

## TWO MODELS OF DEVELOPMENTAL READING INSTRUCTION—FUSED OR PAIRED

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### INTRODUCTION

Many university students scheduled for developmental reading courses need help not only in reading, but in all communication skills: listening, speaking, reading, and writing. Chaplin (1977) explains the need for teaching higher cognitive skills in university reading courses by stating that success in college depends upon the ability to interpret, analyze, and synthesize the thoughts of authors with one's own ideas. This task proves difficult for many students and national assessments indicate that the ability of America's youth to read and think critically has declined in recent years.

The National Assessment of Educational Progress (1980) reported that the ability of 17 year-old students to interpret decreased from 51 percent in 1970-71 to 41 percent in 1979-80. The 1980 group encountered difficulty in problem solving, critical thinking, and formulating a coherent defense in support of an opinion.

As the birth rate declines, universities will have to compete with other institutions and employers for students. It is safe to assume that as enrollment declines, institutions will depend more heavily upon developmental educators to stabilize enrollment by increasing retention and graduation rates.

The purpose of this descriptive study was to examine data collected from developmental reading models which used course content to improve reading and study skills of university freshmen.

The objectives of this study were threefold:

1. To initiate a study comparing the reading skill gains of students participating in content fused instruction with reading gains of students participating in content paired instruction.
2. To develop a profile of high risk students from Millersville University and University of Cincinnati.
3. To compare the retention rates of high risk students from both institutions who received paired and fused reading instruction.

## Fusing Skills with Content

### RATIONALE

During the 1981 summer session, Millersville University combined two developmental course, Reading—Communication and Study Skills (Ed 090) and Developmental Biology (Bio 020) into a nine-week course for underprepared freshmen. The purpose of this experimental class was to upgrade reading, critical thinking, and communication skills by using these abilities to build a background of biological concepts.

This course was provided for students specially admitted to the Program for the Advancement of Compensatory Education (PACE). PACE students were identified as high risk by Admissions personnel on the basis of academic and/or financial disadvantage.

The subject of biology was selected as the content to which the communication and cognitive skills would be applied because PACE students had a history of performing poorly in Biology 100. From 1976 to the spring semester of 1981, 284 PACE students took Biology 100. At the university all students must complete a science course with an attached lab. Biology 100 is the course that is chosen most frequently to fulfill this requirement. When the Biology 100 grades were examined, the majority of PACE students earned grades in the D or F range. One percent of the 284 students achieved A; four percent a B; nineteen percent a C; thirty-two percent a D; and forty-four an F. Since it was not possible to determine the number of credits completed by each student prior to scheduling Biology 100, it must be assumed that some of the PACE students were upperclassmen and some may have repeated the course. The grades tabulated represented the final assessment which appeared on the students' transcripts.

### DESIGN

#### Subjects:

PACE students scheduled for the fused reading and biology course during the 1981 summer session were freshmen with the lowest verbal SAT scores. The following table compares the SAT scores of the Millersville University freshmen with national norms.

MEAN SAT SCORES OF  
1981 MILLERSVILLE UNIVERSITY ADMITS  
COMPARED WITH NATIONAL NORMS

$\bar{X}$ SAT Scores	National Norms	MU Regularly Admitted Freshmen	Total PACE Admits	PACE Students Scheduled For Fused Instruction
Verbal	424	459	330	280
Math	466	502	370	386
Combined	890	961	700	666

#### Method

The fused course consisted of nine weeks on instruction.

During the first five weeks, the reading professor taught units of vocabulary development, test-taking, time management, outlining, paraphrasing, and listening. These techniques were then applied to biology content in the four weeks that followed. A biology professor taught concepts in ten chapters of *An Invitation To Biology* (Curtis) and was supported in the classroom by the reading professor and a tutor. Pre and post reading and biology tests were administered to assess student progress over the summer session. The Nelson Denny Reading Test was used to evaluate reading ability; an examination constructed by members of the Biology Department assessed understanding of biological concepts. Students who were judged to have made the most progress during the summer session were scheduled for the Biology 100 course the following fall semester.

In the spring of 1984, the records of the 23 students who completed the fused course were examined. The purpose of this review was to determine the success rate of students who completed the developmental course.

### FINDINGS

The performance of the 23 students who participated in the fused reading/biology course was tracked from the 1981 summer session to the fall 1984 term to determine if the fused approach was a viable teaching alternative for upgrading the skills of underprepared university freshmen.

#### Reading and Biology Gains—June, 1984—August, 1981

At the completion of the fused course, pre and post reading and biology test scores were compared to measure achievement during the nine-week summer session. The following table indicates the progress made by PACE students.

	Pre-Test	Post Test	T-Value
Nelson Denny Reading Test	$\bar{x}$ 283 SD 4.5	$\bar{x}$ 292 SD 5.3	$t(20) = 9.09, p < .05$
Biology	$\bar{x}$ 32 SD 6	$\bar{x}$ 49 SD 11	$t(21) = 7.08, p < .05$

Gains in reading and biology were significant.

#### Performance Review—Fall, 1981

After completing summer courses, PACE students are scheduled for traditional college courses. Nine of the students taking the fused summer course were scheduled for Biology 100 during the fall term. A profile was developed which included SAT scores, pre and post reading/biology test scores, Ed 090 grade, Bio 020 grade, Bio 100 grade, summer cumulative grade point average, fall cumulative grade point average and tutorial hours. At the completion of the fall term, these conclusions were drawn from information collected on the profile:

1. Of the nine students scheduled for Bio 100, 22 percent earned a B; 45 percent earned a C; 22 percent earned a D; 11 percent earned an F.
2. Reading and biology grades appeared to be stable when students participated in fall tutoring. Grades dropped when no tutoring was evidenced.
3. Not all students who made passing grades in Bio 100 participated in tutoring, but students receiving a D or an F grade rejected tutoring.
4. Students who had tutors in biology during the fall term also had tutors in other subjects.

#### Performance Review—Spring, 1984

At the completion of the Spring, 1984 semester, data was collected from the records of a target group. The following tables report the retention rate, grade point averages, and Bio 100 grades of the students tracked.

#### RETENTION RATE OF MILLERSVILLE UNIVERSITY STUDENTS — 1981-1984

1981 Freshmen	Original Enrollment	$\bar{x}$ SAT Scores		Number	Enrolled 1984 Retention Rate
		Verbal	Math		
Regularly Admitted	944	459	502	578	61%
All PACE	98	330	370	42	43%
PACE Students Receiving Fused Instruction	23	280	386	20	44%
PACE Students Not Receiving Fused Instruction	75	367	372	32	43%

The retention rate of PACE students receiving the fused instruction is lower than the regularly admitted population and slightly higher than other PACE students, however, it must be remembered that students were placed into the fused course on the basis of SAT scores. The SAT scores of the target group were 34 points less than other PACE freshmen and 295 points less than the regularly admitted group.

#### GRADE POINT AVERAGE OF PACE STUDENTS 1981—1984

1981 PACE Admits	Still Enrolled Spring 1984	$\bar{x}$ Credits Earned	$\bar{x}$ GPA
Total Pace	42	82.2	2.19
Received Fused Instruction	10	85.7	2.31
Did Not Receive Fused Instruction	32	81.0	2.15

Students receiving fused instruction earned more credits and had a higher grade point average than other PACE students.

#### BIO 100 GRADE DISTRIBUTION FOR PACE STUDENTS

PACE	Number of PACE Students	A	B	C	D	F
1976 - Spring 1981	284	1%	4%	19%	32%	44%
Receiving Fused Instruction	14	-	47%	15%	23%	15%

When the Bio 100 grades of students receiving fused instruction were compared to PACE students completing the course in previous semesters, the results are striking. Only 56 percent of the 284 PACE students passed Bio 100 from 1976-1981. Fourteen students took the fused instruction and completed Bio 100. Of this group, 85 percent were able to pass the 100 level biology course.

#### Pairing Skills with Content

##### RATIONALE

Most college students who enter an open admissions college like University College — University of Cincinnati need help with reading and study skills. To this end we have been pairing one section of an Introduction to Psychology class with an Effective Reading and Study Course for the past three years. Specifically, students placed in this paired course arrangement are reading at or below the 12th grade level based on the Degrees of Reading Power Test. Students with these low reading test scores are advised by either their counselor or advisor to take the paired courses.

A psychology professor in the University College — University of Cincinnati noted that many students lacked the essential reading and study skills necessary to do the required work in his course. Therefore, he began to upgrade his course syllabus to include the SQ3R technique and several other study skills. He soon realized that it would take a greater effort so this psychology professor explored the possibility of pairing his Introduction to Psychology class with an Effective Reading course. The biggest problem was how to solve the logistics of getting students signed up for the correct classes. This was finally solved by giving the paired courses their own course numbers.

Paired students are freshmen who need to take the Introduction Psychology class as part of the requirements for their program of studies. In fact, 16 out of 21 programs in University College require Introduction to Psychology. Since fully one-third of the entering freshmen class are reading at or below the 12th grade level, this makes it an ideal class for pairing.

##### DESIGN

##### Subjects

The subjects are students who took the paired reading and psychology course during the 1983—1984 academic year. These students were directed into the paired courses by either their counselor or academic advisor because of their low test scores on the Degrees of Reading Power Test.

**Method**

The paired course consisted of 10 weeks of instruction. The Introduction to Psychology class is a large lecture class (approximately 50 to 60 students) that meets three times a week for 10 weeks. The Paired Reading Class breaks the large lecture class into three sections that also meets three times a week. The Psychology course used the text *Introduction to Psychology*, 2nd Edition, by Linda Davidoff, while the Paired Effective Reading and Study course used *The Houghton Mifflin Study Skills Handbook* by James Shepherd. This current year the Psychology class is using *Fundamentals of Psychology*, 3rd Edition, by Audrey Haber and Richard Rungon and the Paired Reading course is using *Study for Success* by Meredith and Joyce Call.

**FINDINGS**

**TABLE I - N = 26**

**CONTROL GROUP'S DEGREES OF READING POWER TEST**  
Mean Scores—Fall, 1983

Total Raw Scores		Test Part I/Items 1-50		Test Part II/Items 51-98	
Pre	Post	Pre	Post	Pre	Post
1,894	2,033	1,209	1,226	775	897
Score Gain + 39		Score Gain + 17		Score Gain + 122	

**TABLE II - N = 23**

**EXPERIMENTAL GROUP'S DEGREES OF READING POWER TEST**  
Mean Scores—Fall, 1983

Total Raw Scores		Test Part I/Items 1-50		Test Part II/Items 51-98	
Pre	Post	Pre	Post	Pre	Post
1,267	1,269	934	969	331	307
Score Gain + 2		Score Gain + 15		Score Gain -24	

Tables I and II suggest that the experimental group did not make the test score gains made by the control group. Two important factors must be noted in interpreting these results: (1) the experimental group had 15 minutes less test taking time on the post test administration of the Degrees of Reading Power; and (2) the experimental group's average pre-test score was 20 points lower than the control group's pre-test on the Degrees of Reading Power.

**TABLE III**

**PAIRED PSYCHOLOGY AND READING COURSE ATTITUDE SURVEY RESPONSES OF EXPERIMENTAL (PAIRED) AND CONTROL (NON-PAIRED) STUDENTS**

Question Number	N = 23 Paired Students		N = 26 Non-Paired Students	
	YES	NO	YES	NO
<b>I. SKILLS</b>				
1) Lecture Notes				
	78%	22%	62%	38%
2) Note Taking				
	70%	30%	69%	31%
3) Underlining				
	87%	13%	73%	27%
4) Review Strategies				
	96%	4%	77%	27%
5) Textbook Aids				
	87%	13%	92%	8%
6) New Vocabulary				
Method	96%	4%	69%	31%
7) List Vocabulary				
Words for Each Chapter	91%	9%	54%	46%
8) Techniques Used				
Most Often	SQ3R	54%	Outlining	60%
	Notetaking	44%	Notetaking	38%
	Underlining	2%	Study Aids	2%
<b>II. TIME</b>				
1. Percentage of students				
who set aside specific time . . . . .			62%	27%
Who do not set aside time each week for studying psy- chology . . . . .				
			38%	73%
2. Number of hours				
1 — 3 hours		32%	1 — 3 hours 60%	
4 — 6 hours		38%	4 — 6 hours 35%	
7 — 9 hours		26%	7 — 9 hours 5%	
each week		More	4% More 0%	

The attitude survey produced interesting results. First, the experimental group (paired) used study skills such as review strategies and vocabulary strategies much more frequently than their control group (non-paired) counterparts. The only exception was textbook aids. Second, 62 percent of the experimental (paired) group set aside specific time each week for studying psychology while only 27% of the control (non-paired) group set aside specific time for studying psychology. Third, the experimental (paired) group spent more hours each week studying than the control (non-paired) group.

TABLE IV

**RETENTION DATA PERCENTAGES  
FROM FRESHMAN TO SOPHOMORE YEARS  
FOR COMPARISON OF PAIRED, NON-PAIRED,  
UNIVERSITY COLLEGE, AND UNIVERSITY  
OF CINCINNATI**

	University of Cincinnati	University College	Non-Paired Control	Paired Experimental
Retention	70%	59% (683)	N.A.*	66% (42)
Non-Retention	30%	41% (482)	N.A.*	34% (22)

\*Data Not Available

Table Four indicates that retention rates are higher - 66 percent - for the experimental (paired group) than it is for the University College, - 59 percent - and slightly less than the University wide retention of 70 percent. (Control group data is not available at this time.)

#### FINDINGS

Increasing the retention and graduation rates of university students will become more important as sources of revenue decline. This descriptive study examined data from two content based reading programs so that recommendations could be made to other developmental educators.

It would seem that teaching reading and study skills through course content is a method that warrants further study. Even though the population was small and the students participating in the instruction were academically weaker than other freshmen, gains were evidenced:

1. Gains in reading and biology scores were significant at the completion of the nine-week fused course at Millersville University.
2. Students who participated in the fused instruction earned higher grades in the 100-level biology course than high risk students who did not take the fused course.
3. Students participating in the paired course at the University of Cincinnati had better attitudes about using reading skills and study time than their non-paired counterparts.
4. Paired students did not make significant gains from the pre-test to the post-test on the Degrees of Reading Power. However, paired students had 15 minutes less time for the post-test.
5. Retention rate from freshmen to sophomore year was 66 percent for paired students at the University of Cincinnati. The Millersville University students were tracked from freshmen to junior year. The retention rate at the end of the junior year was 44 percent.

#### REFERENCES

- Chapain, M. L., Where do we go from here? Strategies for Survival of College Reading Programs, 1977. (ERIC Document Reproduction Service No. ED 147 791).

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