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Chapter 14: Evaluation Report of the First Year of the ADAPT Program

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CHAPTER FOURTEEN

Evaluation Report of the First Year of the ADAPT Program

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Evaluating the success of the ADAPT program seemed, at the outset, to be an extremely complex task. How does one assess a student's growth in six different content areas over a year's time? What are the hallmarks of progress which might signal the success or failure of the program? The first step of the evaluation was a clear enumeration of the goals of the program. In staff discussions it became clear that our primary goal was to encourage students to think critically and logically by devising a curriculum which required the students to actively participate in their learning and to explore substantive concepts within the six content areas. Secondly, we were interested in providing successful learning experiences that would facilitate personal and social growth. Finally, we hoped that students who were being encouraged to explore a variety of content areas would feel the excitement of learning and that this would be reflected in positive attitudes toward the whole university community. In short, our goals were to encourage abstract, formal thought patterns to facilitate personal growth and to cultivate positive attitudes toward the university.

Obviously, demonstrating that ADAPT students have changed on the above dimensions is not sufficient. Certainly one would expect some growth and change to occur during a college student's freshman year. A more compelling documentation of change requires that the ADAPT students' development be compared to some kind of standard of change. Hence two comparison groups of students were selected. The first comparison group was composed of students who had applied to the ADAPT program but in the random process of selection were not chosen as participants. These students enrolled in regular freshman courses at the University of Nebraska.

Later in the year it was decided that the freshman year for the ADAPT and control groups differed in so many ways that it might be helpful to have a third comparison group. A group of freshmen from the Centennial Education Program were selected as a third

comparison group. In this program, as in the ADAPT program, students are in small classes, they are encouraged to participate in class, they often know each other, and the professor usually knows them. Comparing this group to the ADAPT group seemed like a more reasonable test of whether the Learning Cycle (Karplus, 1974) as a curriculum organizer was effective in moving students toward more abstract thought processes.

Evaluation Instruments

To examine any changes in formal operational thought processes a series of paper and pencil tasks were devised. These were adapted from Inhelder and Piaget's (1958) original work in the area of formal operations. These tests examine the student's ability (a) to separate variables (b) to test variables in an unconfounded way (c) to generate hypotheses systematically (d) to display proportional reasoning (e) to conduct critical tests of hypotheses (f) to demonstrate an understanding of probability and (g) to ascertain the relationship between two variables. These tests of logical operations were administered to the ADAPT and Control groups at the beginning of the fall semester.

To examine personality changes and development in social areas, two tests were administered. In the fall the ADAPT and Control subjects were given the Omnibus Personality Inventory. This personality test emerged from the extensive work on college student development by Sanford (1956) and his associates at Vassar after World War II. Extensive data have been accumulated concerning this test by the staff of the Center for Research and Development in Higher Education at Berkeley. The test was selected because it examines both the intellectual and emotional aspects of personality. However, since it is more likely to indicate personality development over a long period of time, it was decided that it should not be administered a second time until the junior or senior year.

A test which is somewhat more likely to show short term changes is the Conceptual Complexity Assessment, conceived by Harvey, Hunt, and Schroeder (1961). This test deals with the adult's ability to conceptualize issues on succeedingly abstract planes. Based on responses to sentence stems, a student is categorized into one of four stages. The lowest stage suggests that a student conceptualizes issues in black and white terms and is very concrete about the material and facts that are part of his clear cut and often simplistic handling of the issue. At the other end of the scale, a stage four response is characterized by a careful weighing of a variety of variables that effect the issue. The issue is conceptualized in much more abstract and general terms, and an attempt is made to look at all the variables that are relevant to the problem. The Conceptual Complexity Assessment was

administered to the ADAPT and Control subjects in the fall and to all three of the freshmen groups in the spring.

Finally to assess the students' attitudes toward various facets of University life the College Student Questionnaire Part II was administered. This standardized attitude questionnaire is published by the Educational Testing Service. A student's responses to the multiple choice questions are summarized into scores on eleven dimensions. These include a look at (a) how the student perceives his family and his peers, (b) the student's perception of the society in general, (c) the student's satisfaction with the University environment, and (d) how the student balances studying with extracurricular involvements. All three of the freshman groups responded to this test during the spring semester.

Initial Measures

In order to compare the effects of the freshman year on the three target groups--ADAPT students, control students and Centennial students--it was first necessary to assess the students on some measure taken prior to their entrance to the University. The American College Testing (ACT) program administered nationally provides such a measure. Table 1 shows the relative positions of the three groups as well as the means and standard deviations of the entire freshman class at the University of Nebraska-Lincoln on the ACT. While some slight differences did occur, the three groups appear essentially equivalent on this measure. Several other variables that allow a comparison of the three groups of Freshmen are presented in Table 2. It is interesting to note that the ADAPT group has a larger percentage of instate students than any of the other groups. Also, the ADAPT group has by far the largest percentage of students who graduated from the bottom half of their class (34.8%). In the control group a very large percentage of students had graduated in the top quarter of their high school class.

Assessing Formal Operational Thought

The basic design of the evaluation of formal thought was a pretest and posttest comparison of the ADAPT and Control groups. Since the Centennial group was not added until the spring of the year, no pretest scores were available on those students.

Table 3 presents the means and standard deviations of the ADAPT and Control subjects on eight subtests of formal operations and a composite index of formal operational ability. The ADAPT students scored significantly higher than the Control students on

three of the subtests and on the Composite index. Both groups made significant improvements during the year on (a) systematically generating combinations, (b) using a logical strategy to help them generate combinations, (c) conducting critical tests and (d) solving correlation problems. These results suggest that the freshman year is a time of intellectual growth for all students, but that the ADAPT students made progress over and above that typically seen during the freshman year.

There is a hazard to this analysis, however, since the ADAPT students scored significantly higher on the pretest than the controls. To control for any bias this might have introduced, it was decided to look at the performance of a group of ADAPT students who were matched with Control students on pretest scores. Such a matched pairs analysis showed that the ADAPT students gained an average of 3 more points than the Control students on the posttest $t(19) = 3.38$, $p<.01$. This difference would be expected to occur by chance less than one time in one hundred. This somewhat truncated sample indicates that the ADAPT students are learning how to think abstractly and perform formal operations at a pace that is not matched by the Control students.

The Centennial students' scores on the posttest are compared with the ADAPT and Control groups' scores in Table 4. It is evident that a substantial difference exists between groups on five of the eight subtests. The ADAPT students score higher than the other groups on four of the five subtests and their superiority to the other two groups on the composite score is clear.

Assessing Conceptual Complexity

The formal operations tests administered and described above concentrate on logical, systematic, and deductive kinds of thought processes. The analysis of these tests indicated that, in general, the ADAPT students evidenced more of these characteristics after their freshman year than the other two groups. There is, however, more to adequate conceptual functioning in American Society than logical, deductive abilities. In fact other investigators have argued that personality development and the development of social skills are the critical acquisitions of the college years.

As the year progressed, the ADAPT students showed marked changes in personality skills and the level of their social interactions. It was hoped that the conceptual complexity measure would provide a more systematic documentation of the staff's subjective impressions that many such changes were occurring.

Table 5 shows the means and standard deviations of the three groups on the conceptual complexity measure. Comparing only the

ADAPT and Control students, we see a slight downward shift during the year in the Control students. The ADAPT students on the other hand show a substantial increase resulting in a significant interaction $F(1, 52) = 6.68$, $p<.02$ between the two groups and the pretest and posttest. A comparison of all three groups on the posttest shows that both the ADAPT and Centennial students scored significantly higher on this measure than the Control subjects.

Since growth in this area is seen as a function of interpersonal skills, it is appropriate to ask what characterizes the ADAPT and Centennial students that might facilitate such growth. One possible answer is that both groups are in social clusters. The ADAPT students attend all of their classes together. Many of the Centennial students live in the dormitory associated with the Centennial Education program. Unlike the Control students, the ADAPT and Centennial students interacted together in class settings as well as outside of class. Perhaps it is the depth of the social interaction with another group that fosters conceptual growth.

Other differences that may be very influential in fostering conceptual complexity are the small classes and the concomitant level of interaction with professors. Perhaps this kind of personal interaction encourages students to conceptualize issues in a more differentiated and abstract way.

Assessing Attitudes Toward College

One of the critical components of the freshman year seems to be the student's attitude toward school. In fact, positive or negative attitudes about their college experience are often critical factors in whether students decide to drop out of school or remain in it. For this reason the attitudes of all three groups of students were assessed on the College Student Questionnaire Part 2. The scores for the three freshman groups in the present study and a sample of 1500 freshmen and sophomores from a variety of colleges and universities are presented in Table 6.

One can't help but note the satisfaction with faculty scores. Here the ADAPT students are clearly more satisfied with their instructors than the Centennail students $t(55) = 2.08$, $p<.05$. Two scales on which the ADAPT students score lower than the other groups are cultural sophistication and satisfaction with their major. The latter score is understandable in terms of the large number of undeclared students in the ADAPT program.

Summary

An overall summary of the first year of the ADAPT program indicates that the program has been moderately successful at achieving its goals. ADAPT students made significantly more gains in the realm of logical and abstract thinking than a matched group of Control students. In addition, there is evidence that during the year they learned to conceptualize issues in a more differentiated way than the Control subjects. Further, their attitudes toward social and academic experiences are quite favorable and they appear to have gained satisfaction from their interactions with both faculty and students. These changes are especially encouraging when one considers that over one-third of the ADAPT students were from the bottom half of their graduating class. The documentation of change along these dimensions has given rise to cautious optimism that the ADAPT program may facilitate the kind of logical, abstract thinking that is so prized in r society.

TABLE 1

Means and Standard Deviations
of Freshman Groups on ACT

	ACT Composite	English	Math	Social Science	Natural Science
All Freshmen at UN-I	21.95	19.53	22.78	20.88	24.15
n = 2,747	5.13	4.75	6.88	6.82	5.93
ADAPT	21.29	18.85	20.85	21.29	23.81
n = 27	4.94	4.99	6.93	5.78	5.81
Control	24.25	21.29	25.54	23.13	26.54
n = 27	3.77	3.91	3.85	6.28	4.83
Centennial	21.89	20.05	21.05	21.89	24.68
n = 19	5.01	4.95	5.68	5.86	6.19

TABLE 2

Percentages of Freshmen in Each Group

	% from Nebr.	% from out of state	% from Lincoln & Omaha	% from rural Nebr.	% in each quarter of high school class top	2nd	3rd	4th
UNL-Freshman	93.16	6.84	52.57	47.43	47	33	14	6
ADAPT	96.80 n=30	3.20 n=1	60.00 n=18	40.00 n=12	47.8 n=11	17.4 n=4	26.1 n=6	8.7 n=2
Control	92.00 n=23	8.00 n=2	52.2 n=12	47.8 n=11	73.9 n=17	17.4 n=4	8.7 n=2	
Centennial	90.32 n=28	9.68 n=3	60.7 n=11	39.3 n=17	41.7 n=10	37.5 n=9	8.3 n=2	12.5 n=3

TABLE 3

Means and Standard Deviations on Formal Operations Measures

	ADAPT (n=32) Pre-test	ADAPT (n=32) Post-test	Control (n=26) Pre-test	Control (n=26) Post-test	2x2 ANOV Group F	2x2 ANOV Time F
No. Produced (16)	12.34 3.20	13.91 2.96	9.73 4.71	11.88 3.84	8.06**	12.56**
Initial Marks Held Constant (15)	5.31 3.52	7.91 4.82	3.92 3.25	4.42 3.35	9.11**	6.35*
Drawing Conclusions (4)	2.63 1.64	2.75 1.67	2.92 1.29	2.46 1.53	<1	<1
Critical Tests (4)	2.00 1.68	2.81 1.51	1.69 1.76	2.23 1.81	1.32	9.44**
Probability (6)	4.69 1.69	5.03 1.57	4.88 1.33	5.42 1.10	<1	3.77
Correlation (16)	9.19 5.16	10.59 5.01	7.23 4.97	8.42 4.97	3.17	3.95*
Separating Variables (8)	5.94 1.72	5.87 1.79	5.69 2.09	6.19 .94	<1	<1
Holding Variables Constant (4)	3.03 1.49	3.38 1.24	3.38 1.36	3.46 1.03	<1	<1
Composite Formal Operations Score Total possible=73	45.28 12.71	52.34 11.99	38.92 10.63	44.50 9.92	6.72*	23.85**

*probability level <.05
**probability level <.01

TABLE 4

Posttest Only Comparisons of Three Freshmen Groups

On Formal Operations Measures

	ADAPT n=32	Control n=26	Centennial n=32	F
Number Produced (16)	13.91 2.96	11.88 3.84	9.66 5.40	8.16**
Initial Marks Held Constant (15)	7.91 4.83	4.42 3.35	3.22 2.61	13.45**
Drawing Conclusions (4)	2.75 1.67	2.46 1.53	1.44 1.78	5.40**
Critical Tests (4)	2.81 1.51	2.23 1.82	2.12 2.49	1.09
Probability (6)	5.03 1.58	5.42 1.10	4.69 2.35	1.21
Correlation (16)	10.59 5.01	8.42 4.97	7.53 5.98	3.17*
Separating Variables (8)	5.88 1.79	6.19 .94	5.31 1.60	2.54
Holding Variables Constant (4)	3.38 1.24	3.46 1.03	3.06 1.24	<1
Composite Formal Operations Total Possible = (73)	52.34 11.99	44.50 9.92	36.97 13.29	13.07**

*probability level <.05
**probability level <.01

TABLE 5

Means and Standard Deviations of Three Groups on Conceptual Complexity

	ADAPT n=128	Control n=26	Centennial n=30
Pretest	1.69 .45	1.73 .36	
Posttest	1.907 .36	1.612 .41	2.13 .998

TABLE 6

Means and Standard Deviations of Groups

on College Student Questionnaire Part II

	ADAPT	Centennial	Control	National Sample
Family Independence	22.23 4.70	23.41 6.03	20.46 4.50	22.16 5.24
Peer Independence	24.41 4.21	24.29 3.60	23.35 3.32	23.98 4.12
Liberalism	27.60 3.61	29.38 4.39	25.50 3.50	25.86 4.65
Social Conscience	29.13 4.78	30.13 5.23	29.15 5.32	27.98 4.71
Cultural Sophistication	20.68 4.18	25.06 4.74	21.65 4.30	23.51 5.31
Satisfaction with Faculty	28.60 4.64	25.69 5.65	26.81 4.78	25.27 4.69
Satisfaction with Administration	25.55 4.55	23.22 5.50	26.81 3.55	26.33 5.26
Satisfaction with Major	20.50 2.50	25.42 4.59	29.71 4.10	27.55 4.56
Satisfaction with Students	26.80 3.33	25.69 3.67	25.72 3.81	26.83 4.49
Study Habits	23.44 5.32	24.69 4.43	25.38 4.79	25.22 4.35
Extracurricular Involvement	20.63 3.99	18.00 5.01	20.85 4.96	20.84 4.46

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