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ABSTRACT

Four secondary schools throughout the country are operating with one or more of the recommended components of the Fort Lincoln secondary school. An analysis of these schools as they relate to the Fort Lincoln Plan appears after each description with a summary at the end of this appendix. Discussed in this report is supporting and expanded information to Volume I (ED 047 184) including descriptions of existing programs, sources of objectives, student seminar proceedings, an occupational education model and suggested courses. (For related documents see ED 047 171 through ED 047 188.) (LS)

GENERAL LEARNING CORPORATION
EDUCATIONAL SERVICES DIVISION

SECONDARY PROGRAM

VOLUME II

APPENDICES

GENERAL LEARNING CORPORATION
FORT LINCOLN NEW TOWN

SECONDARY PROGRAM

VOLUME II

NEGOTIATED SERVICES
CONTRACT # 69183

REPORT # 4

APPENDICES

APRIL 6, 1970
Revised

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APPENDIX A

DESCRIPTIONS OF EXISTING PROGRAMS

Four secondary schools round the country are operating with one or more of the recommended components of the Fort Lincoln secondary school. These are prominent, well-established programs which will form a baseline for classifying and comparing other innovative programs that are or will be emerging in the next five years. An analysis of these schools as they relate to the Fort Lincoln Plan appears after each description with a summary at the end of this appendix.

1. NOVA HIGH SCHOOL, FORT LAUDERDALE, FLORIDA

Nova High School, a six year school for 3,000 students, opened in 1963. The education plan designed for Nova High School has the following characteristics:

Interrelated Academic and Technological Program

Each student is prepared for both college entrance and entry-level employment in a technical area. In the Technical Science Department courses are offered in the divisions of: art, business education, drafting, electronics, graphic arts, home science, mechanical technology, music, and traffic safety. Students in levels 7, 8, and 9 are required to take Technical Science courses. Courses are elective for levels 10, 11, and 12.

The academic curriculum is organized under the following subject headings: language (English and foreign languages), mathematics, science, and social studies. Also, required and elective courses are offered in health and physical education.

The curriculum areas are housed in separate buildings clustered around a court. Each building contains rooms of varying sizes for individual, small group or large group work, for faculty planning and work space, and for a resource center containing materials related to the particular curriculum area and individual carrels equipped for AV reception and information retrieval.

Individualized, Nongraded Continuous Progress

Each student progresses at his own rate, determined by level of achievement, independent of the time of year or the accomplishment of other students. When Nova High School first opened, individualized instruction was actually practiced on a limited scale. In the intervening years, however, teachers have developed numerous Learning Activity Packages for all curriculum areas. A Learning Activity Package

is a unit of content prepared for specific behavioral objectives that guides an individual student to achieve those objectives. Learning Activity Packages for the same unit may vary in level of difficulty and may offer a choice of activities to reach the same objectives.

Within this framework it is possible for a student to be on one level in one curriculum area and on a different level in another curriculum area. Students who complete the Nova program at a time which prevents immediate entry into college or job may continue at Nova taking electives or working on a special project, may take courses at the nearby junior college, or may work and attend Nova parttime.

Core Curriculum

The faculty at Nova has defined the core content in each curriculum area that all students must master. Supplementing this are a wide range of elective courses, opportunities for independent study, student-teacher projects, and student designed experiments and investigations.

Modular Scheduling

A modular scheduling system is used at Nova. The scheduled time includes required and elective courses as well as unscheduled student time. The school operates on a trimester system for a total of 210 school days each year.

Multimedia Instructional Resources

In addition to the Learning Activity Packages and the decentralized resource centers mentioned above, instructional resources include, among others, two large flexible lecture halls equipped for AV presentations; closed-circuit TV with receivers in every classroom; television production and transmission facilities; laboratories for art, electronics, experimental science, graphics, language, automotive mechanics,

music, reading, social science, and visual aids; a planetarium; and data processing equipment.

Faculty

Teachers work in teams within curriculum areas. Planning time is scheduled, and teachers have the support of teacher aids and clerical service assigned by curriculum area as well as technicians skilled in electronics, graphic arts, and data processing. From time to time, interns and junior college students may also be part of the teaching team.

Guidance

Nova has one guidance counselor for each 500 students who performs the customary guidance activities supplemented by guidance from teachers on matters directly related to the instructional program. One module each day is scheduled for guidance activities.

Looking to the future Nova administrators see the demands of individualized instruction requiring one teacher-guidance counselor for every 50 to 60 students and three or four specially trained counselors to handle personal problems.

Analysis

The philosophy of Nova School, as of Fort Lincoln, is one of continuous education from childhood through adult life. The concept is reflected in an individualized and nongraded comprehensive program which encourages student responsibility for scholastic achievement.

Nova, however, lacks certain features which will be a part of Fort Lincoln. There is an early closing time at Nova and the school is not operated on a twelve

month basis. Involvement of the community members and use of community resources is limited to the use of some volunteers.

Subject matter areas are traditional with some additional courses. Nova School rules appear rigid, preventing free movement and responsibility for personal actions and in turn encouraging the feeling of coping with, not contributing to the school community.

Fort Lincoln in an effort to avoid these problem areas has been designed with extended school hours and a twelve month operating schedule. The center concept will involve the community while breaking down the traditional separation of subject matter into artificial units. Within the Fort Lincoln center concept, students will have a great deal of responsibility for their own actions.

2. EVANSTON TOWNSHIP HIGH SCHOOL, EVANSTON, ILLINOIS

Evanston Township High School is the first educational park to become operational in this country. Beginning eleven years ago, it has developed into four separate, semi-independent high schools under one roof housing four principals, four teaching staffs, and four student bodies, grades 9-12, totaling 5,246 students.

Students are assigned at random among the four schools which can accommodate 1,500 students each. Courses such as mathematics, science, English, social studies, and foreign language are held in each school. Courses in physical education, industrial arts, business education, home economics, music, and speech arts are held in shared facilities with students from the four schools attending classes together. Other characteristics of the Evanston Township High School are:

Both College Bound and Vocational Programs

A unique feature of the Evanston academic program is the Advanced Placement program offering eleven courses acceptable for college credit. Some Evanston students have entered college with sophomore standing.

In the vocational area, work-study programs provide practical work experience in conjunction with school studies in Distributive Education, Diversified Occupations, and Office Lab Co-op. Students uncertain about a career choice receive intensive counseling and assistance from a full-time counselor, teacher, and program director in the Vocational Experience program.

The total curriculum of 250 courses includes 20 courses in science, 21 courses in English, 18 courses in business, 13 courses in art, 9 programs in special education, and 4 programs in vocational work experience.

Modular Scheduling

The school day, 8:30 a.m. to 3:30 p.m., is divided into 22 modules. The first and last module are ten and five minutes long, respectively, and are used for attendance and announcements. Modules 2 through 21 are 20 minutes long, including 5 minutes passing time. All classes meet for at least two modules.

A maximum of one third of a student's time may be unscheduled and is designed for independent study. Unscheduled time must be spent in the cafeteria, the student lounge, an open lab, the main library, or a resource center.

More than 50% of students enroll in summer school, only 10% of these to complete a course failed the previous semester. The summer school program is utilized for experimental programs, remedial or advanced work, and new student orientation to high school.

Resource Centers

The central library of 50,000 volumes is supplemented by a resource center in each of the four schools which is open 8:00 a.m. to 4:00 p.m. Monday through Friday. Located in the resource centers are: offices for English, combined studies, speech arts, social studies, foreign language, and mathematics faculty; a faculty workroom; individual student carrels, twelve equipped for dial access information retrieval; a collection of 10,000 books, plus records and filmstrips; one large room (seats 16), two medium rooms (seats 8), and three small rooms (seats 2 or 3) for meetings and discussions.

Faculty

Faculty is organized on the concept of team teaching which started in 1955 as part of a pilot program sponsored by the National Association of Secondary School

Principals. Expansion of program and facilities has brought the number of teaching teams at Evanston to 39.

Paraprofessional team members include teacher aides who assist with supervision, clerical tasks, and other functions under the direction of certified teachers and lay readers who help grade papers and prepare instructional material.

Special Activities

Trained staff and special facilities are available for students who are mentally retarded, blind, deaf, or who have impaired hearing or speech defects. Materials and equipment of special design and separate home economics, woodshop, and resource center facilities are employed to assist these students to achieve optimum levels of performance.

A nursery school for three and four year olds is available to junior and senior girls enrolled in Child Development. Class, observation, and direct experience are combined to enhance the study of physical, mental, social, and emotional development of children.

A Demonstration Center for the Fine Arts is a facility where Illinois teachers may come to observe programs for students talented in art, dance, music, and drama. Evanston faculty also visits other Illinois schools to provide follow-up assistance in the development of fine arts programs.

A full-time director is employed at Evanston to coordinate a program of intramural sports in which over 90% of the students participate some time during the year.

In the Testing-Tutoring Center, teacher aides supervise make-up tests and student volunteers tutor their classmates. This latter program was organized by

the student government. Plans are underway to expand the testing program to include all testing done in the school.

The Data Processing Center is used as a resource center, a teaching station, and an administrative aid. A two-year program in Data Processing in Business Education is one example of the instructional use of the Center.

Two foreign language laboratories are in operation. One, primarily for independent study, has a dial access system capable of transmitting 120 different programs simultaneously. The second, primarily for class drill, also has channels for originating programs.

Many of the new comprehensive curriculum programs have been adopted at Evanston, including PSSC physics, CHEM study chemistry, ESCP physical science.

Analysis

Evanston High, as an educational park, offers vocational education, vocational counseling, work study programs, and advanced placement courses. Students choose from 250 course offerings and are permitted much unscheduled time. A large summer program, extensive sports programs, and a wide selection of activities for exceptional students characterize the varied program and involved student body at Evanston.

Fort Lincoln is designed to improve upon the Evanston model. Evanston makes little use of the community outside of involving a few volunteers. The framework of courses, although broad, is still centered around traditional subject matter areas of mathematics, social studies, Foreign language, Health, physical education, English, band, etc. Under-use of facilities is a problem,as are guarded relationships between pupils and teachers. In the Fort Lincoln design there will be a

movement toward a curriculum closely related to the community and using community facilities. The Fort Lincoln structure encourages openness between students and teachers and involve both in the decision making process.

3. MELBOURNE HIGH SCHOOL, MELBOURNE, FLORIDA

Melbourne High School, a three year school with a student population of 2,300, began ten years ago to move toward a total nongraded program. Now all schools in the county, elementary and secondary, are nongraded.

Nongraded Program

In the nongraded program at Melbourne, subject content has been reorganized into generally non-sequential courses of five phases. A phase denotes the approach to the subject matter and the depth to which mastery is anticipated.

> Phase I courses are designed for students who score from 0 to the 20th percentile on nationally standardized achievement tests. Classes are small to permit special assistance to each student.
>
> Phase 2 courses are designed for students who score between the 20th and 40th percentiles.
>
> Phase 3 courses are designed for students who score between the 40th and 60th percentiles. This range is considered to represent average accomplishment.
>
> Phase 4 courses are designed for students who score between the 60th and the 80th percentiles.
>
> Phase 5 courses are designed for students who score above the 80th percentile and wish to pursue college-level courses for advanced placement. (A list of student characteristics for each phase is appended in Appendix C, Exhibit C.)

The standardized tests most frequently used at Melbourne are the Metropolitan Achievement Test, Sequential Tests of Educational Progress (STEP), Public School Achievement Test (PSAT), and the Stanford Achievement Test (SAT).

A student is given his test scores, a prediction of most appropriate phase for him in each subject, a list of available courses and teachers, and a class schedule. The student registers for six courses at the phase levels he desires. He may or

may not observe the phase level suggested by the counselor and he may change courses at any time during the first two weeks of the semester.

At any time during the year the student may change phases. The request for change rests with the student. The one limitation is that students whose test scores indicate average achievement may not choose a course designated Phase 1 or Phase 2.

Both College Bound and Vocational Programs

Students must complete 16 1/2 units during their three years at Melbourne to qualify for graduation.

Credits	Subject
3	English
1	Mathematics
1	Science
1	American History (if American history was taken in 9th grade, another history course may be substituted)
1	Art
1	Physical education
1	Home economics (for girls only)
7 1/2	Elective subjects
8 1/2	Elective subjects for boys and those girls who took H-E in 9th grade.

Students planning to attend college choose additional courses in English, mathematics, science, history, and foreign language. Other students may choose to take vocational courses in electricity, electronics, building trades, drafting, automechanics, or business education. Approximately 100 courses are offered.

Other Student Options

An opportunity for independent study, known as Phase Q or Quest Phase, is open to students interested in studying an area beyond the scope of the curriculum. This independent course of study, planned by the student, replaces a formal course.

Students may register for a Quest Phase at the start of the semester or during a semester.

Inquiry is a program of full time research usually for a period of six to nine weeks. Admission to Inquiry is by student application to the Inquiry Committee who grants permission after consideration of the student's qualifications and plan of study.

Students participating in Inquiry terminate all regular classes during the period of their research. A preceptor selected from the school faculty or the professional community provides guidance and counsel for the Inquiry project. Students spend at least six hours each weekday on their projects, including first-hand experimentation and field work whenever possible. Weekly seminar meetings with other Inquiry students serve as catalysts for further study and promote cross-fertilization of ideas.

Projects are evaluated during the final week of the Inquiry period. Participants submit written evidence of their work supplemented by an oral, visual, or audio presentation. Credit received for Inquiry is acceptable to meet graduation requirements and for college entrance.

Education by agreement (educational contract) is an arrangement between student and instructor whereby regular course time is reduced and the released time is devoted to independent study, individual or group projects, or work on assigned material. This agreement is formalized in a written document signed by teacher and student.

Phase X is a designation applied to courses such as typing, physical education, chorus, and some vocational courses where there are no standardized criteria. These courses are nongraded, but unphased.

Faculty

Teachers are responsible for planning the curriculum. Each teacher has one period out of six free for planning. Team teaching methods are used and some para-professionals are available for assistance.

Analysis

Melbourne High is a nongraded school where student choice and responsibility for academic decisions are encouraged. However, Melbourne incorporates phasing into its program, which permits students not only to select courses but to select the depth or level of study in a particular course. In addition to the five phases offered the students, independent study programs and scheduled research periods are arranged. Some advanced placement courses, individualized instruction, and use of community resources are promising and developing features of the school.

The Fort Lincoln design would solve some of the problems which are evident at Melbourne. At Melbourne materials and facilities are locked or not in use. Community volunteers are used only to a limited extent. Although extensive, the courses are basically kept within a traditional structure. Rules are rigid, limiting student movement and responsibility for personal activity. In the Fort Lincoln centers the community members would be actively involved and facilities will be shared with the community. Courses will be related to centers rather than to a traditional curriculum structure and the school will be responsible to both students and teachers on the personal as well as academic level.

4. PARKWAY PROGRAM

Over the past year a great deal of national attention has focused upon a simple but creative approach to high school education which has been launched in the city of Philadelphia and which appears "to be working."

The Parkway Program is an experiment in creating a new social structure for an educational program. It is a school without walls. The city is the school and the life of the city is the curriculum. According to its Director, "the city is our curriculum because there is nothing to learn about but the city. If education isn't useful in life, it is difficult to know why we would bother with it." A key feature of the Parkway Program is the direct participation of institutions and businesses throughout the city in the instructional program.

The Parkway Program began operation in February 1969 with 143 students selected by lottery from volunteers (see attached letter announcing program). The only admission data requested were name, address, school, grade, and parental approval. The first unit of students, known as ALPHA, had nine highly-qualified, certified teachers and 13 interns as its full-time faculty. The racial mix of students reflected the city population, i.e., 60% black and 40% white. The program was organized as follows:

The 143 students are randomly divided into nine groups of about 16 students each which are called Tutorial Groups.

Each full-time faculty member is paired with a university intern, and each pair is assigned jointly to a Tutorial Group.

A pair of Tutorial Groups together constitute a Seminar Group.

Each student chooses, within the context of subject distribution requirements, one or more programs offered by the Parkway participating institutions, as well as courses taught by Parkway faculty members.

Each student may choose to participate in a Management Group responsible for one aspect of the program's day-to-day operation.

Each student, then, participates in:

a. A Tutorial Group with one faculty member, one university intern, and 15 other students.

b. A Seminar Group, with the other students in his Tutorial Group, the fifteen students of another Tutorial Group, and an additional faculty member and university intern.

c. A program of study including at least one course offered by a participating institution and additional courses offered by Parkway faculty members.

d. A Management Group consisting of other students and faculty who assume responsibility for one aspect of the program's functioning.

The function of the Tutorial Group is twofold:

a. It is the unit within which personal encouragement, support, and counseling is given, and it is the unit in which continuous assessment of the Program as a whole, is carried out.

b. It is the unit responsible for the acquisition of those basic skills in language and mathematics required by the students in their work in the Parkway participating institutions and by the requirements of life in our society.

Each group will, of course, go about performing its functions in the ways seen by students and staff alike as being most successful. The various groups have experimented with a variety of experiences and activities ranging from formal tutoring sessions in mathematics and English to individual faculty-student conferences to free-for-all discussions, recreational gatherings, and field trips.

The function of the Seminar Group is to work from the students' experiences in various Parkway institutions towards a generalized and liberalized view of that experience.

The function of Management Group is:

a. To perform the functions and provide the services necessary for the Parkway's successful operation.

b. To involve students in a meaningful way in determining the nature of the program.

c. To help students develop the skills of management which are the source of power in the community. Management Groups have formed around the following problem areas: self-government, public relations, office management, athletics, facilities, fund raising, extracurricular activities, the printing of a Parkway newspaper, and, in conjunction with professors from Temple University, attempting a scientific analysis of the effects of the Parkway Program on its students.

The Academic Curriculum consists of:

a. Institutional offerings - programs of study offered by participating Parkway institutions and taught by staff members of those institutions.

b. Basic skills offerings - math and language arts courses taught by Parkway faculty which provide both remedial and advanced level work for students who need or desire it.

c. Elective offerings - classes in the humanities, physical sciences, and social studies taught by the Parkway faculty.

Each students schedule depends on the particular courses he is taking, but is usually a variation of the following general schedule:

SAMPLE STUDENT SCHEDULE

TIME	MON	TUES	WED	THURS	FRI	SAT
9:00 - 11:00	Ed Com (a few FO)	Ed Com (a few FO)	Ed Com (a few FO)	Ed Com (a few FO)	Ed Com STAFF	FO Ed Com
11:00 - 1:00	Lunch FO	Lunch FO	Lunch FO	Lunch FO	Lunch FO	Ed Com FO
1:00 - 3:00	Tutorial	Tutorial	MAN	Tutorial	Seminar or Town Meeting	FREE
			or			
3:00 - 5:00	FO Ed Com	FO Ed Com	FREE	FO Ed Com	FO Ed Com	FREE

Ed Com — Educational Components (Institutional offerings)
FO — Faculty Offerings (Basic Skills and Electives)
MAN — Management Group
STAFF — Staff Meeting
FREE — is for large group activities, field trips, independent study, etc.

In addition to the three types of study listed above, each student is encouraged to participate in a program of individual study in an area of his own interest. This may be done in collaboration with one or two other students.

Students are encouraged to participate in work programs of the Parkway institutions as an extra non-required component. This can lead to vacation jobs or to career possibilities. In addition, and not of least importance, will be the opportunity of community service in a variety of social agencies.

Since the inception of ALPHA, three other autonomous units have been organized. Each unit has a base of operations or headquarters, but "classes" are held at various sites around the city -- corporate offices, church basements, garages, etc. Teachers and students together decide what courses will be offered and secure the people and places to implement the courses. The unit is governed informally through weekly town meetings at which everyone can and does have his say about unit operations. In general, the rules or laws of the school are the federal, state, and municipal laws or rules which apply to all citizens. Tutorial sessions are the only "required" classes. There are no grades except credit or no-credit. Course offerings meet all of the State requirements for earning a high school diploma. Teachers assess student progress on a personal basis and students evaluate teachers' performance. Staff and students are on a first name basis. Students are allowed to attend staff meetings. The Program operates year-round.

Skeptics of the Program were worried about the administrative complications presented by the prospect of students shuttling about the city for classes and were suggesting the use of special buses, etc. However, the Director feels that reliance on public transportation is part of the learning experience of the students. There

they are responsible for getting where they have to go on their own. Transportation to and from "school" is the student's own financial responsibility; tokens are provided to them for trips to institutions or businesses during the day. The students make their own eating arrangements. The school operates within the $680 per pupil expenditure of the system. For the first six months of the project, funding came from the Ford Foundation, but in September 1969, the Board of Education included Parkway in its operating budget.

At this point in time, there is no objective way to determine in traditional terms how much and how well the students are learning in this Program versus a traditional high school program. However, the "satisfaction quotient" of the students and staff, the enthusiastic response to course offerings despite the lack of attendance requirements, and favorable parental response indicate that something good is happening. There is concern in some quarters over whether the program deals adequately with basic skill needs like reading and writing and basic disciplines such as history and science, but Parkway Director Brenner says these problems are being worked on.

The Program has proved to be such an attractive alternative to the regular school system that there were more than 10,000 applications for the 500 openings last fall. The Director anticipates expanding enrollment to 2,500 students in September of this year. While a few students have chosen to return to their original High schools because they preferred more structure and less responsibility, there have been no "dropouts" from the Parkway Program.

For the first semester of 1969-70, Parkway also included an elementary school in which the high school students taught young pupils and received credit as well as a

sense of responsibility, achievement, and motivation to learn themselves. The elementary program will be reinstated in the Fall.

Parkway could be criticized at this point in its development for the absence of any type of staff development program. While there is a solid staff of experienced, qualified teachers, there are also a number of interns handling teaching responsibilities who might benefit from some form of peer counseling, etc.

The Parkway Program Course Catalogue, offering approximately 100 courses, is attached. The following is a list of the cooperating institutions and businesses, which gives an idea of the extent of community response to and cooperation with the Program.

A PARTIAL LIST OF PARKWAY PROGRAM COOPERATING AGENCIES

Academy of Natural Sciences

Addressograph-Multigraph Corporation

American Civil Liberties Union

American Friends Service Committee

Archdiocese of Philadelphia

Art Alliance

Atlantic Richfield

Catholic Youth Organization

Center City Magazine

City Hall

Commission on Human Relations

Convention and Tourist Bureau

Council for Professional Craftsmen

County Court

County Medical Association

Day Nursery for the Deaf

Delaware Valley Regional Planning Commission

Dra[illegible] Guild

Fellowship Commission

Fidelity Mutual Life Insurance Company

Film Media Center

Franklin Institute

General Electric Company

Gratz College

Greater Philadelphia Chamber of Commerce

Greater Philadelphia Movement

Hahnemann Medical College and Hospital

Health and Welfare Council of Greater Philadelphia Metropolitan Area

Industrial Valley Bank Building

Insurance Company of North America

IBM

JCRC

Metropolitan Associates of Philadelphia

Moore College of Art

Municipal Services Building

NAACP

NYU Educational Network

Parochial Schools Administration Building

Peale House

Pearl Buck Foundation

Penn Center

Pennsylvania Academy of Fine Arts

First Pennsylvania Bank

Pennsylvania Railroad: Suburban Station

People for Human Rights

Philadelphia 1976 Bicentennial Corporation

Philadelphia Board of Education

Philadelphia College of Art

Philadelphia Free Library

Philadelphia Museum of Art

Philadelphia Music Academy

Philadelphia National Bank

Philadelphia Zoo

Pocket Playhouse

Police Administration Building

Pon[illegible]rantz Office Supplies

Print Club

Regional Film Library

Rodin Museum

Smith, Kline and French

Society Hill Playhouse

Temple University

J. Reid Thomson, Architect

United Gas Improvement

University of Massachusetts School of Education

University of Pennsylvania

Urban Coalition

Urban League

Wanamaker's Department Store

Weinstein Geriatrics Center

YMCA of Philadelphia

YWCA of Philadelphia

YMHA of Philadelphia

YWHA of Philadelphia

The following news media also helped generously in a variety of ways:

Canadian TV Network

Evening and Sunday Bulletin

KYW

London Sun

Los Angeles Times

Philadelphia Daily News

Philadelphia Inquirer

Philadelphia Tribune

Toronto Daily Star

WCAU

WFIL

WHEG

WPEN

WUHY

WPVF

WKES

II. THE ORIGINAL LETTER SENT TO ALL CITY HIGH SCHOOL STUDENTS

The School District of Philadelphia JANUARY 1969

BOARD OF EDUCATION

From: John Brewer, Director Phone: 448-3761
The Parkway Program
1801 Market Street
Philadelphia, Pennsylvania 19103

The Parkway Program is like a high school.

In some ways.

It offers a four-year full-time program; it gives a diploma; it satisfies state requirements.

And in some ways, it isn't.

The Parkway Program will not be a school with classrooms or bells. The organizations around the Benjamin Franklin Parkway will provide laboratories, libraries, and meeting space. Although participation will only be required for the length of the normal school year, study and work programs will be available year-round. Students and faculty will form small groups for discussion, study, counseling, and self-evaluation. Learning situations will vary from films, jobs, and lectures to special projects.

The Parkway Program is a chance for you, the student, to build your own education. You will use the Parkway, the seminar and tutorial groups to design your learning program. The institutions around the Parkway will offer special offerings; the teachers will have special skills and interests. You can work, get job training, take courses, do independent study, work on research projects. You can work on these by yourself, with fellow students, with faculty, and with individuals from the institutions. Vocational? College Preparatory? Do you want to study city government, be a reporter for a newspaper, improve your ability to read and write, get secretarial training, study electronics at the Franklin Institute or art with the Philadelphia Art Museum?

This Program is a chance for you to expand your education in as many ways as you -- and the Parkway -- can create.

ADMISSIONS

Any Philadelphia public school student (in grades 9 - 12) can join the Parkway Program. The requirements are simple: the willingness of the student and a parent's signature. If there are more applicants than places, names will be publicly drawn from a hat, with provision made for equal distribution among the city school districts. The program is not designed for any special group of students. It doesn't matter what your present grades are, whether you're in "Gifted" or "Start", or what your grade in behavior is. The deadline for applications is 27 January 1969. The program will begin on 17 February 1969.

.....

PLEASE PRINT

I would like to join the Parkway Program

Name_____ Present School_____

Address_____ Grade_____

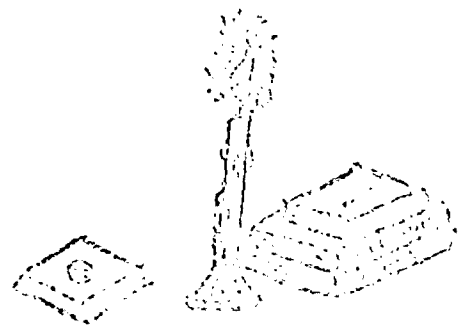
_____

Signature of Student Signature of Parent

Mail to: John Brewer, The Parkway Program, 1801 Market Street, Philadelphia, Pa. 19103

PARKWAY
PROGRAM

Course Catalogue



MY, MY, JUST THINK WE'RE ABOUT TO CELEBRATE OUR FIRST BIRTHDAY.

SO MUCH HAS TRANSPIRED IN THE PAST YEAR. SOMETIMES WE HAVE EXPERIENCED SOME BEAUTIFUL MOMENTS. AT OTHER TIMES WE HAVE RECOGNIZED OUR MISTAKES AND MADE EVERY EFFORT TO OVERCOME THEM. HOPEFULLY IN THE FUTURE WE WILL HAVE BENEFITED FROM OUR EXPERIENCES SO THAT WE SHALL BE PARTICIPANTS IN A BETTER WORLD THAT WE HELPED TO SHAPE.

CONTAINED HEREIN IS THE CULMINATION OF OUR EFFORTS, BOTH STAFF AND STUDENTS, TO MAINTAIN AN EDUCATIONAL PROGRAM IN WHICH WE FIRMLY BELIEVE.

ANITA E. HACKNEY
ADMINISTRATIVE HEAD
COMMUNITY ARTS

INSTITUTIONAL OUTLINE CHART

ACADEMY OF NATURAL SCIENCES

CITY HALL ANNEX

ETHICAL SOCIETY

FELLOWSHIP COMMISSION

FIRST BAPTIST CHURCH

FIRST PRESBYTERIAN CHURCH

FRANKLIN INSTITUTE

FREE LIBRARY OF PHILADELPHIA

CITY HALL ANNEX

PEALE HOUSE

PHILADELPHIA MUSEUM OF ART

PHILADELPHIA PRINT CLUB

REGIONAL FILM CENTER

ROBERT MORRIS HOTEL

UNITARIAN CHURCH

ANATOMY-CHEM BUILDING U of PENN

LEINGLIN GERIATRIC CENTER

Y.M.C.A

INDUSTRIAL VALLEY BANK

thanks!

[illegible]

Miss Jeanette Fank

Dr. Peter Block

Mrs. Paula Bloom

Mrs. Carolyn Cusson

Samuel Etris

Miss Faringer

Manfred Fishback

Otto Gardner

Mrs. Jan Goldman

Anthony Izzo

Mrs. Joyce Johnson

Gordon Kramer

M. Lefkowitz

Rudy [illegible]

PCA students

Gary Richardson

Irv Rosenstein

Mitchel Strubel

James Thompson

James Tichenor

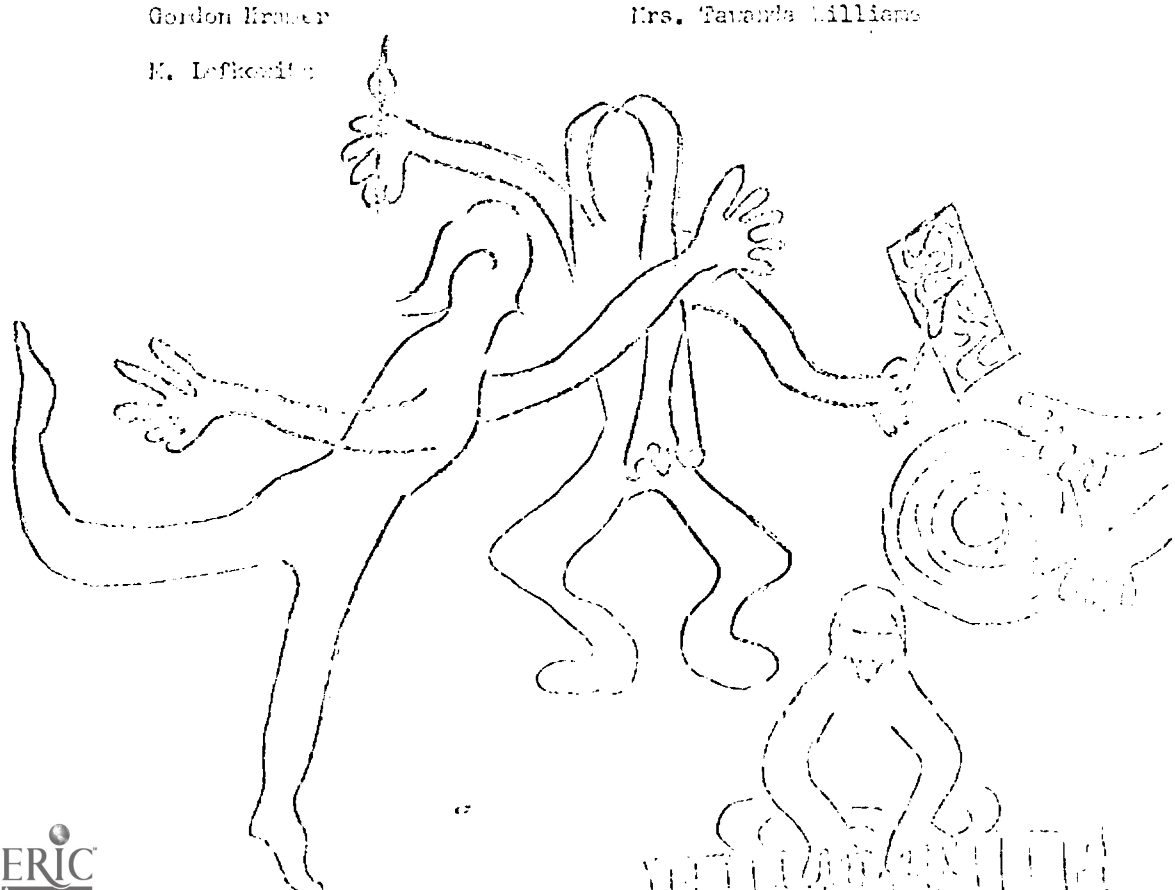
Lee Tichenor

Dr. Margaret Tincken

Mr. Vogt

Vincent Walters

Mrs. Tawanda Williams



PARKWAY PUBLIC SCHOOL CALENDAR

Monday, January 5, 1970 ..... Beginning of Winter term

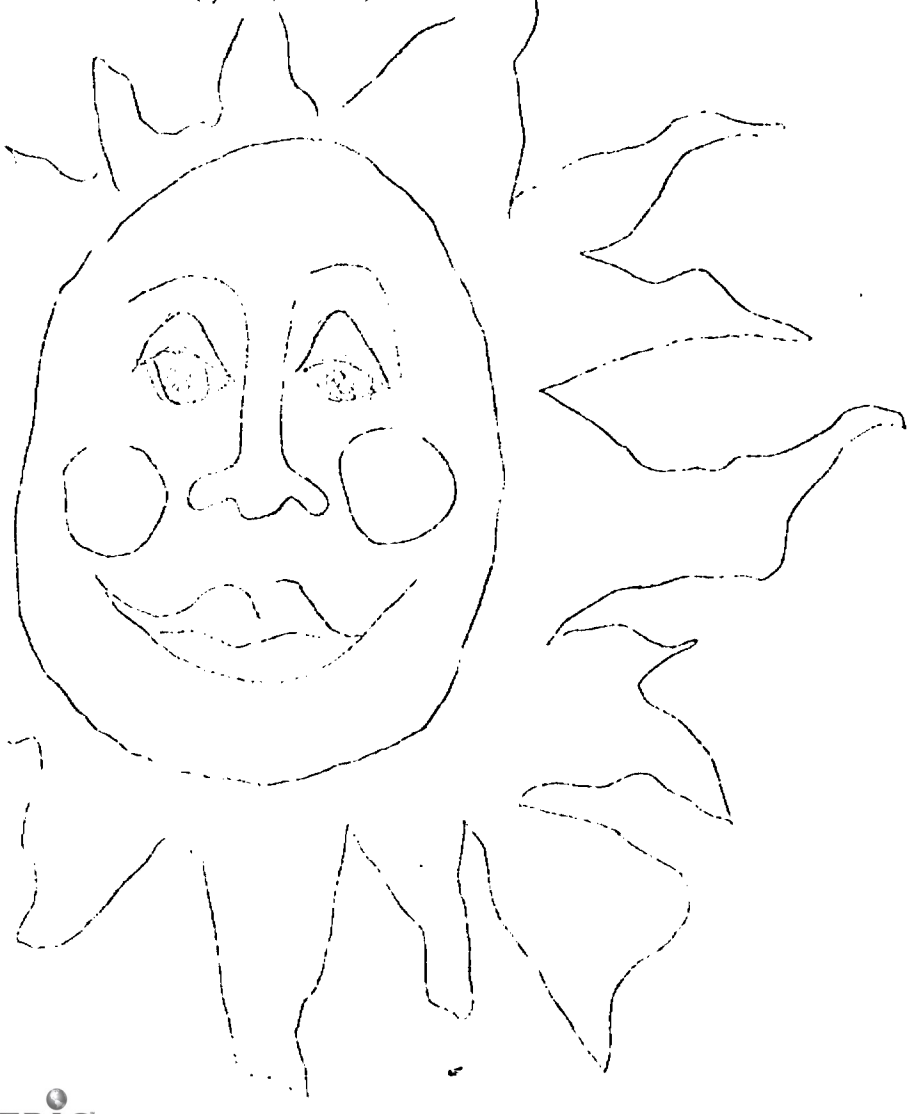
Friday, March 30, 1970 .....End of Winter term

Monday, March 30, 1970.....Beginning offspring term

Friday, June 19, 1970 .....End of Spring term

Monday, July 6 , 1970.....Beginning of Summer term

Friday, August 14, 1970.....End of Summer term



STATE REQUIREMENTS FOR HIGH SCHOOL DIPLOMA

The State of Pennsylvania stipulates the number of content hours in each subject required for graduation. The State makes the following definitions in General Curriculum Regulations printed by the Department of Public Instruction, 1965.

7-103 A unit of credit shall be given for satisfactory completion of a planned course of instruction no less than 120 clock hours. Partial units of credit may be granted at the discretion of local authorities.

GRADUATION REQUIREMENTS FOR 4 YEARS OF HIGH SCHOOL

1. English 4 units

Social studies - 3 units, including ½ unit of world cultures, 1 unit of U.S. and Pennsylvania history, and government, and one third unit of economics.

Science 1 unit

Mathematics 2 units

Physical Education A program amounting to two meetings a week for 4 years.

Health Education ½ unit

Eighteen and one third units are required for a four year program, 1 unit = 120

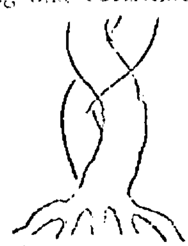
COLLEGE REQUIREMENTS

Most colleges require 3 - 4 years of foreign language, 2 years of science (1 year of a laboratory science) and 2 years of academic math.

THE FOLLOWING SUBJECTS COUNT AS ENGLISH CREDIT

COURSE TITLE : POETRY AND SELF-ENCOUNTER THROUGH EACH OTHER
INSTRUCTOR : REV. ROBERT H. OSTLAND
PLACE : PENN HOUSE 16 th and CHESTNUT
TIME : Tu, Th 3:30 - 5:00

This course will consist of poetry workshops, encounter groups (informal) "togetherness", nature walks, and will be aimed primarily at self-understanding, communication between individuals, and free expression, ultimately directed at the understanding and termination of defensive "games" which hinder communication.

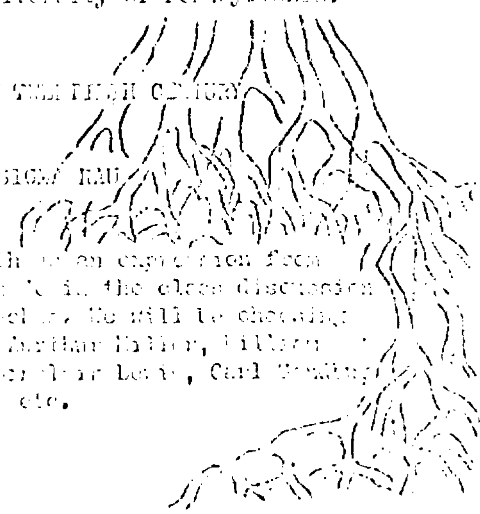


II COURSE TITLE : TWENTIETH CENTURY LITERATURE
INSTRUCTOR : H.H. HASBETT
TIME : M W F 11-12
PLACE : UNITARIAN CHURCH

A course in twentieth century literature: poetry, prose, and drama. Reading will include : Joyce's Portrait of an Artist as a Young Man, Fitzgerald's, Great Gatsby, and Beckett's, Waiting for Godot Poems by a variety of individual poets will be mimeographed and discussed in class. Novels will be assigned and discussed chapter by chapter. The teacher will determine the other reading when he has gained a feeling of the capabilities , interests, and limitations of the students.

Cl asses will be conducted as small discussion groups hopefully, less than 15 people . The teacher conceives his role in class as follows:
1. To guide the discussion.
2. To provide background material for the students on the authors' life and to outline some of the be critical interpretations of the authors' works.
3. Most importantly, to invoke and discuss the students' reaction and responses to the readings .
Short interpretive papers will be assigned on topics of the students" choice. There will also be some in class writing

The teacher is an English major at the University of Pennsylvania.



III COURSE TITLE : AMERICAN LITERATURE IN THE TWENTIETH CENTURY
INSTRUCTOR : AMY GOLDMAN, FRED KEMIGER
TIME : MWF 3:30-4:30
PLACE : 3914 SPRUCE STREET BETA SIGMA RHO

American Literature in the Twentieth as an expression from different life styles. An attempt will be made in the class discussion to evaluate the legitimacy of these approaches. We will be choosing among authors such as Tennessee Williams, Arthur Miller, William Faulkner, Ernest Hemingway, Philip Roth, Sinclair Lewis, Carl Sandburg, Robert Frost, James Baldwin, Leroi Jones , etc.

12

COURSE TITLE SHAKESPEARE I COMEDIES
INSTRUCTOR RALPH
TIME TU TH 2-2:30 [illegible]
PLACE [illegible] 301

This will consist of reading 5 of Shakespeare's comedies.

13

COURSE TITLE SHAKESPEARE II TRAGEDIES
INSTRUCTOR RALPH
TIMES M W M-W 9-10:30 Tu Th, 9-10:30
PLACE ~~SWEDENBORGIAN~~ CHURCH

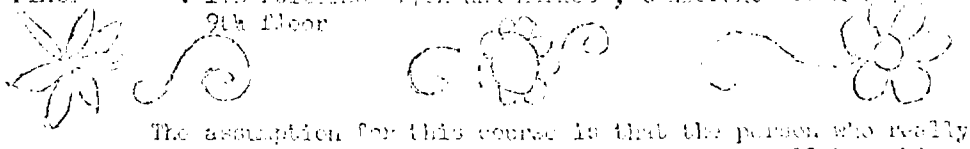
WE WILL DISCUSS FIVE OF HIS TRAGEDIES

14

COURSE TITLE BLACK LITERATURE
INSTRUCTOR [illegible]
PLACE UNITARIAN CHURCH
TIME TU TH 10:30-12

A survey of black writers

[illegible] COURSE TITLE : COMMUNICATIONS WORKSHOP
INSTRUCTOR : LISA STARK
TIME : W F 10:30- 12:30
PLACE : IVB BUILDING 17th and Market , Conference room C
9th Floor

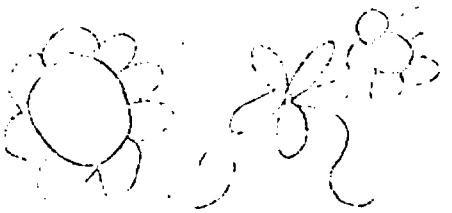


The assumption for this course is that the person who really knows how to communicate is the one who gets ahead. We will be asking ourselves HOW people communicate, HOW they do it, and HOW We can do it better. We will go into news writing, public speaking, use of the media (like TV, radio, newspapers) and learn about what it takes to succeed in these fields. We will try to figure out exactly how many different ways there are to say things, and which ways are best.

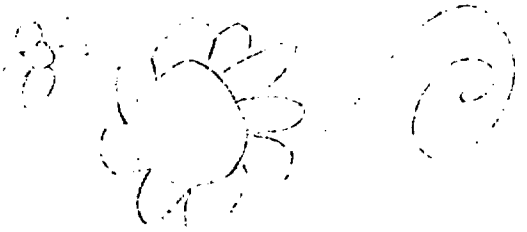
Class projects may include expanding an inter-community Parkway newspaper and producing it regularly; writing and illustrating an article on the Parkway Program for publication, setting up and operating a Parkway radio station, and making speeches in the Program in the community. In addition, each student will be expected to complete one individual project on a subject of his own choosing. Work-study opportunities with TV, newspapers, radio, etc. are being worked out and may be possible.

OPEN TO STUDENTS OF ALL UNITS REGARDLESS OF VERBAL ABILITY.

[illegible]6 COURSE TITLE : PHOTOGRAPHY
INSTRUCTOR : DAVID, TERRY,DICK
PLACE : DARKROOM AT 1801
TIME : M 9- 1:00

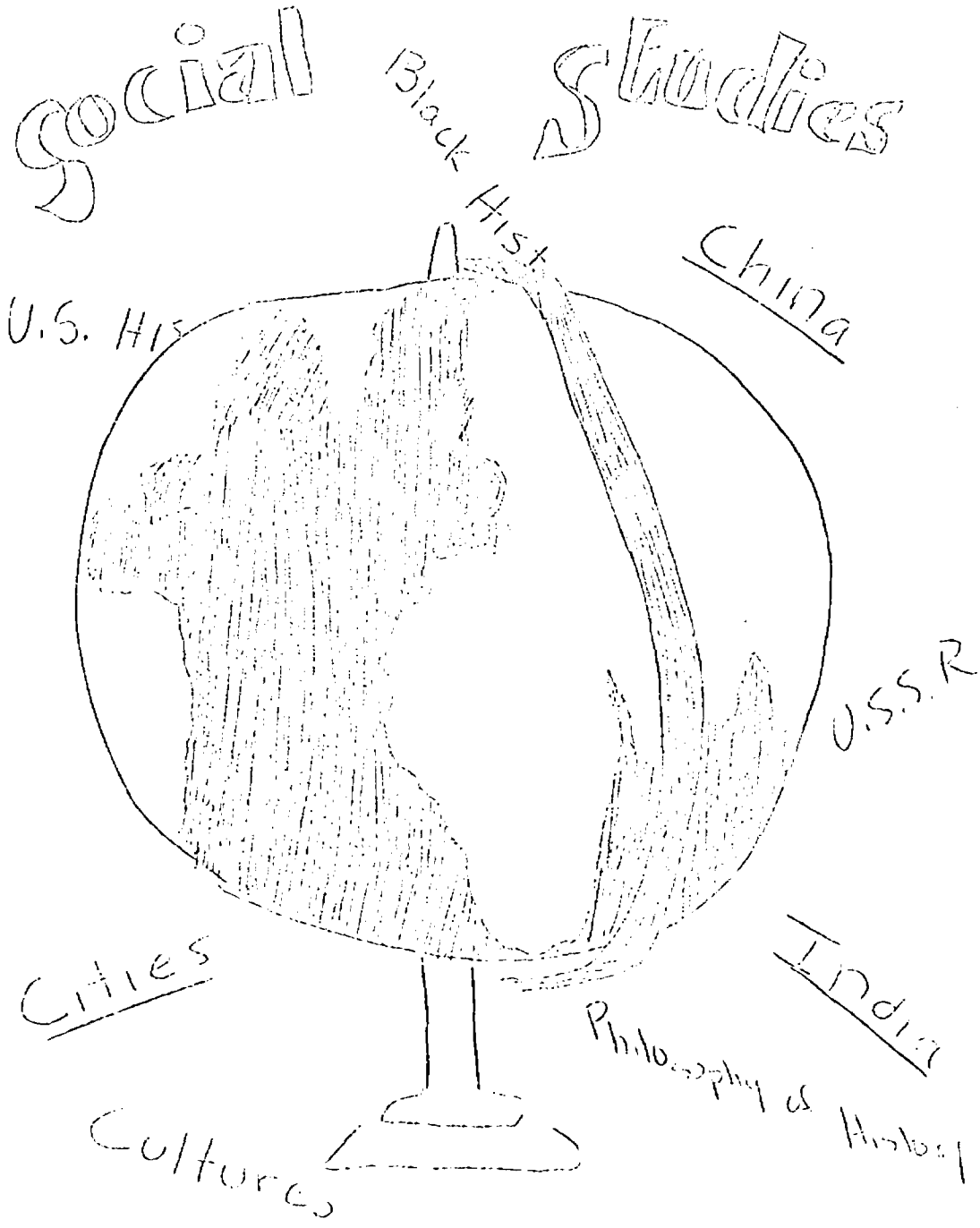


A continuation of the photography course now in progress with the instruction by the PCH students in the use of the camera, and darkroom techniques. There is no room available at the present for new students.



[illegible]7 COURSE : PHOTOGRAPHY WORKSHOP
Instructor : Ken Sherman
PLACE : DARKROOM AT 1801
TIME : FRI 2:30 - 5:00

We'll talk about my ,hotographs and your photographs: why some are good and why some are not. I'll be constantly taking new photographs and I assume you will too. Sometimes we might be able to meet because I am in and out of town; but we'll meet as often as we can. Bring your photographs to the first meeting.



THE FOLLOWING COURSES GIVE HISTORY CREDIT

18

COURSE TITLE: STUDY OF CONTEMPORARY POLITICS
INSTRUCTOR: [illegible]
PLACE: FRANKLIN HALL, ROOM 201
TIME: M W 3:30- 5
PREREQUISITES: MUST BE WILLING TO PARTICIPATE ACTIVELY IN CLASS

We will begin with a discussion of METHODS USED TO STUDY POLITICS. Is there a political science? To what extent is politics dependent on other areas- psychology, philosophy, etc. Course will then consider different view points on politics- Liberalism vs Conservatism vs Radicalism vs others. On what assumptions are these based? Each student will select one book from a list of contemporary works and will present a critique. Finally, the class will choose 10 or 15 topics to be discussed. Each student will research one topic and present a point of view; the class will debate and criticize.

19

COURSE TITLE: PSYCHOLOGY OF THE ADOLESCENT
INSTRUCTOR: [illegible] MILLER
TIME: T Th 10:30- 12
PLACE: FIRST BAPTIST CHURCH 17th and SANSOM

Open to all old students and a few new ones. The course will include readings in learning theories, developmental theories, and therapeutic theories. Students will do independent work in the area of their choice. It is hoped that students will bring their own experiences to the class to help understand themselves and others. Students will also be required to have a private weekly meeting with the instructor.

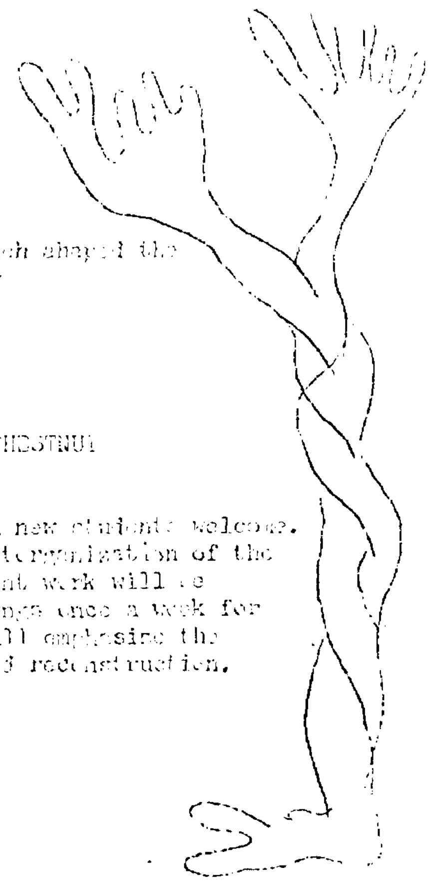
20

COURSE TITLE: [illegible]
INSTRUCTOR: [illegible]
PLACE: 1220 ARCH ST.
TIME: MTWThF 10- 12 pick one or more

An opportunity to work with post- psychiatric patients at an industrial workshop. Students will be asked to work in vocational counseling groups. Each working student would probably work with one client, speaking with the persons counselor, and having direct contact a few times a week. Students will arrange the times convenient for them.

COURSE : UNDER AMERICA 21
INSTRUCTOR : DANIEL WRIGHT
PLACE : ROOM 1512 CITY HALL ANNEX
TIME : W F 9-10:30

A continuation of the study of ideas which shaped the American character. This is U.S. History



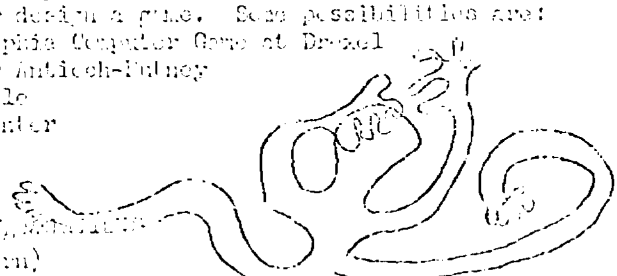
COURSE: AMERICAN HISTORY 22
INSTRUCTOR: GERARD SMYTHE
PLACE: SWEDENBORGIAN CHURCH 22nd and CHESTNUT
TIME: 10:30 -12 T Th

Continuation of the present course, with new students welcome. There will be some changes in the present organization of the course. Weekly conferences and independent work will be continued, but there will be class meetings once a week for everyone. Class discussions this term will emphasize the Civil War Era- abolitionism, the war, and reconstruction.

COURSE: GAMES 23
INSTRUCTOR: KEN [illegible]
PLACE: 101 S. 13th ST. METROPOLITAN ASS.
TIME: M 10:30- 1

Games are a reflection of life. Come learn ideas you can apply to your life in a fun way. Students will go to a different place each week and play or design a game. Some possibilities are:

West Philadelphia Computer Game at Drexel
Game Center at Antioch-Putney
Strike or Battle
Camden GameCenter



COURSE: INTER-CULTURAL RELATIONS
INSTRUCTOR: JOE(intern)
PLACE: Y.W.C.A. ROOM 2
TIME: T Th 2-3:30 24

This course will be a workshop to try and air the problems which have developed between inter cultural groups. It is hoped from this work that we will be able to gain a better understanding of ourselves and others. Material which students feel would be pertinent to our discussions will be an important part of the [illegible] work. The course will be divided into three major [illegible] divisions [illegible] of intercultural relations, [illegible] of intercultural relations, and [illegible] and strategies for change. The following texts will be required reading for the course:

[illegible] "[illegible]" [illegible]
[illegible] 1[illegible] - 1[illegible]

[illegible]

COURSE TITLE : VIETNAM SEMINAR
INSTRUCTOR : [illegible], AFSC STAFF AND GUESTS
TIME : THURSDAY 3:00 – 5:00
PLACE : FRIENDS MEETING HOUSE 1500 RACE STREET
UNIT OF CREDIT ½
CLASS SIZE : 15

Students interested in this course should meet with Linda Reckiel Thursday at 2006 [illegible] Street, 2nd floor. This will be a reading research course with speakers, many of them have lived and worked in Vietnam during the last few years.
Through the course we will try to come to some understanding of what the war has meant, particularly to the people of North and South Vietnam as well as to the people of the rest of the world – the grape pickers in California, the Black G. I., the people of Laos and Cambodia. Curious? Concerned? Come to learn, come to work.

TEXT AND COLLATERAL READING:

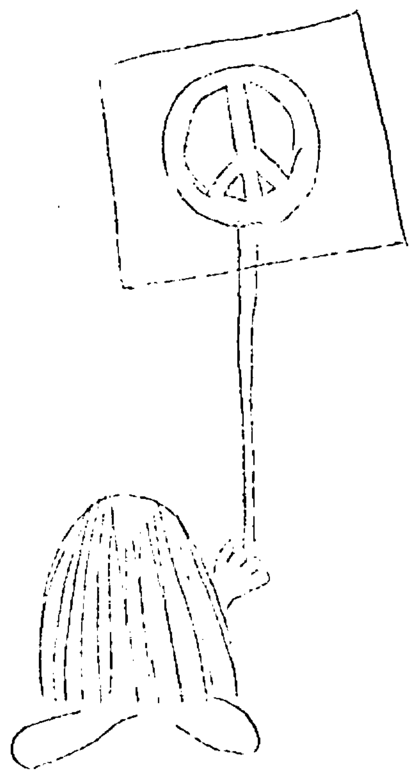
Bernard Fall, _Between Two Vietnams_

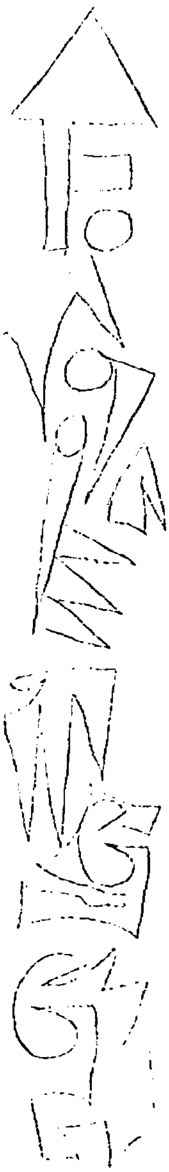
Kahin and Lewis, _The United States in Vietnam_

Gettleman, Vietnam: _History, Document, and Opinion_

Schell, _The Village of Ben Suc_

American Policy vis a vis Vietnam, lawyers committee





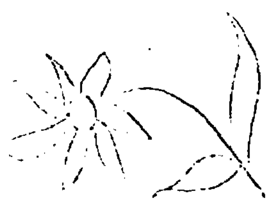
COURSE TITLE: [illegible] 26

INSTRUCTOR: JILL [illegible]
PLACE: [illegible] CHURCH 22nd and [illegible]
TIME: W F 10:30-12

Because I'm sick of playing jive games, this course is going to be different. I am tired of pretending that all the work people do in school makes a difference in our lives. I am tired of pretending that what bores you and me in school is what's important. What it is like to be a woman in this society? How does it feel to be a "girl", a "chick", a "lady"? What difference does it mean to you? I don't have any one correct answer. I have feelings, interests, ideas and more questions. May be you do too. There is a place in this course for some heavy readings and written work. But that's not where it's at until you start asking basic questions like "What do I need to know now? Can you dig it?

HELP 27
PLACE: 1917 SPRUCE ST TIME: ANYTIME
HELP is a non-profit organization set up by kids to help kids with legal, medical and social problems. They have lawyers and doctors working with them, but need student volunteers to help with office work etc.

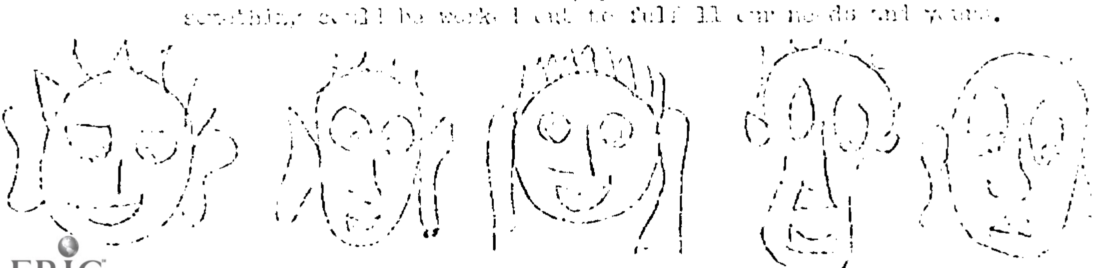
COURSE: MARXISM AND SOCIALISM 28
INSTRUCTOR: [illegible]
TIME: W F 3:30-5
PLACE: FRANKLIN INST. ROOM 303



A theoretical and practical investigation of socialism and marxism. An investigation of american economy and future american capitalism. There will be much reading to do for this course.

[illegible] CENTER 2135 [illegible] ST 29
TIME: [illegible]

People who want to do work with elderly people would enjoy using their time here. There is a need to help immigrants learn English. Also students who have office skills could work in the office. There are many possibilities here and we think something could be worked out to fulfill our needs and yours.



30

COURSE TITLE: THE EVOLUTION OF SOCIAL AND [illegible] THINKING OF PEOPLE
INSTRUCTOR: [illegible]
TIME: 3:30-5 [illegible]
PLACE: [illegible]

This course will go into the study of relations between people using an anthropological and psychological approach. We will take a look at some of the more recent, enlightening philosophies of the nature and characteristics of people. Suggested topics for discussion will be; aggression, evolution of races, evolution of the body, evolution of where your head is at, pair bonding, and love. Possible readings may include; _Naked Ape_, _On Aggression_, _African Genesis_, and _Man in Groups_.

31

COURSE TITLE: Learning
INSTRUCTOR: CHRIS [illegible]
TIME: T Th 10:30-12
PLACE: THE GROUP MEETING SPACE AT 1800

This course is about learning to share with and appreciate each other while learning and growing. It is about getting our heads more together. This is a participation course in which each person will make a daily contribution. Contributions will take varied forms and how you give is up to you. Just a few possibilities would include; reading aloud to the group, making music, dancing, theatre, talking about what's been happening to you, organizing short activities for the whole group, bringing things in to look at or share - really anything is possible and hopefully we can even get sound and light equipment for records, tapes, and slides. Regardless of our equipment we can make a fine thing together. Credit will be given on the basis of attendance. ANY STUDENT WHO MISSES [illegible] WILL BE [illegible] AND [illegible] DROPPED FROM THE COURSE. A student may be excused only when he and I have talked and we agree that the student's absence on a particular day has been necessary.

32 [illegible]

Jane Adair /Denise Wright
YMCA Room 20
Mon-Fri 2:15-3:15

A comparative study of several nations of the non-western world in Africa, Asia, China, India, Iran, Latin America, Brazil.

33

CONSUMER EDUCATION
H. Lefkowitz
Wed. 3:30-5:00
Place to be announced

We are a nation of consumers, but most of us know little of the nature of our industrial complex. This course will be a comprehensive look at what is happening in the consumer field today, and how the profit motive affects each of us. It will deal with basic resources, how products are made and distributed, advertising, and packaging (their decorative uses), consumer protection legislation brand name and the manufacturer's 'image', service and placement parts, guarantees, warranties, interest and carrying charges, tax considerations and consumer publication. The overall aim will be to make us more aware of what we want to buy, the selections available to us, and how to get what we want at the best prices.

33a

MAJOR CRISES IN AMERICAN HISTORY
Dennis Torkewicz
M W 9:00-10:30
Swedenborgian Church, 22nd and Chestnut

A study of crisis situations in American History, such as the Civil War, the Depression and the war in Vietnam. What causes the crises? How has society handled them? What can we do to avoid them?

33b

AMERICAN HISTORY 1877-1930
Jim Baldiero
Tu Th 9:00-10:30

A survey of American political, social, economic and intellectual history from post-reconstruction to the Depression.

(COURSES 33, 33a, and 33b are separate courses)

The Berkeley Program [illegible]

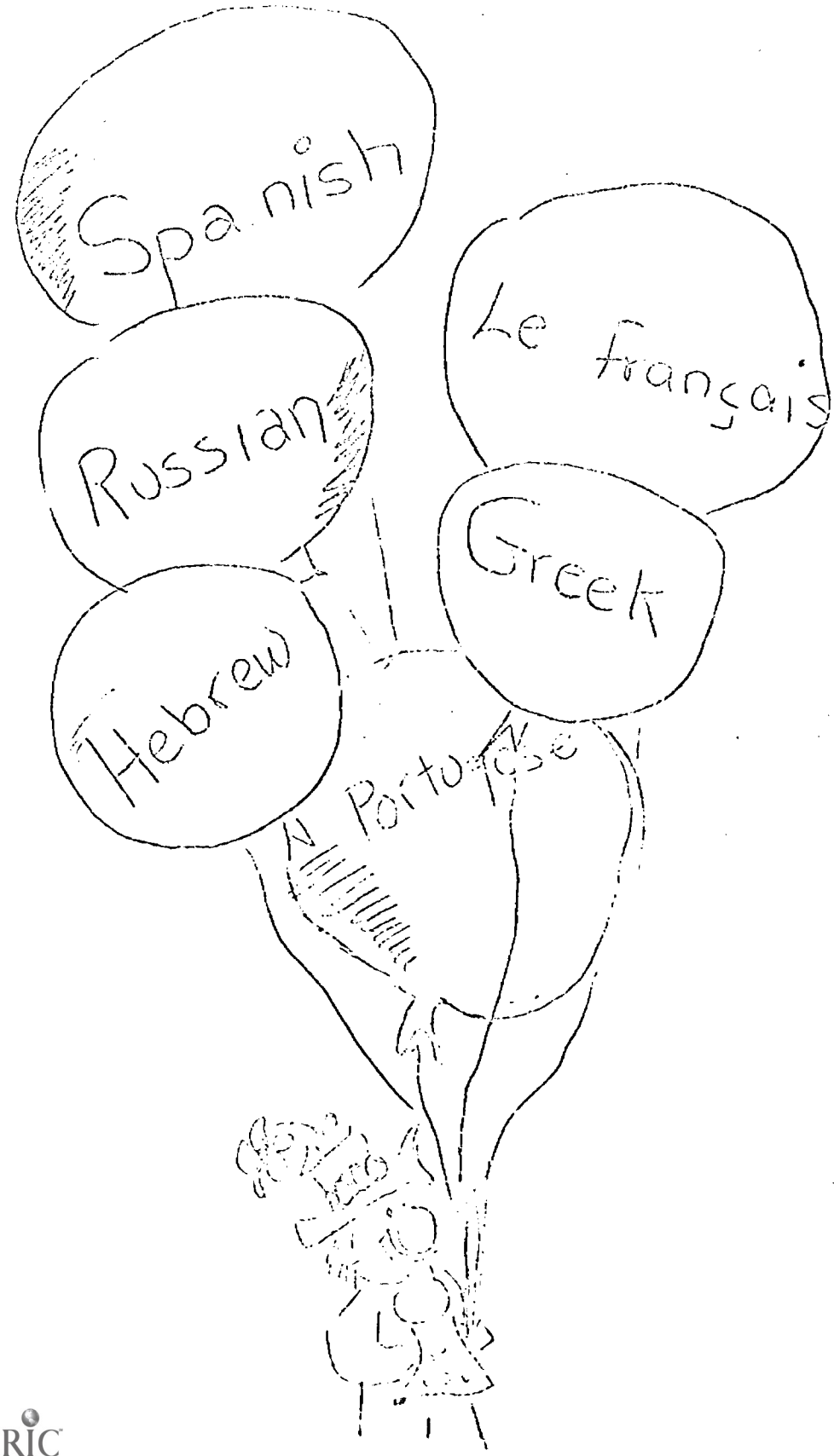
To Be Included in Course Catalog 33C

Title: The Existence of Man

Teacher: Curtis [illegible]
Place: to be announced
Time: 3:30-5:00

Course Description: A very general course defining man's existence primarily through the scientific and metaphysical means using studies in astronomy, geology, biology, evolution, paleontology, anthropology, and history. Studies of religion, philosophy, [illegible], [illegible], technology, [illegible], demography, and [illegible] will also be [illegible].

Purpose: To give the student a general definition of man and therefore of himself.
To form a basic foundation from which he may pursue more specialized studies.
To promote free thinking


LANGUAGES
Spanish
Russian
Hebrew
Le français
Greek
Portuguese

1. Course Title: GRAMMAR/SPELLING/VOCABULARY
   Instructor: Intern
   Time: M, F, 2:00-3:30
   Place: Orange Room

This is a course for students who feel the need to concentrate on this area of writing. An intern will teach this course.

2. Course Title: READING WORKSHOP I
   Instructor: Dorice
   Time: M, W, Th. 12:00-12:45
   Place: 2201 CHESTNUT ST. APT. 6D

A programmed reading course for student who say "I can't read".

3. Course title: Reading Workshop II
   Instructor: Intern
   Time: Tu Th 10:30-12:00
   Place: Prism Club, 17th and Latimer

An intern will teach this reading course

4. Course Title: Reading Workshop III
   Instructor: Intern
   Place: Corrective Clinic, 22nd and Chestnut
   Time: Tu, Th 2:00-3:30

An intern will teach this reading course.

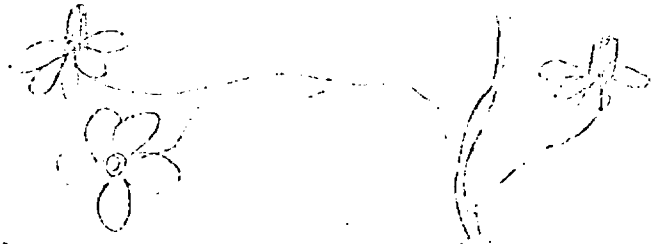
5. Course Title: Very Basic Writing
   Instructor: Claudette Levitt
   Time: M, W, 10:30-12:00
   Place: 1st Presbyterian Church, 21st and Walnut

This course is for people who feel they should be able to write better than they do. We will begin with very basic stuff: "Controlled Writing" and short paragraphs, and move on to longer essays and maybe even poetry. You will get help with vocabulary spelling, and punctuation if you need it.

6 COURSE TITLE : BASIC WRITING
INSTRUCTOR : MARK LYONS
TIME : M.,W. 10:30 – 12:00
PLACE : CHURCH OF THE NEW JERUSALEM, 22nd. and Chestnut
C

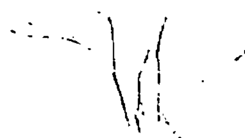
Writing is not a mechanical act, made up of grammar and proper sentence structure. Writing comes from seeing, feeling, touching, hearing, smelling- not from knowing how to spell a word properly.

We will explore the city, our neighborhoods, each other, maybe the country, with our senses, and translate these feelings into words. We'll read writings of others who have experienced and explored what we are experiencing. We'll teach each other how to better say what we feel, through improving grammar, spelling, etc. And hopefully, writing will bring us closer to the world we live in, and with each other. There are two classes per week plus individual conferences to be arranged.
LIMIT 10 students



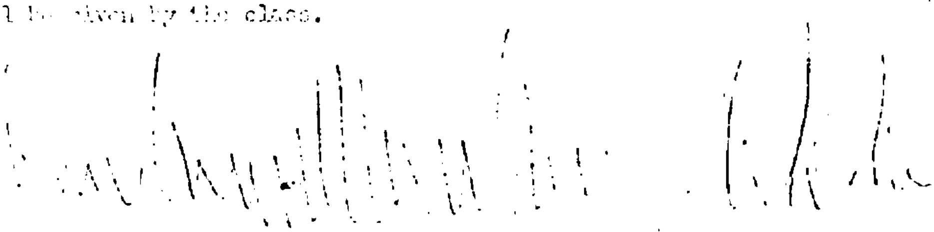
7 COURSE TITLE : FILM MAKING
INSTRUCTOR : MARK LYONS
TIME : Tu Th 9–10:30
PLACE : REGIONAL FILM LIBRARY 114 N. 19th. St 2nd floor

A continuation of the film course– open to students who are presently enrolled in film. We will survey the 70 year history of film, and study two or so directors by viewing their films and reading about their philosophy of film (life). We will also get into more technical aspects of film production such as tape sound, editing, and lighting.



8 COURSE TITLE : DRAMA [illegible]
INSTRUCTOR : [illegible], CLAUDETTE [illegible]
TIME : [illegible] – 3:30
PLACE : [illegible] HALL AND ROOM 25[illegible]

This will be a course in the various phases of acting stressing the methods of acting. Voice, diction, interpretation, inflection, character acting, and stage movement will be considered. Some type of production will be given by the class.



FOREIGN LANG [illegible]

COURSE TITLE: SPANISH I (CONVERSATIONAL SPANISH) 34
INSTRUCTOR: OMARI
TIME : M T TH F 2-3:30
PLACE : FRANKLIN INSTITUTE ROOM 203

Continuation of present course. Emphasis on conversation. We will talk as little English as possible in class. Faithful attendance is an absolute requirement in language study, and students who miss five classes will not pass the course. Students who have had some Spanish before this year should see Omari before signing up for this course.

COURSE TITLE : FRENCH I 35
INSTRUCTOR : JILL
TIME :M T TH F 2-3:30
PLACE : SPACE TO BE ARRANGED. MEET 1801 FIRST CLASS.

Beginning French!

COURSE TITLE : LATE FRENCH 36
INSTRUCTOR : LINDA [illegible]
TIME : M W 2-2:30
PLACE : TO BE ANNOUNCED

Continuation of Advanced French by students already enrolled in the course.

THE FOLLOWING COURSES ARE OFFERED AT THE PHILADELPHIA [illegible] SCHOOL AT BROAD AND SNYDER. TOKENS WILL BE FURNISHED FOR STUDENTS WHO ATTEND THESE COURSES. BE SURE TO FILL OUT REGISTRATION FORMS.

COURSE TITLE :GERMAN - BEGINNING, INTERMEDIATE, ADVANCED 37
TIME :M W 3:45 - 5:45

COURSE TITLE : FRENCH - BEG., INT., ADV. 38
TIME : M W 3:45 - 5:45

COURSE TITLE : ITALIAN - BEG., INT., ADV. 39
TIME : M W 3:45 - 5:45

COURSE TITLE : SPANISH - BEG., INT., ADV. 40
TIME : M W 3:45 - 5:45

COURSE TITLE : SWAHILI 41
TIME : M W 3:45 - 5:45

COURSE TITLE : GERMAN BEG., INT., ADV. 42
TIME : SAT. 9-1

COURSE TITLE : LATIN - BEG., INT., ADV. 43
TIME : SAT 9-1

COURSE TITLE : POLISH - BEG., INT., ADV. 44
TIME : SAT. [illegible]-1

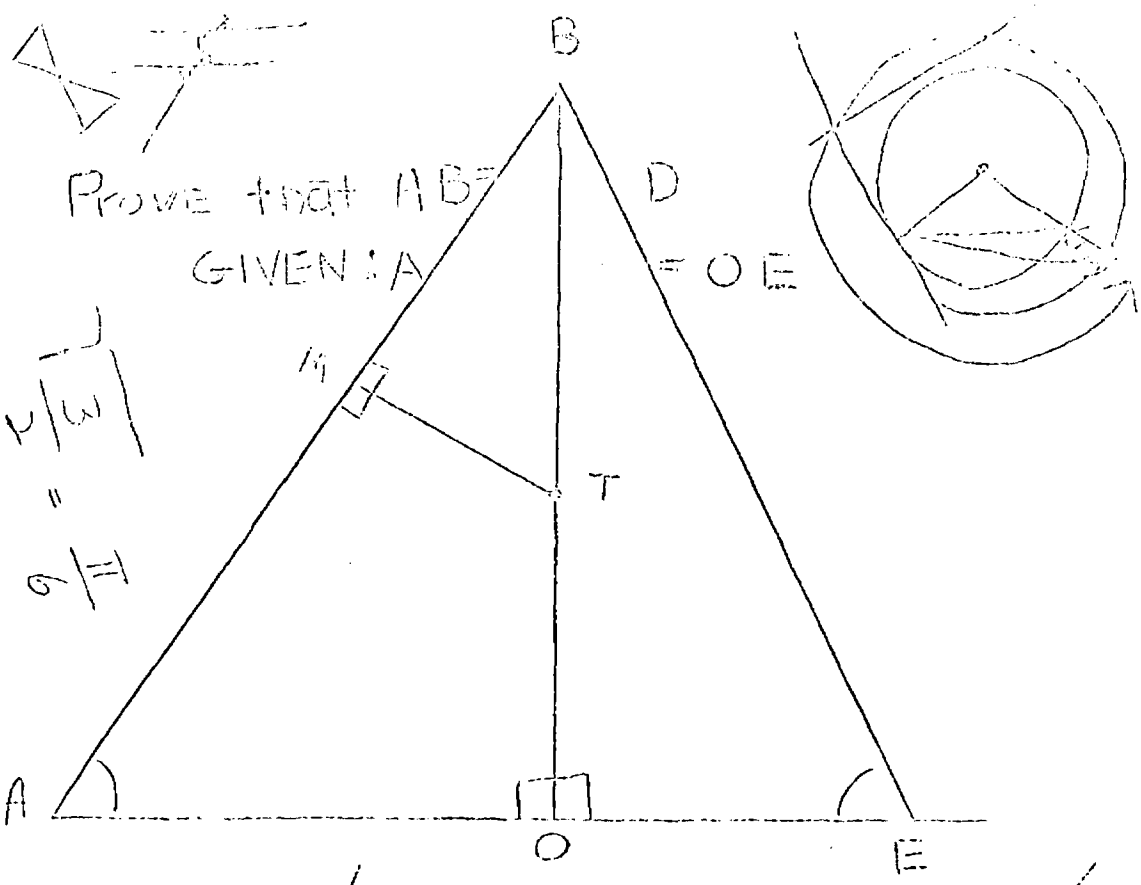
COURSE TITLE : [illegible] - FRE., ITA., ESP.
TIME : SAT 9-1

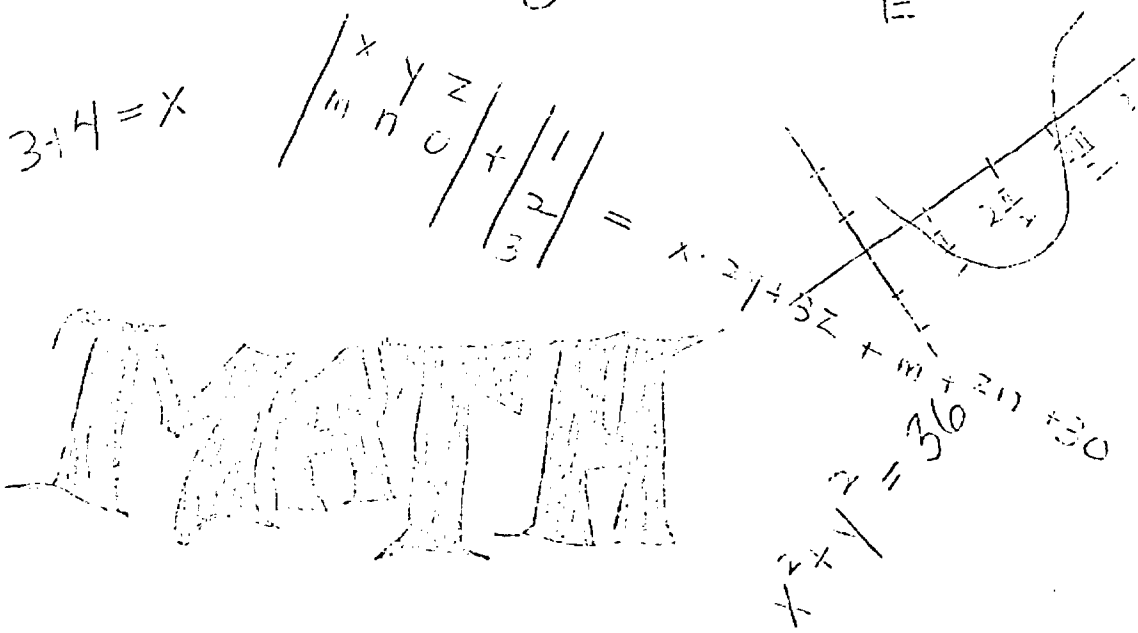
COURSE TITLE : SPANISH
TIME : SAT 9-1

COURSE TITLE : PORTUGUESE
TIME : SAT 9-1

COURSE TITLE: GREEK
TIME : SAT 9-1

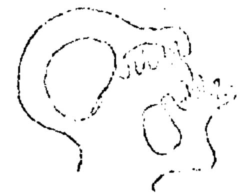
COURSE TITLE : HEBREW
INSTRUCTOR : LEE BLOCK
TIME : TUESDAY 10:30 - 12:00
PLACE : FIRST BAPTIST CHURCH
I
Individualized instruction for any level of Hebrew.





THE FOLLOWING GUIDES GIVE CREDIT IN MATH

COURSE TITLE : BASIC [illegible] MATH 50
INSTRUCTOR : [illegible]
PLACE : [illegible] ([illegible])
TIME : [illegible] 10:30- 1[illegible]



Do you need to improve your basic math skills? Come to this course to improve your speed and accuracy in all areas of math thru studying business math.

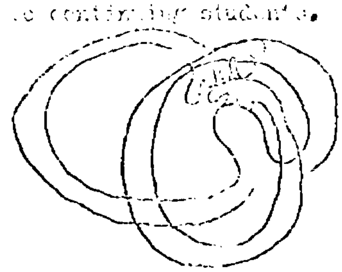
COURSE TITLE : ALGEBRA I 51
INSTRUCTOR : FLORA
TIME : Tu, Th 9-10:30
PLACE YWCA 20 CHESTNUT

Continuation of 1st quarter's course. Open only to students enrolled in the first quarter.

COURSE TITLE : ALGEBRA II AND TRIG. 52
INSTRUCTOR : FLORA
TIME : M [illegible] Th F 12- 12:45
PLACE : CITY HALL [illegible] RM. 1312

Continuation of first ½ course. Open only to continuing students.

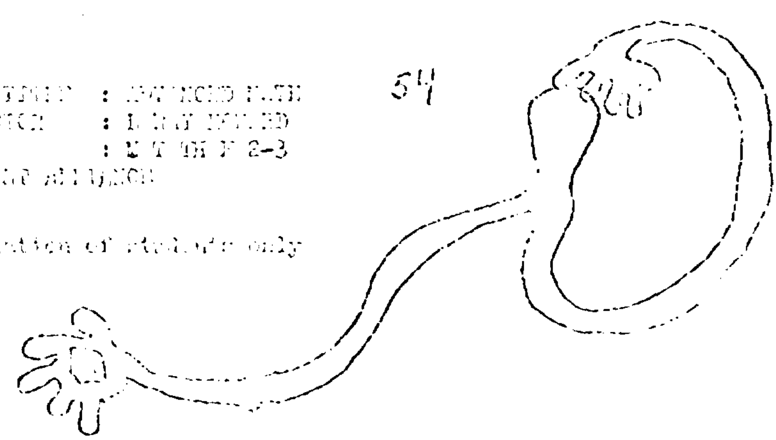
COURSE TITLE : ALGEBRA II 53
INSTRUCTOR : [illegible] GILLIS
TIME : Tu Th 11-12:30
PLACE : [illegible]



continuation of first quarter's course. Open only to continuing students.

COURSE TITLE : ADVANCED MATH 54
INSTRUCTOR : [illegible]
TIME : M T TH F 2-3
PLACE [illegible]

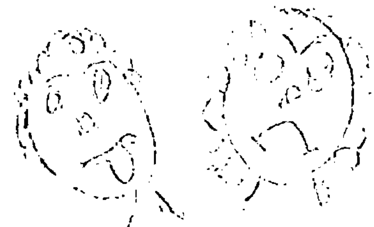
Continuation of students only



55

COURSE TITLE : PROGRAMMING II
INSTRUCTOR : [illegible]
TIME : W 9-10:30
PLACE : UNITARIAN CHURCH

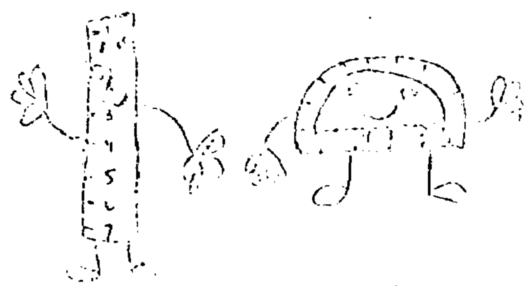
Practical experience in computer programming. Mathematical statistics for EOP also taught. Continuation of students only.



56

COURSE TITLE: MATH FOR MATH HATERS
INSTRUCTOR : [illegible]
TIME : F 9-11:45
PLACE : BAPTIST CHURCH 17th and [illegible]

People who do not enjoy math should consider taking this course from someone who has hated math most of his life. No special math skills required and the course will be a failure if it is not fun. Topics chosen from arithmetic, geometry, algebra, differential calculus, topology, number theory, analytical geometry, set theory, physics and applied math.



57

COURSE TITLE : MEASUREMENT
INSTRUCTOR : [illegible]
TIME : W 1-2
PLACE : 19 and [illegible]

A continuation of last quarter's course, which concentrated on uses of measurement, methods and tools of measurement and the standardization of measurement.

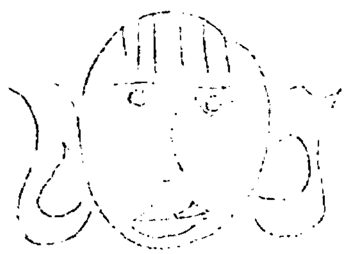
58

COURSE TITLE : GEOMETRY
INSTRUCTOR : [illegible]
TIME : [illegible] 9-10
PLACE : UNITARIAN CHURCH

[illegible] geometry as applied to architectur[al] [illegible] the formal studies of geometry with concentration on logical foundations.

COURSE TITLE : MATH WORKSHOP I 59
INSTRUCTOR : [illegible]
TIME : M W 9- 10:30
PLACE : YMCA

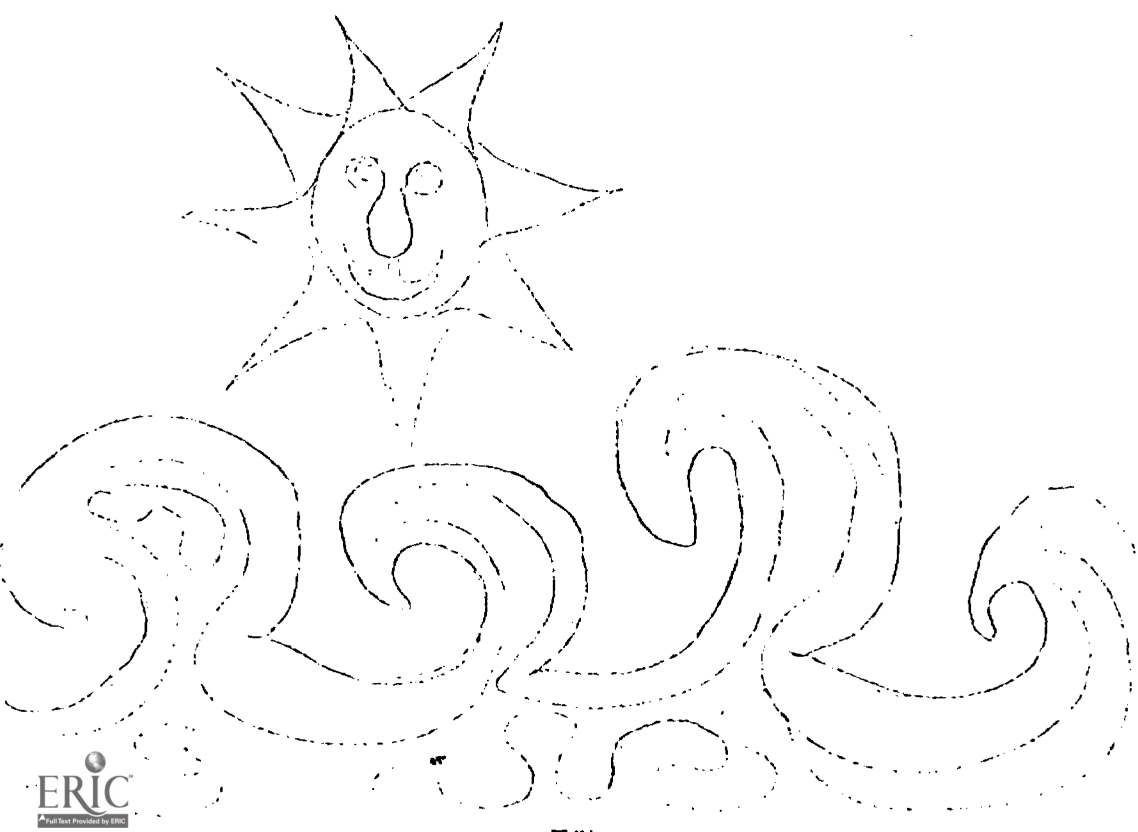
A workshop open to 5 students who are having trouble with division multiplication, fractions, or beginning algebra.

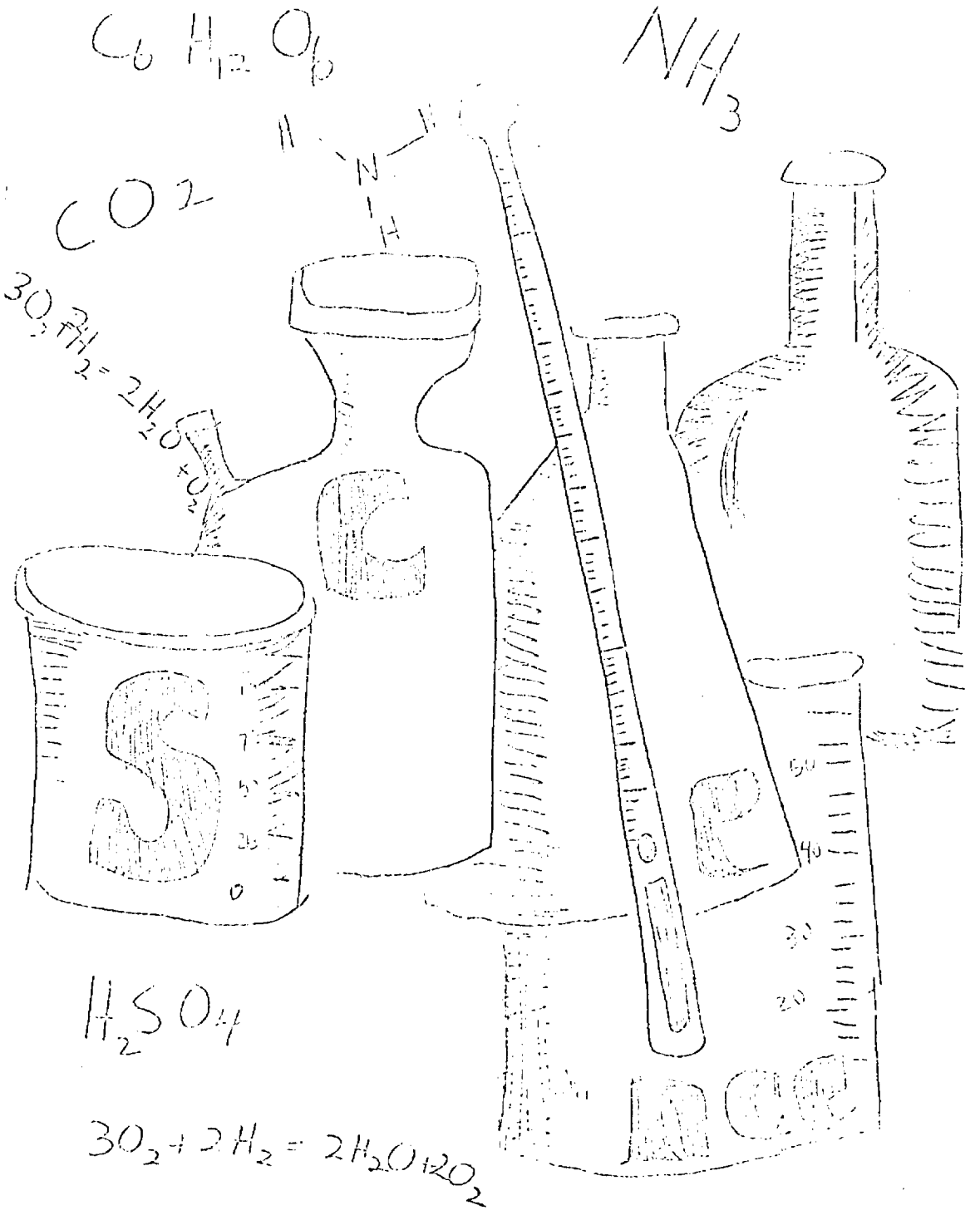


COURSE TITLE : MATH WORKSHOP II 60
INSTRUCTOR : [illegible]
TIME : TU TH 2-3:30
PLACE : ART GALLERY

SAME as workshop I

COURSE TITLE : MATH WORKSHOP III 61
INSTRUCTOR : [illegible]
TIME TU TH 10:30- 12;00
PLACE ; DORMITORY FLOOR 1601





THESE COURSES GIVE SCIENCE CREDIT

COURSE TITLE: [illegible] 6.2
INSTRUCTOR: [illegible]
TIME: TU, TH, 3:30-5
PLACE: [illegible]

Continuation of first quarter's course... The course will attempt to provide a survey of contemporary physics. The effects that physics has had on modern ideas of medicine, biology, chemistry, communications, and social thought will be discussed. In addition, an attempt will be made to outline the problems that confront modern physics both in a highly developed society such as ours and in the developping nations.

COURSE TITLE: GENERAL PHYSICAL SCIENCE 6.3
INSTRUCTOR: ARTHUR STARKS
TIME: TU, TH 3:30-5
PLACE: FRANKLIN INSTITUTE

This course is a compact view of the physical world from inside of the atom to infinity of the Universe. It is fluid, open-ended, in function, designed to explain and illustrate the natural world as man knows it.

COURSE TITLE: SCIENCE 6.4
TIME: WED 11-1
PLACE: COUNTY MEDICAL SOCIETY * 2100 GERMAN TOWN

A survey course that will touch upon such areas as Genetics, Enzymes, basic physiology, sex education, Public health, and which can involve trips to hospitals to observe their practical application. Other subject matters can be worked out with the staff. This course may be particularly interesting to a student thinking about medicine as a career, but this is not a prerequisite to taking the course. Attendance at all meetings is definitely required. This course will be a lecture series given by doctors and teaching MDs.

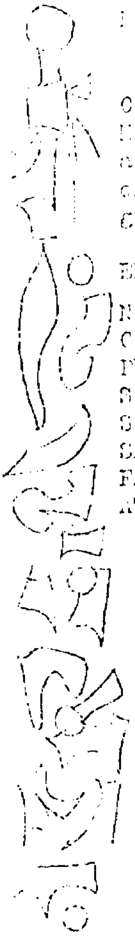
COURSE TITLE: GENERAL INTRODUCTORY CHEMISTRY 6.5
INSTRUCTOR: WILLIAM O'GRADY
TIME: M, W 3:30-5
PLACE: BIOCHEMISTRY L.B, U PENN

Continuation of last quarter's course for students who are currently enrolled.

COURSE TITLE: GENERAL BIOLOGY 6.6
INSTRUCTOR: TO BE ANNOUNCED
TIME: M,W 9 - 10:30
PLACE: ACADEMY OF NATURAL SCIENCES
Continuation of last quarter's course.

COURSE TITLE: PHYSICAL SCIENCES: AN INQUIRY APPROACH 6.6A
INSTRUCTOR: STAFF MEMBER
TIME: M, W 2:15-3:30
PLACE: FRANKLIN INSTITUTE

The basic idea of this course would be to encourage logical thinking by presenting a problem either by demonstration, film, or student experiment, and to delve into the possible solutions of the problem. As various things are tried by the students, they will be encouraged to devise and carry out experiments to prove or disprove their theories.

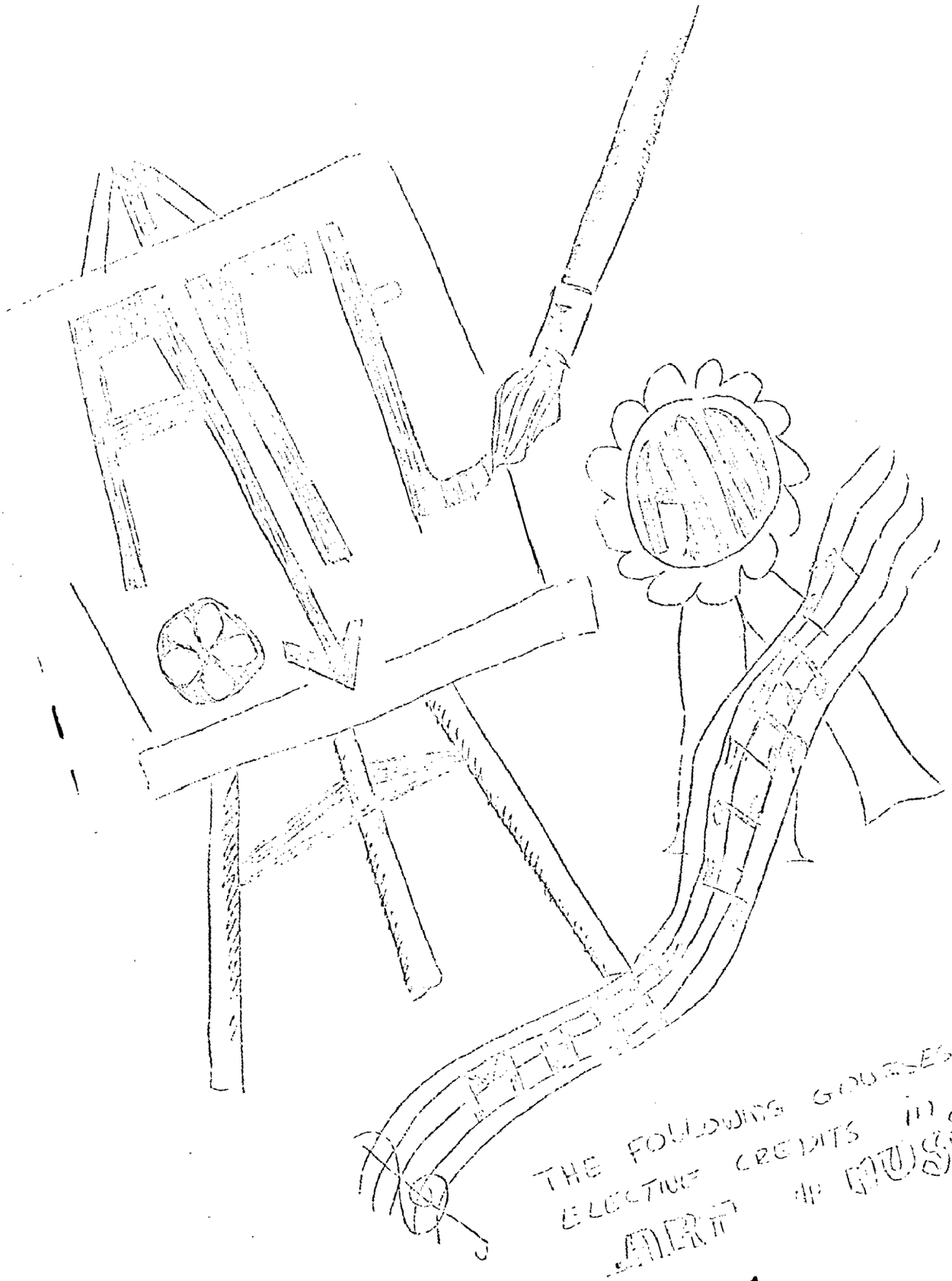


MANAGEMENT GROUPS

Credit will be given for participation in management groups. Management groups are scheduled to meet on Fridays between 12:00 and 1:00, and any other time which are convenient for the members of that group. You may join one of the following existing management groups, or form a new management group which you feel is important.

EXISTING MANAGEMENT GROUPS -

NEWSPAPER
CURRICULUM
PUBLIC RELATIONS
SOCIAL AFFAIRS
SENIOR ACTIVITIES
SELF - GOVERNMENT
FACILITIES
ATHLETICS


ART
THE FOLLOWING COURSES ARE
ELECTIVE CREDITS IN
ART & MUSIC

69

COURSE TITLE GRAPHIC DESIGN

INSTRUCTOR [illegible]
PLACE [illegible] COMMUNITY CENTER [illegible]
TIME [illegible] ONE [illegible] A DAY

A course in graphic design concentrating in silk-screen. The students may get as involved as they want to.

69

COURSE TITLE RESISTANCE PRINTSHOP
INSTRUCTOR [illegible]
PLACE 3611 [illegible] TO 37 AND LANCASTER
TIME M T W F [illegible]

The Resistance [illegible] silk screen workshop which prints anti-war posters leaflets, [illegible] will teach you how to sketch and make the silk screens using laquer and photographic processes and how to print. In turn you can help make anti-war posters.

70

COURSE TITLE CALLIGRAPHY
INSTRUCTOR JOHN CATALDO
PLACE [illegible]
TIME TH 1:30- 6 STARTS FEB. 19
LIMIT 2

Calligraphy in its most free aspect; design, structure, lettering, etc. This course will be very crowded and the two students who take it must be able to deal with crowded conditions and little individual help, bring different colors of ink, speedball [illegible] points, and a layout pad to the first class on Feb. 19. It may be possible that Parkway may pay some of the expenses for supplies. See Christin if interested.

71

COURSE TITLE INDEPENDENT ART
INSTRUCTOR CHRISTIN

Students who wish to work independently in art and receive credit, I will available a few hours each week to talk about your work with you, Times that will be available will be posted on the orange door and the students will be expected to sign up to see me.

72

COURSE TITLE [illegible]
INSTRUCTOR [illegible]
TIME [illegible] 1-5
PLACE [illegible]

Course: Art History 13
Instructor: Museum of Art, and Dick Innes
Time: Tues and Thurs. 9-10:30
Place: Art Museum

A lecture series, mostly on Tuesday mornings. Attendance is required. They do not wish to offer the series unless 20 people sign. If students can't make the Thursday time, see Criston at registration. Dick Innes, from [illegible], will offer a lecture and discussion series on the Thursdays that the museum does not give lectures.

Lecture Times and descriptions: 14

Tues. Jan 6 Life in America 1750- 1800
Jan 20 The Orient
Jan 27 The Middle Ages
Feb. 3 How to look at painting
Feb 10 The Renaissance
Feb. 17 American crafts and craftsmen
Feb. 24 Pennsylvania Dutch
Feb. 26 20th Century art

Course: Ceramics 15
Instructor: to be announced
Place : Germantown Y.M.C.A., Chelten and Germantown Ave. (transportation provided)
Time: Mondays 1-4
Open to Three alpha students

A beginning course in handbuilding, only for people who are serious about crafts, and who can work on their own. There may be a possibility of working on the wheel.

Also: the following courses, which are described in the skills section of the catalogue, may be taken for art credit:

Course Number 82, Industrial Design

Course Number 88, Printing

Come together

MUSIC

MUSIC COURSES AT [illegible] [illegible] ACADEMY _ 313 S BROAD ST :
[illegible]

COURSE TITLE : PRELIMINARY THEORY (T 100)
TIME : M W F 8:30 - 9:30 A M

A course in the fundamentals of music theory.

COURSE TITLE : THEORY AND LITERATURE (T 101 - T 102)
TIME : M W F 8:30 - 9:30 A M

A study of the rhythmic, melodic, contrapuntal, harmonic, and structural materials and devices of music. Works from all historical periods are discussed, and basic analytical and writing techniques begun.

COURSE TITLE : SYNTHESIZER TECHNIQUES (T 415)
TIME : TU 2:30 - 5:30

An introduction to basic synthesizer techniques, the history and literature of electronic music composition, problems of notation and basic acoustics. Students will have access to the Academy's synthesizer in the Electronic Music Laboratory.

ARRANGEMENTS CAN BE MADE WITH ALICE FOR ADDITIONAL COURSES IN HARMONY, COMPOSITION, AND INSTRUMENTAL INSTRUCTION

COURSE TITLE : PARKWAY SINGERS
INSTRUCTOR : ALICE TECKER
TIME : TU TH [illegible] 3:30 [illegible]
PLACE : TO BE ANNOUNCED

A vocal music course open to students interested in improving their voices and extending their musical repertoire. The group may grow into an ensemble or a choir, depending on the musical talent at Parkway.

COURSE TITLE : SURVEY OF MUSIC
INSTRUCTOR : LEE TICHLER
PLACE : [illegible] CHURCH 22 and CHESTNUT
TIME : 3:30 - 5:00

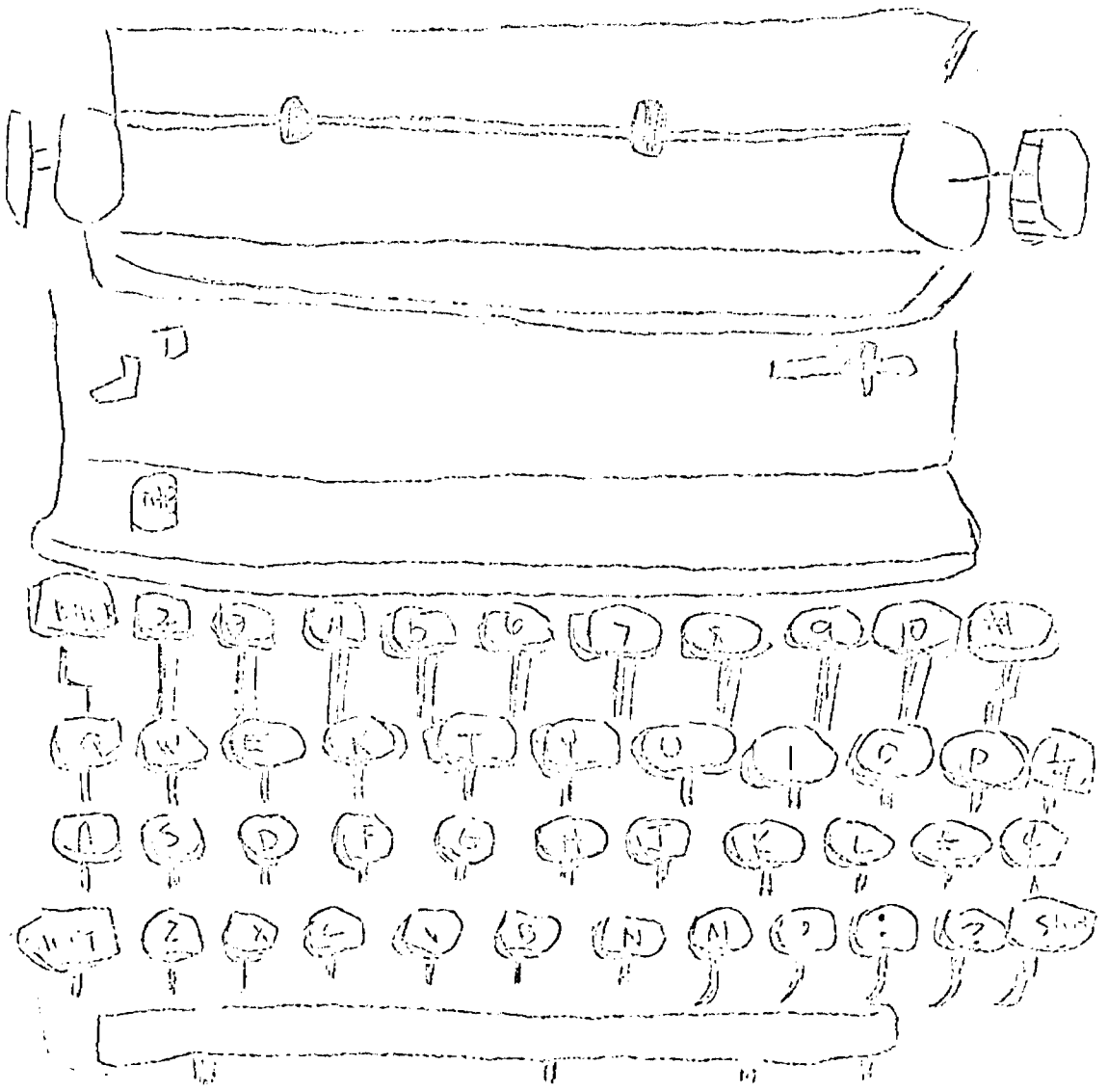
A general survey of western music as it grew from preliterate beginnings through plainsong and polyphony, instrumental and orchestral styles to the present time. The student will be encouraged to make instruments and compose original music to perform and sing. Knowledge of basic music elements would be helpful, but not absolutely necessary. Not instructional.
Continuing course for students already enrolled.

COURSE TITLE : GUITAR CLASSES
[illegible] Folk Studios has offered to give us some guitar classes. In order to get this program started we need to know (1) what kind of guitar music do you want to learn (2) what level are you - beg, int, adv (4) do you have a guitar? [illegible]

Basic Skills

Business Skills

The following courses are electives



COURSE TITLE : [illegible]
[illegible] : [illegible]
[illegible] : [illegible]
[illegible] : [illegible]

82

This is a course which combines shop skills with [illegible] skills. It is a "problem solving" course", in the [illegible] students will decide on a certain problem (such as an [illegible] classroom, a table, a children's toy, or an upright structure), design a structure, and the secrets of it in the shop.

Materials used for construction will be pipes, wood, plastic, polystyrene, and metal.

Course begins Jan. 19.

See Mark for list of materials you will need for 1st day of class.

COURSE TITLE : HOME ECONOMICS
INSTRUCTOR : CHRISTY
PLACE : TO BE ARRANGED
TIME : MWF, PM [illegible]

83

We will be developing the following skills: cooking, meal-planning, nutrition, house cleaning, crocheting, knitting, family planning, etc. We will also be discussing the role of women in the home and society.

COURSE TITLE : ARCHITECTURE
INSTRUCTOR : JIM THOMAS
PLACE : 27th & PARKWAY
TIME : MWF 3:30- 5:00

84

Architecture as a continuous living experience. Meeting will consist of studio workshop, seminar, and field trips.

Areas covered will be architecture; past, present, and future. model making, geometries, natural forms and their ecological fit. The city.

Pre-requisite: curiosity

[illegible]

COURSE TITLE : AUTO MECHANICS I
INSTRUCTOR : [illegible]
PLACE :
TIME : TU [illegible] - 10:[illegible] THIS TIME TO BE ARRANGED BY CLASS

85

A course in theory and practice in which students will learn the skills of engine tune-up, brake systems, exhaust systems, general systems of standard automobiles. The course includes definite possibilities of summer jobs following the course.
For students who have been enrolled in Tony's course since Sept.

COURSE TITLE : AUTO MECHANICS II
INSTRUCTOR : TONY ROSS
PLACE : 19th and CHERRY
TIME : TH 6 - 10:30 PM; TIME TO BE ARRANGED BY CLASS

86

Prerequisite
For new students who were not enrolled in the last quarter for the entire quarter. Limited

87

COURSE TITLE : FILM PROCESSING [illegible]
INSTRUCTOR : [illegible]
PLACE : [illegible]
TIME : AT STUDENTS CONVENIENCE IN THE AFTERNOON

Spectrum [illegible] high quality, low production processing and printing of 16 mm film, color and black and white. They have room for two or three students, probably one two hour period per week, to be arranged. They are willing to teach the details of developing and printing film; an area which is highly skilled, and for which there is demand in the growing film industry.
Prerequisite - must have had experience in a still film photography course.

88

COURSE TITLE : PRINTING - VICTOR KRAFT
INSTRUCTOR : [illegible]
PLACE : BROAD AND PINE

A small printing outfit, on Broad and Pine. He has an artist-designer who does commercial design and layout for the work he prints. The commercial artist is willing to take on one student for 4-8 hours a week to meet at student's convenience and work on design projects. Some of them would be projects that the commercial artist is working on; some would be student projects. Sorry, one student only - see Mark

89

COURSE TITLE : TYPING [illegible] !!!!! [illegible]
INSTRUCTOR : TAMI WILLIAMS
PLACE : 1801
TIME : W F 9 -10:30

Basic skills of typing, aimed at developing speed and accuracy (and maybe you can type up the next course catalogue!)

90

COURSE TITLE : SHORTHAND
INSTRUCTOR : JOYCE JOHNSON
PLACE : 1801
TIME : W F 10:30 - 12

91

Course Title: Bookkeeping
Instructor: [illegible] Miller
Time: Tu Th 9-10:30
Place: 1st [illegible] Church, 17th and [illegible]

A continuation of the present course, for students who enrolled. A continuation of Bookkeeping methods and procedures.


these courses for
HEALTH & P.E. credit

Course: Swimming
Place: YMCA 20th Chestnut
Time: 1-2, Wed.

Course: Collective Experience in Motion 92
Instructor: Manfred Fishbeck
Time: Wed. Fri, 10:30-12:30
Place: YMCA, 20th Chestnut

Description: The class will consist of two parts:
1. A warm-up exercise with and without music
2. An improvisation and creative part based on collective situations and events.

The following courses will also give credit for health education.

Course: Introduction to Health and Medical Careers 93
Instructor; Jim Wilder, United Health Services
Time: TuTh 10:30-12:00
Place: United Health Services , 225 S. 15th St.

The course will consist of classes and field trips involving hospitals and public health agencies throughout the city. Areas of study will include diseases, drugs, medical technology, etc. Students will develop an increased awareness of medical problems and concerns.

Mel Miller's course of the Psychology of the Adolescent (Course #19) will also qualify for health education credit.

*********** **********

More P.E. Courses: 94
Course Title: Israeli Folkdancing
Instructors: Judi Kirpich, Susan Fenster
Time and Place: to be determined according to their schedule...look for notice the first week of school, next quarter.

We also think we have gym space at the Y, and maybe at the 1st Baptist Church... We are looking for people to be responsible for basketball, volleyball, handball, etc. Students welcome... let Mark know.

happiness runs in a circular motion
come dance with us in circles
and we will teach you the folk dances of israel

Addendum to the Catalogue

COURSE TITLE : CHEMISTRY
TIME : M 9-11 W 9-12 F 9-11
PLACE : PHILLIPSBURG COMMUNITY COLLEGE 11 [illegible]
INSTRUCTOR : COMMUNITY COLLEGE INSTRUCTOR

9/15

DESCRIPTION Introduction to chemistry through lectures and laboratory work

A change in Late French class:

Course Number 36

Late French
Instructor: Linda Backiel
Place: Still to be announced
Time has been changed from MW 2-3:30 to the new time which is now MW, 10:30-12:00

SUMMARY ANALYSIS OF NOVA HIGH SCHOOL, EVANSTON TOWNSHIP HIGH SCHOOL, AND PARKWAY PROGRAM

Currently several secondary schools are using plans and programs recommended for the Fort Lincoln secondary school. Nova High School in Fort Lauderdale, Florida; Melbourne High School in Melbourne, Florida; Evanston Township High School in Evanston, Illinois; and the Parkway Program in Philadelphia have been described and analyzed briefly. Each of these schools successfully demonstrates several components of the Fort Lincoln secondary school. Other features, while not necessarily unsuccessful, are inappropriate to the design of Fort Lincoln. These features include underutilization of time, space, and equipment; limited use of community resources; traditional organization of courses and subjects; and rigidity of behavior management which precipitates guarded relationships between students and teachers.

- Underutilization of time, space, and equipment

  Especially in evidence at Evanston and Melbourne were materials and facilities locked or not in use. Perhaps this is due to the lack of freedom of movement. More independence and responsibility for materials is encouraged at Fort Lincoln.

  All of the schools indicate closing times earlier than hours recommended for Fort Lincoln. In addition, year round operation not evidenced here would be assumed at Fort Lincoln.

- Limited use of community resources

  In accordance with the belief that the school and the community are inseparable, the Fort Lincoln plan includes utilization of

of community facilities and resources as real experiences for students. The community in turn will utilize both school facilities and student talents. Involvement with the community is distinctly absent from activities at Nova, Evanston, and Melbourne with the exception of some volunteer programs. Melbourne staff solicits the aid of community members when special help is needed with a student project. The Parkway Program is an exception which does make extensive use of community resources. Frequent and wide use of local resources is encouraged and expected at Fort Lincoln where much learning depends upon direct experience and research.

- Traditional organization of courses and subjects

While these secondary schools with the exception of Parkway are more comprehensive in course offerings than the standard high school, courses continue to be organized around the traditional subject-matter areas of mathematics, social studies, foreign language, health, physical education, English, band, etc. Each varies slightly but the framework remains. At Parkway thus far there is no systematic curriculum development and evaluation. It is hoped that courses at Fort Lincoln will be organized around centers where life-relevant units of material will replace the fragmented nature of the traditional outline. Band will become part of the performing arts unit in the Communications Center. The problem of pollution will be studied in the Social Environments Center, not as simply an historic, economic, or scientific

problem. Course organization at Fort Lincoln reflects the need to eliminate the artificial nature of current curricular breakdown, and the need to approach problems in a manner consistent with real-life situations.

- Faculty-student relationships

  Because the Fort Lincoln planners view education as a cooperative effort between staff and students, the situations at both Evanston and Melbourne are disappointing and do not provide good models for Fort Lincoln. Relationships between pupils and teachers are guarded and not conducive to open change. Rules appear rigid, preventing free movement and responsibility for personal actions and in turn encouraging the feeling of coping with, not contributing to the school community. Parkway is an exception in that student-teacher interchange is much more open.

It becomes apparent that the Fort Lincoln Schools will be able to adopt and to adapt components of existing schools for its own use. Other procedures and programs are currently in the experimental stage. (See Appendix B, Projects to Watch). As these innovations are proved effective, they will become available to Fort Lincoln.

APPENDIX B

PROJECTS TO WATCH

Following are examples of current school innovations which are relevant to Fort Lincoln planning, and which ought to be observed for their growth and development.

1. NASSP MODEL SCHOOLS PROJECT

A project started in the Fall of 1969 by the National Association of Secondary School Principals includes 34 secondary schools in a five-year program to develop new educational patterns. Fort Lincoln planners will be interested in the development of this project in which director NASSP Associate Secretary J. Lloyd Trump and his staff will work closely with seven core schools and less directly with other schools in the U. S. and overseas "to gather - for the first time - all of the major practical new ideas in secondary school education" for systematic experimentation and evaluation.

J. H. Johnson Junior High School in the District of Columbia will be among the seven key schools to implement educational innovations, many of which are compatible with and parallel to the goals projected for Fort Lincoln. This project, supported by the Danforth Foundation, will not be an expensive addition of equipment or a trial of fads but rather a careful study and use of present teachers, administrators, and nonprofessionals. Individualized learning, flexible scheduling, and measurement of student progress will be emphasized for students, along with a cost analysis of the effective use of supplies, equipment, and other resources.

In developing a model of conventional classrooms which will become learning centers for independent study, the school staff will be concerned with reshaping the role of the teacher to a teacher-counselor who spends only one-third of his time in direct teaching and the remainder in developing materials, evaluating, and encouraging student self-direction and assisting and responding to the community power structure.

Tested goals with potential impact on the Fort Lincoln Plan may result as this 31 school model passes through the projected two-year transitional period ending in 1971. An outline is available of specific goals for the project as well as a list of participating schools. However, project members do not encourage publicity during the transitional period saying "We have other ideas in this project, but we won't talk about them very much until we have tested our hypotheses."

The address of the project director is:

J. Lloyd Trump, Director
Model Schools Project
National Association of Secondary School Principals
1201 Sixteenth Street N. W.
Washington, D. C. 20036.

2. EDUCATION SYSTEM FOR THE SEVENTIES (ES'70)

The Education System for the Seventies (ES'70) originated in May 1967, as a cooperative program of local school districts across the United States, their respective state education departments, and universities, foundations, private nonprofit organizations, business and labor organizations, the U. S. Office of Education (U.S.O.E.) and other federal agencies. The program target was to develop educational objectives stated in performance terms while emphasizing individual instructional programs. Further aims were to emphasize effective staff organization, use technological aids, and evaluate local school district experience.

As an information-sharing network, ES'70 is concerned with both theoretical and practical educational developments. It will be funded by the U.S.O.E. until June 1970 at which time it plans to continue unaided. ES'70 publishes a newsletter on membership activities and an annual report with a synopsis from projects in schools and education centers throughout the U.S.*

Fort Lincoln planners may find these concise project descriptions a useful starting point for developing programs and for learning the potential resources, pitfalls, etc. that other school systems have found.

Five sample abstracts follow; all are related to the vocational programs for secondary students. The Baltimore Paramedical Program uses community resources and might be a useful model for Fort Lincoln's Mental and Physical Health Center.

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*These and other publications are available from Robert Pruitt, Acting Director, DCVER Bureau of Research, Room 3019, U. S. Office of Education, 400 Maryland Avenue S. W., Washington, D. C. 20201.

Duluth's High School Film Study has developed performance objectives which might be used by an independent group of students to develop their own film course at the Communications Center. Teachers at the Economics and Business Center might want to know more about the follow-up study on students who succeed in retailing careers after completing Mineola's Distributive Education Program. The Ornamental Horticulture - "Operation Green Thumb" - in Portland might be used to begin a project for the Social Environment's Center. Girls at any center in the Fort Lincoln plan might want to explore the role of women at work and in this case consider the model developed at San Mateo High School in Project GAP (Girls and Parents), Women's Occupations.

Baltimore City Public Schools: Paramedical Program

An innovative paramedical program is being developed for the proposed Dunbar High School, which has been designated as the ES'70 School for Baltimore City. Dunbar will offer a comprehensive curriculum and will be at the same time a magnet school for the area of health services. In developing the paramedical program, Johns Hopkins Medical School, the University of Maryland, nearby hospitals and professional organizations, and representatives of the local community have entered into a working partnership. Their joint effort has already awakened keen interest in the program both among professionals in the medical world and among educators. Much of the specific training to be offered to the students will take place outside the school building, in hospitals, laboratories, doctors' offices. Those responsible for teaching will come from university faculties and from the medical profession, as well as from the teaching staff of Dunbar High School.

Duluth Public Schools: High School Film Study

This project is a course of study in English for all high school sophomores at Central High School using film as the basic instructional resource. The entire course is based on performance objectives. Directed at understanding the film as an art form, the course also emphasizes its value as an interpreter of our society. Inauguration of the program acknowledges the contemporary communications shift to the non-print media.

For further information contact:

Carol Beatty
Duluth Central High School
Duluth, Minnesota.

Mineola Public Schools: Distributive Education

The purpose of the Distributive Education Work-Study Program is to develop future leaders for careers in Marketing and Distribution. Training is begun in the junior year of high school and develops the individual in his or her area of particular interest in the senior year. The student progresses by attending a survey course in Distribution which is called Retailing I. In this course, the student is introduced to all phases of the retail world including advertising, sales, transportation, retail and wholesale outlets, display and promotion. The student is also placed on a job related work station.

In the senior year the students specialize in an area of retailing in which they are most interested. This is done through individualized instruction and project manuals. The student is then placed on a job related to that area of retailing in which he is most interested.

The students in the work study program are given this training in local department stores. These stores include Gimbel's, Arnold Constable, Lord and Taylor, Abraham and Straus, and Macy's.

Follow-up studies reveal that many students have remained in retailing full time after graduation from high school. Others have remained in retailing part time and have gone on to college.

Portland Public Schools: Ornamental Horticulture - "Operation Green Thumb"

This program prepares interested high school students for horticultural and floricultural occupations and for post high school training for those occupations in the field which require additional preparation. In the second year of operation, several students have already been placed in positions. In some cases pretests indicated academic deficiencies which need immediate and concerted attention. Noticeable progress is being made, and student and community interest in the project has been very gratifying. Currently involved in implementing this program are: the director of vocational education, 3 teachers, 1 paraprofessional, and 1 student teacher. An extensive collection of purchased and free materials was used as well as visual materials.

Evaluation of the program is underway, and information is available for distribution. It is recommended to others attempting to replicate this program that a competent advisory committee be secured. Employment opportunities should be determined beforehand and adequate facilities for classroom instruction provided. Related instruction should be co-incident with practical work.

For further information contact:

Mr. James C. O'Gara
Director of Vocational Education
631 N. W. Clackamas Street
Portland, Oregon 97208.

San Mateo Union High School District: GAP (Girls and Parents), Women's Occupations

- Purpose

  - Inform girls of choices available to them in the area of occupations. Program designed to show them the changing role of women in this world of work. Department of Labor facts, among other evidence, have been used as the rationale:

    9 out of 10 girls will work sometime in their lives
    8 out of 10 will work 25 years of their lives.

- Method - Using Counselor Aides

  - General vocational information and rationale presented to all 10th grade girls at one-hour class sessions. Materials now to be included in two-week unit, 10th grade English at a pilot school.
  - Occupational Interest Survey is administered to girls -- small group vocational information and exploration sessions follow with counselor aides. Students given one hour in groups of six with two counselor aides. Have opportunity to discuss many and varied relevant subjects, investigate course requirements, and request information from paraprofessionals. Small group participation is voluntary.
  - Students explore available vocational materials (brought up to date by counselor aides), use reader and microfilm cards, learn to use

materials; i.e. occupational handbooks, vocational files such as Chronicle and Largo series - where to find them - etc., and learn about community business, industry, and professional sources of information and opportunity.

- Grade Level
  - 10th (Future goal: 11th and 12th for return sessions).
- Product Expected
  - Girls who are aware of the changing world of Women and Work and knowledgeable in information about it.
  - It is expected that by going through this exploration process all students will be better prepared to independently pursue information for later interest and needs.
- Results Achieved
  - Tally of interest survey shows the girls think in stereotypes about occupations. This is incompatible with their own future needs and development and the nation's economic well-being.
  - Experience has shown most students now are unaware of vocational materials or how to use them.
  - Counselors report increased interest in and requests for vocational guidance.
  - Acceptance of program in five of seven schools.
  - Small sample of 400 students surveyed at one pilot school showed 96% felt program was good; 53% want more vocational information; 55% want another opportunity to work with counselor aides; and

70% found experience helpful. The 30% who did not achieve help suggested they could if 1) less information were given, 2) more time, 3) interest test was given first, 4) more information on course requirements and colleges as related to vocations was provided.

- Over 90% of girls have requested the small group vocational guidance.

For further information contact:

(Mrs.) Grace Glang
GAP Program Coordinator
San Mateo Union High School District
650 North Delaware Street
San Mate , California 94401.

3. FLORIDA SCHOOLS TO WATCH

The following schools are developing programs to watch. Below is a partial list of Florida secondary schools now experimenting with individualized programs:

Level	School	Address
7-12	Fort Myers Senior High	Lee County, Florida
	Fort Myers Junior High	Lee County, Florida
	North Fort Myers Junior	Lee County, Florida
K-12	Nova	Broward County, Florida
7-9	Carol City Junior	Dade County, Florida
	Glades Junior	Dade County, Florida
	Riviera Junior	Dade County, Florida
	Brownsville Junior	Dade County, Florida
	Rockway Junior	Dade County, Florida
7-12	Jupiter Junior Senior High	Jupiter, Florida
7-9	DeLaura Junior High	Satellite Beach, Florida
10-12	Melbourne High School	Melbourne, Florida
10-12	Oak Ridge High School (Math-Science Research)	Orlando, Florida

4. THE PENNSYLVANIA ADVANCEMENT SCHOOL

The Pennsylvania Advancement School is of interest to educational planners because it is a source of validated innovative solutions to instructional problems. These solutions may be in the form of learning materials, staff organization patterns and training programs, counseling techniques, and teaching methods.

Visitors who have seen the school describe the atmosphere as free and exciting and without the discipline problems that might be expected in an "open school."

The description of the school reproduced in the following pages summarizes the operation of the program, the on-going projects, and some of the results that will be forthcoming. The address for further information is:

The Pennsylvania Advancement School
Fifth and Luzerne Streets
Philadelphia, Pennsylvania 19140

Phone: Area Code 215, BA 6-4653.

D. Grade-level ranks are not given. Teachers write descriptions of the progress made by individual students and areas in which they need to grow. No graded tests are given. Diagnostic tests are given by resource departments.

E. P.A.S. has 46 professional staff members, of whom 32 are curriculum development specialists who spend from one-third to two-thirds of their time teaching students, as well as having responsibilities in development, research, teacher education, and dissemination. The other staff members include administrators, dissemination and teacher education personnel, media technology specialists, writers, follow-through personnel, and researchers.

****

I. The Instructional Program, includes a variety of curriculum development projects. Certain learning goals transcend the subject matter of the projects and become the common emphasis for all: (1) to help students perceive -- intellectually, emotionally and through the senses -- themselves, the physical world around them, and communications media, so that they (2) may analyze critically, evaluate and form values, and make viable choices, (3) and to creatively translate these into useful action. The instructional projects are below.

A. The Family Group project is composed of five groups, each group containing about 24-30 students and from three to five adults, the majority of whom are the students' teachers. Each family group meets three times daily, during which assorted activities are planned that will hopefully allow students to see their instructors in something other than a classroom role, help individual students resolve problems in relating to their peers and adults, provide specific boys and the group as a whole a sense of self-esteem, and encourage students to feel responsible for their actions.

B. In the Human Development Lab, headed by Daniel S. Hoover, students have experiences both in school and in their communities that will help them to better understand themselves and other people. Here the lab's focus is more on psychological education than on the traditional social sciences curriculum. Among other things, students are engaged in meaningful projects and activities, improve their communication skills, and gain insight and experience in working individually and as members of groups.

C-D Laboratory Programs

1) The Life Science Laboratory, headed by Shively D. Willingham provides opportunity for experiences with animals, living chemistry, micro-organisms, plants, genetics continuity, and nature study.

2) The Perception Development Laboratory, headed by Rudd A. Crawford, Jr., provides a rich physical environment in which students set and solve problems on various levels of abstraction.

In both laboratories the problems stimulate systematic thinking and often either require or help develop computational skill. Most of the students' exploration is done individually or in small groups, enabling the teachers to give individual help as clarifiers, stimulators, and resource people.

E. The Reading Project

1) The department helps put the reading component into most of the courses at P.A.S. Incoming students are tested for grade level in reading. The reading staff then provides relevant reading materials for each program, tells teachers the grade level of the materials, and advises them on how to stimulate reading improvement.

2) The department works with the 20 or 30 pupils most deficient in the school in reading skills, trying to find new techniques for making teenagers better readers.

3) Following linguistics information, the department is researching ways of using spoken language activities to improve reading.

F. In the Communications program, headed by Leonard A. Belasco, a unique curriculum development project involving high school students as writers and teachers is under way. The student-writers come to the Advancement School twice weekly to work with teachers to develop a reading and writing program relevant to the needs of inner city students. The basic approach of the program as a whole is to stimulate creative expression by providing students with a rich background of sensory experiences from which to operate.

G. A teaching technique tentatively called Improvisational Drama is being developed in a project headed by George C. Mager. Students provide the content in an unusual series of dramatic experiences in which they develop their ability to have honest relationships with other people, move freely without embarrassment, and use their imaginations. Mr. Mager is also using the technique with teachers and graduate students of education.

H. In the Arts and Crafts Studio, headed by Daniel Gorey, students work side-by-side with teachers skilled in arts and crafts. Activities are intended to help students to see beauty in the world around them and express their perceptions.

I. The Physical Education program, headed by Richard Kurtis, emphasizes academic, social and emotional development within the context of physical education -- tapping the strong interest many boys have in sports and physical activity. Some of the activities are: weight-training, tumbling, wrestling, boxing practice, and team sports. This year a course designed to improve reading skills will be taught within the boxing and team sport class.

J. Personal Typewriting, taught by Ellis Lazowick, has a strong appeal for children. In addition to being a valuable skill in itself, typing improves spelling, punctuation and other verbal skills, giving the child a justified feeling that he can communicate better.

K. A Psychiatric Services Team from St. Christopher's Hospital, the children's hospital affiliated with Temple University, is at the Advancement School two hours a week. Its four members offer their knowledge to the teachers of two family groups. The team is headed by Dr. Marc Forman, a child psychiatrist involved in community work.

L. The Outdoor Program, headed by M. Phineas Anderson, puts urban boys through a week of self-discovery and personality assessment by having them face stressful situations in a wilderness setting. Last year, many of our students spent a several days in the challenging program at La Anna Youth Hostel, about 120 miles north of Philadelphia.

II. Teacher Education: Some of the people you see working at P.A.S. are not permanent staff members, but are in our teacher education programs. If you would like to take part in one of the programs listed below, get in touch with Joseph L. Pruzan, Coordinator of Teacher Education (Phone: BA 6-4654).

A. Resident teachers are on leave from Philadelphia public schools, to which they will return at the end of this semester.

The purpose of the resident teacher program is

1) to give teachers an opportunity to develop ideas, approaches, methods and processes which they can use in their classrooms when they return to their regular assignments.

2) to help the teachers assume staff development leadership roles when they return to assignments.

3) to enable the teachers to help the Advancement School to develop curricula and methods which are important for Philadelphia.

B. The Summer Program

One hundred twenty-five teachers, counselors, community leaders and administrators from six junior high schools and one elementary school participated in a six-week workshop program.
Those attending from each school worked as teams in order to prepare themselves for their group assignments in September. This emphasis on group cohesiveness was enhanced by work in both subject matter and cross discipline workshops, and in group process exercises which helped participants better understand how effectively their group was functioning.

C. Visiting teachers get leaves of absence from their jobs for from one day to a few weeks to observe, get ideas, or carry out short curriculum development projects at the Advancement School.

D. Interns from Graduate School programs at Antioch-Putney, Harvard, and Penn have been participating in teaching at the Advancement School. They are at the school for one year, they are introduced to classroom teaching gradually, they help in planning curricula, and they receive credit toward their degrees (MAT) during this time. They are paid at the rate of half a beginning teacher's salary, and are supervised by the regular staff of the department in which they are operating.

E. In the Antioch work program, Antioch College undergraduates spend approximately six months of each of five academic years in a work program designed to give them non-academic work experience which they can relate to their regular academic work. The Philadelphia School District (and the Advancement School in particular) has been hiring a number of these under-graduates under this arrangement. The under-graduate interns work as aides and assistants in various aspects of the school's operation such as teaching, research, and laboratories.

III. Personal Staff Development refers to our efforts, coordinated by Joseph B. Fox, to stimulate constructive change in schools outside ours. All of our other projects are means to this end. Our major focus for stimulating change is in Philadelphia, but we also try to have impact throughout the country, especially in large cities and colleges of education.

A. At Payne, Vaux, Strawberry Mansion, Steddart-Fleisher junior high schools and the Kenn Elementary School in Philadelphia we have one Pennsylvania Advancement Staff person acting as liaison between the Advancement School and the faculty of these schools, and coordinator of all joint staff development activities.
This coordinator helps define what these activities are, responds to needs of the school and uses Advancement School curriculum development personnel who are assigned to each school in the most effective manner.
Each of the instructional departments has designated one or two members to work in these schools to help in the staff development process which consists of curriculum development, group process work, and working jointly with community representatives to help learn more about students and community resources.
Similar work is going on at Jones Junior High School with former resident teachers at the Advancement School coordinating these cooperative activities.

B. The following programs that we have developed are being tried, with assistance from our staff, by public school teachers with their regular classes.

1) Communication Course

2) Human Development

3) Perceptual Development

4) Animal Lab

5) Reading Programs

6) Group Process Activities

7) Family Group Process

We plan to begin, as soon as possible, extended work in Improvicational Drama.

C. Consulting and speaking. In the past year, Advancement School staff members have been speakers or consultants at conferences and colleges of education from Massachusetts and Montreal in the north,

westward to Ohio, Arizona and California, and southward to Atlanta.

D. Visitors: Thousands of visitors have come to the school, many from Philadelphia and others from many parts of the United States and a handful of foreign countries.

E. Conferences: Periodically administrators, teachers and counselors attended staff development conferences on The Problems of Urban Education. Other conferences will be held from time to time.

F. Publications: Advancement School ideas are being spread through a variety of publications.

IV. Counseling: The counseling department, led by Head Counselor Rex Jarrell, is developing techniques to change the function of counselors in schools. At F.A.S., each student is in a group counseling session with about eight to fourteen students twice a week. Individual counseling is often linked to developments in the group sessions. Sessions are recorded on either audio or video tape, and counselors listen carefully to tapes to refine their own techniques.

V. Research: Research Director Saul Yanofsky and his associate, Mrs. Dale Farran, assist the faculty in evaluating projects and effectiveness in working toward the objectives of the school. Some of the major research projects are: follow-up studies of F.A.S. alumni; program evaluation; examination of how groups of teachers function; study of the effectiveness of the teacher-training and dissemination program; a comprehensive examination of the school's effects on its students.

VI. The School/Community Follow-Through Program helps students continue to develop after they have left the Advancement School. In doing this, the counseling staff works with schools and community residents in setting up programs and activities and making arrangements for tutoring.

VII. The Media Department, headed by Philip Williams, experiments with ways of using communications equipment and techniques (audio-visual) in schools. It also produces 16mm films, slide-tapes and video tapes for use in teacher education.

VIII. The Staff Development Resource Center, headed by Don Rivera, provides developmental programs for the staff, provides resource materials for the staff (audio-visual materials, simulations, paintings, posters, artifacts), and runs a professional library. The Center's staff seeks ways of helping public schools to set up staff development resource centers. The Center is also responsible for the coordination of training of interns and resident teachers within the school.

IX. Organization and Administration

A. The P.A.S. corporation has an 11-member board of directors, which includes two members of the Philadelphia School Board -- Mrs. Elizabeth Greenfield and Mr. George Hutt -- and Supt. Intendent of Schools Mark R. Shedd. No faculty members are on the board of directors. Judge Thomas Reed is president.

B. Executive policy decisions inside the school are made by a governing body consisting of Acting Director Martin S. Cohen, Coordinator of Teacher Education Joseph L. Prusan, Research Director Saul Yanofsky, Staff Development Director Donald Rivera and Curriculum Specialist Irad Valentine.

APPENDIX C

RESOURCES FOR BEHAVIORAL OBJECTIVES

Recent efforts to develop and use behavioral objectives in instructional programs have been responsible for rapid and continuing progress in organizing courses and curricula. A number of excellent resources have developed and will develop in the next few years. Current sources are Project PLAN, Melbourne High School, and the Instructional Objectives Exchange.

- Project PLAN (Exhibit A)

Project PLAN (see Midterm Report, Vol. 1, Appendix F), began operating in 1967 in five states. Researchers expect the program to be complete through grade twelve and fully tested by 1973. The students' programs are based on Teaching-Learning Units (TLU's or Learning Packages) which permit totally individualized instruction. It is the responsibility of the teachers to develop TLU's by specifying behavioral objectives and assigning learning activities to accompany them. The goal is to develop a comprehensive set of objectives and their related activities. Exhibit A is a sample of objectives for Algebra I and Algebra II. The objectives serve as course outlines from which the TLU's will be developed.

- Instructional Objectives Exchange (Exhibit B)

Another source of instructional objectives is the Instructional Objectives Exchange (see Midterm Report, Vol. 1, Appendix B) located at the University of California at Los Angeles. Any participant in the Exchange may withdraw his choice of objectives by contributing objectives of his own. The Exchange currently offers objectives in language arts, auto mechanics, social sciences, English literature, mathematics, reading and biology for grades 7 and above (see

Exhibit B). This service, now in the beginning stages, promises to be a vast source of information in the future.

- Melbourne High School (Exhibits C through I)

Like all the secondary schools in the county, Melbourne High School produces behavioral objectives for all courses in its curriculum. Some are in the developmental stages; many are validated and in constant use.

At Melbourne objectives are designed not only for the course but for each of five phases within the course. The objectives are based upon two things: student characteristics for that phase and the goals of the course for students at that level (see Exhibits C & D). The content does not vary greatly from phase to phase, but depth of study and mastery level does increase as the student advances to Phase V. For example, English is subdivided generally into speaking, reading, writing,and listening. Phase II writing concentrates on sentences, paragraphs, punctuation,and letter writing. Phase III is concerned with paragraph development and essay writing while Phase IV perfects the essay and introduces the research paper. (See Exhibits E, F, G). Profiles are kept on each student as he progresses through the sequence along with other test and personal data (Exhibits H and I).

EXHIBIT A

Project PLAN*
Algebra I and II Objectives

*For a brief description of Project PLAN see page one of this appendix.

PLAN OBJECTIVES FOR
ALGEBRA I

WHOLE NUMBERS

A. To review the properties of operations with whole numbers

B. To order the whole numbers

C. To know the nature of a variable and its use

D. To simplify numerical expressions in accordance with the order of operations

E. To operate with expressions involving exponents

F. To find the solution sets to open sentences

INTEGERS

A. To extend the whole numbers to the set of integers

B. To determine the basic properties of the system of integers

C. To understand the concept of the opposite of an integer

D. To define and use the absolute value of a number

E. To solve application problems

POLYNOMIALS OVER THE INTEGERS

A. To define and operate on polynomials

B. To factor polynomials by use of the distributive law, and binomials and trinomials of special types

THE RATIONAL NUMBERS

A. To extend the integers to the set of rational numbers

B. To determine the basic properties of the system of rational numbers

C. To understand the concept of the opposite of a rational number

D. To define and use the inverse of a non zero rational number

E. To operate with rational expressions

F. To solve application problems

EXPONENTS AND ROOTS

A. To operate with positive and negative integral exponents and the zero exponent

B. To calculate the square root of a number

C. To introduce the real numbers and the real number line

THE LINEAR FUNCTION

A. To define function as a mapping of a set of ordered pairs or as a subset of a relation

B. To understand and apply the constant function and the linear function $ax + b$

C. To study the graphical representation of function

D. To explain the relations between the equation of a straight line and the graph of a straight line

SOLUTION OF LINEAR EQUATIONS AND INEQUATIONS

A. To solve linear equations and inequations in one or two variables (algebraically and graphically)

B. To solve systems of linear equations

C. To solve and graph linear equations involving absolute value

D. To translate verbal problems into systems of linear equations and to solve them

INTRODUCTION TO QUADRATIC FUNCTION

A. To study $ax^2 + bx + c$ for real values of x.

B. To graph $y = ax^2 + bx + c$

C. To solve $ax^2 + bx + c = 0$ by the zero product law

D. To derive and use the quadratic formula

COMPLEX NUMBERS

A. To extend the number idea to include a + bi, where a, b are contained in the reals and $i = \sqrt{-1}$

B. To extend the cartesian plane idea in motivating the argand diagram and graphing complex numbers

C. To introduce elementary notions of vectors

D. To investigate the properties for complex numbers

THE QUADRATIC FUNCTION

A. To graph quadratic functions by various methods (numerical substitution, etc.)

B. To apply the concepts of maximum, minimum and symmetry

C. To derive the quadratic formula and apply it to solving quadratic equations

D. To determine the kind of roots that a quadratic equation has by use of the discriminant

THEORY OF QUADRATICS

A. To determine the type of curve from its equation

B. To graph the conic section

C. To use the theory of quadratics to solve application problems

D. To develop the conics from an analytic geometry definition

THEORY OF POLYNOMIALS

A. To use the four fundamental operations with polynomials

B. To prove the factor and remainder theorem

C. To find zeros of polynomials

D. To factor polynomials

E. To solve equations by factoring

PLAN OBJECTIVES FOR
ALGEBRA II

THE REAL NUMBERS

A. To operate with real numbers

B. To extend the properties of the real numbers to include the completeness axiom

C. Use the properties of real numbers to prove theorems

D. To solve problems using the properties of real numbers.

THE NATURE OF FUNCTIONS, RELATIONS, AND THEIR GRAPH

A. To define relation and function

B. To review the coordinate axes system

C. To determine if a relation is a function

D. To graph relations and functions

THE LINEAR FUNCTION

A. To graph linear functions in one variable

B. To graph linear function in two variables

C. To know the relationship of "a" in ax + b to its slope

D. To solve linear equations

E. To solve linear inequations (inequalities)

F. To solve "n" linear equations in "n" unknowns (and for inequalities)

G. To find equations of lines using analytical geometric methods

EXPONENTS, ROOTS, AND RADICALS

A. To extend the theory of exponents to include negative fractional exponents

B. To prove basic theorems about exponents

C. To apply the relationship between roots and radicals in simplifying algebraic expressions

D. To solve radical equations

E. To simplify various types of radical expressions

INVERSE FUNCTIONS

A. To learn the conditions for existence

B. To find the inverse for given functions when they exist

EXPONENTIAL FUNCTIONS

A. To graph exponential functions

B. To graph the inverse of exponential functions

C. To solve application problems that require a knowledge of exponential functions

D. To apply logarithms to specific problems

E. To demonstrate the relationship between logarithms and exponential functions

F. To learn the various properties of logarithmic functions

G. To prove for logarithmic functions $f(a) \cdot f(b) = f(a \cdot b)$, etc.

SEQUENCES, SERIES AND BINOMIAL EXPANSION

A. To prove theorems about sums of arithmetic and geometric series

B. To apply theorems about limits

C. To expand binomials by the binomial expansion

D. To solve application problems

TRIGONOMETRIC FUNCTIONS

A. To apply the trigonometry to the solution of right triangles

B. To study the circular functions

C. To learn the inverse trigonometric functions

D. To prove DeMoivre's Theorem

E. To solve identities

EXHIBIT B

Instructional Objectives Exchange

Instructional Objectives Exchange

Various sources are available from which objectives can be obtained. One source, the Instructional Objectives Exchange, which was recommended for the First Facility, will also be a useful resource for developing secondary school learning objectives. For a complete description of the Exchange which operates like a clearinghouse where objectives are deposited and unfamiliar objectives withdrawn, see Report 33, October 7, 1969, Appendix B.

A sample of available secondary level objectives follows:

- Mathematics, 7-9 — This collection emphasizes those concepts and skills structural to the discipline of math. The content area includes sets; numbers, numerals, and numeration systems; operations and their properties; measurement; geometry, relations, functions, and graphs; probability and statistics; applications and problem solving; and mathematical sentences, order, and logic.
- Reading, 7-12 — This collection emphasizes structural analysis, critical comprehension, and study skills. Objectives for selected phonetic analysis skills are also included, as well as extensive coverage of the major sub-categories. (approximately 193 objectives).
- English Literature, 10-12 — This collection is designed to develop the students' ability to analyze literature and to evaluate its effects. Content areas include poetry, the novel, and drama. An average of six sample items are listed for each objective. (25 objectives).

- Language Arts, 7-9 -- Contents in this collection include reference skills, listening and speaking skills, composition, literature. (96 objectives).
- Auto Mechanics, 10-12 -- This collection reflects major behavioral objectives required in a comprehensive course in automotive tune-up and repair. (140 objectives.)
- Social Science (Geography), K-9 -- This collection reflects major social science concepts in the discipline of geography. (158 objectives).
- Biology, 10-12 -- This collection emphasizes processes of inquiry and laboratory work, either directly or indirectly. Although this sequence is based on the Biological Sciences Curriculum Study (BSCS), the objectives are designed to make them serviceable to any program. (approximately 62 objectives.)

A biannual catalogue of newly developed objectives will be available from:

Instructional Objectives Exchange
Center for the Study of Evaluation
University of California
Los Angeles, California 90024

The charge for printing and handling of a set of objectives is now approximately $1.

Sample Objectives

READING

Major Category: Word Recognition and Analysis [illegible] Grade Level: [illegible] K

Sub Category: Rhyming Words IOX Acceptability Rating: 2

OBJECTIVE:	After listening to a group of words, some of which rhyme and some of which do not, the student will orally designate the rhyming and non-rhyming words.

SAMPLE ITEM:	Listen to each of the following lists. After each one, state which words do not rhyme.
	1. make, big, fake, take
	2. fill, hill, kite, mill
	3. sat, cat, tell, mat
ANSWERS:	1. big
	2. kite
	3. tell

ENGLISH LITERATURE

Major Category: Poetry Grade Level: [illegible] Senior High

Sub Category: Tone IOX Acceptability Rating: 2

Tone is defined as the attitude of the poet toward his subject matter or toward his audience. The tone of a poem may be formal, informal, solemn, ironic, horror stricken, sarcastic, humorous, or playful.

OBJECTIVE:	The student will demonstrate an understanding of what is meant by tone in poetry and how tone is achieved in a poem. That is, when given a poem, the student will be able to describe the attitude [illegible] toward the subject matter or the audience and identify the [illegible] by which the tone is [illegible].

SAMPLE ITEM:	In "Apparently With No Surprise" by Emily Dickinson, what is the [illegible] attitude toward nature? What details reveal the tone?
CRITERIA:	The speaker's attitude is [illegible]. The speaker presents a picture of [illegible] by [illegible]. The frost kills the flower [illegible] power" [illegible] "[illegible]" and [illegible] "Apparently [illegible]."

EXHIBIT C

Melbourne High School*
Phase II
Student Characteristics

*For a brief description of Melbourne High School see page two of this appendix.

STUDENT CHARACTERISTICS

PHASE II

1. 7th to 10th grade reading level.
2. May be either brash and overcompensating or reticent and retiring in class.
3. Verbally proficient within restricted vocabulary.
4. Little technical background in subject matter.
5. Usually displays aptness in peer group sociability.
6. Responds well to manipulative tasks.
7. Not self confident with subject matter.
8. Restricted, but expanding, vocabulary.
9. Needs continuing reinforcement in work and teacher/student relationships.
10. Negative feelings towards school.
11. Oriented to concrete, tangible materials.
12. Limited writing ability.
13. Failure syndrome.

EXHIBIT D

Melbourne High School*
Phase II English Goals

*For a brief description of Melbourne High School see page two of this appendix.

GOALS

1. To write with variety in sentence structure
2. To write a purposeful sentence
3. To write a paragraph
4. To take useful notes for study purposes
5. To revise written notes
6. To utilize basic punctuation
7. To write a friendly letter in correct form
8. To address an envelope in block style
9. To write a business letter in modified block style
10. To write a letter of application
11. To build vocabulary by using vocabulary skills to attack new words
12. To improve study skills
13. To read for information in a given selection
14. To demonstrate the ability to follow directions
15. To read critically
16. To understand the purpose, nature, and structure of fiction
17. To recognize symbols
18. To describe mood
19. To understand a fable
20. To demonstrate an understanding, appreciation, and values
21. To discover basic human characteristics
22. To recognize and utilize acceptable pronunciation

EXHIBIT E

Melbourne High School*
Phase II English

* For a brief description of Melbourne High School see page two of this appendix.

WRITING

GENERAL OBJECTIVE: TO WRITE WITH VARIETY IN SENTENCE STRUCTURE

The student will be able:

1. To write a simple sentence.
2. To list in writing all the simple sentences found in a given paragraph.
3. To write a compound sentence.
4. To list in writing all the compound sentences found in a given paragraph.
5. To write a complex sentence.
6. To list in writing all the complex sentences found in a given paragraph.
7. To write a compound-complex sentence.
8. To list in writing all the compound-complex sentences found in a given paragraph.
9. To list in writing all the run-on sentences found in a given paragraph.
10. To rewrite a run-on sentence by separating the thoughts into two or more sentences.
11. To rewrite a run-on sentence by joining two thoughts by a conjunction.
12. To rewrite a run-on sentence by joining two thoughts by a semi-colon.
13. To list in writing a series of choppy sentences found in a given paragraph.
14. To rewrite a series of choppy sentences into compound or complex sentences.
15. To list in writing all the stringy sentences found in a given paragraph.
16. To rewrite a stringy sentence by subordinating ideas.
17. To rewrite a stringy sentence by dividing it into two sentences.
18. To list in writing all the sentence fragments found in a given paragraph.
19. To rewrite a sentence fragment into a complete sentence.

GENERAL OBJECTIVE: TO WRITE A PERSONAL SENTENCE

The student will be able:

20. To write a declarative sentence.

21. To list in writing all the declarative sentences found in a given paragraph.

22. To write an imperative sentence.

23. To list in writing all the imperative sentences found in a given paragraph.

24. To write an interrogative sentence.

25. To list in writing all the interrogative sentences found in a given paragraph.

26. To write an exclamatory sentence.

27. To list in writing all the exclamatory sentences found in a given paragraph.

GENERAL OBJECTIVE: TO WRITE A PARAGRAPH

28. To write a topic sentence to introduce a paragraph.

29. To write a paragraph containing facts to support the topic sentence.

30. To write a paragraph giving detailed information to support the topic sentence.

31. To write a paragraph containing examples.

32. To write a paragraph describing an incident or an anecdote.

33. To write a paragraph comparing two things or ideas.

34. To write a paragraph which states and then explains a point of view.

35. To write a paragraph by contrasting two things or ideas.

36. To write a paragraph exemplifying a definition.

37. To write the details of a paragraph in chronological order.

38. To write the details of a paragraph in spatial order.

39. To write the details of a paragraph in the order of importance.

40. To write a paragraph presenting the details contained in one point of view in comparison with the details supporting another point of view.

41. To write a concluding sentence that summarizes the point made in the paragraph.

GENERAL OBJECTIVE: TO WRITE A PARAGRAPH IN CORRECT FORM

42. To write a title showing the relationship of the main idea to the paragraph.

43. To leave a line between the title and the topic sentence.

44. To indent the first word of the topic sentence.

45. To write all subsequent lines flush to the left-hand margin.

GENERAL OBJECTIVE: TO TAKE USEFUL NOTES FOR STUDY PURPOSES

46. To list in writing the main ideas in a selection.

47. To list in writing the supporting details of the main idea contained in a selection.

48. To paraphrase a selection.

49. To write a summary of a selection.

50. To write, in one's own words, the main ideas in a given lecture.

51. To write, in one's own words, the supporting details of the main idea in a given lecture.

GENERAL OBJECTIVE: TO REVISE WRITTEN WORK

52. To cross out unrelated ideas in written work.

53. To write-in supporting details.

54. To change the order of ideas.

55. To rewrite sentences to improve their structure.

56. To correct spelling.

57. To correct punctuation.

GENERAL OBJECTIVE: TO REVIEW BASIC PUNCTUATION

58. To punctuate a statement with a period.

59. To punctuate an abbreviation with a period.

60. To punctuate a question with a question mark.

61. To punctuate an exclamatory sentence with an exclamation mark.

62. To use commas to separate items in a series.

63. To use commas to seperate two or more adjectives preceding a noun.

64. To use a comma between two complete thoughts joined by a conjunction.

65. To use commas to set off information that is not essential to the meaning of the sentence but adds an idea to the sentence.

66. To punctuate dates.

67. To punctuate addresses.

GENERAL OBJECTIVE: TO WRITE A FRIENDLY LETTER IN CORRECT FORM

68. To write the street address in the upper right-hand corner of the first page.

69. To write the city and state directly below the street address.

70. To write the date and year directly below the city and state.

71. To leave a space between the heading and the salutation.

72. To write the salutation flush with the left-hand margin.

73. To write the body of the letter directly below the salutation.

74. To indent the first word of the body of the letter.

75. To indent the first word of each paragraph in a letter.

76. To write the closing of a letter below the final line just to the right of the page.

GENERAL OBJECTIVE: TO ADDRESS AN ENVELOPE IN BLOCK STYLE

77. To write one's name in the upper left-hand corner of the envelope.

78. To write one's street address directly below one's name.

79. To write one's city and state directly below one's street address.

80. To write the name of the receiving person below the middle and to the left of the center of the envelope.

81. To write the receiving person's title, given name, initial and surname.

82. To write directly below the receiving person's name, (his, her) street address.

83. To write the receiving person's city and state directly below (his, her) street address.

GENERAL OBJECTIVE: TO WRITE A BUSINESS LETTER IN MODIFIED BLOCK STYLE

84. To write one's street address in the upper right-hand corner of the first page.

85. To write one's town and state directly below one's street address.

86. To write the date and the year directly below the town and state.

87. To write the inside address four typewriter spaces below the heading and flush with the left-hand margin.

88. To write the name of the firm on the first line of the inside address.

89. To write the town and city directly below the name of the firm.

90. To write the salutation two typewriter spaces below the inside address and flush with the left-hand margin.

91. To punctuate the salutation with a colon.

92. To write the salutation "Gentlemen" when writing to a firm or group.

93. To write the salutation "Dear Sir" when writing to a specific person whose name is not known.

94. To write the salutation "Dear Mr. ----" when the individual's name is known.

95. To write the first line of the body of a business letter two typewriter spaces below the salutation.

96. To indent the first line of the body of the letter equal to the length of the salutation.

97. To indent subsequent paragraphs to align with the opening sentence.

98. To write the closing to the right of the middle of the page.

99. To write the standard form, "Yours truly" for the closing greeting.

100. To write one's signature immediately below the closing greeting.

101. To type or print one's name directly below the signature.

GENERAL OBJECTIVE: TO WRITE A LETTER OR APPLICATION

102. To state in writing the position for which one is applying and how one learned about it.

103. To write the important facts about oneself that an employer would want to know.

104. To write that one is familiar with the requirements of a position and state one's ability to fulfill such requirements.

105. To list in writing three references with addresses.

106. To request in writing an interview at the employer's convenience.

107. To give in writing a telephone number or an address where one can be reached.

GENERAL OBJECTIVE: TO PREPARE FOR A TEST

108. To test in writing specific information found in a given short story by applying the question "Who...?"

109. To test in writing specific information found in a given short story by applying the question "What...?"

110. To test in writing specific information found in a given short story by applying the question "When...?"

111. To test in writing specific information found in a given short story by applying the question "Where...?"

112. To test in writing specific information found in a given short story by applying the question "Why...?"

113. To test in writing specific information found in a given short story by applying the question "How...?"

114. To write five true-false questions that apply to a given short story.

115. To write five fill-in questions that apply to a given short story.

116. To write five multiple choice questions that apply to a given short story.

117. To write five matching questions that apply to a given short story.

118. To list in writing all the new words found in a given short story and give the definition of each.

119. To write questions pertaining to a given short story beginning with each of the following words: am, are, is, was, will, were, would, shall, should, can, could, may, might, must, has, have, had, do, does, did.

EXHIBIT F

Melbourne High School*
Phase III English

*For a brief description of Melbourne High School see page two of this appendix.

COMPOSITION

During the course of study the student should be able:

293. To write a paragraph that has unity, coherence, and emphasis.

294. To write a list of subjects related to a given topic.

295. To write an inductive paragraph with examples from a given subject.

296. To write a deductive paragraph with examples from a given subject.

297. To state orally the major point of a written paragraph.

298. To state in writing the major point of a written paragraph.

299. To state in writing the major point of a paragraph given orally.

300. To state orally the major point of a paragraph given orally.

301. To write paragraphs in chronological order.

302. To write paragraphs in spatial order.

303. To write paragraphs in inductive order.

304. To write paragraphs in deductive order.

305. To write paragraphs in the order of least to greatest importance.

306. To write paragraphs in the order of easy to difficult.

307. To write paragraphs in the order of cause to effect.

308. To select in writing the major point of a paragraph that has no particular order and rewrite the paragraph deductively, giving the major point greater emphasis.

309. To write a paragraph that supplies details to support a main point.

310. To write a paragraph that compares and contrasts a main point.

311. To write a paragraph that will clarify the definition of a main point.

312. To write an introductory sentence in which the basic idea which motivated the paragraph is clearly communicated to the reader.

313. To write a deductive paragraph from an outline and introduction.

314. To distinguish in writing the difference between homonyms, synonyms, antonyms, and pseudonyms.

315. To write a bibliography to list books available in the library under a given topic.

316. To write three paragraphs related to a given topic.

317. To write transitional sentences to combining three related paragraphs into a composition.

318. To write an outline for a composition which will include three paragraphs.

319. To write a first draft of a composition based upon a topic outline.

320. To write the completed version of a rough draft of a composition.

321. To revise a paragraph in which errors are indicated.

322. To revise in writing the introduction of a composition.

323. To revise, in writing, the body of a composition.

324. To revise, in writing, the conclusion of a paragraph.

325. To write a precis on a given topic.

326. To write an informal personal essay on a given topic.

327. To write a book review to show the social, political, or economic climate of the time in which the book was written.

328. To write an essay on a given topic.

329. To write an opinion essay on a given topic.

330. To write a pro argument essay on a given topic.

331. To write a con argument essay on a given topic.

332. To write a narrative from the first person point of view.

333. To write a third person narrative.

EXHIBIT G

Melbourne High School*
Phase IV English

*For a brief description of Melbourne High School see page two of this appendix.

COMPOSITION

GENERAL OBJECTIVE: WRITE A PERSUASIVE ESSAY

The student will be able:

1. To write a sentence which states a position concerning a problem.
2. To write a paragraph stating a position concerning a problem.
3. To write a paragraph stating a problem.
4. To write a paragraph summarizing the cause of a problem.
5. To write a paragraph summarizing the effects of a problem.
6. To write a paragraph selecting one best solution to a problem from several possibilities.
7. To write a paragraph proposing several solutions to a problem.
8. To write a paragraph proposing how a solution to a problem might best be put into effect.
9. To write a one-sentence statement of fact not admissible of interpretation.
10. To write a one-sentence statement of fact concluding with an interpretation.
11. To write a one-sentence statement of opinion.
12. To make a list of statements of fact and statements of opinion which occur in a group of given paragraphs.
13. To outline the opening paragraphs of several persuasive essays, distinguishing between position and proof.
14. To write a paragraph comparing the tone of several given persuasive essays.
15. To write an essay comparing the tone of several given persuasive essays.
16. To write a paragraph summarizing a series of proofs.
17. To write a paragraph in which a series of proofs lead to a stated conclusion.

18. To write a paragraph stating a position concerning a problem using an emotional tone.

19. To write a paragraph stating a position concerning a problem using an objective.

20. To write a paragraph stating a position concerning an old problem in a fresh, original way.

21. To outline an essay which states a position concerning a problem.

22. To outline an essay dealing with a problem from a scientific point of view.

24. To outline an essay dealing with a problem from a humanistic point of view.

25. To write an essay defending a hypothesis by using analogy, example, induction, and deduction.

26. To write an essay opposing a hypothesis by using analogy, example, induction, and deduction.

27. To write a persuasive essay on a controversial subject.

28. To develop a checklist for a good persuasive essay.

GENERAL OBJECTIVE: WRITE A RESOURCE PAPER

The student will be able:

1. To take notes from primary sources on a specified topic.

2. To take notes from secondary sources on a specified topic.

3. To write a topic outline for a resource paper.

4. To write a sentence outline for a resource paper.

5. To prepare a table of contents from a topic outline of a resource paper.

6. To prepare a footnote for a quotation used in a resource paper.

7. To prepare a footnote for documenting evidence given in a resource paper.

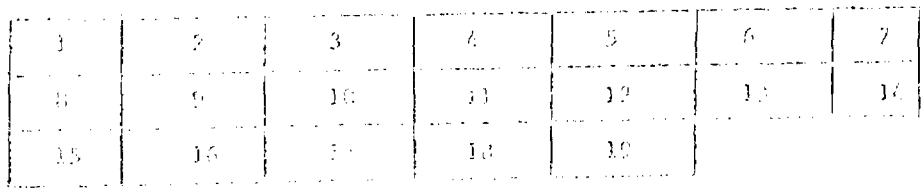
8. To prepare a bibliography for a resource paper.

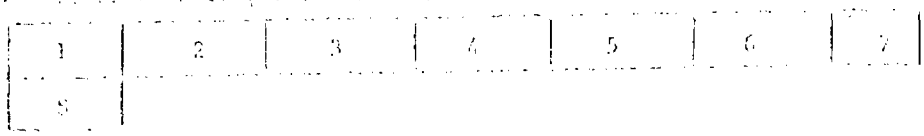
9. To write a long paper exploring a limited topic in depth after consulting primary and secondary sources.

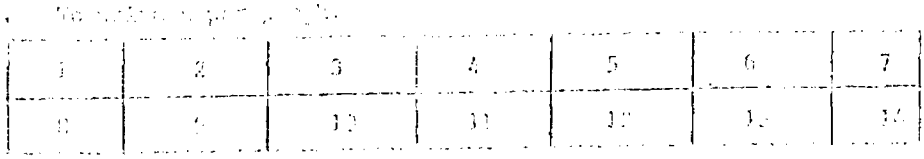
EXHIBIT H

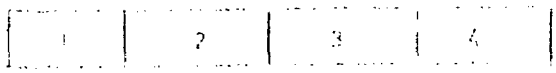
Melbourne High School*
Phase II English

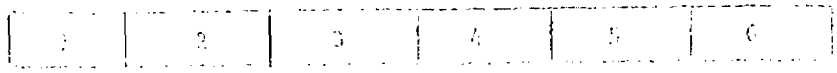
* For a brief description of Melbourne High School see page two of this appendix.

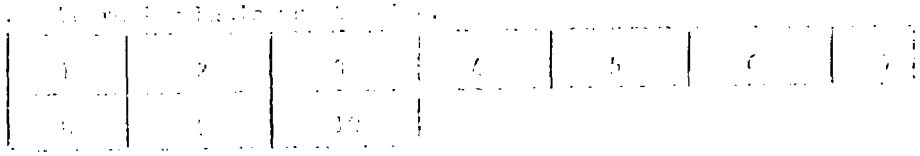


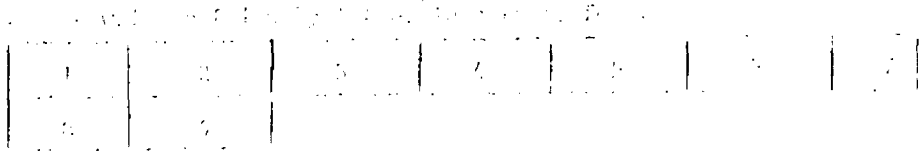












10. [illegible]

1	2	3	4	5	6	7

11. [illegible]

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18			

12. [illegible]

1	2	3	4	5	6

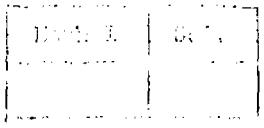
13. [illegible]

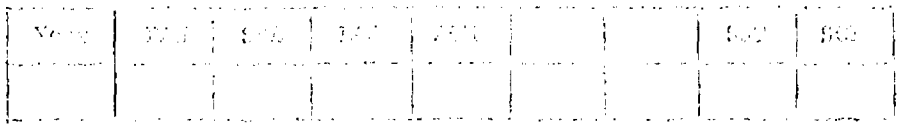
1	2	3	4	5	6	7
8	9	10	11	12		

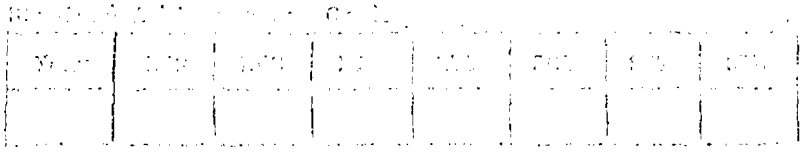
EXHIBIT I

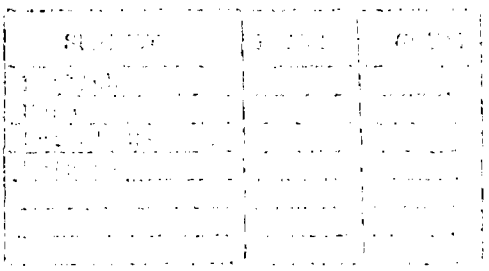
Mell rne High School*
Data Profiles

* For a brief description of Melbourne High School see page two of this appendix.









APPENDIX D

Following is a discussion of general manpower forecasts to 1975, which provides a framework for options regarding specific career programs within the Fort Lincoln schools.

1. OCCUPATIONAL OUTLOOK

1.1 Introduction

Planning of future occupational programs that will prepare students for available employment opportunities should begin with analysis of current and future manpower needs and occupational trends. However, despite some recent improvement, projections of manpower needs are still subject to considerable error, and certain limitations should be recognized: assumptions may be incorrect or incomplete; data are likely to be inadequate; the statistical techniques may be inappropriate or misleading; and unforeseen technological changes or other events may drastically alter estimated figures. Improving the reliability of forecast data does not involve perfecting statistical measurements, but rather learning more about how labor markets operate and about the nature of forces shaping the supply and demand for labor, a difficult and lengthly process.

Despite the limitations of manpower projections, they can be useful for planning vocational education programs if certain factors are taken into account.

- National projections are of limited use to the local planner, yet local area statistics are not widely available.
- Projections can be used to indicate approximate magnitudes and directions of movement, rather than exact ones. Forecasts are seldom more than knowledgeable guesses about the future.
- The frequency with which individuals change occupations is an important variable in the manpower adjustment process.
- Labor requirements are strongly influenced by the degree of technological change introduced into the productive process.

- Government policy, affecting legislation and expenditures in the interest of public welfare, causes changes in the level and direction of labor supply and demand.

One study undertaken to indicate manpower projections to 1975, Tomorrow's Manpower Needs, Volume III, 1969, was produced by the U. S. Bureau of Labor Statistics. The principal findings of that study are summarized here.

Professional, Technical, and Kindred

- The largest groups of workers within this category are, in order, (1) teachers, (2) professional health workers, (3) scientists and engineers, and (4) engineering and science technicians.
- Manpower requirements are expected to rise nearly 40% by 1975.
- Teaching is expected to grow moderately; engineering, science, and health services will grow substantially.
- The need to relieve professionals of relatively routine tasks by technicians will continue to underlie the increased requirements for technicians.

Managers, Officials, and Proprietors

- Retail trade constitutes the largest employing industry followed by: manufacturing; wholesale trade; finance; insurance; real estate; construction; and public administration.
- Employment opportunities are expected to rise more than 20% between 1936 and 1975.
- The decline in the number of self-employed managers is expected to continue.

- Requirements for salaried managers and officials are likely to continue to increase rapidly with increasing dependence of government and industry on trained management specialists.

Clerical and Kindred

- Employment levels are expected to be about one-fourth higher in 1975 than the 1966 level.
- Self-service stores represent a transfer of sales to clerical functions.
- Secretaries, receptionists, and other clerical workers whose duties require contact with the public will not be affected by technological change.
- Use of labor saving devices will be offset somewhat by growing requirements for machine operators.
- Growth and expansion of industries will continue to provide employment opportunities.
- Clerical and kindred workers constitute the largest group of "white-collar" workers.

Sales Workers

- Employment opportunities for this category are expected to increase by 25% between 1966 and 1975.
- Expected increase in residential and commercial construction will increase the need for real estate agents.
- Continued extension of laws such as workmen's compensation and automobile insurance will aid employment for insurance salesmen.

- Trend for metropolitan stores to remain open longer and on Sundays will expand the need for retail salesworkers.
- Increased need for salesworkers will be offset somewhat by self-service.

Craftsmen, Foremen, and Kindred

- More than half of these workers are employed as construction craftsmen, and mechanics and repairmen.
- Employment opportunities are expected to rise 18% between 1966 and 1975.
- Mechanics and repairmen are expected to be in greater demand than other skilled workers in this area.
- Growing use of plastics, and pre-fabricated structures will partially offset rising demand for construction workers.
- Expanding use of numerically controlled machines will restrict employment in the machine trades.

Operatives and Kindred Workers

- Major occupations found in this category are: assemblers; inspectors; drivers and delivery men; fliers, grinders, polishers; packers and wrappers; servers and stitchers; welders and flame cutters.
- Employment opportunities are expected to rise 7% between 1966 and 1975.
- Increases in production caused by rising population and economic growth, as well as increasing utilization of motor truck transportation

are the main factors for employment opportunities.

- Technology is expected to have the greatest impact on employment requirements for semi-skilled workers in manufacturing.

Service Workers

- Service workers include a wide range of diverse occupations - cooks, firefighters, policemen, barbers, nurses aids, maids, etc.
- Employment opportunities are expected to increase by 30% between 1966 and 1975.
- Greater need for protective services, rising demand for hospital and other medical care, more frequent use of personal type service establishments are the main contributors for increased manpower.
- Necessity for person-to-person contact limits the application for labor-saving technological changes.

Laborers

- Little change is expected to occur between 1966 and 1975 in spite of increased activity in manufacturing and construction industries.
- Increased demand will be offset by continuing substitution of mechanical equipment for manual labor.

1.2 Recent Surveys

In an April 1969 report issued by the Manpower Training and Employment Services Administration for the District of Columbia, employment needs for

seven types of industry were forecast to 1975. The occupational categories are the same as in the Bureau of Labor Statistics study summarized above.

The projected industry needs for people prepared for certain occupational classifications are described briefly.

Manufacturing

By 1975, this industry is expected to lack 710 employees of a total requirement of 20,790. The two categories representing the major growth, in order, for this industry are (1) professional, technical, and kindred, and (2) craftsmen, foremen, and kindred.

Construction

This area is expected to show a need of 12,840 by 1975, or a total of 24,300 employees. The three categories representing the major growth, in order, for this industry are (1) clerical and kindred, (2) craftsmen, foremen, and kindred, and (3) operatives and kindred workers.

Finance, Insurance, and Real Estate

This area is expected to show a need of 5,800 by 1975, or a total of 35,000 employees. The three categories representing the major growth, in order, for this industry are (1) managers, officials, and proprietors, (2) clerical and kindred, and (3) sales workers.

Services

This area is expected to show a need of 50,136 by 1975, or a total of 161,420 employees. The six areas representing the major growth, in order, for this industry are (1) professional, technical, and kindred, (2) service workers, (3) clerical and kindred, (4) managers, officials, and proprietors, (5) craftsmen, foremen, and kindred, and (6) operatives and kindred workers.

Retail and Wholesale Trade

This area is expected to show a need of 5,730 by 1975, or a total of 90,120 employees. The three areas representing the major growth, in order, for this industry are (1) clerical and kindred, (2) craftsmen, foremen, and kindred, and (3) operatives and kindred workers.

Government

This area is expected to show a need of 124,560 by 1975, or a total of 439,900 employees. The five categories representing the major growth, in order, for this industry are (1) clerical and kindred, (2) professional, technical, and kindred, (3) service workers, (4) managers, officials, and proprietors, and (5) craftsmen, foremen, and kindred.

Transportation, Communication, and Utilities

This area is expected to show a need of 3,420 by 1975, or a total of 32,850 employees. The three categories representing

the major growth, in order, for this industry are (1) operatives and kindred workers, (2) craftsmen, foremen, and kindred workers.

The summary, by occupation, in order, of size of shortage for all industries is as follows:

Occupation	Total Needs by 1975	Employment 1975
Clerical and Kindred	60,190	230,010
Professional, Technical, and Kindred	52,140	148,030
Service Workers	43,610	142,650
Managers, Officials, and Proprietors	19,400	87,940
Craftsmen, Foremen, and Kindred	16,480	75,230
Operatives and Kindred	6,840	53,360
Laborers, Except Farm and Mine	3,070	28,590
Sales Workers	1,440	29,690

A comparison of the two surveys in employment outlook, by rank, is provided as follows:

Occupation	D.C. Forecast	National Projections
Professional, Technical, and Kindred	2	1
Managers, Officials, and Proprietors	4	4
Clerical and Kindred	1	3

Occupation	D. C. Forecast	National Projections
Sales Workers	8	3
Craftsmen, Foremen, and Kindred	5	5
Operatives and Kindred	6	6
Service Workers	3	2
Laborers	7	7

The above differentiation in relative demand is further indication of the need to provide further research and development into local manpower projections for educational planning and training purposes. Failure to intensify investigation in this area prevents the accumulation of the best available data to fulfill the expectations of meeting local manpower supply and demand.

Understandably, the information previously presented cannot stand the test of time without further refinement and analysis by the Fort Lincoln School System in coordination with the D. C. Employment Services, the regional U. S. Bureau of Labor Statistics, and the D. C. Manpower Training and Employment Services Administration. More information must be known about specific career outlook, rather than general occupational category outlook. Nevertheless, the information presented does indicate magnitudes and direction of movement.

APPENDIX E

ADMISSION REQUIREMENTS FOR LOCAL COLLEGES

ADMISSION REQUIREMENTS

School	High School Dip.	Accred.	Courses: Eng.	Math.	Sci.	Other	Tests	Other
merican niversity	↘		4	2		Plus 9 in For. Lang. History Math Natural Sci. Soc. Stud.	CEEB, SAT and Achievement in Eng. and Math	
atholic U.	↘	↘	3	3		For. Lang. 2 Remaining 8 in Eng. For. Lang. Math, Science, Soc. Stud. Total 16	CEEB SAT & Achievement tests in Eng. & 2 other subjects	Rank 1/3 of class in college prep. program
mmunity ollege of altimore	Transcript						American College	Probationary: uncertified high school graduates and H.S. Equiv. < 75% average
ppin State ollege	↘		4	1	1	Soc. Stud. 2 Total 16	CEEB SAT & Achievement tests in Eng. and Math.	"Nongraduates admitted on basis of high school equivalency examinations, test scores, and recommendations."

School	High School Dip.	Accred.	Courses: Eng.	Math.	Sci.	Other	Tests	Other
District of Columbia Teachers College	✓	Approved	4	2	1	2 For. Lang., 1 1/2 Soc. Stud. Total 16	CEEB SAT, ACT, or Entrance tests administered by College	Recommendation by H. S. official "Applicants with college potential but insufficient number of pre-requisite subjects or less than satisfactory records admitted conditionally."
Dunbarton College of Holy Cross	✓		4	Total of 3		History 2 For. Lang. 4 Total 16	CEEB SAT Achievement in Eng. and Modern For. Lang. if it is to be continued in college	
Georgetown	✓		4	2-3		For. Lang. 2 Soc. Stud. Total 16	CEEB SAT and Achievement tests (depending on school being applied to)	
George Wash. University College of Arts and Sciences	✓		4	2	2	Soc. Stud. For. Lang. 2 Total 15	CEEB SAT Achievement in Eng. and 2 other	Above average academic record, rank in top 2/3 of high school class, satisfactory recommendation from high school
Howard University	Upper Half Upper quarter	Reg. Accred. State Accred.	4	2	2	So. Sci. 2 For. Lang. 2 Elect. 3 Total 15	CEEB: Scholastic Aptitude Achievement in Eng. Achievement in Math. Achievement in For. Language (Liberal Arts, Nursing)	"Since secondary schools vary considerably in their curricula, request for exceptions or substitutions in the minimum program described above will be considered."

School	High School Dip.	Accred.	Courses				Tests	Other
			Eng.	Math.	Sci.	Other		
ontgomery . College	Transcript						American College	"Admission is granted when the admissions committee has satisfactory evidence that the applicant shows promise for successfully completing a program of college study."
organ te	↘		4	2	2	For. Lang. 2 Total 16	ACT	Top 3/4 of class. C average "Applicants not meeting requirements may be admitted by examination."
owson State	↘						CEEB SAT	College Prep. courses recommended "Admission granted on basis of grades, class rank, test scores, and high school recommendation. Non-graduates admitted on basis of high school equivalency examination, test scores, and recommendations."
rinity	↘		4	3	1	History 1 For. Lang. 4 in one or 2 in two Total 15	CEEB SAT and Achievement in Eng. and For. Lang.	

School	High School Dip.	Accred.	Courses: Eng.	Math.	Sci.	Other	Tests	Other*
Montgomery Jr. College	Transcript						American College	"Admission is granted when the admissions committee has satisfactory evidence that the applicant shows promise for successfully completing a program of college study."
Community College of D. Moore	Transcript						American College	Probationary: uncertified high school graduates and H. S. Equiv. & 75% average
Harvard University	Upper Half Upper quarter	Reg. Accred. State Accred.	4	2	2	So. Sci. 2 For. Lang. 2 Elect. 3 Total 15	CEEB: Scholastic Aptitude Achievement in Eng. " " Math. " " For. Language (Liberal Arts, Nursing)	"Since secondary schools vary considerably in their curricula, requests for exceptions or substitutions in the minimum program described above will be considered."
American University			4	2		Plus 9 in For. Lang. History Math Natural Sci. Social Studies Total 16 15 Academic	CEEB, SAT and Achievement in Eng. and Math	
District of Columbia Teachers College		Approved	4	2	1	2 For. Lan. 1 1/2 Soc. Studies Total 16	CEEB SAT, ACT, or Entrance Tests Administered by College	Recommendation by H. S. Official "Applicants with college [illegible] insufficient number of pre[illegible] subjects or less than satisfactory records admitted conditionally"

APPENDIX F

STAPLES HIGH SCHOOL CONSTITUTION

POLICIES CONCERNING THE STAPLES GOVERNING BOARD

Preamble

We the people of Staples High School, in order to create significant educational unity and to work constructively for changes in the education process, do establish these policies governing Staples High School.

Article I - Role of the Staples Governing Board

Section I - Powers of the Staples Governing Board:

1. The Staples Governing Board functions under the policies of the administrative council, Board of Education, and state and federal laws. Policies throughout this document are defined as guides to discretionary action; they should be as broad as possible but as specific as necessary to insure fulfillment of their intent.
2. All powers regarding Staples High School not assumed by the above groups shall be vested in the Staples Governing Board, as well as such powers as may properly be delegated to it. These powers fall under the headings of finance, facilities, staff personnel, community relations, administration, student affairs, special services, and instruction and curriculum.
3. It may offer recommendations in any area to the administrative council, Board of Education or any other organization, agency or governmental body it deems fit.

Section II - Relations between the Staples Governing Board and Staples High School Administration:

1. The Principal shall be bound by and is responsible for the implementation of the policies of the Staples Governing Board as long as they are consistent with the Board of Education and administrative policies of the school system.
2. The Principal shall have power to veto policy proposals of the Staples Governing Board persuant to the terms of Article III, Section II, Subsection 2.
3. The Principal shall appoint with the advice and consent of the Staples Governing Board, such executives, except those which are subject to the review of the Board of Education and the Superintendent of Schools, as he deems necessary for enforcement of rules, enforcement of policy, effective communication, and effective operation of programs and activities of Staples High School.
4. The Staples Governing Board, whenever possible, shall be consulted on the appointments of administrative and supervisory personnel of Staples High School.
5. The Principal shall on the first school day of the second full school week in September and the first school day of the second full school week in February give to the school community information on the state of the school and recommend such measures as he shall judge necessary and expedient.
6. The Principal may convene the Staples Governing Board on extraordinary occasions.

Article II - Organization of the Staples Governing Board

Section I - Staples Governing Board:

1. Representatives to the Staples Governing Board shall be elected on the first school day of the third full school week.
2. Representation to the Staples Governing Board shall be from the three major bodies of Staples High School in the following numbers: 3 administrators, 7 faculty members, 10 students.
3. All meetings of the Staples Governing Board, with the exception of Executive sessions, shall be open to the public.

Section II - Definition of, and Election Procedures, for Administrators:

1. Administrators shall consist of the Vice Principals, the Assistant Principal(s), and the designated Department Heads at Staples High School.
2. This group shall elect three of its members to represent the administrators on the Staples Governing Board.
3. The Administrators shall determine the qualifications for their representatives to the Staples Governing Board.
4. The Administrators shall determine election procedures for election of representatives.

Section III - Definition of, and Election Procedures, for Faculty:

1. All non-administrative certified personnel that spend two or more class periods per day at Staples High School shall be considered members of the faculty.
2. This group shall elect seven of its members to represent the faculty of Staples High School.
3. The Faculty shall determine the qualifications for their representatives to the Staples Governing Board.
4. The Faculty shall determine election procedures for election of representatives.

Section IV - Definition of, and Election Procedures, for Students:

1. The student body shall consist of all students officially enrolled at Staples High School.
2. Those students officially enrolled as sophomores shall elect three of their members to represent them on the Staples Governing Board; those students officially enrolled as juniors shall elect three of their members to represent them on the Staples Governing Board; and those students officially enrolled as seniors and post-graduate students shall together elect four of their members to represent them on the Staples Governing Board.
3. Each voting group shall determine the qualifications for its representatives to the Staples Governing Board.
4. Each voting group shall determine election procedures for election of representatives.

Section V - Alternates; Recalls and Vacancies:

1. There shall be no alternates.
2. A petition stating the reason(s) for recall signed by 30% of the constituency which elected that representative shall be sufficient to force a recall election of the named representative(s) to the Staples Governing Board.
3. Once a member has been subjected to a recall vote and the member has been sustained, no new recall petition for that member shall be valid, unless there has been a substantial change in the reason(s) for his recall, within 30 calendar days.
4. A vacancy for the post shall exist in event of a majority vote for recall.
5. In case of vacancy for any reason, an election to fill that vacancy shall be held within 10 school days.

Section VI - Committees:

1. The Staples Governing Board shall create standing committees and ad hoc committees as it deems fit.
2. The Staples Governing Board shall appoint members of committees, after consultation with the Principal, and according to definite procedures to be established by the Staples Governing Board. Membership shall include a minimum of one member of the Staples Governing Board.
3. The Staples Governing Board may declare membership on a committee open to any member of the Staples faculty, student body, and administration.
4. Meeting shall be announced, and agendas posted, 2 school days in advance except in emergency cases.
5. All committees shall keep and publish records of their meetings. A record of the official proceedings of each meeting shall be published within five school days of that meeting.
6. All recommendations of committees shall appear on the earliest possible agenda of the Staples Governing Board for consideration and appropriate action.
7. All meetings of committees, with the exception of Executive sessions, shall be open to the public.

Article III - Operation of the Staples Governing Board

Section I - Conduct of Meetings:

1. A majority of the Total Board, (50% and one person) shall constitute a quorum to do business.
2. The Staples Governing Board shall keep and publish a record of its meetings. A record of the official proceedings of each meeting shall be published within five school days of that meeting. The voting record of each of the members of the Staples Governing Board on any issue shall be entered.
3. The Staples Governing Board shall announce all meetings two days in advance, except in emergency cases.
4. The Staples Governing Board shall make public an agenda for each meeting two school days in advance, except in emergency cases.
5. The Staples Governing Board shall hold at least two meetings per month.

6. The Staples Governing Board shall determine its own rules of procedure and, with the concurrence of 70% of the total membership, may suspend a member, thus creating a vacancy. If the suspended member is re-elected by his constituency, the Staples Governing Board shall seat the member without prejudice.
7. In an non-executive session of the Staples Governing Board discussion among Staples Governing Board members shall take precedence over general discussion.
8. The Staples Governing Board shall set aside one meeting per month, announced five school days in advance, where the hearing of any member of the Staples community shall be the first order of business. A reasonable amount of time shall be alloted to each speaker. Additional time may be granted to a speaker by a majority of the Staples Governing Board.

Section II - Method of Adopting Policies and Resolutions:

1. A favorable vote of 60% of the members present shall be required to adopt any policy motion or resolution.
2. Every policy which has been adopted by the Staples Governing Board, shall, before it becomes effective, be presented in writing to the Principal of Staples High School or his publically designated representative; if he disapproves he may issue a suspensive veto which may be overridden by a 3/4 vote of the Staples Governing Board, in which case it shall become effective; or he may issue an absolute veto which must be accompanied by an explanatory letter. This veto cannot be overruled, but may be appealed by the Staples Governing Board to the Administrative Council, the Board of Education, and/or any other legally concerned bodies. If any policy shall not be returned by the Principal, or in his absence his publically designated representative, within 10 school days after it shall have been presented to him in writing, the policy shall be effective in the same manner as if he had signed it.
3. Policies or resolutions may be presented by any interested person provided that the proposal has the sponsorship of one or more members of the Staples Governing Board.
4. The Staples Governing Board shall wait five school days before its policies go into effect. During this time 25% of one of the 3 major bodies may petition for referendum. A law referred to referendum shall be considered defeated only when 3/4 of those voting in each of the 3 major bodies vote against it by secret ballot.

Article IV - Amending Process

Section I - The Staples Governing Board, whenever 60% of its members deem necessary, shall propose amendments to this constitution, or upon the application of 60% of the voters of any one of the 3 major bodies shall receive proposed amendments to this Constitution.

Section II - Amendments shall be valid to all intents and purposes when ratified by a majority of voters in any 2 of the 3 major bodies; passed by a 3/4 vote of the Staples Governing Board, and approved by the administrative council.

Section III - Any proposed amendment must be ratified by June 1 of the school year in which it was proposed or the amendment is considered defeated.

Article V - Ratification Process

Section I - This Staples Constitution shall be ratified when a majority of those voting in each of the 3 major bodies approve said Constitution by secret ballot.

Section II - The Constitution shall go into effect 10 school days after ratification provided that the Board of Education has enabling policy.

10/22/69
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APPENDIX G

COMMENTS FROM SECONDARY SCHOOL STUDENTS' SEMINAR

STUDENT SEMINAR

In order to obtain student views on the design of a new secondary school, General Learning Corporation and Special Projects Division planned and conducted a two-day seminar with student representatives of District junior and senior high schools.

The seminar was held on February 12 and 13 in the Natural History Museum of the Smithsonian Institute. Approximately 80 students, selected by student government groups, attended the two-day meeting. A list of student participants is appended.

Tentative Agenda

First Day - 12 February 1970

9:00 a.m. Greetings and Overview of Seminar

10:00 Film: "High School"

11:00 Feedback on Film
- What are the strengths and weaknesses of the school in the film?
- How is the school in the film like your school?
- How is the school in the film different from your school?
- Other Reactions

11:45 Selecting Group Activity

a. Curriculum

b. Student Participation - Extra-Curricular Activities

c. Career Development

d. School Operations

e. Special Services

f. Other

12:00	Lunch
1:00	Slide Presentation - FLNT Education System - Elementary Level - General Learning Corporation
	Architectural Design - FLNT Elementary School No. 1 - Louis Fry, Architect
2:00	Small Group Meetings
3:00	Evaluation of the Day

Second Day - 13 February 1970

9:00 a.m.	Feedback from Small Group Discussions
10:00	Describing an Educational Facility
	Translating Education Plan into a Facilities Design - John Himmelfarb, General Learning Corporation
11:00	Small Group Meetings
	TASK: Develop a description of the facilities needed to accommodate Education Plan designed by your group.
12:00	Lunch
1:00	Small Group Meetings (continued)
2:00	Feedback
	Reporting on facilities plan developed by group
3:00	Evaluation of Seminar

For the most part the tentative agenda was followed, except that each small group discussed a variety of topics rather than concentrating on a limited area.

Five groups were formed with from six to fifteen students and two or three adults (staff members of Special Projects Division or CLC). The groups met briefly on the first afternoon to select a student leader and a recorder. The bulk of the discussions took place on the second day.

Everyone concerned with this part of the project came away delighted with the mature, well thought out recommendations made by the students. The students were asked to rate various activities they participated in during the seminar and these ratings were tabulated in summary form and the ratings of the first day evaluated. As recorded later in this section, almost all the students stated that they benefited from the seminar particularly in relation to the many ways schools and programs can be designed, and in gaining knowledge about what the goals of the school administration are. Students were also impressed with the fact that adults really cared about what they thought and felt that their ideas were going to be included in actual planning of Fort Lincoln secondary schools. In addition, students felt that the quality of student life would be improved by the continuance of seminars on a variety of subjects.

Group #1

This student group offered suggestions in the curriculum related areas of ethnic studies, the use of a quarter system, experimental courses, an advisory board, and independent studies.

Ethnic Studies

- Given with credit equal to other courses

Quarter System

- Division of courses to allow for more selection

Experimental Courses

- Courses that relate to the student's environment
  (e.g. Rap Brown as an option rather than Macbeth if that is what the student chooses, basic math taught with newer, more relevant materials rather than "two apples")

Advisory Board

- Students would like to constructively grade their teachers at the end of each advisory or grading period.
- Either a student or a teacher could be brought before the advisory board for a "trial" if the evaluation warranted

Other Courses

- Tapes of classes so that students who miss school can catch up
- Courses on a week's trial basis to see if student likes it and can do the work

Group #2

This group devised a framework for an ideal secondary school. In this plan, evaluation, courses, staffing, facilities, and materials are interrelated to form a school for the seventies.

Evaluation (grading)

- Tests and grades on demand by students; an end to mandatory testing
- Change from the Carnegie unit system
- The SAT's and achievement tests should not be required because each student knows his own achievement level
- Various methods of assessment of capability should be developed

Courses

- Group courses differently; alter course load
- Take one subject all day for several weeks until required hours are completed
- Students should select own courses and teachers
- Required courses - English composition, general math, co-ed sex education, and criminal and political law

- An alternative to these required courses is that each student must take a course in the humanities (English, history, philosophy, arts, history of religion, law, and sex education combined) and a course in general math.

- Courses such as gym and other subjects such as science should not be required

- Need courses in contemporary issues such as drug addiction, film making, and urban problems

- Need vocational programs in all secondary schools

- Under work-study programs students should get grade credits for having a job

- Student should get grade credits for tutoring other students

- Attendance hours should be flexible with credit based on number of hours student attends

- More "off campus" experience such as using the city as a resource for learning

- Smaller classes

Personnel

- More continuity (not so many substitutes)

- Students should take part in selection of teachers

- Selection of teachers should be by a committee of students, parents, and faculty

- Teachers should include "capable" persons with knowledge of regular teacher and sensitivity to the student's needs

- Teachers must be well trained in the field they are teaching

- Teachers should be selected on the basis of scores on an aptitude test in the subject they are to teach and not only on the basis of academic background or seniority

- A good teacher is one who "can hold your attention"

- Teachers' Union is biased and should change the situation that makes the teacher solely responsible for a student's grade. A student should have recourse if he thinks a grade is unfair
- Teachers should teach what individuals want to know
- Lectures (a one-way exchange) are not effective
- Students respond better when they are responsible for their own learning (as in night school)
- A travel agent should be based in the school to help plan student travel and be a source of student jobs

Facilities

A student center with features including:

- A separate room for dances and proms
- Fiberglass stage with a rising platform, good acoustics, and a good PA system
- Kitchen big enough to produce banquet meals
- All of the above could be rented to make money for the school. Also schools should be taken out of the non-profit class

Other features of the student center would include:

- A library shared with the community and open twenty-four hours a day
- Separate study carrels
- A smoking lounge
- An office for student government
- Student meeting areas with Coke machines
- A student run bookstore
- A parking lot for students

Members of any school governing board would be nominated by submitting a petition to the Student Council which would supervise an election. Petitions would be signed by members of the appropriate group; parents would sign for a prospective representative, etc.

- Maintenance Committee would be an advisory committee on school maintenance, not an operations body.
- The Judiciary Committee would deal with problems of student discipline and complaints made by or against any student, teacher, or administrator. Rules should hold equally for all.
- Counseling Team members would advise students with personal problems.
- The Subject Team would recommend new books to be purchased or additions of ethnic materials for specific courses and would troubleshoot problems in teacher-student relations.
- Members of the Activities Committee would coordinate and plan student activities like dances, meetings, etc.

A separate recommendation was to adopt a career development plan such as that currently proposed to be a pilot program in selected schools in the District. Junior high students would explore four vocational areas: visual communications, materials, human success, and energy and propulsion. In eleventh grade the student would choose one area of specialization in which to develop marketable skills.

Group #4

The following recommendations grew out of a student discussion on the areas of curriculum, staffing, career development, and student participation.

Curriculum

- Wide choice of courses
- More discussion in class; more attention paid to developing verbal capacity of students
- Smaller class sizes
- More field work outside of school for credit
- Freedom to take course above grade level if eligible
- More classes should be held as seminars on various subjects

Staff

- Teachers should play the full role of advisors so that the teacher-counselor role is combined
- More professional advice, for example, using an architect, etc., to teach part time

Career Development

- Courses and equipment to meet the wide career interests of students

Student Participation

- Students should have an honest interest in policy making

Group #5

Students in one discussion group pinpointed problem areas and suggested improvements in food service, teachers, courses, equipment, and counseling.

Foods

- Need improved cleanliness
- Variety (with some choice of foods on daily menus)
- Sanitary preparation of food

- Improved attitude on the part of workers

  (For example, students cited the inconvenience of a rule in certain schools that cafeteria cashiers will not change any amount over $5)

Teachers

- Need better attitudes
- To be qualified and to know up-to-date methods
- Other problem areas are poor staff relations and student-teacher-administrator relations

Courses

- Need updating to include courses selected by students
- More career courses in all schools
- A course in practical law, e.g. citizen's rights
- A course in speech writing and making
- And the same courses could be taught better

Equipment

- Is outdated

Counselling

- Need more college counselors
- More job counselling and more time for counselling
- Student/counselor ratio is inadequate, especially to advise twelfth graders

Facilities Discussion

During the second day's late afternoon brainstorming on what an ideal secondary facility might be like, students listed these ideas:

- Many floors connected by elevators
- Built on stilts with space below for parking, marina, garden, plaza
- Resemble a college campus with several buildings instead of one structure
- Swimming, tennis facilities
- Supermarket, shopping areas
- All night meeting places and snack facilities
- Plastic, inflatable furniture rather than typical classroom furniture
- White chalk boards to use with black chalk; other types of writing surfaces
- Computers
- Sliding doors
- Moving sidewalks
- Facility with geodesic dome to contain year-round recreation park for sports or social events
- Greater numbers of windows and skylights -- all unbreakable
- Air-conditioning
- Carpeting
- CCTV and videotaping capability
- Good transportation connections to all points; special access for important speakers or visitors, i.e., a helioport
- Sufficient number of telephones available for student use
- Dial access capability
- Individual microphones for mass meetings

- Auditorium equipped with TV and good sound projection so that people at the back can both see and hear
- Cafeteria with waiters and music, providing a generally warmer atmosphere for dining
- Electric hand-dryers and mirrors in restrooms
- Student lounges and smoking rooms
- Drinking fountains, Coke machines
- Vending machines for cosmetics
- Photographic, Xerox, printing, and typing equipment for student use
- Microfilm library
- Short-wave radio available to students
- Transparent walls
- Cubicles that can be taken apart and put together in many ways, connected by adhesive, magnets, or other easy-to-operate method
- More technical equipment for teaching

EVALUATION OF FIRST DAY*

The students at the seminar were asked to fill out a rating sheet which asked for their evaluation of the first day activities at the seminar. The rating sheet consisted of six items to be rated on a continuous scale from 1 (low) to 10 (high). The six items were:

1. Greetings and Overview
2. Film: "High School"
3. Lunch
4. Slide Presentation - FLNT Education System
5. Architectural Design - FLNT Elementary School No. 1
6. Small Group Meeting

Additional space was provided for student comments.

The students were given the rating sheets for the first day's activities the morning of the second day. Self-selection probably operated in that students dissatisfied with the first may not have returned to the seminar the following day when the rating sheets were filled out. According to very rough estimates of attendance approximately 25% of the students who came on the first day did not return the second day. These students' opinions were not included in this evaluation.

Forty-one students turned in rating sheets, of these two students did not answer item one - Greeting and Overview of Seminar - because they arrived late the first day. The rating was done anonymously.

Results

The mean of the ratings for each item was computed. Following means were obtained:

Item	Mean Rating
1. Greeting and Overview	8.10
2. Film: "High School"	5.41
3. Lunch	8.31
4. Slide Presentation - FLNT Education System	9.19
5. Architectural Design - FLNT Elementary School No. 1	9.63
6. Small Group Meeting	8.82

*Prepared by Elizabeth Abramowitz, Special Projects Division, D.C. Public Schools.

The overall rating of the first day by the students was based on the composite of the individual means.

Overall rating of first day = 8.16

Conclusions

The rating scale was from 1 (low) to 10 (high) for each item. The stude tended to rate each item toward the high end of the scale.

Film: "High School" got the lowest rating as well as the most variable responses. While on the other items students tended to agree with each other's ratings, on "High School" the students had more varied reactions. Each responded to it differently in terms of personal experience and backgrou it seems. The nature of the film may account for this variability. The film was a documentary about a white, middle class high school in Philadelphia. Many of the students in the seminar reacted to the race, the physical plant, and the educational program described in the film. Others reacted to the poor quality of student-teacher interactions and the irrelevance of the curriculum. These two opposing viewpoints and several others in between were prevalent in the discussion following the film. The mean rating of 5.41 reflects this variability.

All other items were rated highly by the students. The Architectural Design received the highest rating. The remaining items were either rated as 8s or 9s.

The overall rating of the first day was very high (mean = 8.16). This can be interpreted to mean that those students who returned to the seminar the second day seemed to feel that the first day was a valuable experience.

SUMMARY TABULATION OF FLNT STUDENT SEMINAR

		Rating (1 = lowest)				
		5	4	3	2	1
1.	Do you think this seminar was valuable to you?	25	8	4	0	0
	to the planners?	28	4	4	0	0
2.	Do you think the students participated to their fullest capacity?	16	12	7	1	0
3.	Do you think the film "High School" was of any value?	9	7	9	4	8
4.	Are you in favor of an open space school similar to the Fort Lincoln elementary school?	29	3	3	0	1
5.	Would you be in favor of using Washington, D.C. as your main resource for learning?	18	8	7	2	2
6.	How would you rate the value of the small group discussions in terms of content?	27	6	4	1	1
	participation?	24	9	4	1	1
7.	Do you think that the programs for Fort Lincoln presented in the slide show were futuristic and relevant enough?	21	9	6	0	0

Student Participants*

FIRE Secondary Student Seminar, Museum of Natural History - Smithsonian Institute, Constitution Avenue at 10th Street, N. W. February 12 - 13, 1970.

Frank Bohannon	-	Coolidge Sr. High School
Sandra Smith	-	Coolidge Sr. High School
Debra Hood	-	Chamberlain Voc. High School
Francis Jones, Jr.	-	Chamberlain Voc. High School
Bonnie Thompson	-	Burdick Voc. High School
Patricia Turpian	-	Burdick Voc. High School
Kathy Police	-	Gordon Jr. High School
Sandra Savage	-	Hamilton Jr. High School
Valerie Scott	-	Hamilton Jr. High School
Renee Woods	-	Paul Jr. High School
Sterling Ward	-	Paul Jr. High School
Geraldine Hester	-	Woodson Jr. High School
Shelia West	-	Woodson Jr. High School
Presley Hinton	-	Woodson Jr. High School
Davene Nelson	-	Douglas Jr. High School
Frank E. Sewell	-	Jefferson Jr. High School
James Harvey	-	Jefferson Jr. High School
Donald Johnson	-	Jefferson Jr. High School
Robert Perry	-	McKinley Sr. High School
Jordon Davis, II	-	McKinley Sr. High School
Michael Davis	-	Cardoza Sr. High School
Ellis Lipscomb	-	Cardoza Sr. High School
Shelia Perkins	-	Cardoza Sr. High School
Gloria Keaton	-	Spingarn Sr. High School
Edwin Hanson	-	Bell Vocational High School
Richard Knight	-	Bell Vocational High School
Darnell Scott	-	Bell Vocational High School
Carl Clark	-	Dunbar Sr. High School
Phillip Stuart	-	Dunbar Sr. High School
Robert Brown	-	Dunbar Sr. High School
Mary Betts	-	Sousa Jr. High School
David Clark, Jr.	-	Sousa Jr. High School
Melba Smith	-	Sousa Jr. High School
William Preston	-	Taft Jr. High School
Melvin Gilligan	-	Evans Jr. High School
Kathleen Timmons	-	Wilson Sr. High School
Michael Weinstein	-	Wilson Sr. High School
Antoinette Queen	-	Anacostia Sr. High School
Kent Neal	-	Western Sr. High School

*List prepared by Special Projects Division, D.C. Public Schools

Larry Summers	-	Western Sr. High School
Lynda Meeks	-	Western Sr. High School
Viola Clark	-	Western Sr. High School
Yvonne Black	-	Western Sr. High School
Peter Greene	-	Western Sr. High School
Lorraine Neal	-	M.M. Washington Voc. High School
Betty Sanders	-	M.M. Washington Voc. High School
Daryl Johnson	-	Bannecker Jr. High School
Steven Dupree	-	Browne Jr. High School
Reginald Bruce	-	Browne Jr. High School
Mark Zweben	-	Deal Jr. High School
Charles Brandon	-	Langley Jr. High School
Robert Woodland	-	Langley Jr. High School
Cordia Smith	-	Langley Jr. High School
Patricia Mack	-	Langley Jr. High School
Darlene Jones	-	Terrell Jr. High School
Ronald Duvall	-	Terrell Jr. High School
Patricia Webb	-	Terrell Jr. High School
Brenda Malin	-	Evans Jr. High School
Gwenith Chisholm	-	Francis Jr. High School
Minnie Adams	-	Francis Jr. High School
James Johnson	-	Stuart Jr. High School
Derek K. Ross	-	Kelley Miller Jr. High School
Tracy Tyler	-	Kelley Miller Jr. High School
Ronald Musgrove	-	Kelley Miller Jr. High School

FOLLOW-UP MEETING FOR STUDENT COMMENTS ON SECONDARY EDUCATION PLAN

Ten student members of the original student seminar were asked to read the completed Secondary Program plans for Fort Lincoln and then meet with members of Special Projects Division and General Learning Corporation to discuss the plans.

The meeting took place at the office of the Special Projects Division on March 26, 1970. The general consensus of the eight students who participated in the discussion was that the plan for Fort Lincoln Secondary School is an excellent and revolutionary one. Some skepticism was expressed in regard to the acceptability of such a revolutionary educational plan by the community at large. The students felt that the people of the community would need preparation for such an innovative approach.

Comments on the Secondary Plan and additional student recommendations were:

- Pre-orientation for students who would attend the school and for parents of students. Orientation would provide a "get acquainted period" for students, parents, and teachers and would introduce the center concept as well
- To encourage prospective student and community awareness of the school a fact sheet about the school should be sent to all schools, community organizations, local T.V. and radio stations
- The type of student government should be decided by students in conjunction with the administration after the opening of school
- Students should be involved in community aid projects and workshops relating to community aid

- The school should invite prominent people (e.g. national politicians) to visit the school so that students and community members could meet them
- A hot line staffed by sympathetic students, qualified social and psychiatric workers should be a twenty-four hour service open to students with problems. Children's Hospital and Blackman's Development Corporation have similar hot lines
- Security recommendations included an intercom system, closed circuit T. V. and walkie talkies to be used. No policemen should be involved unless absolutely necessary
- Fund raising projects suggested were 1) student travel clubs, 2) slot car tracks, and 3) rental of school recreational facilities
- Additional courses recommended were 1) religious history including the historical background of all religious faiths and 2) course in aeronautics to teach the basics of aeronautics and provide flying instruction to interested students

APPENDIX H

CURRICULUM DEVELOPMENT GUIDE

Cognitive Behavior	Performance	Content	Terminal Objectives
Defining - (1) Knowing terminology for specific referrents.	Matching Identifying Defining Naming ⇩ Orally In Writing	Communications: Vocabulary and symbolic language of verbal expression and mass media (word recognition, foreign language vocabulary). Fine and Performing Arts: Vocabulary and symbolic language of the arts (musical symbols, dance positions) Health: Vocabulary and symbolic language of the sciences (e.g., chemical chart, parts of the body). Social Environment: Vocabulary and symbolic language of the social sciences (e.g., specialized terminology for sociology → role, anthropology → mongoloid, history → century, politics → president) Economics and Business: Vocabulary and symbolic language of economics and business (e.g., shorthand symbols, budgeting terms → credit and debit, banking terms, economic terms → supply and demand, occupations, math numbers and symbols. Engineering and Technology: Vocabulary and symbolic language of engineering, technology, and the building trades. Recreation: Vocabulary and symbolic language of exercise and sports (e.g., football signals, swimming strokes).	

Cognitive Behavior	Performance	Content	Terminal Objectives
Informing - (2) Knowing specific persons, places, dates, events, etc.	Naming Identifying Listing Orally In Writing	Communications: Names, dates, places, events of developments in styles and mechanics of communication. Fine and Performing Arts: Names, dates, places, events of significant artistic movements. Health: Names, dates, places, events of significant scientists and doctors, their discoveries and inventions. Social Environment: Names, dates, places, events of significant political, social, and cultural leaders and movements. Economics and Business: Names, dates, places, events of significant business and labor leaders and movements. Number facts, mathematicians. Engineering and Technology: Names, dates, places, and events significant to technological progress. Recreation: Names, dates, places, and events significant to the development of and excellence in athletics.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Organizing - (3) Knowing characteristic ways of treating and presenting ideas and phenomenon (usages, styles, practices, forms)	Identifying Naming Tracing Describing Orally In Writing Graphically	Communications: Major forms of verbal communications and uses of mass media. Fine and Performing Arts: Major artistic forms (e.g., literature -> novel, dance -> ballet, music -> symphony, art -> sculpture, drama -> tragedy) Health: Scientific method of reporting experimental data; graphic representations of scientific data. Social Environment: Major practices in presentation of social, political, cultural phenomenon including academic research (outlining) practices, statistical representations, displays; photographic essays, diaries, original sources, time lines. Economics and Business: Major practices in treatment of economic data both written and graphic, bookkeeping, accounting styles, graphs and tables, mathematical equations and proofs, business letters. Engineering and Technology: Standard means of presenting technical information including printouts, manuals, blueprints, layouts, diagrams. Recreation: Standard means of presenting information on sports including rule books, diagrams.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Studying - (4) Knowing processes, directions and movements of phenomenon with respect to time.	Naming Identifying Listing Tracing Sequencing Orally In Writing Graphically	Communications: Development of language -- linguistics. Fine and Performing Arts: Artistic forms, styles, schools, and periods through history. Health: Medical and scientific movements in historic perspective. Includes economic and social phenomena that have affected science. Social Environment: Significant social, political, cultural figures and movements with respect to time (e.g., non-interpretive history of events and movements). Historical themes. Economics and Business: Significant economic and business trends and movements (e.g., cycles, labor movements, industrialization). Engineering and Technology: Technological advances and developments and their relationships to other historic events (e.g., printing press and communications, X-ray and medicine, interchangeable parts and economics). Recreation: Forms of recreation with respect to peoples and places throughout history.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Judging - (5) Knowing criteria by which facts, principles, opinions, and conduct are tested.	Naming Listing Describing Orally In Writing	Communications: Criteria for evaluating verbal and mass communications. Fine and Performing Arts: Criteria for evaluating artist achievements and performances. Health: Criteria for judging scientific information and testing scientific principles. Social Environment: Criteria for testing statements of social or political fact or opinion; for judging social conduct. Economics and Business: Criteria for testing statements or data on economic or business facts and opinions; testing mathematical principles; judging employers' and employees' conduct. Engineering and Technology: Criteria for testing performance in operating technical equipment; judging safe conduct in shop, testing work methods. Recreation: Criteria for judging conduct in sports and games (rules).	

Cognitive Behavior	Performance	Content	Terminal Objectives
Criticizing - (6) Knowing the methododology with which standard types of research are done.	Identifying Describing Explaining Orally In Writing	Communications: Research procedures for the study of literature and mass communications. Fine and Performing Arts: Research procedures for study of the arts. Health: Research procedures used for experimental study in the sciences Social Environment: Research procedures relevant to examining data in the social sciences. Economics and Business: Research procedures used to examine economic data and business management. Engineering and Technology: Research procedures used for experimental study with equipment and designs. Recreation: Research procedures used to examine the effects of athletic activity.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Abstracting - (7) Knowing generalizations, universals, and abstractions in the field. "isms"	Identifying Reciting Describing Stating Labeling Orally In Writing	Communications: Abstractions used to discuss literature, and media presentations (plot, climax) Fine and Performing Arts: Abstractions used to discuss the arts (impressionism, plasticity) Science and Health: Classifications and abstractions used to identify groups having like members or to discuss ideas (animal phylum or properties like weight, mass, density, color) Social Environment: Classifications and universals used to label concepts in the social sciences, (democracy, race, man, power) Economics and Business: Classifications and generalizations used to discuss economies and business (depression, laissez-faire, income, depreciation). Generalizations used to classify numbers (whole, irrational, mixed). Engineering and Technology: Generalizations used to discuss types of processes, operations, and equipment. Recreation:	Given six definitions of abstractions basic to a discussion of the novel, labels each definition with the appropriate term (100%, 3 minutes) Given a list of five typesetting specifications, labels each with the appropriate generalization (80%, 5 minutes)

Cognitive Behavior	Performance	Content	Terminal Objectives
Translating - (S) Rendering from one language or form of communication to another. Putting something in own words.	Recording Typing Transcribing Translating Writing Speaking Drawing Performing Constructing Broadcasting	Communications: Adapts or translates a communication from one verbal form to another or from one language to another.	Reads a novel of his own choosing and described orally or in writing one or more of the following: plot, theme, climax, setting, style (for evaluation share your work with another student or a teacher).
		Fine and Performing Arts: Translates expressions from one artistic media to another.	
		Health: Translates scientific information from technical form to oral, written or graphic form and vice versa.	
	Explaining Retelling Describing Orally In Writing	Social Environment: Translates social data to oral, written, or graphic form or vice versa. (Describes data on a poll, population density on map.)	
		Economics and Business: Translates statistical and mathematical data to oral, written, or graphic form and vice versa. (Describes stock market report, how to fill out a check.) Types, transcribes, records data.	
		Engineering and Technology: Translates technical information to oral, written, or graphic form and vice versa. (Draws, constructs, drafts.)	Given a page of standard print, describes the layout in terms of picas and points (use measuring device or manual).
		Recreation: Describes graphic information orally or in writing and vice versa.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Interpreting - (9) Comprehending. Explaining a communication. Following directions.	Reading Operating Cooking Sewing Simulating Building Fabricating Welding Processing Attending Performing Explaining Describing Comparing Orally In Writing Graphically	Communications: Explains or communicates in foreign language. Fine and Performing Arts: Demonstrates comprehension of artistic procedures (mixes paints, interprets a poem, performa a part in a play). Health: Explains scientific or medical information. Demonstrates comprehension of procedures (attends a patient, sets up an experiment). Social Environment: Explains or gives meaning to social data. (Interpretation of political speeches, historic writings, laws and codes, current events) Economics and Business: Explains mathematical procedure to demonstrate comprehension. Explains economic and business data (interprets wage and price data, profit and loss data, consumption and production data). Demonstrates comprehension of office procedure (operates equipment, keeps records). Engineering and Technology: Explains and demonstrates comprehension of technical information and procedures. (Explains programming a computer, fabricating, welding, building, processing.) Recreation: Performs according to athletic sports standards.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Extrapolating - (10)	Inspecting Managing Maintaining Researching Comparing Predicting Diagnosing Describing Orally In Writing Graphically	Communications: Implications and effects of significant developments in communications through literature and mass media. Fine and Performing Arts: Implications and effects of artistic achievements. Health: Effects of developments in medicine and science on people and events. Effects of medical treatment on injury and disease. Social Environment: Effects of human interaction and implications for history. Economics and Business: Short and long-term consequences of personal, corporate, and national monetary and fiscal policies, principles and patterns in our number system. Engineering and Technology: Interdependence within mechanical systems -- effects of one part on another. Recreation:	

Cognitive Behavior	Performance	Content	Terminal Objectives
Problem Solving - (11) Recalling and applying abstractions - general rules, procedures, and methods - to appropriate situations.	Repairing Editing Counseling Solving Resolving Predicting Prescribing Orally In Writing Graphically	Communications: Methods, procedures, rules of effective writing, speaking, communicating through mass media. Fine and Performing Arts: Methods, procedures, rules of effective performance or of communication in the arts. Health: Methods, procedures, rules of effective medical and scientific research, care, and treatment of patients. Social Environment: Methods, procedures, rules which facilitate resolution of conflict, interaction between people and cultures, and research in social sciences. Economics and Business: Methods, procedures, rules that guide personal, corporate and national economy decision-making. Mathematical computation. Engineering and Technology: Methods, procedures, and rules which govern operation of technical systems. Recreation: Athletic participation according to stated rules and procedures.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Analyzing - (12) Breaking down the whole into its elements in order to examine the original structure.	Dissecting Disassembling Experimenting Breaking Down Reporting Orally In Writing Graphically	Communications: Verbal or mass communications to discover elements of organization and style. Fine and Performing Arts: Artistic communications to discover elements of style and structure. Health: Organisms to discover structure, function, relation of parts. Replication of experiments to test hypotheses. Social Environment: Social, cultural, political organizations and events to discover individual elements, their relation and function. Economics and Business: Economic organizations and events to discover individual elements, their relation and function. Components of various number systems. Engineering and Technology: Technical systems to discover structural elements, their relation and function. Recreation:	

Cognitive Behavior	Performance	Content	Terminal Objectives
Synthesizing - (13) Joining elements to create a structure not clearly there before. Combining varied elements of past experience.	Creating Designing Planning Formulating Orally In Writing Graphically	Communications: Verbal communications unique and appropriate to content. Fine and Performing Arts: Artistic achievements unique and appropriate to content. Health: Hypotheses on basis of experimentation. Social Environment: Unique programs or plans for dealing with social or political problems. Economics and Business: New product or service, or method of management. Programs or plans for dealing with economic problems. Engineering and Technology: An original construction or design or adaptation of existing technical systems. Recreation: Original sports, games, exercise programs.	

Cognitive Behavior	Performance	Content	Terminal Objectives
Evaluating - (14) Making judgments about value of practices or materials both qualitative and quantitative	Judging Criticizing Evaluating Orally In Writing Graphically	Communications: Verbal or mass communications on basis of stated criteria in terms of structure and impact on audience for which it is intended. Fine and Performing Arts: Artistic achievements on basis of stated criteria in terms of structure and impact on audience for which it is intended. Health: Medical or scientific research on basis of stated criteria in terms of structure and impact on audience for which it is intended. Social Environment: Social research on basis of stated criteria in terms of structure and impact on audience for which it is intended. Economics and Business: Economic and business research and communications (including advertising) on basis of stated criteria in terms of structure and impact on audience for which it is intended. Engineering and Technology: Designs or constructions on basis of stated criteria in terms of structure and impact on audience for which it is intended. Recreation: Athletic form and skill on basis of stated criteria.	

APPENDIX I

This appendix contains an overview of currently available science and math programs followed by descriptions of other resources including materials available from National Aeronautics and Space Administration.

The following science and math curriculum projects are described in the Sixth Report on the International Clearinghouse on Science and Mathematics Curricular Developments. Up-to-date copies of this report may be obtained by writing to:

Dr. J. David Lockard, Director
International Clearinghouse on Science and Mathematical
Curricular Developments
Science Teaching Center
University of Maryland
College Park, Maryland 20742

Where another source is used this is noted. Abstracts describing these projects follow.

Several of these projects are being recommended as curriculum resources for Fort Lincoln or should be watched because additional materials for a broader range of students and for students with different interests are being developed.

Descriptions include title and address of the project, commercial affiliations if any, purposes and objectives of the project, methods of instruction, types of learning objectives, specific subjects or age and grade levels, descriptions of materials and other information. Both elementary and secondary level projects are included since in many cases the elementary level programs are in the process of being expanded to the secondary level.

SCIENCE

Title: AAAS COMMISSION ON SCIENCE EDUCATION

The Commission has sponsored the development of a program in elementary school science known as Science -- A Process Approach.

Director: John R. Mayor, Director; Arthur H. Livermore, Deputy Director; 1515 Massachusetts Avenue, N. W., Washington, D. C. Tel.: 202-387-7171.

Present Commercial Affiliations: Xerox Corporation, 600 Madison Avenue, New York, New York 10022.

Purposes and Objectives: Science -- A Process Approach is designed to present instruction which is intellectually stimulating, and scientifically authentic. It is based on a belief that the scientific approach to gaining knowledge of man's world has a fundamental importance in the general education of every child. Instructional materials of Science -- A Process Approach are prepared for the teacher, while kits of materials are available for use by the children. Topics covered sample widely from the various fields of science, including some exercises in mathematics and the social sciences. The exercises are ordered in a sequence of instruction to provide a developmental progression of increasing competence in the processes of science. Each exercise is designed to achieve clearly stated objectives. Methods for evaluating the pupil achievement and progress are an integral part of the program. A guide for in-service instruction is also provided. (These descriptive phrases are taken from a recently published brochure, Science -- A Process Approach: Purposes, Accomplishments, Expectations. Copies of the brochure are available upon request.)

Methods of Instruction Used in the Project: Independent study, discussion groups.

Orientations of Stated Objectives: Process acquisition, scientific literacy, behavioral changes.

Location of List of Objectives: Behavioral objectives are stated for each exercise. The program is organized in seven parts and in each part are 20 to 26 exercises.

Specific Subjects, Grade and Age Levels: Science for kindergarten through grade 6.

Description of Materials Already Produced: Distributed by Xerox Education Division, New York, New York 10022:

1. Science -- A Process Approach, A-E, grades K-4.
2. Kits of Teaching Aids for Science -- A Process Approach, all parts.
3. Process Hierarchy Chart for Science -- A Process Approach, parts A-D.

Available from the Commission on Science Education, American Association for the Advancement of Science, Washington, D. C.:

4. Science -- A Process Approach, parts 6 and 7, Fourth Experimental Edition.

5. Science -- A Process Approach, Competency Measures, parts 4 & 5.
6. Science -- A Process Approach, Commentary for Teachers.
7. Science -- A Process Approach, Guide for In-Service Instruction.
8. Science -- A Process Approach, Response Sheets for the Guide.
9. The Psychological Bases of Science -- A Process Approach, 2nd Edition, 1967.
10. An Evaluation Model and Its Application, 2nd Edition, 1967.
11. Newsletter, AAAS Commission on Science Education.

Materials Available Free: Items 9, 10, and 11.

Materials Purchasable: Items 1, 2, and 3 contact Xerox for prices. Contact American Association for the Advancement of Science, 1515 Massachusetts Avenue, N. W., Washington, D. C. 20005 for the following: Item 4, Part 6 - $4.35; Part 7 - $3.50. Item 5, Competency Measures - $1.00 (Part 4); Competency Measures - $3.50 (Part 5). Item 7, Guide for In-Service Instruction - $2.30. Item 8, Response Sheets for Guide - $1.00.

Title: BIOLOGICAL SCIENCES CURRICULUM STUDY (BSCS)

Director: Dr. William V. Mayer, Director, BSCS, University of Colorado, P.O. Box 930, Boulder, Colorado 80302. Tel. 303-443-2211, Ext. 6153.

Present Commercial Affiliations: Several firms publish different parts of materials. For complete listing, write to Project Director for list published in August, 1967.

Purposes and Objectives: To contribute to the improvement of biological education through preparation of curriculum materials related to the study of biology. Three versions of BSCS biology have been produced and have now been revised; an international program involves many scientists overseas in processes of adaptations of the three versions and other BSCS materials in various languages.

Methods of Instruction Used in the Project: Independent study, programmed instruction, laboratory investigations, discussion groups, "Invitations to Inquiry" and Single Topic Films.

Orientations of Stated Objectives: Process acquisition, attitudinal changes, scientific literacy, career guidance, self-directiveness.

Location of List of Objectives: Teacher's guides and handbooks.

Specific Subjects, Grade and Age Levels: First course in secondary school biology (10th grade) ages 15, 16; second course in secondary school biology (12th grade) ages 17, 18; special materials for low-ability high school students.

Description of Materials Already Produced:

1. Blue Version - Biological Science: Molecules to Man: Houghton Mifflin Company, 110 Tremont Street, Boston, Massachusetts 02107.
2. Green Version - High School Biology, BCSC Green Version; Rand McNally & Co., P.O. Box 7600, Chicago, Illinois 60680.
3. Yellow Version - Biological Science: An Inquiry Into Life; Harcourt, Brace & World, Inc., 757 Third Avenue, New York 10017.
4. Version Tests - Quarterly Achievement Tests in two alternative forms and Processes of Science Test (POST): for all versions: The Psychological Corporation, 301 East 45th Street, New York 10017.
5. Second Course - Biological Science: Interaction of Experiments and Ideas: Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632.
6. Second Course Tests - Quarterly Tests and Final Examination: Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632.
7. Special Materials - Biological Science: Patterns and Processes: Holt, Rinehart and Winston, Inc., 383 Madison Avenue, New York 10017.
8. Special Materials Tests - Unit Tests and Final Examination: The Psychological Corporation, 301 East 45th Street, New York 10017.

9. Laboratory Blocks - Plant Growth and Development; Animal Growth and Development; Microbes: Their Growth, Nutrition and Interaction; The Complementarity of Structure and Function; Field Ecology; Regulation in Plants by Hormones--A Study in Experimental Design; Animal Behavior; Life in the Soil; Genetic Continuity; D. C. Heath & Co., 285 Columbus Avenue, Boston, Massachusetts 02116.
10. Teachers' Handbook - Biology Teachers' Handbook; John Wiley & Sons, Inc., 605 Third Avenue, New York 10016.
11. Biological Investigations for Secondary School Students - Research Problems in Biology; Investigations for Students, Series One, Two, Three, and Four; Doubleday & Co., 277 Park Avenue, New York 10017.
12. Pamphlet Series (24 titles); D. C. Heath & Co., 285 Columbus Avenue, Boston, Massachusetts 02116.
13. Techniques Films (16mm sound or 8mm loop, silent); Thorne Films, 1229 University Avenue, Boulder, Colorado 80302.
14. BSCS Newsletter.
15. BSCS Special Publication No. 3, BSCS Materials for Preparation of In-Service Teachers of Biology.
16. BSCS Special Publication No. 4, The Teacher and BSCS Special Materials.
17. BSCS Special Publication No. 5, Laboratory Blocks in Teaching Biology.
18. BSCS Bulletin No. 1: Biological Education in American Secondary Schools 1890-1960, by Paul Dell. Hurd, 1961.
19. BSCS Bulletin No. 2: Teaching High School Biology: A Guide to Working With Potential Biologists, by Paul Brandwein, Jerome Meitzer, Evelyn Morholt, Anne Roe, and Walter Rosen, 1963.
20. BSCS Bulletin No. 3: BSCS Biology - Implementation in the Schools, by Arnold Grobman, Paul Dell. Hurd, Paul Klinge, Margaret McKibben Lawler, and Elra Palmer, 1964.
21. Laboratory Blocks, experimental editions.
22. The Molecular Basis of Metabolism.
23. Physiological Adaptation.
24. Information Film, The Story of BSCS.

Materials Available Free: Items 14, 15, 16, 17, and 24.

Materials Purchasable: Item 18, $3.50; Item 19, $2.00; Item 20, $3.50; Item 22, $1.25; Item 23, $1.25; Other prices may be obtained from the publisher.

Brief Summary of Project Activities Since 1967 Report: Special Publication #5; versions revised; teachers guides revised; films tested and completed, ready for distribution.

Plans for the Future: Revision of the information film, "The Story of BSCS;" production of a teacher preparation film; developed a proposal for establishing guidelines for development of modern instructional program in life sciences as a one-year course for intermediate grades (7th & 8th). Special materials program at 50 briefing sessions for 1,500 teachers. Expanded cooperative college-school Los Angeles. International cooperation involving UNESCO project in Africa and over 30 countries.

Title: CHEMICAL EDUCATION MATERIAL STUDY (CHEM STUDY)

Director: George C. Pimentel, Professor of Chemistry, University of California, Berkeley, California 94720. Tel.: 415-845-6000 ext. 3747

Purposes and Objectives: To diminish the separation between scientists and teachers in the understanding of science; to stimulate and prepare those high school students whose purpose it is to continue the study of chemistry in college as a profession; to further in those students who will not continue the study of chemistry after high school and understanding of the importance of science in current and future human activities; to encourage teachers to undertake further study of chemistry courses that are geared to keep pace with advancing scientific frontiers, and thereby improve their teaching methods; to guarantee the existence in the near future of a variety of excellent high school chemistry texts significantly influenced by CHEM Study but produced under a normal author-publisher relationship; to reduce the likelihood that textbooks of the future will, by their failure to keep pace with the accelerating movement of science, make repeated curriculum studies necessary.

Methods of Instruction Used in the Project: Independent study; programmed instruction; laboratory investigations; lectures; seminars; discussion groups; computer assisted instruction.

Orientations of Stated Objectives: Content mastery; process acquisition; attitudinal changes; scientific literacy; career guidance.

Location of List of Objectives: CHEM Study Newsletter, vol. 1, no. 1, November 19

Specific Subjects, Grade and Age Levels: Senior High School chemistry.

Description of Materials Already Produced:

1. Chemistry -- An Experimental Science (textbook, 466 pages, clothbound).
2. Chemistry--An Experimental Science (laboratory manual, 138 pages, paperbound).
3. Chemistry -- An Experimental Science (teachers guide, 785 pages, paperbound).
4. Programmed instruction pamphlets: Slide Rule (64 pages); Exponential Notation (31 pages).
5. Achievement tests (set of 7 open-book, multiple choice tests, including 5 tests each covering 3 or 4 chapters, a semester final and a year final); 2 series, designated 1963-64 and 1964-65.
6. Motion pictures:

   a. 26 films integrated into the course.

b. 2 teacher training films by George C. Pimentel.
c. A film to acquaint laymen with the course: A Chance to Wonder Why -- 14 minutes.
d. A film to acquaint educators with the course: CHEM Study: Information for Educators -- 19 minutes.

7. A series of 17 half-hour teacher training films which may be used on TV or for screening.
8. Teacher's Guide to the CHEM Study Films (102 pages, paperbound).
9. CHEM Study Newsletter (issued as needed).
10. Bibliography of journal references to the CHEM Study materials.

Materials Available Free: Items 9 and 10.

Materials Purchasable: Items 1-5 above available from W. H. Freeman Co., 660 Market Street, San Francisco, California 94104 (list prices F.O.B. shipping point, subject to normal educational discount). Item 1, $5.80; Item 2, $1.60; Item 3, $7.00 (free to teachers using the textbook in quantity); Item 4, $0.50/set; Item 5, $1.00/set. Items 6-7 films available from Modern Learning Aids, 1212 Avenue of the Americas, New York, New York 10036. Item 8, $2.00 (free with purchase of rental of three or more films) from Modern Learning Aids.

Plans for the Future: Written materials and films will be sold to commercial companies for continued distribution. A minimum staff will be maintained to supervise remaining business activities and to carry out contractual obligations.

Title: ELEMENTARY SCIENCE STUDY (ESS)

Director: Randolph R. Brown, 55 Chapel Street, Newton, Massachusetts 02160. Tel. 617-969-7100, ext. 504.

Present Commercial Affiliations: None.

Purposes and Objectives: Primarily ESS hopes to develop more meaningful science materials for use by children in the form of units which schools can arrange in a variety of sequences to meet their own requirements. The program is a highly individual experimental one in which all children have access to the materials for open-ended rather than teacher or textbook directed investigations. Careful attention is given to all materials used so that all equipment looks like materials which are normally accessible to children in their own environment and not imposingly "scientific." A mix of university scientists and master teachers work together in the laboratories and in classrooms to test and revise their ideas before the materials are released for general use in the schools. ESS materials have been equally successful in middle-class suburban and low-socio-economic areas, large cities and small towns, and a great variety of different situations.

Methods of Instruction Used in the Project: Independent study; laboratory investigations; discussion groups.

Orientations of Stated Objectives: Attitudinal changes; scientific literacy; cross disciplinary boundaries.

Location of List of Objectives: Objectives are not stated in isolation. They are written into the teacher's guides as an integral part of the text.

Specific Subjects, Grade and Age Levels: K-8

Description of Materials Already Produced: Numerous science units and materials have been developed and a full description of these is available from the Director. Two descriptions follow as samples:

1. Kitchen Physics (grades 5-7). This is a first course in science drawn from the child's environment. The student investigates the properties of common liquids -- typically water, soapy water, oil, alcohol, and syrup. He considers a number of questions about the behavior of these liquids which directs his attention to such attributes as the way they are absorbed, evaporate, drop, steam, and interact with various surfaces. Equipment: drip tubes of varying diameters, liquids, balances, droppers, container; printed matter: teacher's guide, worksheets; film: three 8mm film loops, color: Beading of a Water Column, Water Rise in Blotter Strips of Graded Width, Water Rise in Blotter Strips Exposed and Enclosed.

2. Mystery Powders (grades 3-4). This unit deals with the properties of various substances and the use of indicators in detecting their presence.

Students try to identify some unknown white powders by tasting, smelling, feeling, and comparing them with known substances. Additional investigations with heat, iodine, and vinegar identify specific reactions with several of the powders. To conclude, the children attempt to determine the presence of individual powders when two or more are mixed together. Equipment: sugar, salt, baking soda, starch, plaster of Paris, vinegar, iodine, heat source, containers; printed matter: teacher's guide.

Materials Available Free: Brochure describing ESS (Introduction to ESS), reprints of several articles, Newsletter which is published irregularly and sent to the mailing list. Upon request, interested institutions, scientists, or educators are added to this mailing list.

Materials Purchasable: Price list obtainable from Webster Division, McGraw-Hill Book Company, Manchester Road, Manchester, Missouri.

Plans For The Future: ESS is curtailing new development in an effort to release commercial editions of work which has been in development for some time. The fact that science education in elementary schools is not likely to flourish unless it relates more cogently to other areas of the curriculum, specifically reading and arithmetic, requires that ESS not explore these other areas. Problems of teacher training retain a high priority and ESS will explore the use of films, videotapes and other materials which have promise. Units in early development stages are: Animal Tracks; Astronomy and Applied Optics; Batteries and Bulbs (advanced); Heating and Cooling; Introduction to Lenses; Kites, Boats, Planes, Bridges, and Towers; Melting and Mixing; Mosquitoes; Mushrooms; Orion Book; Primitive Chemistry; Rolling Things; Silk Screen Printing; Snails' and Other Eggs; Stream Tables; Thermometry; Time and Clocks; Water Cells.

Title: IDENTIFYING BEHAVIORAL OBJECTIVES FOR SCIENTIFIC LITERACY

Director: Dr. Albert F. Eiss, Identifying Behavioral Objectives for Scientific Literacy, Associate Executive Secretary, National Science Teachers Association, 1201 Sixteenth Street, N. W., Washington, D. C. 20036.

Description: This project is an attempt to begin the task of identifying behavior descriptions which are appropriate for use in evaluating the development of desirable attitudes, interests, and appreciations for the scientifically literate citizen. A list of subject matter topics that are essential for scientific literacy is also being prepared. A preliminary report of these activities is available from the director. An overhead transparency-taped sound sequence, "Why Behavioral Objectives?" was prepared to introduce the topic to participants at the nine regional meetings held in the fall of 1967. This sequence is available from N.S.T.A. at a cost of $25.00.

Title: INTRODUCTORY PHYSICAL SCIENCE (IPS).

Director: Uri Haber-Schaim, Education Development Center, 55 Chapel Street, Newton, Massachusetts 02160. Tel.: 617-969-7100

Present Commercial Affiliations: Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632; Macalaster Scientific Corporation, 186 Third Avenue, Waltham, Massachusetts 02151; Modern Learning Aids, 1212 Avenue of the Americas, New York, New York 10020.

Purposes and Objectives: To develop a one-year course in physical science for use in junior high schools. The students laboratory work is of primary importance. To emphasize this the laboratory instructions are incorporated in the body of the text; the results are not described. The equipment has been designed in such a way that the students can perform the experiments in ordinary classrooms.

Methods of Instruction Used in the Project: Laboratory investigations, lectures, discussion groups, pre- and post-lab discussions.

Orientations of Stated Objectives: Content mastery, process acquisition, attitudinal changes, scientific literacy.

Location of List of Objectives: Preface to the textbook.

Specific Subjects, Grade and Age Levels: The major emphasis in the course is the study of matter. The course has been extensively used in grades 8 and 9 with students who have a wide range of abilities. In addition, many schools have used the course in grades 11 and 12 for students who do not plan to take further physics or chemistry.

Description of Materials Already Produced:

1. Textbook
2. Teacher's Guide
3. Laboratory equipment and apparatus
4. Achievement tests
5. Films
6. Descriptive brochure

Materials Available Free: Item 6 from Introductory Physical Science Program, 55 Chapel Street, Newton, Massachusetts 02160.

Materials Purchasable: Item 1, $2.79 (hardcover) or $1.98 (paperback) from Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632. Item 2, $4.71 from Prentice-Hall, Inc. Item 3, prices vary; catalogues can be obtained from either Prentice-Hall, Inc. or Macalaster Scientific Corp., 186 Third Avenue, Waltham, Mass. 02151. Item 4, $0.45/package, from Prentice-Hall, Inc. Item 5, prices vary; from Modern Learning Aids, 1212 Avenue of the Americas, New York 10036.

Plans for the Future: The project will phase out after the work is completed on the commercial editions of texts and test materials.

Title: INTERMEDIATE SCIENCE CURRICULUM STUDY (ISCS)

Director: Ernest Berkman, Professor of Science Education and Director, Intermediate Science Curriculum Study, Kellum Hall Basement, Florida State University, Tallahassee, Florida 32306. Tel. 599-3161.

Purposes and Objectives:

1. To develop a comprehensive science program for grades 7-9.
2. Student materials are being written in "self-pacing" style. The students work through them at their own rate.
3. "Package" will contain materials designed for all student levels. "Excursions" (supplemental materials) are vehicle for accommodating both better than average and below average students.
4. The project is using computer assisted instruction as a vehicle for evaluation.
5. Sequence features gradual building of process skills and sequential development of basic notions. Transition is from tight structure in grade 7 to open ended activities in grade 9.

Methods of Instruction Used in the Project: Independent study; laboratory investigations; discussion groups; computer assisted instruction.

Orientations of Stated Objectives: Content mastery; process acquisition; scientific literacy.

Location of List of Objectives: (Not answered.)

Specific Subjects, Grade and Age Levels: Science for grades 7, 8, and 9.

Description of Materials Already Produced:

1. 7th grade core sequence, Volumes 1, 2.
2. 7th grade excursion sequence, Volumes 1, 2.
3. 8th grade core sequence, Volumes 3, 4, 5.
4. Supplemental problems booklet, Volumes 1, 2, 3, 4.
5. Teachers manuals for Volumes 1-5.
6. Equipment kit for Volumes 1-5.
7. Achievement tests for Volumes 1-5.
8. Computer assisted instruction program for Volumes 1, 2.

Materials Available Free: Newsletter.

Materials Purchasable: Contact Project Headquarters.

Plans for the Future: Summer 1968 - Revise 7th and 8th grade core, develop 9th grade core; summer 1969 - Revise 8th, 8th, and 9th grade core; develop AV aids, finalize revisions; tentative phase-out date, August 1971.

Title and Address: PHYSICAL SCIENCE STUDY COMMITTEE (PSSC)

(Secondary, College) Jerrold R. Zacharias, Department of Physics, Massachusetts Institute of Technology, Cambridge, Mass. 02139. (Grantees: Massachusetts Institute of Technology, 1957-1959; Educational Services Incorporated, 55 Chapel Street, Newton, Mass. 02158, 1960-)

Description: The PSSC physics program has developed a textbook; a laboratory guide with new experiments; simplified, low-cost apparatus in kit form; 54 films which set the tone and standards for the course; achievement tests; an extensive library of paperbound books written by distinguished authors on topics of science; and teachers' guides which provide background material and make concrete suggestions for class and laboratory activities. All course materials are available from the commercial sources listed below. The PSSC course consists of four closely interrelated parts. The first is a general introduction to the fundamental physical notions of time, space and matter. This is followed by a study of light, both optics and waves; a study of motion from a dynamical point of view; and a study of electricity and the physics of the atom. The course concentrates on fewer facts than are usually included in an elementary physics course. Considerable time is spent on the stories running through physics which tie together the facts with explanations. The laboratory is an important tool in learning the ideas and is on an equal level with the textbook, class discussions, and films as a means of learning and teaching.

The text Physics, laboratory guide, and teachers' guide, published in 1960 in a new edition. Four chapters of the text have been extensively reorganized and rewritten, five chapters have been shortened and five have been reorganized or reworded. Homework problems have been thoroughly revised for each chapter on the basis of teacher feedback information. Also, a new type of short problem has been included in the new edition in direct response to teacher feedback. Each of these new problems refers to a particular section of the chapter and uses material only from that section. The problems are identified by a section reference number, and answers are given in the back of the book. The new laboratory guide contains several new experiments. Several old experiments have been reduced to the status of "necessary demonstration." The teachers' guide has been revised to bring it into conformity with the revised text and laboratory guide.

Further information is available from Educational Services Incorporated.

The textbook Physics, laboratory guide, and teachers' guide: D. C. Heath and Co., 1965, 2nd ed.

Apparatus kits: available from several supply companies.

[1] Description drawn from National Science Foundation's Course and Curriculum Improvement Projects, NSF66-29, September, 1966.

Achievement tests (3 batteries: the original battery, an alternate battery, and a scrambled version of the original battery): Cooperative Test Division, Educational Testing Service.

Various PSSC films.

Title: PSSC ADVANCED TOPICS PROGRAM

Director: Uri Haber-Schaim, Education Development Center, 55 Chapel Street, Newton, Massachusetts 02160. Tel. 617-9[illegible]-7160.

Present Commercial Affiliations: D. C. Heath and Company, 285 Columbus Avenue, Boston, Massachusetts 02116; Macalaster Scientific Corporation, 186 Third Avenue, Waltham, Massachusetts 02154; Science Electronics, 1085 Commonwealth Avenue, Boston, Massachusetts 02215; Modern Learning Aids, 1212 Avenue of the Americas, New York, New York 10035.

Purposes and Objectives: The Advanced Topics Supplement takes up additional fundamental ideas and is meant to serve as an extension of the PSSC course into a three-semester or two-year course in high school or to be used as part of an introductory course in college.

Methods of Instruction Used in the Project: Laboratory investigations, lectures, discussion groups.

Orientations of Stated Objectives: Content mastery, process acquisition, scientific literacy.

Location of List of Objectives: (Not answered.)

Specific Subjects, Grade and Age Levels: Angular momentum, statistical mechanics, special relativity and quantum physics for use in high school or an introductory college course.

Description of Materials Already Produced:

1. Text: includes laboratory guide.
2. Teacher's Guide.
3. Laboratory apparatus.
4. Films.

Materials Available Free: None.

Materials Purchasable: Item 1, $3.80; D. C. Health and Company, 285 Columbus Avenue, Boston, Massachusetts 02116. Item 2, $3.80; D. C. Health and Company, 285 Columbus Avenue, Boston, Massachusetts 02116. Item 3, prices vary; catalogues can be obtained from: Macalaster Scientific Corporation, 186 Third Avenue, Waltham, Massachusetts 02154; or Science Electronics, 1085 Commonwealth Avenue, Boston, Massachusetts 02215. Item 4, prices vary, catalogue can be obtained from Modern Learning Aids, 1212 Avenue of the Americas, New York, New York 10036.

Brief Summary of Project Activities Since 1967 Report: Achievement tests have been prepared for all chapters and are being prepared for publication by Educational Testing Services, Princeton, New Jersey 08540.

Plans for the Future: Phase out.

Title: SCIENCE CURRICULUM IMPROVEMENT STUDY (SCIS)

Director: Robert Karplus

Project History: The Science Curriculum Improvement Study was established in the winter of 1962 by Robert Karplus, professor of theoretical physics at the University of California, Berkely, as a result of his work with the Elementary School Science Project at that university. This experience had led Professor Karplus to the conclusion that science had not only to be simplified for the elementary school, but organized on a drastically different basis from the usual logical subject-matter presentations to which the university scientist is accustomed.

Present Commercial Affiliations: Raytheon Education Company - preliminary publication program.

Purposes and Specific Objectives: SCIS usually capsulizes its purposes as the development of scientific literacy. But it is important to delineate exactly what is meant by that term, and how the staff hopes to achieve this goal. An important meaning of scientific literacy is a sufficient knowledge and understanding of the fundamental concepts of both the biological and physical sciences for effective participation in twentieth century life. The role science plays in society is continually increasing in importance and will not be decided by the scientist alone. To join in making wise decisions, the non-scientist will have to have an understanding of the real nature of science. A second implication of scientific literacy is the development of a free and inquisitive attitude and the use of rational procedures for decision-making. In the SCIS program, children learn science in an intellectually free atmosphere where their own ideas are respected, where they learn to test their ideas by experiment, and where they learn to accept or reject ideas, not on the basis of some authority, but on the basis of their own observations. Ideally, some of these experiences will carry over to other areas of life and incline the children to make decisions on a more rational basis after weighing the factors or evidence involved more objectively.

Methods of Instruction Used in the Project: How does SCIS go about achieving these goals? SCIS uses a materials-centered approach in which the elementary classroom actually becomes a laboratory. In their first explorations of a new concept, the children are allowed to manipulate or observe selected materials, sometimes freely in any way they wish and sometimes under the guidance of the teacher. As a result of these preliminary explorations, the children have a new experience--direct physical contact with natural phenomena. As the next step, the teacher introduces the scientific concept that describes or explains what the children have observed. This is called the "invention" lesson. Following the invention lesson, other experiences are provided that present further examples of the concept. These are called "discovery" lessons. Through this procedure, the child is expected to recognize that the new concept has applications to situations other than the initial example. In other words, the discovery experiences reinforce, refine and enlarge upon the concept.

Orientations of Stated Objectives: As stated in Purposes and Specific Objectives, the objectives of SCIS are oriented toward scientific literacy.

Location of List of Objectives: Specific objectives for each unit may be found in the introduction to each part of a unit.

Specific Subject's, Grade and Age Levels: Sequential physical and life science curriculum suggested for grades K-6.

Description of Materials Already Produced: For a full description of materials contact Raytheon Education Company or the Project Director.

Title: CAMBRIDGE CONFERENCE ON SCHOOL MATHEMATICS (CCSM)

Director: Mr. Hugh P. Bradley, Education Development Center, 55 Chapel Street, Newton, Massachusetts 02160. Tel. 617-969-7100.

Present Commercial Affiliations: Houghton Mifflin, publisher of "Goals for School Mathematics" and "Goals for the Mathematical Education of Elementary School Teachers".

Purposes and Objectives: The program grew out of a conference in 1963 which explored curriculum reform needs in mathematics. The report of the conference, "Goals for School Mathematics", outlined exploratory thinking on mathematics curriculum. While it was recognized that the CCSM is not primarily engaged in the preparation of materials for classroom use, it was felt that it was necessary to develop and try out some materials to demonstrate the feasibility of the goals. Thus, a continuing part of the program has been work, with a limited number of schools, developing and trying out units. Copies of the working papers, listed below, are available upon request. In recent years the attention of the program has been turned towards the problem of teacher education and the integration of mathematics and science education in the lower schools.

Methods of Instruction Used in the Project: (Not answered.)

Orientations of Stated Objectives: Content mastery; attitudinal changes.

Location of List of Objectives: "Goals for School Mathematics." (Report of 1963 CCSM summer conference); "Goals for the Mathematical Education of Elementary School Teachers" (1966 conference).

Specific Subjects, Grade and Age Levels: Mathematics, Kindergarten through 12th grade.

Description of Materials Already Produced:

1. Probability.
2. Checks, Approximations and Order of Magnitude Calculations.
3. Complex Numbers Leading to Trigonometry.
4. Use of Negative Digits in Arithmetic.
5. Topology in the Tenth Grade and After.
6. The Exponential Function.
7. Multiplication of Negative Numbers.
8. Kindergarten Work on Numbers.
9. Morse School -- 1st Grade (Inequalities Unit).
10. Morse School -- 2nd Grade (Multiplication).
11. Morse School -- 3rd Grade (Chip Trading).
12. Morse School -- 3rd and 6th Grades (Graphs and their Application).
13. Morse School -- 7th Grade (Slopes and Limits).
14. Morse School -- Slopes and Limits (Lessons and Commentary).

15. Experimental Teaching -- Multiplication.
16. Palo Alto -- Second Grade (Geometry, Logic and Matrices).
17. Stanford -- Eighth Grade (Geometry through Symmetry).
18. Informal Geometry for Young Children.
19. Symmetry Motions for Elementary School.
20. Hosmer School -- 6th Grade (Elementary Number Theory).
21. Report of SMSG/CCSM Conference in March, 1965.
22. Collected reports of CCSM Writing Conference, Summer 1965.
23. Inequalities and Real Numbers as a Basis for School Mathematics.
24. Symmetry Motions -- Further Work.
25. Probability Lessons at Hancock School.
26. Inequality Lessons at Adams School.
27. Geometry in the Elementary School -- Teachers' Guide and Children's Worksheets.
28. Transformational Geometry.
29. Averages, Areas and Volumes.

Materials Available Free: All materials except "Goals for School Mathematics" and "Goals for the Mathematical Education of Elementary School Teachers". Since this list is undergoing change both by addition and withdrawal, those requesting materials are asked to specify with their request the areas of the curriculum in which they are interested and the use to which materials will be put so that an intelligent selection may be made from the materials available at the time of the request.

Materials Purchasable: "Goals for School Mathematics"; "Goals for the Mathematical Education of Elementary School Teachers", $1.60 and $1.80 respectively. Purchasable at Houghton Mifflin Company, 2 Park Street, Boston, Massachusetts.

Brief Summary of Project Activities Since 1967 Report: A conference was held August/September 1967 to examine the problem of creating math/science integrating material for the lower school. Additional working papers were prepared.

Plans for the Future: The CCSM proposed to encourage the mathematicians who attend the Cambridge Conference on Teacher Training to continue their interest in the mathematical education of elementary school teachers, and in the development of math/science integrating materials.

Title: DEMONSTRATION AND EXPERIMENTATION IN COMPUTER TRAINING AID USE IN SECONDARY SCHOOLS.

Director: Prof. Thomas E. Kurtz, Kiewit Computation Center, Dartmouth College, Hanover, New Hampshire 03755. Tel.: 603-646-2643.

Purposes and Objectives: The purpose of this project is to demonstrate the large-scale use of the computer as a broad aid to secondary education without requiring major curriculum changes or extensive teacher retraining. Through materials to be developed cooperatively with the participating schools, the staff expects to show the value of computing as an aid to course teaching in many subjects, and as a significant mechanism for extra-curricular education of students. It is expected that these materials, appropriately reviewed and modified during the course of the project, will provide important guidelines for the development of the potential of computers in secondary education on a broad front.

Methods of Instruction used in the Project: Independent study, laboratory investigations, lectures, seminars, computer assisted instruction.

Orientations of Stated Objectives: Content mastery, process acquisition, attitudinal changes, scientific literacy.

Location of List of Objectives: In the proposal to the National Science Foundation.

Specific Subjects, Grade and Age Levels: Mathematics, 7-12; science, 7-12; social sciences, 7-12 - ages 10-17.

Description of Materials Already Produced:

1. Report on a Summer Training Session.
2. Topic Outline by Peyton Pitney, "How to introduce the computer to ninth graders."
3. NSF Project proposal.
4. Mid-year Report.

Materials Available Free: Items 2, 3, and 4.

Materials Purchasable: Item 1.

Title: ENGINEERING CONCEPTS CURRICULUM PROJECT (ECCP)

Directors: Dr. E. E. David, Jr., Bell Telephone Laboratories, Murray Hill, New Jersey 07971. Tel. 201-582-4025. Dr. J. G. Truxal, Polytechnic Institute of Brooklyn, 333 Jay Street, Brooklyn, New York, 11201. Tel. 212-643-2164.

Present Commercial Affiliations: American Machine & Foundry Company; Measurement Control Devices Corporation; McGraw Hill Book Company; Call-A-Computer.

Purposes and Objectives: The ECCP course, entitled "The Man-Made World", is intended as a part of the cultural curriculum. It is a course for embryo journalists, businessmen, lawyers, medical doctors, executives, teachers, and in fact for all citizens who will take part in guiding the currents of our society. Resources used to take part in guiding the currents of our society. Resources used to create the man-made world are diverse. There are concepts, physical principles, modes of thinking, and the much heralded "scientific method" as well as arts, skills, and inspiration. This course brings these into focus by reference to vital technical accomplishments, but the course also strives to demonstrate the relevance of these resources for biology, economics, sociology, business, communication, psychology, and even the arts and humanities. In emphasizing the utility of precise thought and language the course does not overlook the importance of procedures and techniques for achieving concrete goals, nor the importance of value judgments in deciding "what to do" from the vast number of possibilities. Through this broad approach, the course aims to help students develop insights useful in coping with social, economic, political as well as purely technical problems.

Methods of Instruction Used in the Project: Laboratory investigations; lectures; seminars, discussion groups; computer as a modeling device; twelve schools using time sharing computers.

Orientations of Stated Objectives: Content mastery; process acquisition; attitudinal changes; scientific literacy; technological literacy.

Location of List of Objectives: Preface and statement to the students in the text, each chapter in the Teacher's Manual.

Specific Subjects, Grade and Age Levels: 11th and 12th grades; logic and computers; decision making; feedback control; bio-medical engineering concepts.

Description of Materials Already Produced:

1. Text.
2. Teachers Manual.
3. Laboratory Manual.
4. Logic Circuit Board.
5. Analog Computer.
6. Computer Programs.
7. Newsletters - Brochures.

Materials Available Free: Item 7 from Engineering Concepts Curriculum Project, Polytechnic Institute of Brooklyn, 333 Jay Street, Brooklyn, New York 11201.

Materials Purchasable: From project headquarters: Items 1, 3, and 6, $5.00. From American Machine & Foundry Company, Alexandria, Virginia: Item 4, $60.00; Item 5, $315.00.

Plans for the Future: Summer institutes 1968 and 1969. In-service institutes 1968-1969. Writing conference at Polytechnic Institute of Brooklyn during summer 1968. Laboratory, film reviewing, teachers manual, testing. Planning conference re: future direction of project during summer and fall 1968. Text preliminary edition will be published by August 1968 through McGraw Hill Book Company; final edition January 1970.

Title: SCHOOL MATHEMATICS STUDY GROUP (SMSG)

Director: Dr. E. G. Begle, SMSG - Cedar Hall, Stanford University, Stanford, California 94305. Tel. 415-321-2300, ext. 2912

Present Commercial Affiliations: The monograph series "New Mathematical Library" is published by Random House Inc., 457 Madison Avenue, New York, New York 10022. The filmed course for elementary school teachers is distributed by Modern Learning Aids, 3 East 54th Street, New York, New York 10022

Purposes and Objectives: The primary purpose of the SMSG is to foster research and development in the teaching of school mathematics. The work of SMSG consists primarily in the development of courses, teaching materials and teaching methods. It is a part of SMSG's task, in cooperation with other mathematical organizations, to encourage exploration of the hypotheses underlying mathematics education.

Methods of Instruction Used in the Project: Normal classroom procedures.

Orientations of Stated Objectives: Understanding of and skill in mathematics.

Location of List of Objectives: SMSG Bylaws; Newsletter No. 11.

Specific Subjects, Grade and Age Levels: Mathematics, kindergarten through grade 12; teacher training materials.

Description of Materials Already Produced:

1. Large number of texts, programmed teaching materials, and teacher training materials.

Title: UNIVERSITY OF MARYLAND MATHEMATICS PROJECT

Director: Henry H. Walbesser, Director, University of Maryland, College Park, Maryland 20740. James H. Henkelman, Associate Director. Tel. 301-454-2031.

Present Commercial Affiliations: None

Purposes and Objectives: The principal purpose of the project is to contribute to the improvement of the teaching of mathematics. The project has produced experimental textbooks for mathematics in junior high school and experimental textbooks for courses in mathematics for elementary teachers. In addition, the project has conducted research studies in the learning of mathematics. Presently the main efforts of the project are directed toward the development of an in-service course for elementary teachers of mathematics which incorporates behavioral objectives and specific evaluation, and the research into mathematics instruction with the use of behavioral hierarchies.

Methods of Instruction Used in the Project: Independent study; programmed instruction; computer assisted instruction; dial access with tape recording and 35mm projectors.

Orientations of Stated Objectives: Content mastery; process acquisition; attitudinal changes; scientific literacy.

Location of List of Objectives: In the MEMUP materials, behavioral objectives are stated at the beginning of each lesson. In UMMaP junior high school texts, there are objectives in the teacher's guide for each chapter.

Specific Subjects, Grade and Age Levels: Mathematics, grades seven and eight; preservice elementary teachers; in-service elementary teachers.

Description of Materials Already Produced:

1. Textbooks
2. Materials for teacher use.

OTHER RESOURCES IN VARIOUS SUBJECTS

Goals for School Mathematics (K-12)

- Written by Cambridge Conference on School Mathematics (CCSM)
- Houghton Mifflin
  53 West 43rd
  New York, New York 10036 Attention:John Myers

Inventing the Western World (Grade 7)

- Discusses Western culture, values, policies, view of man beginning with Greek and Roman history
- Librarian
  Social Studies Curriculum Program
  Educ. Devel. Center
  15 Mifflin Place
  Cambridge, Massachusetts 02138

From Subject to Citizen (Grade 8)

- A course on the concept of power in people, institutions and culture. 17th - 20th C Britain and U. S. (In preparation)
- Librarian
  Social Studies Curriculum Program
  Educ. Devel. Center
  15 Mifflin Place
  Cambridge, Massachusetts 02138

Black and White: The Struggle for Identity and Power (9-12)

- 6-8 week unit on interactions of black and white Americans. (In developmental stage)
- Course director, Black and White Social Studies Curriculum Program
  EDC
  15 Mifflin Place
  Cambridge, Massachusetts 02138

Cardozo Raps (High School) .30/copy

I Wish I Was Everything: Happiness, Sadness, Rich, Poor, Black, White (1.75)

Inching On Up (1.50)

Lengthening Shadow of Martin Luther King

- Student publications and Black Studies Material

- Innovation Team
  D. C. Model School Division
  1292 Upshur Street, N. W.
  Washington, D. C. 20011

The Labor Movement (Grade 12)

- A one semester course on labor organizations, issues and bargaining, and job opportunities information

- D. C. Public Schools
  Curriculum Department

Black Curriculum (K-12)

- Negro Heritage: ESEA Title III
  Project 420

- D. C. Public Schools
  Curriculum Department

Time, Space, and Matter (7-9)

- Secondary school science project course of laboratory experience. Emphasizes collecting and recording data.

- Webster Division/McGraw Hill Book Co.
  Princetown Road
  Hightstown, New Jersey 08520

Exploring Electricity and Electronics (7, 8)

- Text, laboratory guide, and transparencies ($5.00)

- Science Electronics, Inc.
  Webster/McGraw
  Princetown Road
  Hightstown, New Jersey 08520

General Metals (7-9)

- Filmstrips, text, workbook

- Webster/McGraw
  Princetown Road
  Hightstown, New Jersey 08520

Geography in an Urban Age

- Multimedia program funded by National Science Foundation

- MacMillan Co.
  School Division
  866 Third Avenue
  New York, New York 10022

Patterns in Human History (9-12)

- Prepared by Anthropology Curriculum Study Project. Sixteen week multimedia course emphasizing ethnography and archaeology ($110.00/30)

- MacMillan Co.
  School Division
  866 Third Avenue
  New York, New York 10022

Educational Paperbacks Guide

- 104-page catalogue listing educational paperbacks available for use in junior and senior high schools, and junior colleges.

- Simon and Schuster, Inc.
  Educational and Library Development
  1 West 39th Street
  New York, New York 10018

Modern Consumer Education

- Written materials, filmstrips, and audio tapes including units on The Things You Buy, The Law and Medicine, Ways to Handle Money, Ways to Shop, and Smaller Purchases. Geared to potential dropouts and adults in basic education.

- Grolier Education Corporation
  845 Third Avenue
  New York, New York 10022

MATERIALS TESTED AND FOUND USEFUL

ON JOB TRAINING FOR YOUTHS*

How to Get Along on the Job. New York: Holt, Rinehart, Winston, Inc. $2.08

Coping. New York: MacMillan Co. $1.24

20th Century Typing. South Western. $4.60

S.R.A. Reading Lab Kit. Science Research Associates. $59.50

Gregg Quick Filing Practice Kit. McGraw Hill. $1.55

How to Fill Out Application Forms. Hobbs, Dorman and Co. $1.00

Who Am I? New York: MacMillan Co. $1.32

* For a full description of the materials from which these materials were abstracted, see Final Report Project No. UPO 310767, OE Grant No. OEG 2-7-065146-5146.

NASA AS A RESOURCE

One valuable resource for relevant and up-to-date information about the U.S. space program is the material produced by the Educational Programs Office of the National Aeronautics and Space Administration (NASA). NASA produces a variety of materials including tested teaching units, free or inexpensive booklets, and charts and posters. Also available on request are NASA speakers, a touring space mobile unit, and a visit to the Goddard Space Flight Center.

Samples from the NASA Aerospace Bibliography follow. The number following each item corresponds to the list of sources. A partial list of materials published since 1968 is appended to the bibliography sample. For further information, contact the Educational Office, NASA Goddard Space Flight Center, Greenbelt, Maryland 20771.

The Fort Lincoln resource center should have a copy of this bibliography along with a subscription to *NASA Facts*, a regular bulletin dealing with space-related subjects.

Code for reading or usage levels

P--Primary grades, 1-3
I--Intermediate grades, 4-6
U--Upper grades, 7-8
S--Secondary grades, 9-12
A--College and adult levels

Curriculum Resource Materials And Aids

Film Bibliographies

NASA FILM LIST. A booklet listing selected general interest space films produced by the National Aeronautics and Space Administration. Annotations and instructions for ordering these free loan films are included. One copy free. *40*

FILMS AND FILMSTRIPS FOR THE SPACE AGE. An 8-page listing of sources of films and filmstrips on space research, missiles, space travel, and unmanned satellites. 50 cents. For the teacher. *46*

JETS FILM INDEX. An annotated list of more than 250 free loan films available from industrial and professional sources covering many scientific and engineering fields including astronautics and aerospace engineering. 75 cents. (S-A) *85*

Sources of Aerospace Education Materials

EDUCATIONAL PUBLICATIONS. A booklet listing educational material published by the National Aeronautics and Space Administration for teachers, [illegible] and the public. It lists booklets and fact sheets on numerous NASA projects such as manned and unmanned spacecraft, launch vehicles, Project Apollo, space careers, astronauts and space science subjects. Also lists curriculum resource aids for teachers and includes order forms and instructions as to how and where NASA educational materials may be obtained. The booklet is free. (U-S-A) *106*

SOURCES OF PICTURES, PAMPHLETS AND PACKETS. 7th ed. 1967. A comprehensive annotated and graded list of selected aerospace education teaching aids--booklets, pamphlets, charts, pictures, leaflets, bibliographies, units, etc. produced by aerospace manufacturers, airlines, government agencies, and private and professional organizations on aviation and space flight subjects. Most of the items are free; none costs more than $10. 50 cents. (A) *107*

BROCHURE describing the aims, objectives, services and publications of the National Aerospace Education Council, a non-profit professional education organization. Free. (A) *107*

SPACE. Price list of space publications available from the Superintendent of Documents, U.S. Government Printing Office. List covers publications on missiles, the moon, NASA, satellites, space education, space exploration, research and technology of interest to the general reader. Ask for latest price list. Free. (U-S-A) *156*

NASA Services

EXHIBITS. NASA educational exhibits range from posters to full-sized models of spacecraft and satellites. Write for further information. *49*

NASA SPACEMOBILE LECTURE-DEMONSTRATION PROGRAM. Provides a systematic means of filling requests from schools for classroom and assembly hall lectures and demonstrations about NASA activities. The Spacemobile is a unit composed of a lectures with science teaching background, equipment for space science demonstrations, and 20 to 25 models of NASA spacecraft and launch vehicles transported in a panel truck. *104*

SPEAKERS. Speakers from NASA Headquarters and the various NASA field centers are available to student and teacher groups for the purpose of discussing NASA programs. (A) *151*

General Aerospace Education Teaching Aids

HOW TO INTRODUCE THE STUDY OF OUTER SPACE IN GRADES 6-8. A booklet [illegible]

lesson on gravity and its effects on orbits of objects in space. Applications for use at each grade level are detailed. Of particular help to the non-science trained elementary teacher. Free. 9

AEROSPACE EDUCATION. Booklet interpreting aerospace education. Tells why schools are interested, points out the effects of aerospace progress and explains the responsibility for aerospace education, how it may be presented in a school, and its relationship to modern curriculum trends. Free. (A) *27*

AEROSPACE EDUCATION COURSE SYLLABUS. A booklet outlining a two-semester high school course in aerospace education. Suggests topics, materials, number of lessons, class periods, and weeks of instruction. Includes a bibliography. Free. (A) *27*

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A LIST OF SPACE TRAVEL articles appearing in issues of the *National Geographic Magazine* from December, 1926 through Nov. 1966. Free. (I-U-S-A) *111*

SCIENCE ACTIVITIES HANDBOOK. Information about organizing science clubs and setting up club projects. Also gives information about science fairs, the Science Talent Search, science and engineering careers and scholarships. Revised 1966. $1. (U-S) *143*

SCIENCE PROJECTS HANDBOOKS. A student's guide to planning science research projects. 55 cents. (S) *143*

150 SCIENCE EXPERIMENTS STEP-BY-STEP. Instructions and lists of necessary materials for setting up simple science experiments in chemistry, physics, biology and meteorology. Also includes arithmetic and mathematics problems. 65 cents. (U-S) *143*

INTERNATIONAL SCIENCE YOUTH PROGRAM. A leaflet listing science services available to students and teachers through Science Service. Revised annually. Free. *143*

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FROM HERE, WHERE? A space mathematics supplement for secondary level. [illegible] $1.25. *156*

INTRODUCING CHILDREN TO SPACE. #NAS 1.19: [illegible]. A space handbook for teachers, grades K to [illegible] maturity [illegible] 5 through 11 years old. Projects and illustrations described at each age level. 166 p. $1.25. (A) 156

MODEL SPACECRAFT CONSTRUCTION, UNITS FOR SECONDARY SCHOOL INDUSTRIAL ARTS. #NAS 1.2:SP 1/16. 104-page illustrated guide to building spacecraft models, together with suggested units for classroom instruction in industrial arts. $1. (A) 156

THE PLANETARIUM. #NAS 1.19:42. A report by the University of Bridgeport on projects for elementary school classes in the Bridgeport Planetarium. 69 p. 40 cents. (A) 156

THE SHAPES OF TOMORROW. #NAS 1.2:SH2. A supplement in space oriented geometry for secondary levels. Prepared by NASA in cooperation with the U.S. Office of Education. 204 p. $1.50 (A) 156

SHORT GLOSSARY OF SPACE TERMS 2nd edition. #NAS 1.21:1/2. 51 p., 1966. 25 cents. (U-S-A) 156

WHAT'S UP THERE, A SOURCE BOOK IN SPACE ORIENTED MATHEMATICS FOR GRADES 5-8. 1964. Student edition, 144 p. #NAS 1.2:W 55/student. $1. Teachers' edition, 144 p. #NAS 1.2:W 55/teacher. $1. 156

SPACE. A 96-page handbook for the teaching of elementary grade science prepared under the sponsorship of the National Science Teachers Association and NASA. Helps teachers to incorporate space science into the science curriculum. Suggests 80 activities to "create an atmosphere in which children enthusiastically explore, experiment, and speculate about the universe from the vantage point of their space station: the Earth." Material and experiments are arranged from the simple to the more complex. $1.95. (A) 157

Miscellaneous

EXPLORING NEARBY SPACE. A 48-page illustrated booklet discussing the basic laws of physics and their application to space travel, and such topics as aurora, radiation belts, solar wind, zodiacal lights, plasma and x rays. [illegible] cents each for 10 copies or more. (U-S) 9

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THE LASER. #NF-23. An illustrated summary, in general terms, of the laser beam and the role it will play in NASA's exploration of space. Also described are laser applications in medicine, metallurgy, and communications. One sheet folds to 8 p. One copy free. For quantity orders see Supt. of Documents listing (#150) on p. 63. (U-S-A) 106 (See NOTE)

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SATELLITE TRACKING PROGRAM HISTORY. An illustrated 6-page review of the history of the Smithsonian Astrophysical Observatory's part in the nation's satellite tracking program. Free. (S-A) *147*

SEARCH FOR EXTRATERRESTRIAL LIFE. (Rep. #365, March 1965). An 8-page leaflet reproducing a script of a radio program discussion by the Science Editor of the *New York Times* and two professors from Yale University's Astronomy Department. The discussion centers on Walter Sullivan's book, WE ARE NOT ALONE. Free. *171*

Aerospace Industries Information Sources

Below are listed the names of aerospace industry companies having free pamphlets, pictures, booklets, charts, or free loan films, etc. for distribution to teachers.

In order to best serve both teachers and companies, the sources are listed under specific subject headings.

Requests for single copies of printed materials should be made on school or library stationery.

When inquiring about the availability of free loan films, ask first for the list of films and loan instructions.

The addresses of the companies appear at the end of this bibliography, on pp. 57-63.

GENERAL INFORMATION ON SPACE

General Electric Co.--printed matter and charts

General Precision, Aero-space Group--printed matter

B. F. Goodrich Co.--free loan films

McDonnell Douglas Corporation--free loan films, charts

Radio Corporation of America--printed matter, pictures

AEROSPACE AND SERVO SYSTEMS

Lear Siegler, Inc.--printed matter

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IBM Federal System Division--printed matter

The Marquardt Corporation--printed matter

Radio Corporation of America--printed matter, pictures

BIOASTRONAUTICS

McDonnell Douglas Corporation--free loan films

COMMUNICATIONS SATELLITES

McDonnell Douglas Corporation--free loan films

Radio Corporation of America--printed matter, pictures

TRW Systems--pictures

DATA PROCESSING AND COMPUTERS

General Precision, Aerospace Group--printed matter, pictures, charts

General Precision, Librascope Group--printed matter

IBM Federal System Division--printed matter

Radio Corporation of America--printed matter, pictures

ELECTRIC POWER SYSTEMS

Lear Siegler, Inc.--printed matter

LAUNCH VEHICLES

Ling-Temco-Vought--printed matter

McDonnell Douglas Corporation--printed matter, free loan films

LIFE SUPPORT SYSTEMS

McDonnell Douglas Corporation--free loan films

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Radio Corporation of America--printed matter, pictures

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Radio Corporation of America--printed matter

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General Precision, Librascope Group--printed matter

General Precision, Link Group--printed matter

IBM Federal System Division--printed matter

Kollsman Instrument Corp.--printed matter, pictures, free loan films, help with student projects
The Marquardt Corporation--printed matter, free loan films
Radio Corporation of America--printed matter, pictures

PROJECT GEMINI
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IBM Federal System Division--printed matter
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Kollsman Instrument Corp.--printed matter, pictures, help with student projects

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McDonnell Douglas Corporation--free loan films
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Thiokol Chemical Corp.--printed matter, free loan films
TRW Systems--printed matter, pictures

SOLAR CELLS
Radio Corporation of America--printed matter, pictures

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The Marquardt Corporation--printed matter

SPACECRAFT GUIDANCE SYSTEMS
General Precision, Aerospace Group--printed matter, pictures, charts
IBM Federal System Division--printed matter
Kollsman Instrument Division--printed matter
McDonnell Douglas Corporation--free loan films
Radio Corporation of America--printed matter, pictures

SPACE MANEUVERING UNITS
Ling-Temco-Vought--printed matter

SPACE PROBES
McDonnell Douglas Corporation--printed matter, free loan films
TRW Systems--printed matter, pictures, free loan films

SPACE SIMULATORS
General Electric Co.--printed matter
General Precision, Link Group--printed matter
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McDonnell Douglas Corporation--free loan films

SPACE SUITS
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SPACE TECHNOLOGY CAREERS
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6 American Astronautical Society,
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7 American Astronomical Society,
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8 American Aviation Publications,
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9 American Education Publications,
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10 American Institute of Aeronautics and Astronautics,
[illegible] Sixth Ave.,
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11 American Society for Engineering Education,
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13 Anchor Books—
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53 Flight Systems, Inc.,
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152 STAS Instructional Materials, Inc.,
2100 Fifth St.,
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153 Sterling Publishing Co.,
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155 Strode Publishers,
6602 Jones Valley Drive, SE,
Huntsville, Ala. 35802

156 Superintendent of Documents,
U.S. Government Printing Office,
Division of Public Documents,
Washington, D.C. 20402

157 Teachers Publishing Corp.,
23 Leonard Ave.,
Darien, Conn. 06820

158 Thiokol Chemical Corp.,
Pandyne & Logan Divisions,
Bristol, Penna. 19007

159 Translabs,
P.O. Box 7123,
Seattle, Wash. 98133

160 TRW Systems,
Attn: Public Relations Dept.
Bldg. 12-Room 2053E,
One Space Park,
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161 U.S. Civil Service Commission,
Chief of Office Services Division,
Room B431,
Washington, D.C. 20415
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162 University of Arizona Press,
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163 University of California Press,
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164 University of Washington Press,
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166 Viking Press, Inc.,
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169 William Frederick Press,
55 East 86th St.,
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170 World Publishing Company,
119 West 57th St.,
New York, N.Y. 10019

171 Yale Reports,
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- Spacecraft Power
- Space Life Sciences
- Aeronautics
- Space Age By-products
- Materials

APPENDIX J

OCCUPATIONAL EDUCATION CLUSTERING MODEL

Program Clusters

Three occupational clusters that might be implemented in Fort Lincoln are:

- Technology
- Health
- Business

The clusters are divided into modules (career relationship) and sub-modules (or career specializations) as follows:

- Technology
  - Electronic and Electrical Module
    - -- Communications
    - -- Instrumentation
    - -- Avionics
    - -- Electrical Systems
  - Industrial Module
    - -- Automotive
    - -- Aviation
    - -- Climate Control
    - -- Mechanical
  - Visual Communications Module
    - -- Photography
    - -- Commercial Art
    - -- Graphic Arts
    - -- Drafting
    - -- Performing Arts
  - Construction Module
    - -- Carpentry
    - -- Plumbing and Pipe Fitting

-- Masonry

-- Painting and Decorating

- Health

  - Environmental Module

    -- Earth Science

    -- Ocean Science

    -- Air Science

  - Allied Health Module

    -- Dental Assistant

    -- Practical Nurse

    -- Nursing Assistant

    -- Mental Health Aid

    -- Home Health Aid

    -- School Health Aid

    -- Physical Therapy Aid

    -- Community Health Aid

    -- Physical Science Aid

    -- Environmental Health Assistant

    -- Medical Assistant

    -- Medical Research Assistant

    -- Recreation Aid

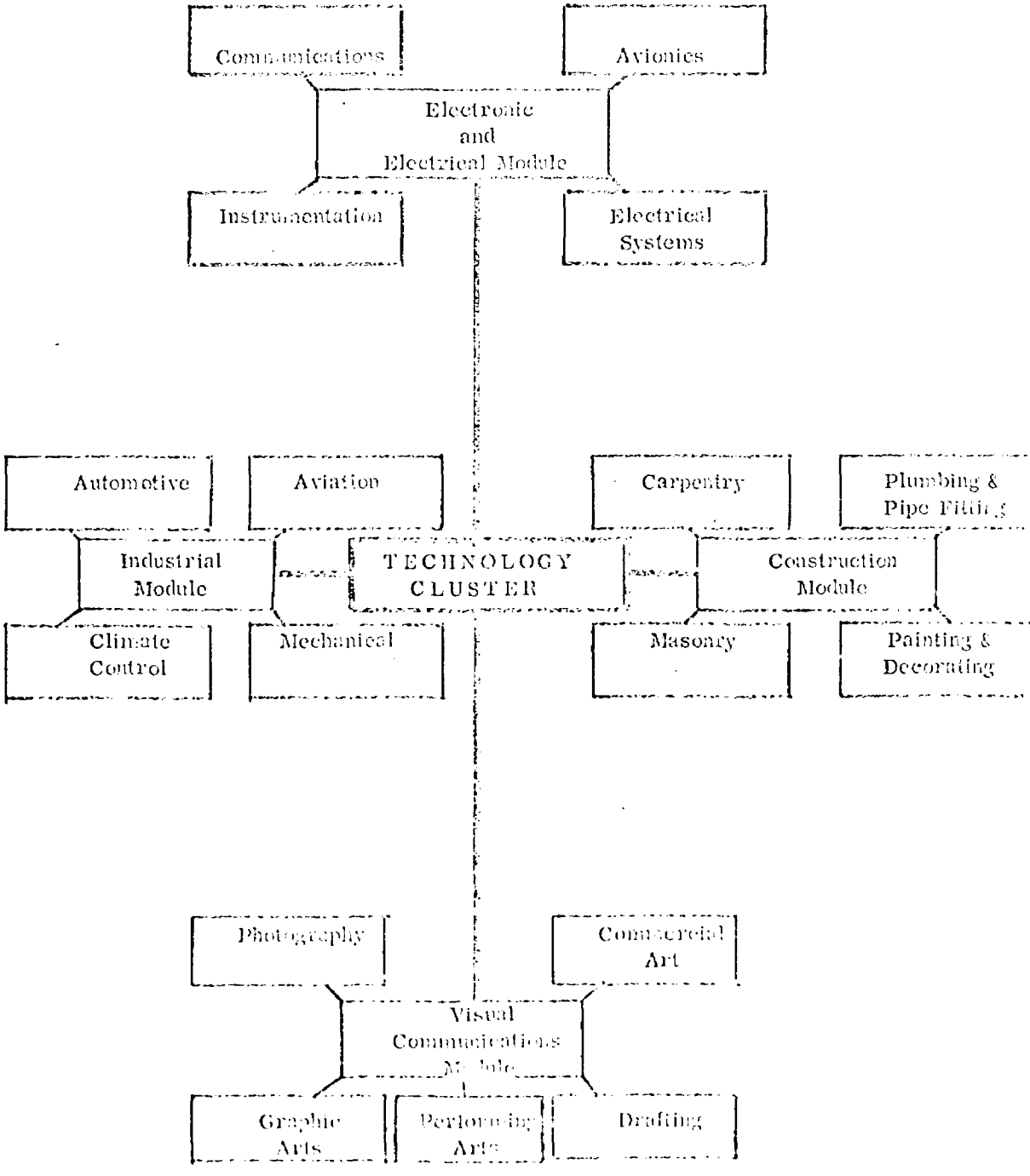
- Business

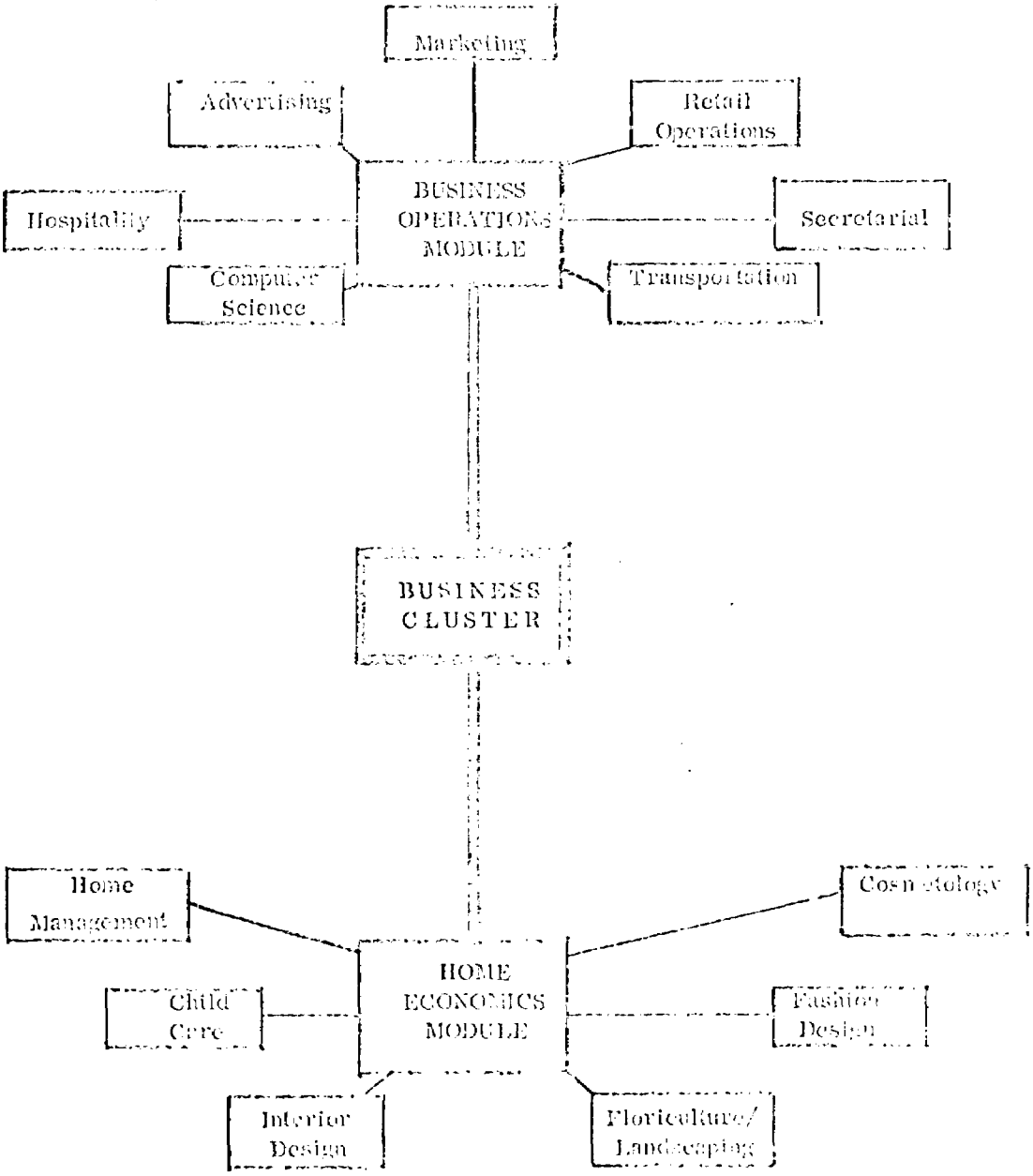
  - Home Economics Module

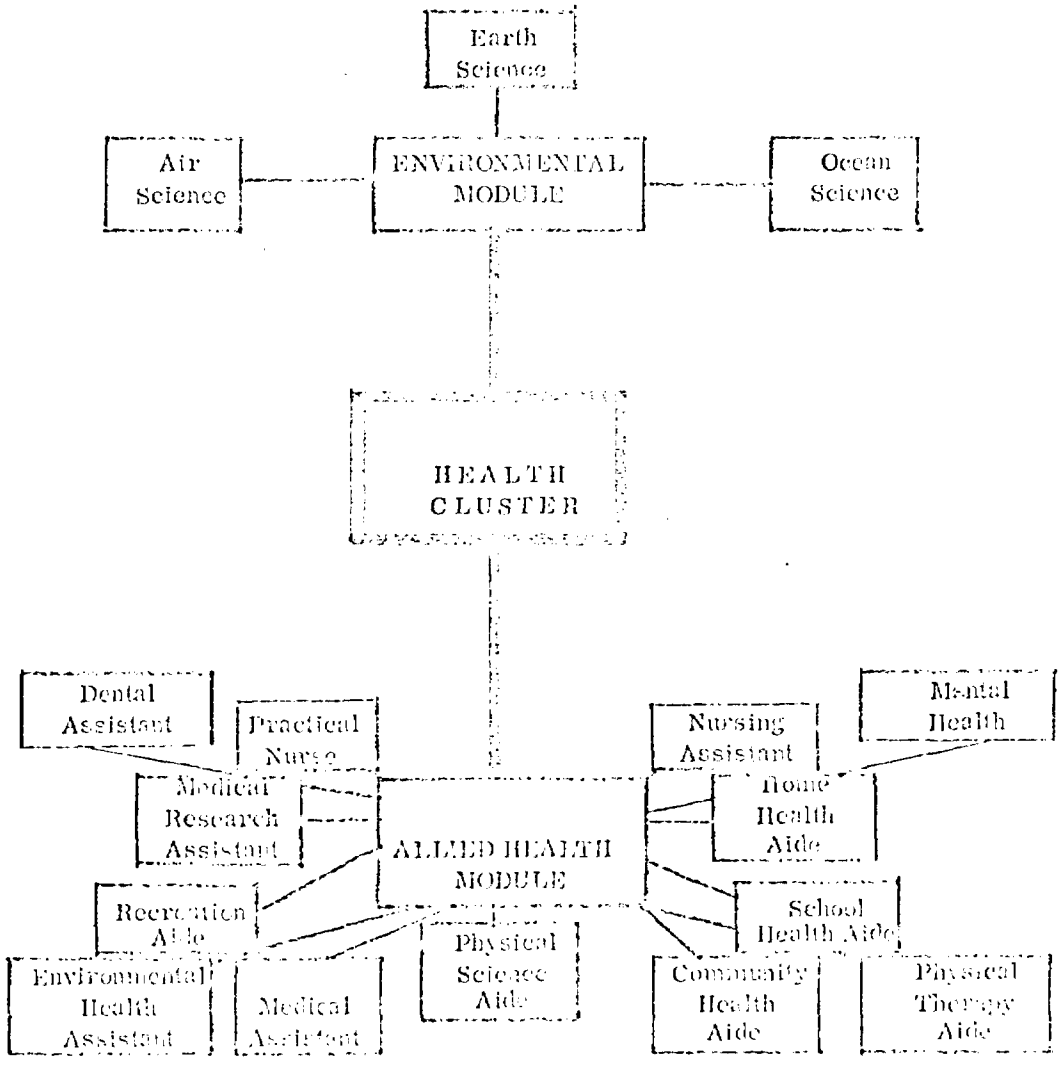
    -- Home Management

- -- Cosmetology
- -- Child Care
- -- Fashion Design
- -- Interior Design
- -- Floriculture/Landscaping

- Business Operations Module
  - -- Advertising
  - -- Marketing
  - -- Retail Operations
  - -- Hospitality
  - -- Secretarial
  - -- Transportation
  - -- Computer Science


Communications
Avionics
Electronic and Electrical Module
Instrumentation
Electrical Systems
Automotive
Aviation
Carpentry
Plumbing & Pipe Fitting
Industrial Module
TECHNOLOGY CLUSTER
Construction Module
Climate Control
Mechanical
Masonry
Painting & Decorating
Photography
Commercial Art
Visual Communications Module
Graphic Arts
Performing Arts
Drafting


Marketing
Advertising
Retail Operations
BUSINESS OPERATIONS MODULE
Hospitality
Secretarial
Computer Science
Transportation
BUSINESS CLUSTER
Home Management
Cosmetology
HOME ECONOMICS MODULE
Child Care
Fashion Design
Interior Design
Floriculture/ Landscaping


Earth Science
Air Science
ENVIRONMENTAL MODULE
Ocean Science
HEALTH CLUSTER
Dental Assistant
Practical Nurse
Medical Research Assistant
Recreation Aide
Environmental Health Assistant
Medical Assistant
ALLIED HEALTH MODULE
Physical Science Aide
Nursing Assistant
Mental Health
Home Health Aide
School Health Aide
Community Health Aide
Physical Therapy Aide

APPENDIX K

SUGGESTIONS FOR RELEVANT COURSES

The following course descriptions are excerpts from Reconnection for Relevance: A Proposed New High School Curriculum* by James L. Fenner, Brooklyn, New York.

1. *ENTERTAINMENT* This course would deal with current films, with TV, with radio (very much a source of adolescent entertainment today: "We're portable!" as the "good guys" put it), records, with the theater, and with the entertainment aspects of the mass-circulation magazines. Sebastian De Grazia[22] underlines the hollowness of our leisure. A course like this one wouldn't cure the malaise he describes, but it might be a start, and it would surely be popular. Its purpose would not be primarily to entertain the students; it would be aimed at helping them to understand and assess and respond knowingly to what the entertainment media offer. Materials would be plentiful; they constitute a major part of the out-of-school life of youngsters already, and in class they could be analyzed as to their methods, their craftsmanship, their social implications, their psychological impact, and their visual, verbal, rhetorical, sensory, and kinesthetic structures.

2. *PERSONAL RELATIONSHIPS* This subject would explore the many levels and values in personal relationships. Carl Rogers[23] insists upon the essential importance of self-discovery. "Psychology" would have been the traditional name for a course like this, and there would still be that aspect to it, but in addition it would deal with the style and content of relationships within the family and the peer-group, and with personal concerns such as love, sex, friendship, ambition, the draft, and perhaps it would touch upon the philosophical as well as the psychological aspects of such matters. Here too, the content of the course would be life as students actually and personally live it outside of school. Although it would deal with these situations in general and in principle instead of attempting to guide pupils in their personal lives directly, it most certainly would bear a direct and magnetic relationship to the reality with which they are in daily contact.

3. *MORAL ISSUES* This would be a study of ethics as exemplified by the personal relationships of the previous course, or by political questions, or by school or business problems. The course would aim to present issues and analyze them with penetration and clarity rather than to present solutions. Any kind of written or other material could provide the basis for a sequence of discussions: magazine articles, news items, TV, radio, or film shows, excerpts from philosophical writings, the Bible—whatever. These would be grouped into "topics" representing different *kinds* of ethical issues, and presented in discussion as they relate to adolescent concerns both immediate and future. Here the ethics of business, politics, international affairs, child rearing, sex, and school would be subjected to the kind of analysis that might make even school look rele[illegible]

21 Jules Henry, *Culture Against Man*. New York: Vintage Books, 1963.
22 Sebastian De Grazia, *Of Time, Work, and Leisure*. Twentieth Century Fund, 1962.
23 Carl Rogers, *On Becoming a Person*. Boston: Houghton Mifflin, 1961.

* The Record, Teachers College, Columbia University, Volume 71, Number 3, February 1970.

4. *WASHINGTON POLITICS TODAY* This would combine the current events that the media brand to us with the national aspects of what used to be called "Civics", political theory, debates on national programs and on bills before Congress, biographical and/or political studies of national figures, a little history as the need for it arose in discussion of the day's issues, and perhaps some class predictions of future political developments. The text for the course would be the daily paper, the newsweeklies, the radio, TV, and perhaps some traditional textbook material on the structure of the Federal government.

5. *LOCAL POLITICS TODAY* The emphasis here would be on state and municipal politics, including education, the police, welfare, the courts, and the tax structure. City and neighborhood newspapers would provide the texts. TV and radio coverage of local events would be monitored daily. Local politicians might be asked to address the students. Jury duty would be discussed, possibly in connection with the film *Twelve Angry Men.* Magazine articles on such topics as corruption in politics would certainly be of value and interest. An aspect of such a course that would capture the interest of young people and seem relevant to their real concerns and out-of-school experience is the discovery and discussion of ways of "fighting city hall" effectively: how to mount an effective campaign, when to write letters, when to obstruct, when to visit whom—how, in other words, to make one's weight felt as a citizen.

6. *INTERNATIONAL AFFAIRS TODAY* All the media would provide material for this course. Propaganda analysis would form a considerable part of the subject-matter, as would the metaphors of international discourse. The foreign press could be studied for alternative points of view. WNYC has an interesting suppertime "Foreign Press Review" several times a week. The course would not try merely to acquaint students with international events; it would seek to help them understand the thrusts, pressures, aspirations, and other motivations that they reflect. And it would undertake some evaluation of the thoroughness, effectiveness, objectivity, and reliability of the media's presentations of international news.

7. *HOW TO THINK STRAIGHT* The traditional name for this course is "Logic," but here a commonsense rather than a technical approach would be stressed. Books like Stuart Chase's *Guides to Straight Thinking*[24] or Robert Thouless' *How to Think Straight*[25] could be used as texts, and issues and examples for analysis could be found in every news presentation or public document, whether political, social, religious, or whatever, published in America. The popularizers of Korzybski[26] have provided interesting case studies in straight and crooked thinking. In this kind of course, the "purely" intellectual enterprise of thinking accurately could be given a contemporary applicability to social and personal issues that vitally concern young people, thus serving to help integrate in-school and out-of-school learning and experience.

8. *THE FUTURE* Nothing concerns teenagers more than the future, probably not even the present. This course, cutting across many subject-matter boundaries, would explore and speculate about the future of technology, of politics, of school, of personal relationships, of sports, of communications, of America, of the Negro, of practically everything. It would draw upon the present as depicted in the media, upon the past as researched out of books for this or that investigation, upon life experience, and invention. It might help pupils to feel that they have some realistic possibility of contributing to the shaping of their own futures if they understand more fully the processes and probabilities in accordance with which the future tends to unfold.

24 Stuart Chase, *Guides to Straight Thinking*, New York: Harper and Row, 1956.

25 Robert H. Thouless, *How to Think Straight*, New York: Hart [illegible], [illegible] 1932.

26 See Alfred Korzybski, *Science and Sanity* [illegible]

9. *OUTER AND INNER SPACE: A SCIENCE SURVEY.* In descriptive rather than technical terms, the principles, discoveries, and chief theories of the social and natural sciences would be presented and discussed here. The course, while relying to a degree on historical material about previous discoveries and innovations in the sciences, would be kept rigorously up-to-the-minute via regular scrutiny of current material presented in the media. Thus, new advances in the technology of space exploration, communications, computerization, automation, or even recent re-evaluations of theoretical systems could be made a part of the course. Biology, psychology, sociology, and embryology might justify the "inner" part of the title; mechanics, chemistry, sub-atomic physics, and astronomy would be the "outer" space. The point of the course would be not to introduce the technical aspects of the sciences, but to give some pupils some familiarity with underlying concepts of scientific understanding, such as the "reflective thinking" of Dewey, so that they will be better able to follow and comprehend the technological society in which they live.

10. *HOW TO USE FIGURES.* The computational problems of everyday existence *stump* many pupils because they have learned in school to *fear* and hate quantitative subject-matter. But computational math and useful arithmetic, if presented afresh in the guise of "tricks" or "speed math" or "mental arithmetic" or "short cuts to accuracy," might grab youngsters and sustain their interest. The Trachtenberg System and other computational devices could be made the basis of a truly useful arithmetic course that would be of value to academic, commercial, vocational, and "general" students. For some, its value would be vocational; for others, academic; for still others, perhaps just recreational or curiosity-satisfying. Certainly it would help relate school to actual student needs.

11. *LOCAL RESOURCES: INFORMATION, RECREATION, SERVICE.* The aim here would be to engage directly in the task of acquainting students with what is real in their surroundings. Particularly among the poor, many students have had limited experiences outside their immediate neighborhoods. In this class, they would have a chance to take the trips their elementary-school teachers never took them on: walking tours through their city's neighborhoods, to the underground cinema, night court, domestic court, the Chinese New Year celebration (if there are such), and scores of others. It would acquaint them with where and what the tourist attractions are; it would take them to the airport; it would show them how to file for services when they need them; it would give them a sense of their city. Here they would find out how to call an ambulance, how to get psychiatric emergency service, how to apply for these or those benefits, whom to complain to about this or that: the Better Business Bureau, the Rent Control Office, the District Attorney's office, and so on. It would acquaint them with the services offered by the Housing Authority, the Board of Health, adult education programs, the Legal Aid Society, private and public family service organizations, the Department of Hospitals, the Civil Liberties Union, outpatient clinics, the Visiting Nurses' Association.

12. *ADVERTISING AND PROPAGANDA.* Here students would practice analyzing and interpreting the political and commercial persuasions that flow around them incessantly. They would deal with local and international propaganda pitches, with the relationship, as Ellul describes it, between technological progress and propaganda, with advertising's particular forms: radio and TV commercials, printed ads, direct mail, billboards, packaging, and point-of-sale promotion. They would practice reading between the lines, understanding what is *not* said, understanding the *purposes* of the message originator, understanding the weaknesses of the reader. Students would consider the interrelationships inherent in the multiple appeals of advertising: visual, verbal, auditory, etc. A course like this is bound to have practical value and intense interest for adolescents. Chase's *The Power of Words* and Hayakawa's *Language in Thought and Action* might be used as texts with average classes. Even as demanding a work as Ellul's *Propaganda* might be used with superior groups.

27 [illegible]

28 [illegible]

13. *CHILD DEVELOPMENT AND FAMILY PSYCHOLOGY.* Here girls would study family resources, sources of outside help on personal and family problems (medical and psychiatric clinics, marriage counseling, etc.), principles of child development, cause of family friction, etc. As texts, the class could use not only popular books like Spock's *Baby and Child Care*[29] and Gesell and Ilg's *Child Development*,[30] and the U.S. Government pamphlets, but they could also study popular presentations in the magazines, papers, and on TV to evaluate their worth and seriousness.

14. *DO-IT-YOURSELF HOUSEHOLD REPAIRS AND IMPROVEMENTS.* This would deal with strictly practical matters that any boy who's going to be a tenant or homeowner would want to know: wiring and rewiring, fuses, circuits, overloading, circuit-breakers, types of cables and their uses, plumbing, changing washers, fixing valves, carpentry, plastering, painting various types of surfaces for various purposes with various types of paint, waterproofing, insulating, weather-stripping, caulking, air conditioning, fans, circulation, ventilation, floors and their care, fire-hazards and how to prevent them, and appliance repairs. Especially now that the so-called "comprehensive high school" looks as though it is to become a reality in most places, a course like this could well satisfy the requirements of a quite heterogeneous group of boys, including many who might not be interested in any of the regular vocational shop courses.

15. *CAR REPAIRS AND IMPROVEMENTS.* This would not be a course in auto mechanics. Instead it would provide theory and practice in "little" jobs like polishing, washing, tune-ups, tires, minor adjustments, gasolines, oils, checking and replacement of parts, customizing, accessories and their usefulness, sources of supply and advice, how not to get cheated at the service station, how to check things for yourself, and how to judge a used car. Texts might include repair manuals, *Consumer Reports* (the annual car issue), and hot rod and custom car magazines. Or all this material might be incorporated into an expanded "driver education" course.

16. *MEDICAL SCIENCE.* This would be designed to acquaint the layman with modern principles and concepts related to medicine and human health. It might include discussion of matters such as sex: its psychology, physiology, and hygiene; medical hygiene, preventive medicine; medical practices (what to expect your doctor to do for you), controversial medical research and recent discoveries; health emergencies and what to do about them; danger signals and symptoms; where and how to get help and treatment. In addition to current medical columns purveyed by the various periodicals, students might study a popular medical "encyclopedia" or the Consumer's Union manual, *The Medicine Show.* Here again such a live course in school would capitalize on a significant out-of-school interest and use it to convey a useful body of integrated and current information and a sensible set of attitudes.

17. *CONSUMER AND LEISURE ENGLISH.* Students would discuss and practice how to read labels and other "fine print" intelligently, how to read and understand applications for loans, charge accounts, subscriptions, book clubs, and similar promotional programs; writing letters of inquiry and complaint; reading advertisements between the lines, understanding and appraising TV and radio commercials, getting reliable information on quality and price, entering promotional "contests," writing last lines for jingles, [illegible] or [illegible] "Why I like [illegible] in 25 words or less"; [illegible] crossword puzzles, [illegible], etc. As texts, the class could use magazines and newspapers [illegible].

29. Benjamin Spock, *Baby and Child Care*. New York: Pocket Books, 1946.
30. Arnold Gesell and Frances L. Ilg, *Child Development*. New York: Harper and Row, 1949.

18. *GETTING YOUR MONEY'S WORTH* The emphasis here would be on such matters as comparing supermarket prices on a cost-per-unit basis, for example, family and personal budgeting, bank accounts and practices, credit accounts and their "real" cost, installment purchases and their cost, insurance of various kinds, life, age, health, straight life, term, hospitalization, etc.; savings and investment; finding where to get reliable information on products and prices, how to save on taxes and compute returns. The thesis expressed by David K. Gast in his article, "Consumer Education and the Madison Avenue Morality,"[31] would be part of the course; major materials would include *Consumer Reports*, *Changing Times*, advertisements, and application blanks.

19. *HOW TO GET A JOB AND GET AHEAD* This course would survey job resources and requirements in service, communications, manufacturing, white-collar, retail, professional, armed-forces, civil-service, and other lines of work. As a career survey, it could be adapted to the "level" and needs of any class. It would acquaint students with job resource materials available in the library, with job-getting services like the commercial employment agencies and the state employment service, and other similar matters.

20. *EVERYDAY LAW* This would be a little like the conventional "business law" courses widely offered in commercial curricula today, but it would not be restricted to commercial applications. In addition to these, it would familiarize students with the ins and outs of negligence suits, leases, contracts, citizens' rights and duties both in court and vis-a-vis the police, and it would acquaint them with the nature of civil suits, family court, small claims court, etc. Trips to the various types of courts would supplement a simple law text. Class discussions would be based on hypothetical and even actual cases representing real situations.

21. *PART-TIME AND SUMMER EMPLOYMENT OPPORTUNITIES WORKSHOP* This would be an exploration of job possibilities; instruction in job requirements and duties; a survey of retail, [illegible], civil-service, library, dining-room, Park Department, ice-cream, post-office, even baby-sitting opportunities, and how to get and make the most of them. The mechanics and legalities of working papers and other school and governmental requirements would be touched upon. Students would be acquainted with school programs such as STEP (School To Employment Program), the Job Corps, co-op educational programs, and others.

22. *HOME DECORATION* This would combine features of traditional courses touching upon this area that are currently offered by art, home economics, shop, and merchandising departments. For interior decoration, it would cover color, texture, shape, size, line, pattern, fabric, furniture, accessories, utility, quality, sources, costs. For exterior decoration, topics would include painting, gardening, outdoor design, patios, porches, grills, houseplants, flower-cutting and arranging, landscaping, [illegible] and pest control.

23. *DESIGN CRAFTS* This would correlate art and shop and perhaps even sewing in providing introduction to and practice in the creative crafts of jewelry-making, block printing, ceramics, fabric printing, weaving, knitting, crocheting, [illegible] and [illegible], rug [illegible] and [illegible], [illegible], sculpture, wall decorations, gift wrapping, toy making, and making ornaments and artificial flowers.

31 David K. Gast, "Consumer Education and the Madison Avenue Morality," *Phi Delta Kappan*, June 1967.

24. *MOVIE, TV, AND STILL PHOTOGRAPHY* Going beyond the typical art department course in still photography, this would include color, black and white, film types, film speeds, camera types, shutter speeds and lens openings, camera accessories, filters, darkroom chemicals, procedures, and manipulations. In addition, using movie and TV equipment (cameras, sound equipment, monitoring screens, TV tape recorder, etc.) it would correlate the arts of improvisation, acting, dramatic writing, continuity, sound background, advertising psychology, and others, in providing students with an opportunity to create commercial and artistic work of all kinds for film and TV. Kohl in *36 Children*[32] has written of how successful ordinary creative writing can be in capable and imaginative hands. A course in creative photography might be even more exciting to adolescents.

25. *NUTRITION, DIET, AND PARTYMAKING* This course would cover nutrients and what they do, calorie counting and special diets, expensive vs. inexpensive foods, economy in shopping, planning ahead for meals, budgeting food purchases. In addition, it would deal with problems of entertaining, such as providing *hors d'oeuvres*, beverages, dinners, after-dinner snacks, table settings, etc.

26. *THE STOCK MARKET* Any student, rich or poor, might experience an interest in mechanisms of investment and speculation. This course could introduce such matters as the mechanics of financial transactions, the stock exchanges, round-lot and odd-lot trading, commissions, margin, analysis of individual companies and industries, sources of information and advice, "technical" (chart) analysis, fundamental economic influences, and other investment and speculative vehicles like bonds, puts and calls, mutual funds, rights, and commodities. Popular and technical publications that could supplement the *Times* and the *Wall Street Journal* as text materials are plentiful.

27. *SONGWRITING* This course would be taught jointly by a music teacher and an English teacher and would be open to would-be lyricists, tunesmiths, and arrangers. As an elective, it would have appeal for many youngsters because of its concern with the here-and-now world of fads and fashions in popular music. As education, it would make sense because it would help transform a largely passive interest into a working approach to craftsmanship and creativity.

28. *INTERMEDIA* Here students interested in creative enterprises like the theater, film, dance, "happenings," painting, sculpture, or just plain self-expression could experiment with new kinds and combinations of art production. Some of this material could be developed and polished for public presentation in auditorium or library, or coordinated with the school's regular extracurricular activities, such as the school play or "Sing." Combinations of media, like lighting, color, sound, shape, depth, movement, and texture would be organized into new and exciting art forms.

29. *CHOREOGRAPHY* Open to students interested in dance, this elective would give them an opportunity for creative self-expression, for coping with the problems of organizing movement intelligently and effectively, of fitting the steps of a dance to a musical accompaniment, of building a climax, of coordinating and blending diverse kinds of movement into a viable whole, etc. The class would involve itself in public performance within and outside the school, both as a cohesive unit and as participants in many school theatrical presentations.

32 Herbert Kohl, *36 Children*, New York, N.Y.: New American Library, 1967.

30. *PROTEST LITERATURE* [illegible] elective would [illegible] students with [illegible] works of protest literature, from [illegible] to the present day. [illegible] as well as [illegible] ephemera, would be studied [illegible] the [illegible] conditions [illegible] of their times and place of origin.

31. *SPEED READING* Open to any student who wishes to increase his reading power, this course would appeal, I believe, particularly to the college-bound or commercial student. The many books available today on better and faster reading, along with teaching [illegible], would provide ample materials for a truly challenging and effective course.

32. *SPEEDWRITING* As an alternative to scheduled courses in stenography, an elective in speedwriting might have appeal for students who want a system of fast notetaking for personal use rather than a commercially salable skill. Students might well be attracted by the possibility of mastering a high-speed writing method based on the familiar longhand symbols and therefore more accessible from the start and easier to practice at any time, even when incompletely learned.

33. *MEMORY TRAINING* Self-help books on this subject are numerous and interesting, but they cannot provide the stimulus or supervision that a teacher and a course can give. Aside from the trivial and superficial appeals that may inhere in this kind of skill subject, in today's increasingly non-"linear" world it may be more and more important for students to develop methods (even gimmicky ones) for remembering what they see and hear.

34. *ROCK AND FOLK SURVEY* The history and current state of the rock'n'roll and folk music industries would be the subject matter here. Recordings and dittoed lyrics would be the texts. Student research, presentations, symposia, TV tapes, audio tapes, visits to recording and broadcasting studios, and many other activities could form the methodology.

35. *INDEPENDENT STUDY* With the approval of the appropriate faculty member, a student wanting to pursue studies along lines dictated by his own interests would have the opportunity to consult on the preparation of a study program consisting, perhaps, of suggested readings and an appropriate time schedule. Whether the subject were statistics or psychological novels, the student could proceed at his own pace, consult when necessary with his adviser, and reap the private benefit of having explored a subject himself.

36. *WORLD RELIGIONS* Comparative study of religious beliefs and practices would acquaint students with the traditions, rituals, and dogmas of the great religions of the East and West. In an age of [illegible], this kind of factual study would be of interest and of value to students. Parents would approve of it and religious organizations would cooperate in planning and executing it.

37. *THE ARTS TODAY* A study of the avant-garde in painting, sculpture, film, architecture, multimedia, happenings, dance, theater, poetry, the novel, etc. would capitalize on everything that is happening in the world of the creative arts concurrently with the course. Students would see actual productions and exhibitions throughout the semester and read current materials such as exhibition catalogs, magazines and newspaper criticism, and the Sunday *Times*. Interrelationships between the various art forms and the milieux in which they occur, taboos and conventions observed and broken, and the implications of what a medium is [illegible] would comprise the substance of the course.

38. *VARIETY IN AMERICAN SOCIETY* This survey of American sociology would explore varying traditions and customs among segments of America's population drawn from diverse ethnic groups, national origins, ages, socio-economic classes, and parts of the country. Emphasis would be not on a mere anecdotal account of other groups' funny customs, but on how traditions interact with social, political, ethnic, economic, and geographical background factors as well as with the future. One possible text resource for such a course would be the magazine *Transaction*.

39. *EMCEEING, NEWSCASTING AND DISKJOCKEYING* This speech elective would give show-business-minded students a chance to study and practice the techniques required in the entertainment industry: gagwriting, timing, introducing guests, interviewing, introducing songs, reading commercials, newscasting. Video tape and audio tape would be the standard performance media for classroom sessions. These could culminate in weekly or monthly assembly or P-A system entertainment and public service programs featuring the work of the class.

40. *COMPUTER TECHNOLOGY* As an elective course this could appeal to a heterogeneous group including those with a philosophical interest in works such as those by Ellul and Weiner, those with a mathematical bent and a possible career interest in programming, and those commercial students who want to learn key punch operation in a realistic setting.