroom activity was recorded every six seconds. Each observation was discrete, not a summary of activities occurring in a six-second period. Thus, not every event in a classroom was recorded, but only those observed each six seconds. The six-second time interval was chosen as frequent enough to encompass interaction among classroom participants; a stopwatch was used to time observations. A full 50 minute class session entailed 500 observations; although the sessions were usually somewhat shorter.

As mentioned, twenty-five categories of classroom activity were delineated. Each six-second observation was recorded on a two-letter code for one of these categories. The first letter of each code indicated who, if anyone, was speaking; the second letter indicated the exact nature of the verbal or other activity. The categories were intended to be comprehensive and non-overlapping. Since team-teaching and tutors were present in some classrooms, both were represented in the coding scheme--by the "other person" (O) categories and, by inplication, in the categories of individual help (XH) and small group activites (XG).

The data were analyzed according to the proportion of observations falling into each of the 25 categories, separately for each sample, but for the four remedial courses combined within each sample.

The two samples were also compared with respect to class size and presence of a tutor in the classroom.

INSTRUMENT

Figure 1 contains the 25 category coding scheme. A measure of inter-rater reliability was obtained when the two observers scored one class session together. In the 492 observations recorded during the single class session, the two observers placed 78% in identical categories. If only the first of the two letters in each code was considered, ie. the speaker, the two observers agreed on 96% of the observations. These indicia were probably conservative estimates, as the particular class chosen was characterized by a rapidity of verbal exchanges and by an ambiguity in some exchanges.

Figure 1
Coding Key for Classroom Observations

Teacher (T) is speaking to class as a whole:

TL = lecturing about or explaining subject matter
TM = dealing with course mechanics; procedures rather than content if related to subject matter
TQ = asking question or otherwise eliciting classroom response about subject matter or related procedures
TR = responding to classroom question or other remark about subject matter or related procedures
TP = expressing positive or supportive attitude in a direct way, even if within another context
TN = expressing negative or non-supportive attitude in a direct way, including discipline, even if within another context
TZ = dealing with topics other than subject matter, course mechanics, or personal attitudes

Student (S) is speaking to class as a whole:

SI = initiating a question or comment about subject matter or course mechanics
SR = responding to classroom question or other remark
SP = expressing positive or supportive attitude in a direct way
SN = expressing negative or non-supportive attitude in a direct way
SZ = dealing with topics other than subject matter, course mechanics, or personal attitudes

Other Person (O) is speaking to class as a whole:

OL = lecturing about or explaining subject matter
OM = dealing with course mechanics
OQ = asking question or otherwise eliciting classroom response about subject matter or related procedures
OR = responding to classroom question or other remark about subject matter or related procedures
OP = expressing positive or supportive attitude in a direct way
ON = expressing negative or non-supportive attitude in a direct way
OZ = dealing with topics other than subject matter, course mechanics, or personal attitudes

No Person (X) is speaking to class as a whole:

XD = demonstration, e.g., on blackboard or with audio-visual equipment
XA = activity assigned for entire class; no individual help
XH = teacher and/or other person helping student(s) individually; no group discussion
XG = two or more groups, each led by teacher or other person; includes one student getting individual help while someone is speaking to the rest of the class
XX = no ordered activity in progress
XY = momentary break in action

RESULTS

Activity Proportions: Table 1 presents raw score tallies and percentage conversions for each of the 25 classroom activities, separately for the two samples.

Table 1

Percentage of Total Classroom Observations Devoted to Various Activities

Activity	TD %	TD (#)	Non-TD %	Non-TD (#)	Z*
TEACHER SPEAKING					
TL (lecture	23%	(1156)	25%	(1437)	NS
TM (course mechanics)	4%	(193)	7%	(381)	$p < .01$
TQ (question)	9%	(471)	8%	(439)	NS
TR (response)	4%	(175)	6%	(370)	NS
TP (positive attitude)	1%	(33)	1%	(34)	**
TN (negative attitude)	--	(11)	--	(20)	**
TZ (other subject)	2%	(75)	1%	(47)	**
SUB-TOTAL	43%	(2114)	48%	(2728)	$p < .01$
STUDENT SPEAKING					
SI (question/comment)	3%	(128)	6%	(325)	$p < .01$
SR (response)	7%	(359)	8%	(462)	NS
SP (positive attitude)	--	(1)	--	(6)	**
SN (negative attitude)	--	(1)	--	(0)	**
SZ (other subject	1%	(25)	1%	(26)	**
SUB-TOTAL	10%	(514)	14%	(819)	$p < .01$
OTHER PERSON SPEAKING					
OL, OM, OQ, OR, OP, ON, OZ	each less than 1%		-		**
SUB-TOTAL	--	(11)	--	(0)	**
NO SPEAKER					
XD (demonstration)	1%	(41)	2%	(122)	**
XA (assigned act.)	4%	(220)	7%	(387)	$p < .01$
XH (indiv. help)	31%	(1530)	26%	(1476)	$p < .01$
XG (group act.)	7%	(364)	--	(0)	$p < .01$
XX (no ordered act.)	1%	(54)	--	(16)	**
XY (mom. break)	2%	(115)	2%	(133)	**
SUB-TOTAL	47%	(2324)	38%	(2134)	$p < .01$
TOTAL		(4963)		(5681)	

*Two-tailed difference of uncorrelated proportions test.
**2% or less of observations; no further analysis.

Because of the exploratory nature of the research, an attempt was made to consider a full complement of possible activities. As a consequence, in both TD and non-TD classes, 16 of the 25 categories each contained two percent or less of the total observations (Table 1); no further statistical analyses were carried out for these 16 categories.

When the four sub-totals were examined, non-TD classes evidenced significantly, $p < .01$, more teacher speaking and student speaking activities. TD classes evidenced significantly, $p < .01$, more no speaker activities; categories XH (individual help) and XG (group activity) accounted for the majority of these activities. (It is possible that the smaller TD class sizes and the presence of tutors in TD sections, see below, are related to the last results cited.) Other person speaking activities were negligible in both samples.

For both samples, teacher speaking activities and no speaker activities clearly predominated over student speaking and other person speaking activities. Moreover, regardless of expressed programmatic goals stressing informality or intimacy in TD, the classes in both samples had small numbers of observations in categories which would have been indicative of this. Such categories would include TP, SP and OP, representing expression of supportive attitudes; and TZ, SZ and OZ, representing remarks not related to subject matter.

Class Size and Presence of Tutor: TD and non-TD classes differed markedly in class size, $p < .01$, two-tailed t test, reflective of college registration policy. A total of 114 students attended the 11 TD sessions observed, for a mean of 10 students per session. A total of 211 students attended the 12 non-TD sessions observed, for a mean of 18 students per session.

The 12 non-TD sessions had no tutor present in the classroom; the 11 TD sessions had a classroom tutor present for seven of the eleven sessions. As mentioned parenthetically in the preceding section, it is possible that the smaller TD class sizes and the presence of tutors in TD sections are related to the observed increase in frequency of individual help and group activity in TD sections.

DISCUSSION

The classroom activities paradigm presented in this report seems to be a reliable process-descriptive instrument, capable of providing a check on program claims of "innovative" classroom interaction. The specific results must be interpreted with caution; they are based on a relatively small number of classes, largely taught by self-selected faculty. Classroom observation was solely on a teacher-voluntary basis.

A suggestion for further research would include the recommendation to use this process-descriptive instrument together with selected educational production or outcome characteristics, probably in a multiple regression format.

References

Flanders, N. A. Teacher Influence, Pupil Attitudes, and Achievement. Washington, D.C.: U. S. Office of Education, 1965.

Flanders, N. A. Analyzing Teaching Behavior. Reading, Mass.: Addison-Wesley, 1970.

Chapters by Amidon and Hunter and Hough in Simon, A. and Boyer, E. G. (Eds.). Mirrors For Behavior: An Anthology of Classroom Observation Instruments. Philadelphia: Research for Better Schools, 1967 and 1970.

Weil, C. H., Weil J., Benenson, T. F. Research Report #8-75. Office of Institutional Research, Bronx Community College, City University of New York, 1975.

INTERDISCIPLINARY EFFORTS IN REMEDIATION AT BRONX COMMUNITY COLLEGE: STIR, LINK, TOTAL DISCOVERY

Robert F. Dennehy, Ph.D.

Barbara Schaier

Preface

This portion of the Final Report for the Fund for the Improvement of Postsecondary Education has been prepared by Dr. Roberty F. Dennehy of the Bronx Community College Psychology Department and Barbara Schaier, Grant Associate, National Project II. This report was patiently typed and retyped by Bess Heyman, Executive Secretary for National Project II.

New York
May 1977

Table of Contents

INTERDISCIPLINARY EFFORTS IN REMEDIATION: STIR, LINK, TOTAL DISCOVER

Since the Fall of 1972 three successive interdisciplinary programs designed to provide remediation for underprepared freshmen have been implemented at Bronx Community College. These Projects, STIR, LINK, and Total Discovery (TD) will be studied to demonstrate the evolution of interdisciplinary approaches to remediation at B. C. C. Educational strategies and goals changed as a result of program assessment as well as faculty skills and preferences. In addition to these internal factors, the financial crisis of Bronx Community College, City University of New York, and New York City also had their impact. This report will focus on the myriad of internal and external forces that impinged on the evolution of the current project TD from project STIR. Published reports on each of these programs have provided some of the information for this study.

PROJECT STIR

In October 1971, several Bronx Community College faculty members attended a workshop at the Center for Humanistic Education that focused on the remediation program for entering students. Of particular concern were students who lacked competency with all basic skills. As a result of this workshop, in the Spring of 1972 a small planning group met to develop co-operative strategies to assist these remedial students. Project STIR was funded for one semester in the Fall of 1972 by the Committee on the Remediation Budget.

OBJECTIVES

During the Spring of 1972 the faculty team viewed STIR as an innovative vehicle to promote skills-learning with selected Bronx Community College students. It was hoped the students would experience rapid gains in basic skills, thus increasing their confidence. This was expected to lead to higher grades and progression to more sophisticated courses.

It became apparent early in the semester that this notion was a limited approach to remediation. Teaching isolated skills would not compensate for the other deficiencies such as students' financial and family problems. The concept of "remedial" therefore was expanded in an attempt to create an integrated unconventional approach to the student via a Faculty-Counselor team.

The program evolved as a humanistic effort to reach the unmotivated, alienated and underprepared student. It developed the following goals:

1. To provide experiences to motivate students to change their patterns of behavior and be success oriented.
2. To create a personalized atmosphere in which students begin to feel good about themselves.
3. To establish a non-competitive, non-traditional setting where cooperation and support are primary factors in faculty-student relationships.

4. To de-emphasize negative past performances, such as low I.Q.'s or high school scores, in order to concentrate on present progress.

ORGANIZATION

Project STIR was unique in method and services as compared with remedial courses in the mainstream of the college. Students with remedial needs in Reading, English and Math were recruited by STIR faculty at registration. The Project students had a block program which included all remedial courses plus Health and the orientation class conducted by a counselor. This meant that students went to all of their classes together and shared the same instructors, while faculty shared the same students. Another unique element was that the faculty team met regularly each week for two hours. This meeting was an important tool in STIR's success. The cohesion and close contact established among faculty members was the crucial key to implementing the philosophy of a total approach to remedial students. Additionally, students' attitudes in classes and possible solutions for negative attitudes were shared. For example, sleepiness in class, tardiness and apathy were often recurrent problems. Knowledge was pooled to determine in which classes the individual exhibited this negative behavior and possible solutions for the faculty as a group and as individuals were offered. In addition, ways in which the student's strengths could be used to overcome weaknesses and the pros and cons for peer assistance were considered.

Another primary focus of the weekly conference was on ways to facilitate learning by the interdisciplinary use of curriculum. For example, all STIR faculty had a particular role to play in the Health Project. In Math, students learned mathematics skills to handle statistics; in Reading, they learned to extract main ideas and details from reading material and to apply note-taking and research techniques; and in English, students learned fundamentals of grammar and the arrangement of materials in a working outline.

In STIR gaining institutional support was considered a major goal because as a new project future funding was tentative. Consequently much time and energy was devoted to the following activities:

1. Inviting guests to the regular meetings.
2. Writing articles about STIR.
3. Keeping chairmen informed of the Project's progress.
4. Preparing STIR's appearance for the Committee on Instruction. (This became a joint project of faculty and several students).
5. Writing a proposal for Spring'73, to submit to the Committee on Remediation.
6. Planning a videotape, taped in January'73, with STIR's first group of students.
7. Planning an evaluation report.

OUTCOMES

1. Holding Power - The holding power of Project STIR was unusual in two respects: the method of recruitment and registration resulted in only a small discrepancy between those who registered and those who appeared on the first day of class and there was a high rate of completion of the total program of those students who appeared on the first day.

Of the 43 students who registered originally, only five did not appear on the first day. The discrepancy between the original registration roster and actual first day attendance was smaller than in the mainstream. The difference resulted from recruitment to a "special program" and the registration procedures that gave students a block program, thereby omitting many possibilities of registration errors.

By the end of the semester, it was evident that the program had unusual holding power. Out of the 38 students who started on that first day only three withdrew from the program and those were for non-academic reasons.

Statistical analysis also showed that when compared with non-STIR classes in Math and Health, Project STIR had a significantly better holding power on the students enrolled in it.

It is important to look at these results in light of published figures of the then Open Admissions dropout rate for community colleges of up to 48%. In most cases withdrawals from Project STIR were for severe personal/financial rather than for academic reasons. Although not dramatically eliminating severe academic deficiencies in one term, Project STIR succeeded

in at least providing the support necessary to enable most of the students to persist in college.

2. Group Cohesion - Students meeting each other in all their classes quickly stimulated the development of a group-cohesion that was beneficial in their academic work. Because of the amount of time spent together, students quickly realized each other's strengths and weaknesses and thereby used each other for mutual support and help. The better students in Math were tutoring others informally and giving encouragement to attend the Math Lab. Students were often in small groups during their common free hours, either socializing or very often discussing classwork.

3. Achievement - An attempt was made to devise a research design that would tap achievement of Project STIR students. The ideal control group for comparison would be a parallel group of entering 9/72 students, all of whom needed English, Reading and Math and who had expressed interest in the program. Logistics and other problems prevented the use of an ideal comparison group in a strict pre-post format. Though it was not feasible to gather data in this ideal way, some comparison groups of non-STIR students in other sections taught by STIR faculty were established. Although this comparison kept the instructor variable somewhat constant, it could not be determined that control students needed all three remedial classes nor that they were all 9/72 entering students.

Comparison of STIR and non-STIR students in Health, Reading and English revealed no significant differences in final grades. However, since the comparison groups needed fewer remedial courses, the lack of significant differences in grades may actually be favorable to STIR students, whose initial deficiencies were greater.

CONCLUSION

STIR began with the expectation that faculty by working together intensively and by concentrating only on the improvement of academic skills could make a meaningful impact on the academic success of the 38 students enrolled in the program. It was learned, however, that the nature of academic deficiency is complex; students who enter the college with severe handicaps to learning must be motivated and their special emotional and social needs must be defined and met. This represented a major change in the Project's philosophy.

Although STIR students had greater remedial needs they performed as well in their academic courses as students from the general population. However, the STIR students had a higher rate than a matched group of non-STIR students.

The advantages of STIR were evident to both students and faculty. Students benefitted from a simplified registration process and a condensed college program that allowed them to work part-time. Faculty found the

weekly meetings with others teaching the same students helpful in identifying students problems, in formulating recommendations and in stimulating faculty interchange across areas of expertise.

PROJECT LINK

The block-programmed format of Project STIR was expanded into the renamed Project LINK in September 1973. LINK thus emerged from Project STIR evaluative data, the recognition of student needs and continued administrative program development.

ORGANIZATION

The four faculty members which comprised the original 2 blocks of Project STIR (each of which contained a "family" of approximately 15 students) continued into Project LINK with but a change in counselor. During the Fall 1973 semester these 2 blocks were referred to as STIR/LINK: the students in these 2 blocks were, as before, Liberal Arts entering freshmen with remedial placements in reading, writing and mathematics. During the Fall 1973 semester there were an additional 3 blocks of Liberal Arts students, 2 blocks of Pre-Nursing students and 1 block of Evening students. Again, all students were entering freshmen with remedial placements in all three academic subjects.

The 8 blocks comprising Project LINK during the Fall 1973 semester started in September with a total of 123 students, 46 males and 77 females.

All students in the 8 blocks took remedial reading (either RDL 01 or RDL 02) and remedial writing (ENG 01). All students in the 2 Pre-Nursing blocks took a remedial mathematics course open only to Pre-Nursing students (MTH 08); students in most of the Liberal Arts blocks took the regular first remedial mathematics course (MTH 05); there were some Liberal Arts blocks where students took no mathematics course. Additionally, all students in the 8 blocks took Critical Issues in Health (HLT 91), the credit-bearing college-level course.

All LINK students were enrolled for the regular six-sessions orientation workshop/seminar (SPD 99) offered by the Department of Student Development to all entering freshmen at the college. Additionally, because of student and faculty interest SPD 99 was extended throughout the semester for all LINK students.

During the Spring 1974 semester, Project LINK was composed of 5 blocks; 4 blocks were Liberal Arts and 1 was a Pre-Nursing block. There were a total of 68 new LINK students at the start of the Spring 1974 semester, 29 males and 39 females. As during the Fall 1973 semester, all students took remedial reading (either RDL 01 or RDL 02) and remedial writing (ENG 01). Again all Pre-Nursing students took MTH 08 and most of the Liberal Arts blocks took MTH 05. Again all students were enrolled in HLT 91 and SPD 99 for the entire semester. The original STIR faculty did not persist as an intact unit into the Spring 1974 semester.

OBJECTIVES

The program objectives listed in order of estimated likelihood of achievement were:

1. Reduced attrition.
2. Change in interest pattern.
3. Improvement in basic skills.
4. Improved achievement in subsequent regular community college courses.

STUDENT OUTCOMES

Attrition - First-semester retention percentages for Project LINK, 79% in the Fall group and 83% in the Spring group, are not significantly higher than either the non-LINK comparison group figure of 80% or the institutional first-semester return rate of approximately 75%. However, female students did have a slightly higher first-semester retention rate - 82% in the Fall group and 87% in the Spring group.

When the Fall LINK students were followed into their second semester, the retention rate for LINK was slightly higher than for the non-LINK comparison group, 72% vs. 65%. Again, females persisted at a somewhat higher rate, 77% vs. 65%. This difference suggests the positive effects of a special program on long-term retention.

Change in interest Patterns - Technical problems with an interest test precluded any conclusion about changes in interests of LINK students.

Basic Skills - Monumental problems in data collection arose. Some tentative findings, however, were revealed:

a) There was no evidence to indicate signifcant improvement in writing skills.

b) On the basis of Nelson-Denny results, there was sufficient evidence to conclude that reading scores for the LINK group had been raised.

c) On the basis of the Educational Skills Test: Mathematics there was no evidence for any improvement in mathematics competency. However, on the Differential Aptitude Test: Numerical Ability scores, there was evidence of substantial improvement in the computational skills of the Pre-Nursing students.

d) Allied to the basic skills, there was an increase in measured scholastic aptitude on the part of Fall male LINK-students, particularly where verbal reasoning abilities are concerned.

Regular Community College Courses - No data were available on achievement in courses taken after completion of the LINK program.

FACULTY EVALUATION

Faculty workshops were held during both semesters. Although attendance was less than optimal, a variety of program advantages and problems were surfaced.

Major advantages centered on the following:

1. Weekly faculty conferences facilitated interdisciplinary efforts. Specifically, teaching methods, common curricular areas, and problems attracted most attention.

2. The conferences enhanced better understanding of the particular strengths and problems of individual students.

3. The conferences also helped faculty and counselors to identify students who needed special attention. This advantage was cited primarily by the counselors. From the weekly meetings, the counselor knew which student had not attended classes and therefore, intensified efforts to contact the student before the student fell behind in his or her school work.

Major problems cited were primarily structural and centered on the following:

1. Individual academic departments did not schedule or take into account the weekly two hour faculty conference. Therefore, in some LINK blocks, the four faculty members did not have a common, free time to meet.

2. Responsibility for opening and closing sections at registration was somewhat ambiguous, with some department chairmen somewhat reluctant to relinquish authority to the Project Director.

3. The Mathematics Department modularized many sections of MTH 05. All LINK students, therefore, did not all stay with the same mathematics instructor for the semester. This proved to be fairly disruptive to the friendly framework for faculty and students in the blocks.

4. SPD 99 is a non-credit course. Students are sometimes quick to grasp the fact that although attendance is requested, non-attendance carries no sanctions or penalties.

SUMMARY AND CONCLUSIONS

Project LINK slightly improved retention, especially for female students. It resulted in overall improvement of reading scores and the computational skills of the Pre-Nursing students. However, no improvement occurred in writing skills and mathematical competency. Moreover, no data was available on success in subsequent regular community college course.

In a much larger context Project LINK served to continue to breakdown some of the rigid curricular boundaries between basic skill academic areas that had been initiated in STIR. Interdepartmental communication concerning teaching methods and curriculum improved substantially among individual faculty, even if structural difficulties inherent in a traditional, departmental college remain.

In the Spring of 1974, Project LINK faced major difficulties when the Remediation Committee decided to discontinue the allocation of funds for the Project. The reason for the inability to sustain the Remediation Committee's enthusiasm for LINK has been largely attributed to the absence of an effective program leadership and committed administrative support. Additionally, no release time was offered LINK faculty, in spite of the extra time and energy required to fully participate in the Program.

At this time many of the more involved LINK faculty also became involved with a proposal to the Fund for Improvement of Postsecondary Education for a cluster college based on the interdepartmental approach. Although this Project was not funded, it provided the basis for Project TD, which evolved when College Discovery funds became available the following Fall.

Despite these problems LINK continued into the next school year on a reduced scale with minimal success.

PROJECT TOTAL DISCOVERY - SPRING OF 1975

Project Total Discovery was an outgrowth of the two earlier interdepartmental programs, Project STIR and Project LINK. TD was begun Spring semester 1975 in order to provide a group of second-semester freshmen with an intensive educational experience. Individualized instruction and interdepartmental cooperation were emphasized. Project Total Discovery differed from its two predecessors in that it was limited to College Discovery students. Moreover, Project Total Discovery added four more college-level courses to the remedial core in order to accommodate a greater number of students and to provide a more "total" program experience for them.

OBJECTIVES

The proposal for Total Discovery specified six objectives for the program:

a) To reduce student attrition.

b) To facilitate student mastery learning, especially in the areas of reading, writing, and mathematics.

c) To encourage students to take a more realistic look at current career opportunities.

d) To provide a climate in which faculty and students would interact more frequently and intimately with themselves and with each other.

e) To facilitate faculty perceptions of themselves as a target group for change.

f) To enable faculty members to evaluate their own growth and teaching ability in a non-competitive and non-punitive environment.

The proposal suggested that these objectives might be met through greater flexibility in teaching (for example, use of resources outside the formal classroom and individualized instruction), intensive use of tutors both in and outside the classroom, and coordination among faculty members. These objectives are more clearly defined than those of the two previous inter-departmental projects; STIR and LINK. They also represent a broadening of perspective.

ORGANIZATION

Nine faculty members were responsible for the total academic program for 58 students. In addition, five other people worked part-time in TD - a director, a counselor, a social worker, and two social scientists who evaluated the program. The addition of the social worker and evaluators

to the Project Staff were indicative of the broadened Project objectives as compared to STIR and LINK.

Project Total Discovery was organized and set into motion in only three months by people with major responsibilities elsewhere in Bronx Community College. This short time for preparation exacerbated some of the organizational and administrative problems inherent in the initiation of any project. The proposal for the project was submitted to the College Discovery Central Office of the City University of New York in October 1974 and funding was approved in November. Faculty members were recruited by early December. The selection of students took place between early December and early February. Two full-day orientation workshops for the faculty were held in January. Classes began February 3rd. The two evaluators were not hired until March, so they were unable to supervise any pre-testing at the beginning of the semester.

All of the students in Project Total Discovery were College Discovery students, and the College Discovery director served as the director of Total Discovery. The College Discovery Program, supported by city and state funds, serves students who meet age and financial need criteria. Depending on the extent of financial need, students may receive free books, pay no registration fees, and receive a stipend. The program provides such supportive services as intensive counseling, social work and tutoring. Funds were also available to provide limited release time for faculty participating in Total Discovery. Because students had to be chosen

quickly for the first semester of Project Total Discovery, clear-cut selection criteria were not established and the screening process was somewhat haphazard. Counselors talked with College Discovery students during the regular advisement period for Spring semester and recommended participants for Total Discovery. The major basis for selection was a very pragmatic one - whether or not a student needed enough of the courses offered in Total Discovery to constitute a full program. In at least a few cases, counselors recommended students who had experienced only failure in college; counselors felt that the only way these particular students might succeed would be with the personal attention and support offered in Total Discovery.

As in Project STIR and LINK, the 58 students who were registered in Total Discovery took all of their courses in the program. The courses were held in classrooms on one floor of a central classroom building. Since the students had all of their classes in the same location with the same pool of students, it was expected on the basis of past experience that interaction among the program's participants would be facilitated and that a sense of "community" would develop.

Because many of the faculty members were part-time in Total Discovery and had prior commitments outside the Project, it was not possible to schedule a common weekly meeting. Instead, two meetings were held each week with each faculty member attending one. This situation hampered communications somewhat.

The first faculty meetings dealt with problems related to physical facilities. A lounge and coffee pot were suggested to encourage students and faculty to interact between classes, and there were difficulties obtaining keys to classrooms. By mid-March these problems had been resolved and more discussion was devoted to the objectives of Total Discovery, experiences with teaching in the program, and problems of individual students.

In order to promote a greater integration of students with faculty and with other students, a joint faculty-student "town meeting" was held in mid-February, and two student meetings were held later in the semester. Student attendance at all of these meetins was poor. A student "president" was chosen by petition; he attended several faculty meetings. The faculty members were concerned about the lack of student participation, but no effective means were established to promote it.

Several of the teachers held "workshops" and individual consultations outside class hours. In some cases, student attendance was again disappointing.

CONCLUSIONS

In this section, the findings of the evaluation of Total Discovery's first semester are summarized and related to the project's initial objectives.

a) To reduce student attrition. This objective was not achieved. In comparison with two groups of Bronx Community College second-semester freshmen who were matched with the Total Discovery students on the basis

of age, sex, and Nelson-Denny reading placement scores, the Total Discovery students had a slightly higher attrition rate (24 per cent, compared with 21 per cent and 19 per cent for the two comparison groups). Note, however, that this "attrition rate" represents withdrawals during one semester. A more meaningful measure, which cannot be made until later, would be the percentage of students who fail to return to college fall semester. Of the 14 students who withdrew during the first semester of Total Discovery, two are enrolled in summer courses and one has transferred to another community college. Others have said they will return in fall. These may not be "dropouts" in a longer range evaluation.

b) To facilitate mastery learning, especially in the areas of reading, writing, and mathematics. It is difficult to assess whether this objective was satisfied. Because no one was responsible for evaluating Total Discovery until more than one-fourth of the semester had passed, standardized pre-tests were not developed and administered. Thus, there were no baseline data for evaluating progress during the semester.

Certainly, many instructional strategies were used by the faculty in attempting to foster mastery learning. The dividing lines between courses within mathematics and English were relaxed, so that if a student made sufficient progress, he could move into the next higher course during the semester. Teachers held extra class sessions, special "workshops," and extensive consultation with individual students. The class hours of one

course, Math 05, were expanded from the usual five to nine hours per week. In-class tutoring was used 211 hours during the semester. Students were encouraged to make use of the unlimited tutoring available outside class as well.

The only findings in the evaluation which indicate to what extent mastery learning of basic skills may have been achieved are those concerning grade outcomes for the semester. These findings are disconcerting. For college-level credits earned and remedial courses passed as proportions of those attempted, Total Discovery students experienced no more success, and in some cases less, than did the students in two comparison groups. The majority of remedial courses attempted by the students in each of the three groups were not passed. Nevertheless, of the 46 students formally interviewed, 33 felt they had learned more in Total Discovery than they had the previous semester. They did, in fact, pass a higher proportion of college-level credits attempted than they had the previous semester, but they passed a much lower proportion of the remedial courses attempted. Moreover, they attempted fewer college-level credits than did the students in the comparison groups.

c) To encourage students to take a more realistic look at current career opportunities. The counselor associated with Total Discovery held two "career workshops" for students in the project. Each of these consisted of six weekly meetings in which students were encouraged to explore their own preferences and expectations, to gather information about careers in

which they were interested, and to make realistic choices. It was reported that six attended the first workshop, eight the second. In addition, two Total Discovery teachers gave assignments designed to help students learn to locate career information.

d) To provide a climate in which faculty and students will interact more frequently and intimately with themselves and with each other. Responses in the student and faculty interviews indicate that this objective was achieved. When students were asked the open-ended question, "What do you like about Total Discovery?", the three most common responses given were knowing the teachers better than they would outside the project, having teachers take more time with students, and knowing their classmates better than they would outside the Project. Faculty members, when asked the same question, responded overwhelmingly that Total Discovery's major advantages were the opportunity to individualize instruction and gratifying interpersonal experiences for participants in the Project. Since Total Discovery is an interdisciplinary endeavor, faculty from different departments have a rare opportunity to interact on a regular basis.

e) To facilitate faculty perceptions of themselves as a target group for change. It is obvious that faculty participants in Total Discovery do see themselves as a target group for change. This may, or may not have anything to do with the Project per se; faculty members who are already flexible and innovative may be more likely to participate in an experimental program.

The experimentation with expanded class hours, workshops, more fluid boundaries between sequential courses, and cooperative assignments is evidence of the flexibility of the Total Discovery faculty. Their commitment to self-evaluation and experimental teaching is clear in the responses to the formal interviews.

f) To enable faculty members to evaluate their own growth and teaching ability in a non-competitive and non-punitive environment. Again, the responses to the interviews and participation in the planning conference indicate that Total Discovery faculty members were involved in ongoing evaluation of themselves and the Project.

SUMMARY

Promising first steps were made during Total Discovery's initial semester in terms of interdepartmental cooperation, experimentation in instructional strategies, and interaction among faculty and students. However, no success can be attributed to the Project according to such measures of academic performance as attrition/retention rates, matriculation status, and grade outcomes. A number of factors may account for the lack of success:

Largely due to the short ime available between the authorization of the Project and the beginning of the semester, Total Discovery was persistently troubled by administrative and organizational problems. Many of these might be resolved in a continuation of the Project with more advance planning.

There is some reason to believe that due to ambiguous selection criteria, some of the students in Total Discovery may have been particularly "failure prone", even in relation to other students with similar remediation needs. Random assignment of students from an eligible pool to either Project Total Discovery or its comparison group is vital.

The "success" of a program like Total Discovery may not be discernible after only one semester. If the students have become more self-confident, have begun to break through barriers to learning, and have made initial steps in mastering academic skills, their "success" may become apparent later. Conclusions about the first semester of Total Discovery must be interpreted in light of these circumstances.

PROJECT TOTAL DISCOVERY - FALL 1975, SPRING 1976

ORGANIZATION

With great enthusiasm Project Total Discovery began its first full year during the Fall, 1975 semester. Ten faculty members were responsible for the total academic program for 84 students. The Project was expanded and thirteen courses were offered, eight of which were remedial courses and five of which were introductory college credit courses. The following courses were taught in Total Discovery: Communications Arts and Sciences (Fundamentals of Interpersonal Communications); English 01 and 02 (Writing laboratory); Health 91 (Critical Issues in Health); Math 05 and 06

(Basic Concepts of Mathematics); RDL 02 (Reading and Study Skills) and Spanish 11 (Elementary Spanish). Two additional courses, Psychology 11 and English 13, were scheduled to be offered in Total Discovery, but were opened up to other students when the enrollment during registration was too low to reserve these for TD students alone. As during the previous semester, the faculty did not attempt to devise new courses, but rather to change the approach to instruction. During the Spring, 1976 semester, a more limited range of courses was offered in Total Discovery based upon the common course needs of students after the first semester. Remedial mathematics, remedial English and HLT 91 were dropped from the list of TD courses because there were not sufficient students at a given level in English and mathematics to entirely fill sections with TD students. In addition, by the second semester many TD students required courses in specialized curriculum areas (e.g. typing, accounting, etc.) not offered in Total Discovery. Most students, therefore, maintained some courses in Total Discovery while, at the same time, fulfilling curriculum requirements in courses outside of the Program.

English 13 and Psychology 11 were again offered as Total Discovery courses during the Spring semester. These courses were "linked" together so that all students taking one also took the other and specific, cooperative teaching strategies were developed by the two instructors. This linkage was indicative of the greater academic orientation which evolved from the Fall to the Spring semester.

Unlike the Spring, 1975 semester, when Total Discovery was set up in only three months, the director, faculty, and counselors had the benefit of the previous semester's evaluation as well as additional planning time to tighten the conceptual and administrative systems of the program.

To alleviate problems of communication, a two-hour meeting was reserved within the Total Discovery schedule of classes for both faculty and students. In addition, a selection procedure for identifying students for the Program was instituted during the late Spring and Summer months. Counselors were able to identify entering freshmen who wished to become part of Total Discovery and who were motivated to take advantage of the kinds of opportunities which were offered by Total Discovery.

Classes in Total Discovery were again scheduled into rooms in a central location in one building except for several sections which, because of faculty requests, were re-scheduled into rooms where specialized equipment would be more accessible.

Of the 84 students who finally registered into a full schedule of Total Discovery courses, approximately 60% had been pre-selected during counseling interviews with freshmen which took place during the late Spring and Summer. During these interviews counselors determined student interest in Total Discovery and attempted to make a general assessment of the level of motivation with which students were entering college. This method of recruitment resulted from recommendations formulated at the end of the previous semester. The other 40% of Total Discovery students were registered

into Total Discovery during the registration period in September, and were selected primarily on the basis of their need for the extensive remedial work provided by the program. These students, however, were also given a choice about making a commitment to TotalDiscovery after being presented with a brief orientation to the program. Because of the two-hour block of meeting time built into the schedule of Total Discovery classes, faculty were able to meet regularly during the entire year. Typically, these meetings dealt with administrative issues, professional concerns such as teaching strategies and classroom dynamics, and discussions of individual student problems. In addition, this time was frequently used to provide faculty support for student projects.

The involvement of Total Discovery students in program activities increased substantially over the Spring 1975 semester. The Total Discovery Student Organization was formed during October, a constitution was written and approved, and student officers were elected. Committees were formed to assist the faculty in planning co-curricular activities, for planning sports activities, and for organizing social activities. A monthly newsletter ("The TD Challenge") written by students, began in December and was used to communicate important information to students as well as to provide a forum for student opinion and creative writing. A campus-wide toy drive was organized by students prior to Christmas vacation and hundred of toys were collected and distributed to charitable organizations. Three student-faculty parties were held throughout the year, and during the Spring semester,

a trip to the theater and a poetry reading were well attended by TD students.

The positive spirit which developed among Total Discovery students was also evident in the students' concern for each other, in spontaneous peer tutoring arrangements, and in the regular communication with faculty regarding the planning of activities within Total Discovery. During the summer of 1976, four Total Discovery students worked as peer counselors with the College Discovery Program to help with orienting the new freshmen to the College, the College Discovery Program, and to Total Discovery.

Late in June 1976, a final evaluation and planning conference was held by students and faculty to assess the success of Total Discovery and to plan for improvements the following year.

OUTCOMES

The findings of the evaluation of Total Discovery during the 1975-1976 academic year are summarized and related to the Project's six stated objectives as follows:

a) To reduce student attrition. This objective was achieved. In comparing Total Discovery students with a random sample of College Discovery students with less need for remedial work, Total Discovery students remained in college at a substantially higher rate during both semesters.

b) To facilitate mastery learning, especially in the areas of reading, writing and mathematics. The only findings in the evaluation which indicate to what extent mastery learning in basic skills may have been achieved are those

concerning grade outcomes for each semester. Total Discovery students took three times more remedial courses than did the College Discovery comparison group during the first semester and passed a higher percentage of these courses. To this limited extent, the objective of facilitating mastery learning was achieved. However, there is still much need for improvement in this area as reflected by the high number of "R" grades (students repeat the course, but do not receive credit) in remedial mathematics as well as in the general outcome that neither Total Discovery students nor College Discovery students passed a satisfactory percentage of remedial courses during the year. Perhaps, as suggested by the faculty interviews, greater emphasis should be placed upon utilizing the available free time in the Total Discovery schedule for co-curricular activities, aimed mainly at meeting the remedial needs of the weaker students.

c) To encourage students to take a more realistic look at current career opportunities. Career counseling was an integral part of the counseling program in Total Discovery throughout the year and was addressed in both orientation classes as well as in individual counseling sessions. During the Spring semester a semester-long career exploration seminar was instituted for Total Discovery students who wished to spend one hour a week exploring the career choice process in depth. In addition, one week during the Fall semester was designated "Career Week" in Total Discovery and faculty spent part of their class time exploring careers related to their individual disciplines.

d) To provide a climate in which faculty and students can interact more frequently with themselves and with each other. The results of both teacher and student interviews indicated that the frequent, open interaction between and among students, teachers, and counselors was perhaps the most successful aspect of Total Discovery. Feelings of mutual respect, interest and concern pervaded the program throughout the year and resulted in many cooperative projects as well as spontaneous tutoring and other supportive relationships.

e) To facilitate faculty perceptions of themselves as a target group for change. It is obvious that the faculty participants in Total Discovery do see themselves as a target group for change. The experimentation with cooperative teaching arrangements, the willingness to discuss classroom problems openly with peers, and the desire to move beyond traditional roles in interacting with students are all indications of the kinds of challenges which the Total Discovery faculty set for themselves. In addition, Total Discovery faculty were always willing to assume additional responsibilities for assisting with the administration of the program as well as with its evaluation.

f) To enable faculty members to evaluate their own growth and teaching ability in a non-competitive and more punitive environment. Again, the responses to the interviews and participation throughout the year in meetings indicate that Total Discovery faculty members were involved in ongoing evaluation of themselves and the Project.

RECOMMENDATIONS

As a result of this evaluation and an evaluation meeting held during June by Total Discovery faculty and students, the following recommendation for the improvement of Total Discovery have been incorporated in plans for next year's project.

1) The two-hour block of meeting time in the Total Discovery schedule should be used exclusively for student-faculty planning meetings as well as co-curricular and structured academic activities. Social programs within Total Discovery should be planned for the college-wide club hour period on Thursdays.

2) Freshmen should continue to be oriented to Total Discovery during the summer prior to entering college and should be asked to sign a "contract" accepting the goals of Total Discovery during the first week of classes.

3) There should be more student involvement in the educational program of Total Discovery. Students no longer in the program might work as tutors, peer counselors, etc., to assist the entering freshmen in their adjustment to college.

4) The Total Discovery Program should, through workshops, tutoring, counseling etc., attempt to focus clearly on meeting the educational needs of the weakest students in the Program.

5) Counselors should be brought into the learning environment more fully through the mechanism of joint faculty conferences with students and as classroom "observers" at the invitation of instructors.

TOTAL DISCOVERY - FALL 1976/SPRING 1977

Evaluation of this year's TD Program is still in progress but a number of preliminary findings are available. Academic performance of the TD students has not been analyzed. Retention rates for the Fall semester, however, indicate that over 90% of the students returned for the Spring semester. This result is gratifying since the group had greater remediation needs than the general college population. The limited academic preparation was also noted in the inability of many students to comprehend directions on the semester-end evaluation form.

Based on the recommendation of the previous TD staff, the Wednesday meeting time was used exclusively for student-faculty planning meetings as well as co-curricular and structured academic activities. During the Fall semester, this goal was especially pursued by one faculty member who co-ordinates the Wednesday activities. The refocusing of the Wednesday meeting time in the Fall led to a noticeable improvement in the organization and implementation of the Wednesay programs in the Spring semester. Student social programs within TD were planned for the college-wide club hour period on Thursdays. At the midpoint of the Spring semester this program is just developing. A combination of weaker student leadership, lack of response from last year's TD students, and a lack of faculty assertiveness seem to account for the slow evolvement.

One of the crucial developments of this year's TD Program was the introduction of the notion of a contract. The items in the TD contract still remain a general guide, rather than expected behavioral objectives with appropriate sanctions. Many faculty, however, have begun to specify course objectives in terms of broader objectives of the TD contract. For example, some include attendance at the Wednesday co-curricular meeting as a required course activity.

Others have developed course requirements with grade attainment contingent on certain accomplishments. Course material is structured in response to the needs of the particular student population. This focus on course content indicates the increased sophistication in the TD Program.

Another measure of sophistication is the faculty evaluation at the end of the Fall semester. The faculty were asked to express their goal expectations, as well as fulfillment. A cursory view of the results seem negative, but a closer analysis indicates that the faculty have high expectations of themselves, the program, and the students. Thus, the unfulfilled expectations should not be viewed as an indictment of the program. Rather, the results suggest a high level of achievement with aspirations for even greater goals.

Probably the most devastating factor is the continuing New York City financial crisis. Repercussions were especially felt at Bronx Community College by reduction in counselling staff. In addition, a high level of anxiety transcended the campus and sapped individual energy. But, despite the blight that affected the campus, TD stood as an oasis of innovation and support.

STIR, LINK, TD: SUMMARY AND CONCLUSIONS

Evolvement of the interdisciplinary approaches to remediation from STIR to LINK to Total Discovery is marked by the expression of clearer objectives and more precise evaluation. Increased administrative control by the director is also noted.

The programs attracted an elite group of faculty who have a positive effect on each other as well as students both in and out of the classroom.

One of the most gratifying aspects of the program has been the enthusiastic response of students who saw their academic and non-academic needs satisfied by a unique faculty group. Consequently, student cohesion, which was developed as a result of this positive experience seemed to affect their high retention rate.

More specifically, the development of the programs suggest the following points:

EVOLUTION OF TD

1. Involving students in the decision making process has had a positive impact on the program. Students have been encouraged to take more responsibility for their own academic success and for the success of the program. This year contracting has been introduced by some TD faculty.

2. Faculty who are attracted to STIR, LINK and TD and who feel comfortable with the interdisciplinary approach tend to be risk-takers, innovators, open-minded and feel comfortable with students both in and out

of class. Although close student-faculty relationships are common in higher education, effective models of student-faculty cooperation where students have high remediation needs, are lacking. Approaches for faculty interaction with underprepared students have been experimented with successfully in STIR, LINK and TD. Not all faculty work comfortably with this approach, thus faculty self-selection is an important component.

3. Program goals have become more explicit. TD objectives have been framed in terms of attainability. The initial obscurity of STIR's intended outcomes made the success of the program difficult to evaluate. The more clearly stated objectives of TD has led to greater clarity in identifying the outcomes.

4. Important additions to the statement of TD goals are to facilitate faculty perceptions of themselves as a target group for change and to enable non-competitive self-evaluation of growth and teaching ability. In TD, faculty development includes not only the enhancement of teaching skills, but also a heightened awareness of variable student characteristics such as remediation needs, social and personal problems, student leadership potential and ethnic identity.

5. Faculty have recognized the importance of tightened course objectives for underprepared students and have thus proceeded to refine their objectives.

6. Faculty and students benefit from a common weekly meeting time. The consensus of opinion has changed from focusing the meetings on social events to devoting most of the time to academic and co-curricular activities. Experience with STIR, LINK and TD indicates that the common meeting time is crucial to the success of the Program. Therefore, a two hour time block has been programmed into all TD student and faculty schedules.

7. Strong program leadership which can garner institutional support and effectively focus the energies of program faculty is a major factor in ensuring the program's success. Without administrative support Project LINK was no longer funded by the Remediation Committee Budget. In TD with increased administrative support, the Director gained control of the registration process for TD students, was able to set aside a two hour block for a common meeting time, had more influence in faculty selection, and could offer release time to faculty.

8. In TD, the source of funding is assured from semester to semester through College Discovery funds of the City University. This security has enabled faculty to spend all of their time on the program rather than in seeking financial support.

ADVANTAGES OF TD

1. The interdisciplinary approach at B.C.C. has been successful in terms of holding power. With but a few exceptions the retention rates of students in the highly supportive interdisciplinary approach to remediation programs are as high or higher than those of regular college students.

2. Student satisfaction has been consistently high, with positive attitudes expressed towards the openness of faculty, close interaction with other students and faculty, facility in dealing with college logistics (registration, centralization of classes) and availability of support services.

3. The additional support services implemented with TD, unlimited tutoring, additional class hours and greater availability of counseling and social work services, provided a wider range of resources for solving student problems.

4. The close working relationship between instructors and counselors resulted in the identification of counseling and tutorial problems. In turn, assistance could be offered to the students.