REPORT

project 360

1966 - 1968

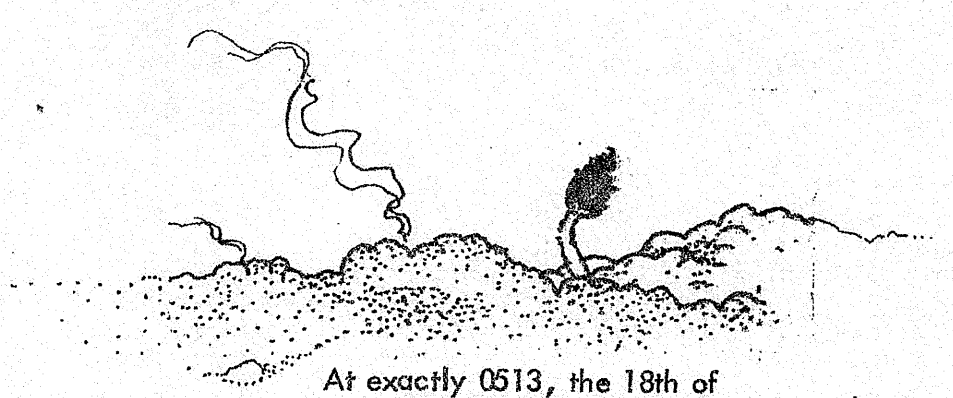
ANDREW P. HILL HIGH SCHOOL

PROJECT 360

1966 - 1968

Prepared by
William Gilmore
Coordinator
Andrew Hill High School

East Side Union High School District
12660 North Capitol Avenue
San Jose, California
Frank Fiscalini, Superintendent



At exactly 0513, the 18th of April, 1906, a cow was standing at 123°20' West longitude, 37°58' North latitude somewhere between the main barn and the milking shed on the old Shafter Ranch in California, minding her own business. Suddenly, the earth shook, the skies trembled, and when it was all over, there was nothing showing of the cow above ground but a bit of her tail sticking up. ...the Shafter cow is a sort of symbol of our times. She stood quietly enough, thinking such gentle thoughts as cows are likely to have, while huge forces outside her ken built up all around her and within a minute discharged it all at once in a great movement that changed the configuration of the earth, and destroyed a city, and swallowed her up. ...if we do not learn to understand and guide the great forces of change at work on our world today, we may find ourselves like the Shafter cow, swallowed up by vast upheavals in our way of life---quite early some morning.

"The Dynamics of Change"
Kaiser Aluminum News.
24:1, 1966.

PREFACE

The experimental program reported herein is the result of three years' work and the efforts of many people. During the first year, 1965-66, several feasibility studies were undertaken to test out certain aspects of independent study, and the general plans were developed for an interdisciplinary pilot study. The 1966-67 pilot involved 100 students. The results of the pilot helped to clearly define goals and procedures necessary for an expanded project during the 1967-68 year. Project 360 has been jointly financed by funds from Title I, ESEA, and the District's Project LODESTAR, funded through a Kettering Foundation grant. The project staff has included:

(1966-67)

Project coordinator and science teacher	William Gilmore
Mathematics	Darrell McLeod
World Geography	Wiley Wilson
English	Ted Faley
Reading	Pat Hughes
Counselor	Mary Utschig
Aides	Terri Smitherman Mary Ryan

(1967-68)

Project coordinator	William Gilmore
Science	William Gilmore Richard Smith
Mathematics	Darrell McLeod Jerry Powell
World Geography	Terry Griffin William Connolly
English	Julie Allen Larry Haukedalen
Reading	Pat Hughes
Counselor	William Connolly

Secretary	Mary Ryan
Teachers' Aides	Charlotte Pickleman Pearl Graham
Graphic Artist	Mario Galvan

The success of this project has been dependent upon the determination and persistence of the staff. Without their cooperation and extra efforts this project would have been impossible.

It would be impossible in this section to give full credit to all the people who have given their time and energies to this project. However, I would like to thank the members of the Andrew Hill Science Department, Jim McCammon and Jay Russell, and the members of the Oak Grove High School Science Department, Jack Grube and Stu Eastman, for their continued support and valuable contributions to the project.

A special thanks should be given to Henry Jensen, former principal of Andrew Hill High School whose support and guidance during the planning stages were invaluable, and to Bill Bare and Don Campagna, present and former principal of Andrew Hill High School, for their help in the general operation of the project.

Many thanks to Dennie Van Tussel and Steve Hoberg of the San Jose State College Computer laboratory for their assistance in processing the data.

This section would not be complete without a special thanks to Marcella Sherman, Research Assistant, Project Specialist for the ESUHSD. Her continued efforts on behalf of the project have contributed greatly to its success.

And lastly, our many thanks to Frank Fiscalini, Superintendent; William Baker, Deputy Superintendent; Thomas Collins, Assistant Superintendent-Business Services; Edmond Alliguie, Director of Planning; and William Sullivan, Director of Education. Without their support and understanding this study could not have been conducted.

W.A.G.

Art work and cover design by Mario Galvan, project graphic artist.

I. THE PROBLEM

Educational institutions teach students in groups called classes. The teacher in each class performs the role of general practitioner. Generally speaking, each teacher plans what should be taught (within the general framework of the district policy and the textbook) and how it should be taught. This, then, is a system where teachers work in self-contained classrooms isolated in time and space from colleagues. Here lessons and learning activities start and stop with the ringing of the bell. Most teachers will see anywhere from 125 to 175 students in a day. Because of this workload, the many other responsibilities required of teachers, and the system under which the school is operated, teachers will rarely if ever have the opportunity to talk with a student's other teachers or his counselor regarding specific learning problems or successes.

The typical classroom procedure is well known. A teacher spends two to three weeks presenting a unit of study. The variety of activities undertaken is limited only by the creativity of the teacher. Students listen to lectures, participate in discussions, read the textbook, work out homework assignments, do special projects, check out library books, look at films, etc., etc. At the end of a specified time period a unit test is given. Learning is then evaluated on the basis of who can pick the most right answers and who cannot. The highest scores result in the A grades and the lowest ones, the F grades. If the teacher has done a good job the percentage of A grades will about equal the F grades with the average grade being a C. This grade distribution is accepted because supposedly some students cannot or will not learn and therefore deserve F grades.

The Faculty Handbook of the East Side Union High School Districts states: "If a student demonstrates motivation, interest and effort, he will receive an education commensurate with his abilities." And every year the report card grade distribution approximates the normal distribution curve. This seems incongruous when on the one hand education is a purposeful activity and yet the results (grades and achievement tests) fit a normal distribution curve which is most appropriate to chance and random activity distribution.

It would appear that we are perpetuating a gigantic self-fulfilling prophecy. The students who have failed in the past are presently failing and will probably continue to fail in the future while the previously successful student will continue to be successful. Over time the poor student gradually gets further and further behind.

As a result of "the system" a large percentage of incoming 9th grade students possess a general unreadiness for school learning - unreadiness in terms of specific subject-matter background and unreadiness in terms of social maturity. They simply cannot function and compete in the present educational system. The harder we try within the confines of the existing system the more overwhelmed the students become from exposure to learning tasks that exceed by far their prevailing level of cognitive and affective readiness. Hence, since they do not function at the required level they typically fail, lose self-confidence in their ability to learn, become thoroughly demoralized in the school situation and disengage themselves from it. And the pattern goes on and on and on.

Inasmuch as this general school unreadiness is not a group phenomenom but rather the result of the activities of an individual, the situation can only be improved or changed on the basis of what individuals accomplish. It would seem essential, therefore, that the pupil's existing state of knowledge and sophistication be taken into account, no matter how primitive this happens to be. Once an appropriate starting point is ascertained, continued subject matter readiness can be strived for using sequentially organized materials and by insisting on mastery of all ongoing lessons before new learning tasks are introduces

This then brings us to the overall problem. The essential problem appears to be in the development of instruction into a predictive system -- a system where educational outcomes are specified in terms of behavioral objectives that are measurable and therefore capable of being systematically revised and evaluated. No longer can we be satisfied with learning activities based on objectives stated in terms of appreciations and understandings for they cannot be taught, evaluated or revised.

Project 360 has devoted itself to the study of procedures that will attack the above-stated problem. The prime strategy is that of developing independent study curricula and procedures.

We soon found that in order to make an independent study curriculum operational, it would be necessary to make some rather major changes in facilities, staff utilization, counseling procedures, learning materials, and general classroom procedures. In short, we found it necessary to look at all aspects of classroom and school procedures.

The overall study was predicted on the following assumptions:

1) Independent learning behaviors can be taught or facilitated;

2) Such behaviors can be learned by most high school freshmen;

3) Independent learning behaviors are desirable in high school students;

4) The role of the teacher can be changed without increasing the total cost of the system, and the results will improve the system;

5) Counseling should play a major role in the instructional program;

6) An independent study curriculum would tend to lessen differences in school unreadiness.

II. PRELIMINARY INVESTIGATIONS

A study on programmed tape-recorded laboratory activities for 9th grade science was conducted by Jack Grube and William Gilmore at Andrew Hill High School in 1965-66. This study involved defining concepts and skills into their smallest components, writing objectives in behavioral terms, sequencing learning activities, script writing, testing and revising, tape production and evaluating terminal behavior on the basis of the previously stated objectives. Using the above system, the results of a ten-minute tape-recorded lesson could be predicted and guaranteed with 90% accuracy. This exactness did not come without a price however. The total preparation time for each minute of tape playing time averaged one and one-half hours. A ten-minute taped laboratory activitiy would then take approximately fifteen hours to prepare.

A second activity undertaken by Grube and Gilmore involved the use of an instant feed-back device called a Rapid-Rater.[1] When using the Rapid-Rater, the student inserts a piece of paper into the instrument and a metal probe is used to answer questions by punching a hole in the space allotted for the alternative he thinks is correct. If the probe goes all the way through the paper, the student knows immediately that the response is correct; if it does not go all the way through, he knows that his response is wrong and he can make another choice until he selects the correct response. Thus, the paper in the Rapid-Rater revealed immediately the student's correct responses and his errors. (See Appendix A for a Rapid-Rater student handbook.)

The Rapid-Rater punchboard was used to guide reading assignments, give unit tests, provide reviews after films, and serve as a self-checking quiz. In all situations it proved to be a convenient and simple device for providing immediate knowledge of results without extra effort by the instructor. It was concluded that the Rapid-Rater, when used systematically and integrated into the course to provide self-instruction produces significant gains in learning for all students.

Although these studies at Andrew Hill High School were short in duration and provided only subjective data, it was our first indication that when the learning conditions are precisely controlled, learning will occur regardless of the ability level of the student.

During this same year, 1965-66, Jim McCammon, Stu Eastman, and William Gilmore were putting into operation the first draft of an independent study curriculum for tenth grade biology. This involved writing a study guide for each chapter in the textbook. The study guide consisted of behaviorally stated objectives and a step wise guide specifying the learning materials necessary to meet the objectives. Students worked independently at their own rates during an allotted time period. At the end of the predetermined time period, all students took the chapter examination. Although no improvement in examination scores was noted, an improved attitude became apparent regarding responsibility toward learning. Many other conclusions could be drawn from this first-year study. However, probably the most important thing that happened was that the teacher was not under the gun "teaching" the class every day. Here then was our first evidence that the role of the teacher could be changed from that of dispensing information to guiding learning with individuals or small groups. (See Appendix B for examples of biology study guides.)

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[1] Research Media, Inc., Stosset, New York.

The 1966-67 Project 360 pilot study will be briefly considered here as a preliminary investigation.

The goals of the project were to investigate the feasibility of 1) independent study, 2) an interdisciplinary team approach and 3) improving school-home communications.

The experimental group consisted of 105 freshmen. They were not randomly selected in order to include students most severely handicapped in reading. The 360 group consisted of 45 students reading below the 6.0 grade level as measured by the Nelson Reading Test, 30 students who would normally have been in an English C (low track) class and 30 students who would normally have been in an English B (average ability) class.

A "comparison" group (N=116) at Andrew Hill had the following makeup: 10 students reading below the 6.9 grade level (the only remaining freshmen in this category), 30 English C students and 76 English B students.

The project group was involved in science, math, English or reading improvement, and world geography during a four-period block of time.

The facilities used in the project were two classrooms, one science laboratory, and one study center.

Learning materials and activities were selected on the basis of whether or not they would facilitate independent study. Programmed learning books, 35mm slide - tape recordings, 8mm film loops, and study guides were used and procedures evaluated.

The 4-hour block of time allowed for a weekly modified flexible schedule based on students' needs.

Prior to the opening of school, an attempt was made to contact all the parents of the project students for the purpose of explaining the project and answering questions about high school. Meetings were held at school and in the homes of parents with approximately 65% of the parents attending.

A newsletter describing school and project activities was sent to the parents of project students quarterly. (See Appendix C.)