ED 072 220   VT 018 580

TITLE   PEAPOL I (Program Evaluation at the Performance
                Objective Level) User's Manual.
INSTITUTION   Fresno County Dept. of Education, Fresno, Calif.
SPONS AGENCY   Office of Education (DHEW), Washington, D.C.
PUB DATE   1 Jul 72
NOTE   77p.

EDRS PRICE   MF-$0.65 HC-$3.29
DESCRIPTORS   Achievement Rating; Behavioral Objectives; *Computer
                Oriented Programs; Computer Programs; Cost
                Effectiveness; County Programs; Educational
                Accountability; Educational Innovation; *Manuals;
                *Program Descriptions; *Program Evaluation; Systems
                Approach; *Vocational Education
IDENTIFIERS   PEAPOL; Program Evaluation at Performance Objective
                Level

ABSTRACT
                The purpose of this manual is to provide a
nontechnical description of the Fresno County system for program
evaluation. Intended for the use of the school administrator,
teacher, or researcher whose knowledge of electronic data processing
is limited, this manual presents ways of using the system, the
procedures required to support system operations, and the
interpretations which should be given to reports generated by PEAPOL.
Designed to allow vocational teachers and district administrators to
closely monitor student progress and costs incurred in individual
classrooms, this system generates reports by linking progress data to
cost data at the performance objective level of instruction. Topics
discussed include: (1) a summary of PEAPOL's capabilities and
limitations, (2) a rationale, (3) its use in vocational education,
(4) collecting and developing class data, (5) developing budget
information, (6) changing the records, and (7) interpreting the
program's output. Funded under the Vocational Education Act of 1968,
this document is related to a technical user's manual and an
evaluation, available in this issue as VT 018 581 and VT 018 579,
respectively. (AG)

PEAPOL I

Program
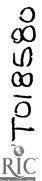Evaluation
At The
Performance
Objective
Level

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Funded under Vocational Education Act of 1968, Part C

User's Manual

Fresno County Department of Education

July 1, 1972

ED 072220

TO18580

MEMORANDUM

TO: The ERIC Clearinghouse on Vocational and Technical Education
The Ohio State University
980 Kinnear Road
Columbus, Ohio 43212

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(Address)_721 Capitol Mall, Sacramento, Ca., 95814_____

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"Program Evaluation at the Performance Objective Level -- Users Manual"

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Source-(agency)
(address)2. Auvil, Mary S., "PEAPOL -- Outside Evaluation"

This document was developed for the Fresno County Department
of Education under a Vocational Education Act research grant. Its
purpose is to provide a nontechnical description of the Fresno
PEAPOL (Program Evaluation at the Performance Objective Level) System.
The document is intended to be used by the school administrator,
teacher, or researcher whose knowledge of electronic data processing
is absolutely minimal. As such, it emphasizes the ways of using the
system, the procedures required to support system operations, and the
interpretations which should be given to reports generated by PEAPOL.
Nothing in the way of technical documentation is supplied in this
manual. For a detailed and technical description of PEAPOL, it is
suggested that the reader refer to the companion document, Fresno
PEAPOL System Technical Manual (TM-4903/000/00).

TABLE OF CONTENTS

LIST OF EXHIBITS

A Summary of Capabilities and Constraints

PEAPOL (Program Evaluation at the Performance Objective Level) is an automated system which generates a series of reports designed to allow vocational teachers and district administrators to closely monitor the progress being made, and expenses being incurred, in individual classrooms. The system accepts cost data which is similar to that required by educational budgeting and forecasting systems, but then combines this data with individual student progress information in order to generate a series of reports linking progress data to cost data at the performance objective level of instruction. This allows the costs being incurred in teaching individual performance objectives, and the number of hours spent by each student working on each performance objective, to be monitored on a weekly basis. The system also charts performance trends for each student and each classroom; and it allows special analyses to be made which report the progress that is being made by special groupings of students that may be expected to have instructional requirements different from those of other students. Among others, reports can be generated which provide grouped progress data for students of different ages, sexes, ethnic groups, reading levels, and math levels.

To evaluate student performance on different behavioral objectives, a time clock is installed in each class. This allows the time each student spends working on each behavioral objective to be precisely recorded. This information is then entered into a data base which also is used to collect and analyze student progress data, student descriptive data, and class cost management information.

Steps Required for the Successful Operation of PEAPOL

The operations listed below are the ones required for the
successful operation of PEAPOL. They are all explained fully in
this chapter.

Before the semester begins:

a) develop a set of measurable behavioral objectives which
   completely describe the content of the course;

b) develop the required course and budget information;

c) install time clocks and print the required forms;

d) gather all available student and class information;

e) construct the initial versions of the studentmaster
   file and classmaster file;

f) validate all initial data input; and

g) orient teachers and students to PEAPOL's purposes, ad-
   vantages and procedures.

During the first week of the semester:

a) make final corrections on input data;

b) familiarize students and parents with the purposes
   and operation of the system; and

c) begin submitting time cards and class event input forms.

Throughout the semester:

a) post the latest copy of the student summary report
   where students will see it;

b) maintain careful control over the accuracy and
   completeness of the data entered into the system; and

c) make periodic checks against the teacher's grade book
   to ensure that student data are being accurately reported
   and analyzed.

Exhibit 1 - Steps Required for the Successful Operation of PEAPOL

At mid-term and at the end of the semester:

a) provide the student with a copy of the latest
   data pertaining to his work found in the student
   summary report;

b) carefully analyze the latest copy of the classroom
   summary report and the dollar summary report with
   the objective of modifying instructional procedures
   inherent in the more expensive performance objectives
   so that overall class costs can be reduced and/or
   efficiency increased; and

c) analyze a complete set of special student reports
   with the objective of modifying general classroom
   procedures and specific instructional sequences so
   that specific groups within the classroom will be
   able to achieve a better level of performance.

Exhibit 1 - Steps Required for the Successful Operation of PEAPOL (Cont'd)

In order for PEAPOL to operate, it must be supplied with various types of information on a scheduled basis. This schedule is summaried in Exhibit 1.

From this flow of information, the system generates four reports on a weekly basis.

The student summary report shows how much time each student has spent on each performance objective, which objectives he has completed, and how his present rate of progress compares to that of previous weeks. It also generates warning or merit indicators whenever this rate changes appreciably.

The classroom summary report produces grouped data which shows the total amount of time all of the students in a class have spent working on each objective, and how the class's present rate of progress compares to that of previous weeks. A special message is generated whenever a class's rate of progress deviates markedly from its established rate. Based on the total amount of time consumed in working on each objective and the number of students who have begun work on each objective, it reports a "present prorated cost" and a "prorated cost per pupil" for each objective, allowing cost analyses to be made at the performance objective level.

The dollar summary report displays overall class budget, dollars expended to date, prorated cost for each objective, and prorated cost per student for each objective.

The special student report groups students by sex, ethnic group,
age, reading or math scores, and produces performance data for each
group. Thus, the progress being made by students with different reading
levels or ethnic group memberships can be reported in summarized,
grouped data form, without identifying particular students within
each group.

It should not be assumed that PEAPOL is capable of being utilized
with any type of instructional situation. There are specific
constraints which sharply delimit its use. These constraints
can be summarized as follows:

a) the entire course of study must be defined in terms
of readily measurable performance objectives which each require
approximately the same amount of time for a student to complete;

b) the class must be structured so that every student proceeds
independently through the course at his own rate of progress;

c) each classroom must be equipped with a time clock which
reports elapsed time to the nearest hundredth-of-an-hour, or an
alternate means of recording this information; and

d) the district must have access to a Honeywell computer
configuration equipped with an operational version of this system.

Needless to say, these constraints pertain only to this
particular system. By modifying the present version of PEAPOL,
variations could be produced with entirely different sets of
capabilities. However, it was not the purpose of this project to
develop a system that would be "all things to all men." Rather,
the purpose was to develop a pilot system which could be used to

evaluate the practicality of applying the concepts developed by
the author in this chapter,.and to provide other researchers with
a set of proven computer programs which could be used as the core
of other reporting systems designed to meet requirements not dealt
with satisfactorily by the present version of the system.

The operational version of this system was developed by System
Development Corporation and the Fresno County Department of Education
under a Vocational Education Act research grant. The project formally
began in August, 1971, and the system went into operation in January,
1972. It is now being used in three automobile repair classes
located in two different school districts in Fresno County.

The programs operate on a Honeywell computer located at the Fresno
Regional Data Processing Center for Education. PEAPOL requires a
Honeywell H-200 series computer configuration with 24K of core memory,
5 tape drives, a 132-character line printer and a card reader. Pro-
gramming is done in Honeywell COBOL (TR) and the Honeywell H-200 (TR)
operating system is utilized.

Rationale

Nearly all educational reporting systems used in the
United States are designed to collect and disseminate historical
information pertaining to individual students and classes.
Quarterly or semester grades, end-of-year teacher comments, and
totals for absences and latenesses have been typical of the type
of information entered on student records. Similarly, class
records have usually been limited to a list of students entering
and completing the course, final grades, and the teacher's name.
Budget information is usually stored separately from student and
class information, and is usually not broken down to reflect
expenditures at the class or student levels.

Because of this situation, it has been nearly impossible to
apply any concepts of accountability to the educational process.
Educational accountability, whether labeled PPBS, program budgeting,
or management by objective, implies that the educator is capable
of determining the type and magnitude of resources required to bring
students from one point in a program to another point, that he is
able to specify the types of gains which have been made by every
student in a class, and that he is able to analyze the results of
previous courses in order to redesign them to operate more efficiently.
Educational accountability also suggests that the educator should not
have to wait until a course is over before he can take corrective

actions to improve the program, but that he should be supplied
on an ongoing basis with sufficient feedback to make intelligent
management decisions pertaining both to individual students and
to classes as a whole.

While movement towards an educational accountability system
capable of supporting all of those types of activities has been
slow, there have been some encouraging developments during the
past ten years. Probably the most significant has been the
acceptance of the concept of evaluating student behavior and
learning gains in terms of measurable behavioral objectives. As
increasing numbers of teachers have restructured their courses
to conform to this model, and as increasing numbers of instructional
packages written in this manner have arrived on the educational
scene, it has become (from a theoretical sense) far more possible
to monitor specific student learnings in order to restructure courses
and provide students with guidance information based upon their
learning gains.

Another concept that has gained ground in the quest for
educational accountability has been PPBS (program-planning-budgeting
system). Originally intended as a management tool capable of
monitoring production projections based upon specific allocations or
resources (e.g. "If I am supplied with 20 men, 8760 square feet of
plant space, and a $198,000 budget this year, I will be able to
produce 87,000 widgets. If my personnel resources are allowed to
grow at an annual rate of 5%, and my space allocation and budget
are allowed to increase at a rate of 3% annually, I will be producing

390 widgets per year at the end of a five-year period."), this technique has been seized upon by many state legislatures and administrative groups as a panacea for problems involving educational accountability. As a starting point, these groups have utilized a PPBS concept, that of the program budget, to force school districts to abandon the traditional educational line item budget (e.g. "X dollars for teacher salaries, Y dollars for building improvements, and Z dollars for administrative and clerical expenses.") and move to a budget plan where each educational unit or program is allocated a specific sum of money to meet a set of specific objectives.

The shift towards PPBS in education is not being accomplished smoothly. Teachers' groups often state that the entire concept is not applicable to education since learning gains cannot be entirely defined in terms of behavioral objectives. They have also objected to diverting resources badly needed for instructional programs to develop PPBS-type programs. Citizens' groups have gotten into the act. Some are waging a highly successful campaign centered around the theme that the imposition of PPBS on local districts will allow the federal government to practice "thought control" over students by forcing districts to adopt standardized sets of behavioral objectives that are aimed at putting across concepts politically beneficial to the group in power.

On the opposing flank, increasing numbers of schools administrators are viewing PPBS as the only way of justifying their activities and budget requests. Many state legislatures take a similar view, and

increasing numbers of state legislatures (California, Kansas,
and Colorado are specific examples) have mandated that PPBS be
utilized by all the districts within the state in the near future.
Also, in order to qualify for targeted federal funds, nearly all
U.S. Office of Education grants require that (1) a program
budget be used to account for expenditures, and (2) that behavioral
objectives be developed to explain the intent and expected end
products of the project.

Thus far, most of the arguing between these opposing groups
has taken place in a vacuum since there are few PPBS or educational
accountability systems upon which either group can target. While
different groups have been busy converting courses to behavioral
objective formats, transforming budgets to a program budget structure,
and talking of how educational accountability will be applied "when
all the bugs are out of the system," few comprehensive reporting
systems have been developed and validated that are capable of
supporting the operation of a true accountability system.

At this point it is necessary to differentiate between a data
management system designed to foster educational accountability
and a true educational accountability system. The purpose of the
data management system is to monitor the progress of individual
students and classes and produce reports which contrast this progress
to (1) the resources required to produce this progress; (2) the
resources budgeted to produce this progress; and (3) the level
and types of progress projected for the student and class at any
given point in time. Such a data management system is not an

educational accountability system. Rather, it is simply a tool

that provides input into an educational accountability system

that is capable of absorbing and analyzing inputs from many different

types of data management systems, from individuals working within

the system, and from outside forces acting upon the accountability

system.

Unfortunately, up until now, most educators have attempted

to leapfrog the essential step of developing data management and

reporting systems capable of monitoring educational progress,

projections, and cost information. In this author's view, it is

because of this that there has been so much sound and furor re-

garding educational accountability; for, without having these types

of tools with which to experiment, the most effective weapon that

has been available to the educator wishing to push his point of

view has been rhetoric.

PEAPOL has been designed to at least partially rectify this

situation. It is a tool, a "logical machine," which is capable of

supplying educators with the types of information which they will

require as they move towards a concept of true educational account-

ability. It is not in itself an educational accountability system

and it is not suggested that it is in its final form. Rather, it

is a highly flexible set of proven computer programs and manual

procedures which are currently being utilized in Fresno County,

California, to move the districts in this county further down the

road towards true accountability. The system is inexpensive to operate

and comparatively easy to change. It is anticipated that as in-

creasing numbers of school districts gain experience with the
system, they will generate ideas which will cause changes to be
made in the present version of PEAPOL and will inspire the develop-
ment of entirely different systems capable of monitoring educational
programs with sets of constraints entirely different from those
encompassed by PEAPOL.

PEAPOL is intended for use by all groups within the educational
community. It specifically targets different reports at students,
teachers, and administrators. Because of its capability to integrate
information coming from many different sources, it is capable of:

a) Generating weekly cost data and progress information
for each performance objective included in a course. This type
of information can be utilized to pinpoint trouble areas in a
program where improved materials or teaching techniques are called
for; to provide the administrator with hard data to support requests
for additional personnel or equipment; and to generate baseline in-
formation that can be used as a benchmark in comparing two or more
instructional systems designed to meet the same set of performance
objectives.

b) Generating weekly performance data which show exactly how
much time each student in the class has spent working on each
objective in the program. This information is then analyzed to assign
each student a quantitative performance rate indicator and to compare
each student's current rate of progress with his rates established
during previous weeks. This information is used to pinpoint,

on an exception basis, those students whose progress rates are
moving sharply upwards or downwards from their established work
pattern.

c) Generating a series of reports which compare the work being
done by different subgroups within a class. The system allows com-
parisons to be made on the basis of reading scores, math scores,
sex, age, or ethnic group membership. In this way, groups of students
who are either receiving exceptional benefit from, or being slighted
by, the instructional materials and methods can be quickly identified.

By providing the student, teacher, and administrator with these
types of reports, it is hoped that the ongoing educational process
can be substantially improved. It is also hoped that the development
and use of this system will enable educators to gain a clearer view
of the possibilities and constraints which are inherent in the
concept of educational accountability.

PEAPOL AND VOCATIONAL EDUCATION

In attempting to develop automated educational accountability
reporting systems, there are a number of problems with which re-
searchers have had to come to grips. Three of the most difficult
questions have been:

- Given the present state of the art, in what subject areas
  are we presently capab.e of monitoring educational per-
  formance?

- Given the cost of developing and utilizing automated re-
  porting systems, in what subject areas can their use be
  justified from a cost-benefit standpoint?

- Given the political difficulties related to accountability
  which have been arising within the educational community,
  what subset of teachers would be most willing to approach
  the implementation of a pilot system with an open mind?

In order to answer the first question, it quickly becomes apparent
that only those subject areas whose entire content can be defined in
measurable behavioral objectives should be considered for pilot projects
of this type. Vocational education subjects are ideal for this purpose.
While it is difficult and time-consuming to develop a set of viable
objectives which completely describe an automotive repair course, it
can be done far more easily than carrying out the same operation for
an English literature course. The main reason for this is that courses
involving the mastery of large numbers of psycho-motor skills are
far easier to define behaviorally. Furthermore, thanks to the
early work done by Robert Mager, the United States Air Force, and
the Job Corps, there is no lack of vocational education course

material which is already defined in these terms. When an
electronics teacher decides to revamp his course by defining it
in terms of behavioral objectives, he has many resources available
to him. The same cannot be said for the history teacher or the
French teacher. While there is no reason why courses in such areas
as mathematics, the hard sciences, music, and physical education
cannot be defined in terms of behavioral objectives, the fact still
remains that comparatively few efforts have been made to date in
areas other than vocational education.

In seeking answers to the second question, in what subject areas
can automated educational accountability reporting systems be justified
from a standpoint of cost-effectiveness, there are two possible ways
of approaching the problem. The first alternative suggest that courses
with the maximum throughput of students represent the largest set
of potential benefactors. After all, if money can be saved in courses
which every student must take, the total savings should be large even
if the per unit savings are rather small. However, because the so-
called "core courses" have few psycho-motor components, it is neces-
sary that real breakthroughs be made in educational evaluation before
these savings can be realized, since, as stated earlier, these are also
the areas where it is far more difficult to develop transportable
sets of commonly agreed upon behavioral objectives. Therefore, a
second alternative becomes more attractive. The second alternative
suggests that instructional areas with a relatively low teacher labor
component represent the largest set of potential benefactors. For

both political and practical reasons, it is very difficult to reduce
the teacher labor component in a class's budget since this means
either increasing the teacher's load or cutting back on the instruc-
tional hours. Therefore, if instructional areas with relatively
large non-labor based cost components can be identified and improved
upon, this argument states that dramatic cost reductions can be
achieved rather easily. Because of the large volume of consumable
materials and the large investments in capital equipment required
in many vocational education subjects, this area stands out as having
the most to gain from cost-benefit type analyses. Such analyses
can easily be used to justify particular types of capital equipment
expenditures, to restructure vocational education programs so that
the most expensive equipment is being used for a maximum number of
hours, and to monitor the consumption of consumable materials.
Therefore, from the standpoint of justifying reporting system ex-
penditures, vocational education stands out as the ideal target area
since it has the potential for realizing significant savings without
totally upsetting the educational applecart.

Vocational education teachers also stand out as the group most
likely to accept and welcome these types of educational innovations.
Whereas a majority of teachers in other subject areas have never had
careers in industry, the same cannot be said for vocational education
teachers. The majority of them have spent from three to ten years
practicing their skills in a "real world" environment. Because of
this, they are not frightened by accountability. Most of them have

punched time clocks at sometime in their lives, have had to

answer to a foreman or a manager regarding per unit expenses,

and have had to set and/or meet production standards. Because of

this the concept of accountability is far more easily accepted by

this group than by any other group of teachers, and they may even

feel that it brings their classes closer to the world of work.

As one of the teachers involved in the pilot effort told his auto-

motive class, "Until you own your own shop you can be sure that

you'll be punching a time clock.....there's no reason you shouldn't

get used to it now."

Developing Course Information

Any course or segment of a course which is to be monitored
using PEAPOL must first be defined in terms of no more than 75
measurable performance objectives. It cannot be emphasized too
strongly that the utility of the system is directly proportional
to the quality of the defined performance objectives. For the
system to function at optimal efficiency, these objectives should
be developed so that they satisfy at least the following two
criteria:

A) The objectives should be mutually exclusive and should
   relate on a one-to-one basis to the work assignments
   of the students. Thus, there should never be any questions
   as to which objective a student is working on at any given
   moment. Any of these objectives may be a terminal objective
   and may require the students to complete a number of enabling
   objectives in the process of satisfying the terminal objective.
   While this will mean that data will not be generated for the
   specific enabling objectives, it will allow objectives which
   are highly complex and dependent upon the student mastering
   a set of skills to be included in the system.

B) To as great a degree as possible, each objective defined for
   a course should be able to be completed by the student in
   approximately the same amount of time. If, for instance,
   objectives one through ten each require only one hour of

work on the part of the student and objectives eleven

through twenty each require more than twenty hours of

work, the cost data generated for each performance

objective will be highly misleading.

It is suggested that when formulating a set of objectives, the

total number of objectives should not exceed 70. While the system

can accept 75 objectives, it is recommended that a few be kept in

reserve so that special projects or end-of-the term assignments (used in

the case where students complete all their other work) can be handled

by the system.

In addition, it is suggested that objective number one be

reserved for "non-productive work" to account for time when the

student is on an errand, in the principal's office, or discussing

non-course related material with the teacher. Similarly, cleanup

time can be charged to this objective, assigned a separate objective

number, or handled as discussed in the next section of this manual,

Developing Budget Information.

Once a complete set of objectives has been defined, it is necessary

for each of them to be assigned a number between one and 75 and an

abbreviated title for use on the students' time cards when they record

the amount of time they are spending on individual objectives. To

make the recording process more efficient, it is also suggested that

wall charts and wallet cards be printed which give the name and abbre-

viated title of each objective in a particular course.

If it is felt that a course cannot be adequately described within

the 75-objective limit, it is recommended that the course be divided

into two or more sections, each conforming to the previously stated

limit, and that a separate class number and title be given to each

section. If this should be attempted, every effort should be taken

to structure the sections in such a way that all the students in

the class can complete all of the objectives in the first section

(i.e., the first set of 75 objectives) before moving to the next

section (the second set of 75 objectives). If this is not done,

costs will have to be allocated between the two course sections, and

this could become rather cumbersome. Similarly, each student would

then have to be provided with more than one type of time card, each

containing a different class number. While such provisions are

allowable, they are unwieldy and could easily lead to the generation

of misleading information. Therefore, if at all possible, the limit

of 75 objectives per course should be observed.

Before a class can utilize PEAPOL, certain information must be
provided by the classroom teacher or the program administrator before
the beginning of the semester. The required information is shown on
the sample classmaster record input form on the following page. As
can be seen by examining the form, there-are two types of required
information items--those that describe the class itself and those that
describe its financial structure. The first type of information is
discussed in this section, and the financial information is discussed
in the following section.

The first type of information required for each class is identifier
information: district number, school number, class number, teacher
number, teacher name, and course name. All of the above items must be
included or the system will not operate. However, except for class
number, these items need not be unique; e.g., the same teacher name
and number can be entered for all classes, and the same class name used
for more than one class. The remaining required non-budget information
consists of the following items:

A) Total number of performance objectives in course
   (maximum 75).

B) Active enrollment (maximum 99).

C) Number of weeks course meets (maximum 99).

D) Number of scheduled instructional hours (maximum 9,999).

If more than 99 students are in a particular class, the class should
be divided into sections which should be given separate class numbers.

Exhibit 2 - Classmaster Record Input Form   22

C	C	1
type of input (N,U,D)	__	2
A	A	3
district number	__ __ __ __ __	4-8
school number	__ __ __ __ __ __ __	9-15
class number	__ __ __	16-18
teacher number	__ __ __ __ __ __ __ __ __	19-27
teacher name (last name first)	__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __	28-47
total no. performance objectives in course	__ __	48-49
active enrollment	__ __	50-51
course name	__ __ __ __ __ __ __ __ __ __ __ __ __ __	53-66
no. weeks class meets	__ __	67-68
no. scheduled instructional hours	__ __ __ __	69-72

C	C	1
type of input (N,U)	__	2
B	B	3
district number	__ __ __ __ __	4-8
school number	__ __ __ __ __ __ __	9-15
class number	__ __ __	16-18
nonbudgeted savings/ nonbudgeted expenses	- __ __ __ __ __ + __ __ __ __ __	19-24
dollars budgeted		
certified salaries	__ __ __ __ __	25-29
classified salaries	__ __ __ __ __	30-34
benefits	__ __ __ __ __	35-39
books and supplies	__ __ __ __	40-43
support services	__ __ __ __	44-47
other services	__ __ __ __ __	48-52
other outgo	__ __ __ __ __	53-57
total dollars budgeted	__ __ __ __ __	58-62
budgeted cost per pupil (to nearest cent)	__ __ __ __ __ __	63-69

Similarly, if a class has students who attend for different periods
of time, sections should be formed for each time interval so that the
number of scheduled instructional hours can be accurate for each group
within the class. In either case, the budget should be divided between
the different sections by using an algorithm such as:

$$
\begin{array}{l} \text{DOLLARS AVAILABLE} \\ \text{FOR SECTION} \end{array} = \left(\begin{array}{l} \text{TOTAL DOLLARS AVAILABLE} \\ \text{FOR ALL SECTIONS} \end{array} \right) * \left[\begin{array}{l} \text{total hours} \\ \text{scheduled} \\ \underline{\text{for section}} \\ \text{total hours} \\ \text{scheduled for} \\ \text{all sections} \end{array} \right]
$$

In determining the number of scheduled instructional hours, care
should be taken to eliminate hours consumed by vacation days, special
school events, anticipated emergencies (snow), etc. As this number
has a direct effect on information generated by the system which
assesses whether or not the class is keeping to its planned budget
through the year, care should be taken to arrive at an accurate figure.
In determining active enrollment, a realistic estimate that reflects
the anticipated enrollment for the class after the beginning of the
semester when transfer activities have virtually ceased should be made.
In cases where classes have open enrollment, an estimate based upon the
steady-state classroom load should be made. Since this number will
also have direct bearing on the budget maintenance information reported
for each class, care should be taken in determining this figure.

Developing Budget Information

PEAPOL requires that a separate budget be generated for each class monitored by the system. The following are the budget items accepted by the system:

Category	Digit Limit	California Code Group
Certified salaries	5	1000 series
Classified salaries	5	2000 series
Benefits	5	3000 series
Books and supplies	4	4000 series
Support services	4	5000 series
Other services	5	6000 series
Other outgo	5	Use for items not falling into any of the above categories

All budget amounts should be rounded to the nearest dollar before being entered into the system. The California Budget Code Structure (Exhibit 3 at end of this section) contains all of the subcategories included in each of the above budget groups. For example, examination shows that group 5000, support services, includes dollars budgeted for consultants, lecturers, travel, insurance, district overhead, and a variety of other expenses. All expenditures for a particular class falling in this category would be totalled, rounded to the nearest dollar, and then entered in the class budget under "support services."

Amounts do not have to be listed for each of these categories; one or more can be left blank. Similarly, there is no reason that schools outside of California should have to group their budget items according

deliberately been made unspecific to allow a completely different budget structure to be accommodated using the same budget category titles.

In addition to the above budget categories, four other types of budget information are required by the system:

A) Total dollars budgeted.

B) Nonbudgeted savings or expenses.

C) Budgeted cost per pupil,

D) Budgeted cost per hour.

Total dollars budgeted is merely the sum of the amounts listed in all previously described budget categories. It is entered once at the beginning of the year and must be updated whenever budget changes are made. A budget change is defined as an alteration in the original budget, not a nonbudgeted savings or expense.

A nonbudgeted savings or expense is incurred whenever a class deviates from a planned budget. If, for instance, a class has been assigned a teacher at the top of the salary scale and that person's relatively high salary has been included in the budget, an entry would be made in the nonbudgeted savings category if, later in the semester, the teacher should become ill and be replaced with an inexperienced teacher commanding a lower salary. In such a case, the difference in the two salaries is a nonbudgeted savings. Similarly, if the above situation should be reversed, with the experienced teacher replacing a novice, an entry would be made in the nonbudgeted expense category.

Budgeted cost per pupil is determined by dividing the total

dollars budgeted for the class by the class's anticipated enroll-

ment.

The final type of budget item is budgeted cost per hour.
This item is developed in two steps:

Step 1: Compute $$\frac{\text{total dollars budgeted}}{\begin{pmatrix}\text{anticipated}\\\text{enrollment}\end{pmatrix} * \begin{pmatrix}\text{number of hours}\\\text{class will meet}\\\text{during entire}\\\text{semester}\end{pmatrix}}$$

Step 2: Decide upon an anticipated level of efficiency

for the class, express this efficiency level in

decimal form, and divide the number derived from

Step 1 by this efficiency level in order to derive

the budgeted cost per hour.

Efficiency levels represent the portion of the class meeting time

which is realistically available for students to do their work. An

efficiency level discounts that portion of the class's time that is

nonproductive. It may include time during which students clean their

work area, prepare to start work or to leave at the end of a period,

listen to administrative announcements, attend special assemblies, etc.

The term, efficiency level, should not be viewed qualitatively. It

is a measure designed to reflect the amount of time in a given class

period available for actual instruction or learning.

Since no class allocates 100% of its meeting time to learning,

the efficiency level should always be a decimal quantity smaller than

1.00. Efficiency levels will vary from class to class. Classes which
do not require extensive cleanup are usually more efficient than those
that do. In a shop situation, a two- or three-hour class is usually
more efficient than a one-hour class since, proportionally, less time
need be allocated for cleaning up. Also, classes scheduled to meet
during certain time blocks, especially at the very end of the school
day, can be less efficient because late afternoon classes are more
likely to be cancelled because of special school events, and/or students
will be less efficient due to fatigue.

A great deal of thought must be given to defining the desired
efficiency level for each classroom. A high efficiency level can be
defined by allowing time spent for cleanups or administrative messages
to be charged to special performance objective numbers reserved for
these occurrences. This will result in a high efficiency rating and a
relatively low budgeted cost per hour being generated. However, this
can cause some problems. In one instance, the performance objectives
recording time spent for cleanups, announcements, etc., might end up
having more time charged to them than to any of the more productive types
of activities denoted by other objectives. Also, since the computer
calculates an actual cost per hour based on the actual number of hours
charged by the students on their time cards, the teacher must take care
to ensure that all nonproductive time is registered on the time cards.
Otherwise, it is entirely possible that the actual cost per hour will
end up far higher than the budgeted amount, making it appear that the
program is operating far in excess of its budget. In contrast, taking
the opposite approach, by discounting the time spent for cleanups,

administration, etc., in advance by using a low efficiency level, it will appear that, unless the expected enrollment of the class drops drastically, the class is adhering closely to its original budget. However, using a low efficiency level multiplier also means that the budgeted cost per hour appears to be relatively high, which in turn may cause sharp questions to be asked by school board members or local citizens.

In determining efficiency ratings for different classes, the best policy is to actually audit a few class periods to see how much time is consumed by nonproductive activities and to make a forecast of how much time is apt to be lost due to class cancellations or shortenings due to special events. After this has been done, a realistic efficiency rating can be developed. During subsequent semesters, this figure can be modified to make it even more accurate. By following this strategy, the resulting reports will be of real use to the district in modifying courses presently underway on an ongoing basis, and in structuring future programs with similar characteristics.

All budget information is input to the system via the classmaster record input form. The use of this form is explained later in the chapter.

Exhibit 3 - California Budget Code Structure

1000	Certified Salaries
1100	Teachers' Salaries
1200	School Administrators' Salaries
1300	Supervisors' Salaries
1400	Librarians' Salaries
1500	Guidance, Welfare and Attendance Salaries
1600	Nurses' and Physicians' Salaries
1700	Superintendents' Salaries
1800	Other Certified Salaries of District Administrative Offices
1900	Other Certified Salaries

2000	Classified Salaries
2100	Instructional Aides - Direct Teaching Assistance
2200	School Clerical Salaries
2300	Maintenance & Operational Salaries
2310	Maintenance Salaries
2320	Operational Salaries
2400	School Lunch Employee Salaries
2500	Driver Mechanics of District-Owned Vehicles
2600	Warehousemen, Deliverymen involved in Operations of a Stores System
2700	District I/G
2800	District Administrative and Clerical Personnel
2900	Other Classified Salaries

3000	Employee Benefits
3100	STRSAF and Perm. Fund
3200	PERS

Exhibit 3 – California Budget Code Structure (cont'd)

3300	OASDI
<u>3400</u>	<u>Health & Welfare Benefits</u>
3410	H & W Benefits for Teachers
3420	H & W Benefits for all Other Certificated Personnel
3430	H & W Benefits for Instructional Aides
3440	H & W Benefits for Classified Employees
3500	Workmen's Compensation
<u>4000</u>	<u>Books, Supplies, and Equipment Replacement</u>
4100	Textbooks
4200	Other Books
4300	Instructional Supplies
<u>4400</u>	<u>Support Program Supplies</u>
4410	Administrative Supplies
4420	Other Office Supplies
4430	Medical
4440	Transportation
4450	Custodial & Operational Supplies
4460	Repair & Upkeep of Equipment
4470	School Lunches
4480	Community Service
<u>4500</u>	<u>Food Service</u>
4510	Meals, Needy Pupils
4600	Equipment Replacement
<u>5000</u>	<u>Contracted Services & Other Expenses</u>
5100	Personal Services – Consultants – Lecturers
5200	Travel & Conference Expenses
5300	Dues & Memberships

Exhibit 3 - California Budget Code Structure (cont'd)

5400	Insurance
5410	Property Damage from Fire, Theft, Storm, or Other Cause. Cost of Appraisals
5420	Liability Insurance
5430	Fidelity Bond Premiums
5440	Pupil Insurance
5500	Utilities & Housekeeping Services Lights, Fuel, Power, Telephone, etc.
5600	Contracts, Rents, and Leases
5700	Legal, Elections, & Audit Expenses
5800	Administrative District-Wide Operation
5900	Interprogram Charges & Credits for Direct Services (Abatements)
6000	New Equipment, Sites, Building Other Facilities and Other Outgo
6010	Books for New or Expanded Libraries
6100	New Equipment
6200	New Sites, Improvement of Sites
6300	New Buildings or Improvements of Bldgs.
6500	Other Outgo
6510	Debt Service
6520	Annual Repayment on Account of Public School Building Apportionment
6530	Annual Repayment on Account of State School Building Apportionment
6540	Bond Redemption
6550	Bond Interest & Other Serv. Charges
6560	Repayment State School Bldg. Fund Aid
6570	Payment Original District for Acquisition of Property
6590	Other Payments

Exhibit 3 - California Budget Code Structure (cont'd)

6600	Outgoing Transfers
6610	J.H.S. Tuition for Grades
6620	Tuition (Interdistrict Att. Agreement)
6630	Education Provided in County or Group of County Institutions
6640	Tuition and Trans. of Students to Special Handicapped Classes
6650	Tuition Paid for Current Expenses to Regional Occupational Center or Programs Operated by Other School Districts
6660	Tuition Paid to Regional Occupational Center or Regional Occupation Program for Capital Outlay Expense
6700	Interfund Transfers
6710	General Fund for Handicapped Minors Development Center
6720	General Fund and Special Reserve Fund
6730	Public or State Bldg. Fund from Other Funds of the District
6740	From Bond Interest and Redemption Fund to General Fund or Special Reserve
6750	Other Authorized Transfers
6800	Other Transfers
6810	Transfers Other Reorganized Schools
6820	Excessive Balances Transferred to County School Services
6830	Transfers to County School Services Fund for the Education of Mentally Retarded Minors

Gathering Student Information

To initiate system operation, a certain amount of information pertaining to each student in the class is required. The required information is shown on the studentmaster record input form depicted on the following page. A good deal of the information matches data required on the classmaster record input form; other information serves to identify the particular student. The descriptor items in the latter category are:

Sex (M or F)

Ethnic code (1 through 6--see form)

Year of birth (last 2 digits)

Reading score

Math score

Percentile score

At this point it should be emphasized that none of the above information items ever appears on any of the regular reports generated by the system. They are used merely to sort students into particular groups so that the special student reports can be produced. In the special student reports, no students are ever identified by name or linked to any of the above characteristics; therefore, confidentiality of this type of data is complete.

The first three items (sex, ethnic code, year of birth) are self-explanatory; the last 3 are more prone to error and deserve closer examination. Test scores are included in the student data base so that performance of different groups (e.g., students with high reading

Exhibit 4 - Studentmaster Record Input Form   34

S   S.   1

type of input   ___   2

A   A   3

district number   ___ ___ ___ ___ ___   4-8

school number   ___ ___ ___ ___ ___ ___ ___   9-15

class number   ___ ___ ___   16-18

student number   ___ ___ ___ ___ ___ ___ ___ ___ ___ ___   19-28

student name   ___ ___ ___ ___ ___ ___ ___ ___ ___   29-48
  (last name first)   ___ ___ ___ ___ ___ ___ ___ ___ ___

number of performance
  objectives in course   ___ ___   49-50

sex   ___   51

ethnic code   ___   52
  1 = Spanish surname
  2 = other White
  3 = Negro
  4 = Chinese, Japanese,
        Korean
  5 = American Indian
  6 = other non-White

year of birth   ___ ___   53-54

reading score   ___ ___ ___ ___   55-58

math score   ___ ___ ___ ___   59-62

percentile score   ___ ___   63-64

class name   ___ ___ ___ ___ ___ ___ ___ ___   65-79

                                ___ ___ ___ ___ ___.___

abilities vs. students with low reading abilities) within a class can
be compared. Such comparisons can quickly alert a teacher to situations
where the instructional materials utilized are overly difficult for a
particular group within his room, are boring or nonchallenging to his
better readers, or are otherwise inadequate or unsuitable.

Because the data are intended for use in this manner, only informa-
tion available for most students in a given class should be entered into
the data base. For example, test scores should only be entered if
nearly every student in the room was given the same test on approxi-
mately the same date and had his scores recorded using the same norms.
The system will produce invalid information if some reading scores in
a class are reported in terms of percentiles and some in terms of grade
levels.

If nearly all students in a class have not been given the same test
or test battery, there are three options that can be adopted:

A) Administer standardized reading and math tests to all
   students at the beginning of the semester and add the
   data to the system after the results are in.

B) Leave these fields blank and do not provide test data.

C) Use an estimating system whereby the teacher might enter
   a "1" if the student reads far below grade level, a "2"
   if he has some difficulty, a "3" if he is an average
   reader, a "4" if he is a somewhat superior reader, and a
   "5" if he reads far above grade level.

All of these strategies have disadvantages. The first strategy is
the most time-consuming and expensive but will yield more accurate

information than if less recent scores are used. The second strategy is the easiest but deprives the teacher of some of the most potentially useful information which the system is capable of producing. The last strategy represents a middle course, but its accuracy is entirely dependent upon the diagnostic skills of the teacher or counselor.

Since four characters have been allocated for reading and math scores, virtually any kind of norms can be entered (grade levels, percentiles, estimating system, stanines, etc.). If grade level scores are used, the period should be included (10.3, 8.2, etc.). Again, it should be emphasized that all scores entered in a particular field (reading, math, or percentile) must be of the same type and represent the same kind of norm.

The item called percentile score is a two-digit field that can be used to store a third set of test scores. While titled percentile score, it can also store other types of scores such as stanines, quartiles, or performance estimates. This field is available for any purpose where a numerical rating can be used to subdivide a class into homogeneous groups. It can be used to store IQ's (in percentile form), a manual dexterity rating, a career commitment rating, or any other type of information where it would be useful to have the class divided into two groups -- an above mean group and a below mean group -- so that the overall performance of the two groups can be examined.

Initiating System Operation

In order for a PEAPOL system to be initiated, four types
of information must be available:

A) Course information.

B) Class information.

C) Budget information.

D) Student information.

The methods by which these types of information are
gathered have been explained. To allow the system to operate,
the gathered information must be entered into two data files:
the classmaster file and the studentmaster file. Entries
must be made in both files for each class. The classmaster
file contains the classmaster record input forms. For the
system to be initiated, a studentmaster record input form
must be completed for each student in each class which is
being monitored by the system. If a student is in more than
one class which the system monitors, a separate studentmaster
record input form must be filled out for each class.
·Similarly, there must be a classmaster record input form
filled out for each class included in the system.

When all input forms have been completed they should
be checked for accuracy and submitted to the computer center
which will process the data, build the required data files,
and return a set of reports to the school district. These
reports should be compared to the original input in order
to see if there have been any keypunching or handwriting errors.

The information submitted on the classmaster record input forms should be compared to the class summary report and the dollar summary report in order to check the accuracy of the information. The information submitted on the studentmaster record input forms should be compared to the student summary report and the special student report in order to validate the data input. Because the special student report does not print student names or any confidential data items (test scores, ethnic group, sex, or age), it is more difficult to validate this confidential information. However, the task can be accomplished by using a special printout which the data center can supply to each school showing the complete contents of each record in the data files. This special printout is called an "80/80 list" and will only be supplied at the beginning of the year for validation purposes. After the validation process is complete the school may either destroy this printout or store it with other confidential information.

The computer system itself is programmed to catch certain types of input errors. In most cases, if it finds an error it is programmed to eliminate the entire record from the data file and print a message telling which record has been eliminated and why the action was taken. In a few cases, it will accept the record but erase the bad data and print a message requesting that acceptable information should be submitted. In both

cases, corrections to the file will be made using the
update procedure described in the next section.

On both types of input forms described thus far,
the first data entry is called "type of input (N, U, or
D)." This entry is used to tell the system what kind of
a record is being submitted. "N" means that a new record
is being submitted to the system; and the "N" notation
should be used when building a new data file. The meanings
of the other notations are explained in the next section.

Updating, Adding, and Deleting Records

As a school year progresses, changes will have to be
made in a class's data files. Changes will be made in
the classmaster file whenever classes are added or
dropped, when a class's budget or level of expenditure
is altered, or whenever any of the descriptors describ-
ing the class (number of performance objectives in course,
number of scheduled instructional hours, teacher name,
etc.) has to be altered. The studentmaster file must be
changed when students are added or dropped from the class
or when information regarding a particular student must
be altered. This might happen if a new set of test
scores are entered for all the students in a particular
class or if an error has been found in a student's record
that must be corrected.

A new student is added to a class by submitting a
studentmaster record input form with the notation "N"
(new record) in the "type of input" field. When adding a
new student in this manner, it is not necessary to change
the "total enrollment field" in the classmaster file since
the system will do this automatically. However, care
must be taken to ensure that there is a classmaster record
for each different class number listed in the studentmaster
file, as if there is not, this error will cause operation of
the entire system to be halted when the computer attempts
to process the files.

A student is eliminated from a class by entering "D"
(delete) in the "type of input" field of the studentmaster
file and then filling in the proper district number, school
number, class number, student number, and student name. This
will cause the entire student record to be eliminated from
the file. If a class is to be eliminated entirely, it is
necessary that "D" records be submitted for each student
in the class and that the class itself be eliminated from
the classmaster file in the manner described below. If
even one student remains in the studentmaster file with
a class number which has been eliminated from the class-
master file, a major system error will occur and all
processing operations will be halted.

Information in the studentmaster file can be changed
by submitting a studentmaster input record with a "U"
(update) in the proper input field and also supplying a
district number, school number, class number, student
number, student name, and the information to be corrected.
Thus, to change a student's reading score, enter a "U",
all required identifier information, and the new reading
score in the "reading score" field on the input form. The
system will change a-student's reading score entry, but
leave the rest of the record strictly alone. If it is
necessary to change any of the identification information,
first enter a "D" form to erase the entire record; then
submit an "N" form filled out with all the information
required for a student's record.

Exactly the same rules are used to add new records
to the classmaster file or to delete or update records
already in a classmaster file. The only change is that
when making changes in the classmaster file, the teacher
number and name are used for identification purposes rather
than the student number and name. When adding a new class
with an "N" in the "type of input" field of the classmaster
record form, care must be taken to put at least one student
in that class in the studentmaster file. If this is not
done, system operations will be halted when the information
is processed. Similarly, when deleting a class with a "D"
record, all students must be deleted from the studentmaster
file on the same computer run. The user should send in both
kinds of delete records at the same time.

Updates to the classmaster file use the "U" notation
and require that only the identifier information and the
information to be changed be submitted on the input form --
except when identifier information must be altered. In this
case the entire record must be deleted with a "D" form and
then rebuilt with an "N" form.

Submitting Time Cards and Class Event Information

The greatest strength of the PEAPOL system is that it monitors student progress on an ongoing basis and prints out a scheduled series of reports which evaluate each student's progress. This provides the teacher with guidance and grading information, the administrator with cost management information, and the student with a definitive record of the performance objectives he has completed and how much time he has devoted to each one.

Time cards and class event input forms are the two devices by which progress is reported. The time card is used in conjunction with a time clock that prints the time to the nearest hundredth of an hour to show the exact time when a student started and ceased work on a given objective on a particular day. The class event input form is submitted by the teacher weekly and records the numbers of the performance objectives the student has completed and any absences, disciplinary reports, or commendations which are to be entered in the student's record.

A sample of a time card is shown on the next page. Each student in a class is given one of these cards weekly. He fills out the identification information immediately. Then, as he begins his week's work, he punches in and out for each objective on which he is working. He can only be punched into one objective at a time; but he can go back and forth between objectives as often as he wishes. Each

Exhibit 5 - Student Time Card

STUDENT TIME CARD			
CLASS # __5043__ CLASS NAME __Auto Adv. Systems--B__			
STUDENT # _____WEEK NUMBER_____			
DISTRICT NUMBER_____			
STUDENT NAME [ ][ ][ ][ ][ ][ ][ ][ ][ ] _____ (last) (first)			
SCHOOL NUMBER __1035575_____			
P.O. #	NAME OF PERFORMANCE OBJECTIVE		TIME
		Start	
		Stop	
		Start	
		Stop	
		Start	
		Stop	
		Start	
		Stop	
		Start	
		Stop	
AL:ja 1/5/72			

time he punches into the new objective, he writes in the
performance objective number and the performance objective
name in the proper spaces. If all the students in a room
should begin work on the same objective at the same time
(e.g., listening to the teacher lecture), a mass rush to
the time clock can be avoided by having the students write
in the beginning time for that objective by hand. Students
can consume as many cards as necessary during a given week.
At the end of the week the cards should be submitted to the
data center for entry into the studentmaster file. Up to
12 hours of time can be charged in a given entry. An
interval of more than this usually means that an error
has been made or a deliberate attempt is being made
to thwart the system.

For reasons that will be explained in detail in a
later section, it is futile for a student to attempt
either to undercharge or overcharge his time. The key to
controlling the system is not in the time cards but in
the class event input forms; while the former are in the
control of the student, the latter are totally controlled
by the teacher.

The primary reason for the class event input form is
to allow the teacher to provide notice when a student has
completed a given performance objective. The teacher does
this by entering the proper identification information on the
top of the class event input form (if this information has not
been preprinted) and then writing the numbers of the
objectives which the student has completed that week

in the proper spaces on the form. Up to nine

objectives can be included on each form, and any number of

forms can be submitted for each student every week. Whether

the class event input forms are completed by the teacher,

an assigned monitor, or a paraprofessional, care should be

taken to safeguard their integrity. As will be explained

later, the key to student and class progress information

is the rate in hours at which students complete work on

their objectives. Since this form is used to generate the

information that work on a given objective has been

completed, it is vital to the system's integrity that

accurate information be submitted. Erasing completed

information once it has been entered is an expensive and

time-consuming job that must be done by a control clerk at

the data processing center and is a procedure to be

avoided if at all possible.

In addition to providing performance objective comple-

tion information on the class event input form, teachers

can also submit discipline reports and commendations to

the system and record how many periods a particular student

missed during the week.

Since PEAPOL is not a grade reporting or guidance

system, a rather unusual use is made of commendation and

discipline entries. Such information is considered by the

system to be confidential, and is never printed out on any

standard report. Rather, it is utilized in the special

student report in grouped data form to provide indicators

of the degree to which specific groups of students are

adjusting to the coursework. The total number of commenda-
tions and discipline reports in each class are also printed
out on the classmaster report but, once again, no names are
provided. In designing the system, it was assumed that the
teacher would maintain a record book in which he would
record detailed information regarding each discipline report
or commendation which he would want to have totalled in the
computer. Therefore, it was not felt to be necessary to print
this information where it might violate a student's privacy.
The information is included because it should prove
extremely valuable in examining the behavior of different
subgroups within a class.

Absence information is entered into the system in
order to help account for variances in the number of total
hours which each student has recorded via the time clock.
If a given student's total of credited hours (the name
given to the sum of all the time the student has charged on
the time cards) is far lower than that of his classmates, it
is either because he hasn't been in class as much or he hasn't
been charging time towards the objectives when he was in
class. Including absence information in the system allows
the situation to be clarified rather easily, since in most
cases a low number of credited hours should be accompanied
by a higher than average number of absences. If this is
not the case, the teacher will know he should make further
observations and inquiries.

Exhibit 6 - Class Event Input Form   48

student name_____teacher signature_____

date_____

S   S_   1

E   E_   2

district number   __ __ ___ __ __   3-7

school number   __ __ __ __ __ __ __   8-14

class number   __ __ __   15-17

student number   __ __ __ __ __ __ __ __ __   18-27

first three letters of
  student's last name   __ __ __   28-30

numbers of perform-
  ance objectives
  student has com-
  pleted this week   __ __

                         __ __

                         __ __

                         __ __

                         __ __

                         __ __

                         __ __

                         __ __

                         _____

How many discipline
  reports this week?   __ __

How many commenda-
  tions this week?   __ __

How many periods
  missed this week?   __ __

Interpreting the Classroom Summary Report

This report is designed to give the teacher and administrator an overall view of the progress of individual classes within the reporting system. The report is generated from the classmaster file and is a rather straightforward listing of information contained within that file.

The report lists for each class:

District number .
School number
Class number
Teacher number
Teacher name
Class name
Current school week number
Number of weeks course meets
Active enrollment

Periods missed
Warning flags
Merit flags
Commendations
Discipline reports
Class warning indicators
Class progress indicators

Total hours credited
Total number of performance objectives completed
Performance objectives completed/hours credited ratios

current week
1 week ago
2 weeks ago
3 weeks ago
4 weeks ago

Current class warning/progress indicator

For each performance objective in course (up to 75)

total hours credited to each objective
number of students presently working on each objective
number of students who have completed each objective
prorated cost of each performance objective
prorated cost per student of each performance objective

CLASSROOM SUMMARY REPORT 03/20/72

CLASS 136   AUTO SYSTEMS 2"   SCHOOL NO. 1035575   DISTRICT NO. 62406

TEACHER - EVANS, RICHARD   TEACHER NO. 000000135   TOTAL SCHEDULED HOURS   494

ACTIVE ENROLLMENT 12   NUMBER OF WEEKS COURSE MEETS 18   CURRENT WEEK NO. 6

	TOTALS	MEANS		OBJECTIVES COMPLETED/HOURS CREDITED RATIOS
PERIODS MISSED	37	3.1	PRESENT WEEK	.08
WARNING FLAGS	5	0.4	1 WEEK AGO	0.69
MERIT FLAGS	18	1.5	2 WEEKS AGO	0.30
COMMENDATIONS	0	0.0	3 WEEKS AGO	0.18
DISCIPLINE REPORTS	0	0.0	4 WEEKS AGO	0.16
CLASS WARNING INDICATORS	0			
CLASS PROGRESS INDICATORS	2		PERFORMANCE STATUS EXCEPTIONAL PROGRESS BEING MADE	
HOURS CREDITED	132.3	11.0		
OBJECTIVES COMPLETED	116	9.7		

FINANCIAL DATA

DOLLARS EXPENDED TO DATE	$	201.00
BUDGETED COST PER PUPIL	$	55.00
PRESENT COST PER PUPIL	$	16.75
COST PER CREDITED PUPIL HOUR	$	1.52
BUDGETED COST PER HOUR	$	1.22

PERFORMANCE OBJECTIVE SUMMARY INFORMATION

OBJECTIVE NUMBER	STUDENTS PRESENTLY WORKING	STUDENTS WHO HAVE COMPLETED	PRESENT PRORATED COST		PRORATED COST PER PUPIL		NUMBER OF CREDITED HOURS
1	11	0	$	22.64		.06	14.9
2	10	2	$	53.33	$	4.44	35.1
3	0	2	$	3.95	$	1.98	2.6

Exhibit 7 - Classroom Summary Report

CLASSROOM SUMMARY REPORT 03/20/72

PERFORMANCE OBJECTIVE SUMMARY INFORMATION

OBJECTIVE NUMBER	STUDENTS PRESENTLY WORKING	STUDENTS WHO HAVE COMPLETED	PRESENT PRORATED COST	PRORATED COST PER PUPIL	NUMBER OF CREDITED HOURS
4	0	8	$ 5.16	$ 0.65	3.4
5	1	5	$ 3.16	$ 0.53	2.1
6	1	4	$ 8.26	$ 1.64	5.4
7	2	2	$ 0.45	$ 0.11	0.3
8	0	3	$ 2.13	$ 0.71	1.4
9	1	2	$ 1.57	$ 0.56	1.1
10	1	2	$ 0.45	$ 0.15	0.3
11	0	7	$ 0.45	$ 0.06	0.3
12	1	3	$ 2.43	$ 0.61	1.4
13	0	0	$ 0.00	$ 0.00	0.0
14	0	0	$ 0.00	$ 0.00	0.0
15	0	0	$ 0.00	$ 0.00	0.0
16	1	6	$ 2.13	$ 0.30	1.4
17	2	4	$ 1.21	$ 0.20	0.8
18	0	3	$ 1.67	$ 0.56	1.1
19	0	0	$ 0.00	$ 0.00	0.0
20	0	0	$ 0.00	$ 0.00	0.0
21	0	0	$ 0.00	$ 0.00	0.0
22	1	0	$ 0.61	$ 0.61	0.4
23	0	0	$ 0.00	$ 0.00	0.0
24	0	0	$ 0.00	$ 0.00	0.0
25	0	1	$ 0.50	$ 0.30	0.2
26	1	1	$ 0.45	$ 0.23	0.3
27	0	0	$ 0.00	$ 0.00	0.0

Exhibit 7 - Classroom Summary Report (cont'd)

Budget information

    dollars expended to date
    budgeted cost per pupil
    present cost per pupil
    cost per credited pupil hour
    budgeted cost per hour

Most items are self-explanatory. One group with a
confusing title is headed PERFORMANCE OBJECTIVES COMPLETED/HOURS
CREDITED RATIO. This ratio is determined by dividing the
total of all the performance objectives completed by all the
students in the class by the total hours charged on the time
clock by all the students in the class. The resulting ratio
is calculated every week and represents a rough indicator of
the speed with which students are moving through the class.
The performance objectives completed/hours credited ratio
provides a way of comparing the rates at which the class is
progressing during different weeks of the semester.

The system does not attempt to set a minimum or
maximum rate. It simply reports the present rate and displays
this rate alongside the rates of the previous four weeks for
the purpose of comparison. If a class's rate of progress
should either go up or down by more than 25% during a five week
period, the system generates a signal. If the rate has
dropped by at least 25%, the signal is call a CLASS WARNING
INDICATOR; if the rate has increased by at least 25%, the
signal is called a CLASS PROGRESS INDICATOR. In either case,
the signal appears for the current week on the right side of
the report, and the total number of all of the signals generated
for a particular class since the first week of the semester
appears on the left side of the report.

It should be emphasized that these signals should be
interpreted with a great deal of caution. A class warning
indicator does not necessarily mean that a class is doing
poorly. There can be many reasons for this indicator. It
might mean that the class is slowing down, but it also might
mean that many class members are working on performance
objectives which are among the hardest and most time-consuming
in the course and that their true rate of progress hasn't slowed
at all. Similarly, a class progress indicator can either mean
that a class's rate of progress has increased, or else it could
mean that students are working on the easier objectives at a
rapid rate. All these indicators mean is that an apparent
change in rate of progress has occurred, and that the reasons
for this change should be investigated. Since five progress
rates are needed to set off an indicator, none will appear
during the first month of the semester. During this month, and
during all other periods when the progress rate is generally
constant, the message "CLASS IS PROGRESSING NORMALLY" will appear.

The budget information on this report also requires some
explanation. DOLLARS EXPENDED TO DATE is determined by prorating
the total amount of money available for the class over the number of
weeks the class is scheduled to meet, and then reporting how much
money has, theoretically, been consumed by the class at any given
date. The computer algorithm which computes this figure also takes
into account any deviations from the budget which have been entered
into the system. BUDGETED COST PER PUPIL and BUDGETED COST PER HOUR
are amounts entered into the system at the beginning of the semester
by school administrators and represent their best estimate of how

much the class should cost. These amounts should be contrasted with

PRESENT COST PER PUPIL and COST PER CREDITED PUPIL HOUR which show,

according to computer calculations, what the actual costs of the program

are at any given time. The computer calculates actual costs by divid-

ing the dollars expended to date by the active class enrollment (to

obtain the present cost per pupil) and by the total hours credited (to

obtain the cost per credited pupil hour). As these numbers may easily

differ from the original estimates, it is likely that differences

between the actual rates and the budgeted rates will appear rather

frequently.

The PRESENT PRORATED COST of each performance objective is obtained

by proportionally dividing the dollars expended to date on the basis of

the number of credited hours charged to each individual performance

objective. Thus, if objective #6 has had 25% of all hours credited

charged to it, its prorated cost will be 25% of all dollars expended

to date. At the present time the system is not sophisticated enough

to take into account different items of capital equipment utilized by

different performance objectives; it is planned that later versions of

the system will have this additional capability.

The PRORATED COST PER PUPIL of each performance objective is

calculated by dividing the present prorated cost of the objective by

the number of students who are either working on or have completed

the objective. This figure gives another rough estimate of the cost

of instruction at the performance objective level.

Interpreting the Dollar Summary Report

This report is a slightly modified and abbreviated version of the
classroom summary report. It is designed to give an administrator a
purely financial picture of the internal operations of a district's
classes. The report lists out for each class:

    District number
    School number
    Class number
    Teacher number
    Class name

    Number of weeks course meets
    Current school week number
    Active enrollment

    For each performance objective in course

        prorated cost of each performance objective
        prorated cost per student of each performance objective
        total hours credited to each objective
        number of students presently working on each objective
        number of students who have completed each objective

    Total dollars budgeted

        dollars budgeted--certified salaries
        dollars budgeted--classified salaries
        dollars budgeted--benefits
        dollars budgeted--books and supplies
        dollars budgeted--support services
        dollars budgeted--other services
        dollars budgeted--other outgo

    Nonbudgeted expenses or savings to date
    Dollars expended to date

    Budgeted cost per pupil
    Present cost per pupil
    Cost per credited pupil hour
    Budgeted cost per hour

The dollar summary report contains only information items also
contained in the classroom summary report plus a full printout of the

DOLLAR SUMMARY REPORT 03/20/72

CLASS 136   AJTC SYSTEMS 2M   SCHOOL NO. 1035575   DISTRICT NO. 62406

TEACHER EVANS, RICHARD   TEACHER NO. 000000135   TOTAL SCHEDULED HOURS 496

ACTIVE ENROLLMENT 12   NUMBER OF WEEKS COURSE MEETS 18   CURRENT WEEK 6

BUDGET INFORMATION

CERTIFIED SALARIES	$ 514	DOLLARS EXPENDED TO DATE	$ 701.00
CLASSIFIED SALARIES	$ 0		
BENEFITS	$ 31	BUDGETED COST PER PUPIL	$ 55.00
BOOKS AND SUPPLIES	$ 40		
SUPPORT SERVICES	$ 19	PRESENT COST PER PUPIL	$ 36.75
OTHER SERVICES	$ 9		
OTHER OUTGO	$ 0	COST PER CREDITED HOUR	$ 1.52
TOTAL DOLLARS BUDGETED	$ 605	BUDGETED COST PER HOUR	$ 1.22
NONBUDGETED EXPENSES OR SAVINGS (MINUS SIGN DENOTES SAVINGS)	$ 0		

PERFORMANCE OBJECTIVE COSTS

OBJECTIVE NUMBER	STUDENTS PRESENTLY WORKING	STUDENTS WHO HAVE COMPLETED	PRESENT PRORATED COST	PRORATED COST PER PUPIL	NUMBER OF CREDITED HOURS
1	11	0	$ 22.64	$ 2.06	16.9
2	13	2	$ 53.33	$ 4.44	35.1
3	9	2	$ 3.95	$ 1.98	2.6
4	0	8	$ 5.16	$ 0.65	3.4
5	1	5	$ 3.19	$ 0.53	2.1
6	1	4	$ 8.20	$ 1.64	5.4

Exhibit 8 - Dollar Summary Report

DOLLAR SUMMARY REPORT 03/20/72

PERFORMANCE OBJECTIVE COSTS

OBJECTIVE NUMBER	STUDENTS PRESENTLY WORKING	STUDENTS WHO HAVE COMPLETED	PRESENT PRORATED COST	PRORATED COST PER PUPIL	NUMBER OF CREDITED HOURS
7	2	2	$ 0.45	$ 0.11	0.3
8	0	3	$ 2.13	$ 0.71	1.4
9	1	2	$ 1.67	$ 0.56	1.1
10	1	2	$ 0.45	$ 0.15	0.3
11	0	7	$ 0.45	$ 0.06	0.3
12	1	3	$ 2.43	$ 0.61	1.6
13	0	0	$ 0.00	$ 0.00	0.0
14	0	0	$ 0.00	$ 0.00	0.0
15	0	0	$ 0.00	$ 0.00	0.0
16	1	6	$ 2.13	$ 0.30	1.4
17	2	4	$ 1.21	$ 0.20	0.8
18	0	3	$ 1.67	$ 0.56	1.1
19	0	0	$ 0.00	$ 0.00	0.0
20	0	0	$ 0.00	$ 0.00	0.0
21	0	0	$ 0.00	$ 0.00	0.0
22	1	0	$ 0.61	$ 0.61	0.4
23	0	0	$ 0.00	$ 0.00	0.0
24	0	0	$ 0.00	$ 0.00	0.0
25	0	1	$ 0.30	$ 0.30	0.2
26	1	1	$ 0.45	$ 0.23	0.3
27	0	0	$ 0.00	$ 0.00	0.0
28	1	0	$ 0.45	$ 0.45	0.3
29	2	1	$ 4.10	$ 1.37	2.7

Exhibit 8 - Dollar Summary Report (cont'd)

class's budget. No information was included in the dollar summary

report that was not directly relevant to the work of a school district

financial administrator. For a full explanation of the meaning of

the different information items in this report, please refer to the

previous section describing the classroom summary report.

Interpreting the Student Summary Report

The student summary report gives the student and teacher a compre-
hensive picture of the progress being made by every student in the class.
For each student, the following information is produced:

District number
School number
Class number
Class name
Student number
Student name
Class hours credited
Days absent
Warning flags
Merit flags
Total number of performance objectives completed

Performance objectives completed/hours credited ratio
Current week

1 week ago
2 weeks ago
3 weeks ago
4 weeks ago

Current warning/merit flag indicator

For each performance objective

hours credited to date
performance objective completion indicator

The major difference between the classroom summary report and
the student summary report involves the PERFORMANCE OBJECTIVES COMPLETED/
HOURS CREDITED RATIO. Whereas in the case of the student summary report
this ratio represents the rate of progress of a single student, in the
classroom summary report it describes the progress rate of the entire
class. However, it is computed in the same way and sets off the same
type of indicators. In the case of the student summary report, these
indicators are called WARNING FLAGS and MERIT FLAGS; they are designed

STUDENT SUMMARY REPORT   03/20/72

CLASS 061   AUTO ELECTRICS   SCHOOL NO. 1036672   DISTRICT NO. 62630

STUDENT NAME	STUDENT NUMBER	PERFORMANCE INDICATOR	HOURS CREDITED	PERIODS MISSED	WARN. FLAGS	MERIT FLAGS	OBJECTIVES COMPLETED	OBJECTIVES COMPLETED/HOURS CREDITED RATIO (WEEKS AGO)				
								NOW	1	2	3	4
BANDY RICKY	0002176739	NORMAL	14.9	3	0	0	10	0.67	0.82	0.88	0.95	1.04
BERTRAND CURTIS	0002176745	NORMAL	7.2	3	0	1	7	0.97	1.06	1.74	2.22	0.00
CASTANON RAYMOND	0002175785	WARNING	12.5	6	2	0	6	0.48	0.65	0.55	0.68	0.91
ENGSTROM BERT FELT	0002176799	NORMAL	19.1	0	1	0	29	1.52	1.59	1.57	1.78	2.00
ENGSTROM DAVID MELVI	0002176800	NORMAL	20.3	0	0	0	23	1.13	1.22	1.16	1.25	1.17
ESTRADA VALENTIN	0002155063	WARNING	14.2	3	0	0	9	0.63	0.74	0.71	0.78	0.69
FORRESTER ROBERT	0002175806	NORMAL	17.7	4	2	0	14	0.79	0.79	0.80	0.92	1.35
GAUCIN THOMAS	0002175820	NORMAL	18.8	0	0	0	13	0.69	0.36	1.07	1.10	0.73
GRIJALVA GARY DAVID	0002176824	NORMAL	20.3	1	0	1	9	0.44	0.48	0.49	0.68	0.34
KENNER DANNY ANTHONY	0002196210	NORMAL	16.9	0	0	0	28	1.66	1.74	1.39	2.00	1.90
LEBARON LOREN SCOTT	0002176358	NORMAL	17.0	3	0	0	16	0.94	0.93	1.06	1.14	0.78
MULLIGAN MIKE	0002176893	NORMAL	16.7	4	0	0	14	0.67	0.79	0.75	0.77	0.57
TAMAYO RUBEN	0002176970	NORMAL	15.9	3	0	0	22	1.38	1.22	0.85	1.11	1.35
TEIXEIRA CLARENCE	0002177052	WARNING	9.9	2	1	0	10	1.01	1.01	1.19	1.46	1.52
WILSON SCOTT ALLEN	0002177057	WARNING	13.0	1	1	0	15	1.13	1.49	1.67	1.96	1.62
CLASS TOTALS			236.4	33	7	2	225					
CLASS AVERAGES			15.6	2.2	0.5	0.1	15.0	0.95	1.03	1.08	1.25	1.08

Exhibit 9 - Student Summary Report

STUDENT SUMMARY REPORT   03/20/72

HOURS AND COMPLETION (%) INFORMATION

CLASS 061   AUTO ELECTRICS

SCHOOL NO. 1036672   - --- DISTRICT NO. 62480

STUDENT NAME	NUMBER	OBJ 1	OBJ 2	OBJ 3	OBJ 4	OBJ 5	OBJ 6	OBJ 7	OBJ 8	OBJ 9	OBJ 10	OBJ 11	OBJ 12
BANDY RICKY	0002176739	4.5	0.2*	0.0	0.0	0.4*	0.0	0.0	0.0	0.1*	0.5*	0.4*	0.4*
BERTRAND CURTIS	0002176745	1.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0*
CASTANON RAYMOND	0002176738	1.8	0.1*	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0
ENGSTROM BERT FELT	0002176799	4.0	0.3*	0.1*	0.0	0.3*	0.0	0.0	0.0	0.5*	0.2*	0.0	0.7*
ENGSTROM DAVID MELVI	0002176800	3.4	0.0	0.4*	0.0	0.0	0.0	0.0	0.0	0.0	0.5*	0.4*	0.0
ESTRADA VALENTIN	0002198063	3.9	0.4*	0.5	0.0	0.7*	0.0	0.0	0.0	1.0	0.9*	0.0	0.0
FORESTER ROBERT	0002176806	4.1	0.1*	0.2*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4*
GALVIN THOMAS	0002175820	5.1	0.0	0.0	0.0	0.7*	0.7	0.0	0.0	0.0	0.7*	0.0	0.4*
GRIJALVA GARY DAVID	0002176824	3.1	0.2*	0.1*	0.3*	0.3*	0.1*	0.0	0.0	0.0*	0.0	0.5*	0.4*
KENYER DANNY ANTHONY	0002196210	4.6	0.3*	0.0	0.0	0.3*	0.4*	0.0	0.0	0.0	0.4*	0.0	0.0
LEBARON LOREN SCOTT	0002176958	5.9	0.4*	0.2*	0.0	0.3*	0.1*	0.0	0.0	1.0	0.9*	0.0	0.0
MULLIGAN MIKE	0002176893	4.2	0.2*	0.3*	0.0	0.5*	0.1	0.0	0.0	0.0	0.8*	0.0	0.0
TAMAYO RUBEN	0002176670	4.5	0.1*	0.2*	0.0	0.0	0.0	0.0	0.0	0.7*	0.0	0.0	0.0
TEIXEIRA CLARENCE	0002177052	3.7	0.2*	0.1*	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
WILSON SCOTT ALLEN	0002177057												

Exhibit 9 - Student Summary Report (cont'd)

to provide notice of an apparent change in a student's rate of progress of at least 25% in either direction. Again, caution must be used in interpreting these ratios and indicators. Since, despite the best intentions of curriculum planners, all performance objectives do not take the same amount of time to complete, perfectly normal variations in progress rates caused entirely by the student working on either extemely brief or extremely time-consuming objectives can be expected to occur. Thus, a warning flag next to a student's name should not represent instant condemnation nor a merit flag instant praise. As in the case of the class indicators, no flags will be set during the first month of a program and, during this time, the message NORMAL will appear for all students.

The first page of the student summary report always contains a summary of each student's progress. Later pages show how many hours the student has spent working on each individual performance objective and which objectives he has completed. Completion of a performance objective is signified by an asterisk (*) placed next to the number of hours charged to that objective. Since students can be signed off on objectives on the basis of a pretest or at the discretion of an instructor, it is perfectly valid for an asterisk to appear next to a performance objective hours total of 0.0. Similarly, some objectives (e.g., objective #1 which usually denotes non-productive time) will never be completed and should never show an asterisk.

Class totals and averages are supplied with this report so that students can see where they stand within a class. At the end of the report, totals and averages are also supplied at both school and district levels. Since these data represent different students working in

different courses with different objectives, they should be interpreted
with extreme caution.

At this point a word is in order regarding student attempts to
"fool" the system. While no system is foolproof, a great deal of effort
has gone into building the system in such a way that attempts to deal
with it dishonestly will almost always result in undesirable consequences.
The least secure segment of the system is the time card procedure. There
is practically no way that situations can be avoided where a student
punches himself in for hours when he doesn't work, or where he does not
punch himself in for hours when he is working. Let us examine the
consequences of both situations, since they should be explained to the
class during the first week of the semester.

By punching in extra hours so that he appears to be spending more
time working on performance objectives than he actually is spending, a
student can indeed raise his credited hours total so that it appears
that he is spending more time on the class than his fellow students.
However, unless he can devise a way to get the teacher to submit class
event input forms which show him completing objectives that he actually
hasn't completed, the combination of a large number of credited hours
and a low number of performance objective completions will cause
the system to generate for him a very low objectives completed/hours
credited ratio. This low ratio will appear the first week in which
he tries this type of deception; and there is a good chance, if he
falsifies a sufficient number of hours, that a warning flag will be
generated as well. Therefore, this type of deception should not prove
profitable to the student.

The opposite approach--not punching in for all the hours in
which a student works--will indeed generate a high objectives
completed/hours credited ratio and possibly a merit flag as well.
However, right next to the merit flag column on the report is the hours
credited column; and next to this column is the periods missed column.
Therefore, if a merit flag or a high ratio appears, the teacher can
immediately look at the hours credited column to see if this is inordi-
nately low, which can be immediately determined by comparing the student's
credited hours with the class average. If it does appear to be low, the
absence column can then be checked to see if the low number of hours can
be accounted for in this manner. If it cannot, the teacher can be almost
sure that hours that should have been credited were not. Since this in
turn causes the cost per credited hour of the course to increase sharply,
there is good reason to believe that the teacher will quickly look into
such a series of occurrences--if only to prevent his apparent costs from
skyrocketing. Also, unless this practice of not charging hours is
carried on continually, its cessation will cause a warning flag o
occur about a month after the deception is ceased, since presumably the
student will then be reporting a true number of hours. This occurrence
will also bring him to the attention of the teacher.

In summary, as long as the class event input procedure is carefully
controlled, the system is virtually self-balancing and will defeat most
attempts to cause it to generate deliberately spurious data.

To minimize paperwork, it is possible for this report to be
supplied with only the first page printed for each class. This means
that the hours consumed per objective listings and the completion
information for the individual objectives will not be supplied.

This report is probably the most interesting produced by the system. It is similar in some ways to the classroom summary report, but instead of printing performance information for the class as a whole, it prints data showing how subgroups within the class compare to one another in performance and in characteristics. The characteristics which can be used to divide the class are called options. Any or all options can be included in a particular report. The six available options are:

Reading score
Math score
Percentile score
Age
Sex
Ethnic group

Within each of these options, the report groups students in what are called option groups. All of the option groups are shown below:

OPTION	OPTION GROUP
Reading score	Students scoring above mean for class Students scoring below mean for class
Math score	Students scoring above mean for class Students scoring below mean for class
Percentile score	Students scoring above mean for class Students scoring below mean for class
Age	A separate group is formed for each year of birth within the class
Sex	Male Female
Ethnic group	1 = Spanish surname 2 = Other white 3 = Negro 4 = Chinese, Japanese, Korean 5 = American Indian 6 = Other non-white

SPECIAL STUDENT REPORT   03/20/72

OPTION READING

DISTRICT NO. 62-30

SCHOOL NO. 1036672

CLASS NUMBER	CLASS NAME	GROUP SIZE	AVERAGE HOURS CREDITED	AVERAGE OBJECTIVES COMPLETED	AVERAGE PERIODS MISSED	AVERAGE MARKING FLAGS	MERIT FLAGS AV PCT THIS WEEK	AV PCT THIS WEEK	AVERAGE DISCIPLINE REPORTS	AVERAGE COMMEND REPORTS	OBJECTIVES COMPLETED/HOURS CREDITED RATIOS (AVERAGE) NOW	-1	-2	-3	-4
OPTION GROUP - STUDENTS AT OR ABOVE MEAN		60		AVERAGE SCORE	79										
061	AUTO ELECTRICS	7	15.6	16.3	2.0 0.6 29	0.1	0		1.4	0.4	1.02	1.15	2.24	1.66	1.17
OPTION GROUP - STUDENTS BELOW MEAN		60		AVERAGE SCORE	38										
061	AUTO ELECTRICS	6	15.7	12.3	2.7 0.5 33	0.2	0		2.5	0.2	0.81	0.84	0.82	0.97	0.90

Exhibit 10 - Special Student Report (Reading Option)

SPECIAL STUDENT REPORT 01/26/72

OPTION SEX

DISTRICT NO. 00001

SCHOOL NO. 0000021

CLASS NUMBER	CLASS NAME	GROUP SIZE	AVERAGE HOURS CREDITED	AVERAGE OBJECTIVES COMPLETED	AVERAGE PERIODS MISSED		WARNING FLAGS		MERIT FLAGS		AVERAGE DISCIPLINE REPORTS	AVERAGE COMMEND REPORTS	OBJECTIVES COMPLETED/HOURS CREDITED RATIOS (AVERAGE)				
					AV PCT THIS WEEK			AV PCT THIS WEEK					NOW	1	2	3	4
OPTION GROUP - FEMALE																	
011	AUTO	2	1.5	0.0	0.0		0	0.0		0.0		0.0	0.00	0.00	0.00	0.00	0.00
OPTION GROUP - MALE																	
011	AUTO	6	2.7	0.3	4.2		0	0.0		3.3		0.0	0.00	0.00	0.00	0.00	0.00
OPTION GROUP - FEMALE																	
012	BODY SHOP	1	0.0	0.0	0.0		0	0.0		0.0		0.0	0.00	0.00	0.00	0.00	0.00
OPTION GROUP - MALE																	
012	BODY SHOP	7	1.0	1.0	0.0		0	0.0		0.1		0.0	0.20	0.13	0.10	0.07	0.12

Exhibit 11 - Special Student Report (Sex Option)

SPECIAL STUDENT REPORT   09/13/72

OPTION AGE

DISTRICT NO. 82050

SCHOOL NO. 1036672

CLASS NUMBER	CLASS NAME	GROUP SIZE	AVERAGE HOURS CREDITED	AVERAGE OBJECTIVES COMPLETED	AVERAGE PERIODS MISSED	WARNING FLAGS		MERIT FLAGS		AVERAGE DISCIPLINE REPORTS	AVERAGE COMMAND REPORTS	OBJECTIVES COMPLETED/HOURS CREDITED RATIOS (AVERAGE)				
						AV PCT THIS WEEK		AV PCT THIS WEEK				NOW	1	2	3	4

OPTION GROUP - YEAR OF BIRTH 1953

| 061 | AUTO ELECTRICS | 4 | 13.4 | 12.3 | 2.9 | 0.3 | 29 | 0.0 | 0 | 0.0 | 0.0 | 0.98 | 0.90 | 1.02 | 1.01 | 1.02 |

OPTION GROUP - YEAR OF BIRTH 1954

| 061 | AUTO ELECTRICS | 9 | 12.3 | 12.7 | 1.4 | 0.1 | 11 | 0.2 | 22 | 0.4 | 0.0 | 1.08 | 1.18 | 1.04 | 0.97 | 1.01 |

OPTION GROUP - YEAR OF BIRTH 1955

| 061 | AUTO ELECTRICS | 2 | 11.6 | 15.0 | 3.0 | 0.6 | 50 | 0.0 | 0 | 2.0 | | 1.20 | 1.22 | 1.36 | 1.41 | 1.71 |

Exhibit 12 - Special Student Report (Age Option)

SPECIAL STUDENT REPORT   03/18/72

OPTION ETHNIC

SCHOOL NO. 1036672

DISTRICT NO. 62430

CLASS NUMBER	CLASS NAME	GROUP SIZE	AVERAGE HOURS CREDITED	AVERAGE OBJECTIVES COMPLETED		AVERAGE PERIODS MISSED	WARNING FLAGS		MERIT FLAGS		AVERAGE DISCIPLINE REPORTS	AVERAGE COMMEND REPORTS	OBJECTIVES COMPLETED/HOURS CREDITED RATIOS (AVERAGE)				
					AV PCT THIS WEEK			AV PCT THIS WEEK					NOW	T -2	-3	-4		
OPTION GROUP - ETHNIC GROUP 1																	
061	AUTO ELECTRICS	5	13.0	10.2		2.6 0.2	20	0.2	20		1.0	0.0	0.80	0.73	0.87	0.80	0.79
OPTION GROUP - ETHNIC GROUP 2																	
061	AUTO ELECTRICS	10	12.3	14.2		1.6 0.2	20	0.1	10		0.3	0.0	1.16	1.25	1.45	1.22	1.52

Exhibit 13 - Special Student Report (Ethnic Option)

SPECIAL STUDENT REPORT 03/20/72

OPTION MATH

DISTRICT NO. 62430

SCHOOL NO. 1036622

CLASS NUMBER	CLASS NAME	GROUP SIZE	AVERAGE HOURS CREDITED	AVERAGE OBJECTIVES COMPLETED	AVERAGE PERIODS MISSED	WARNING FLAGS AV PCT THIS WEEK	MERIT FLAGS AV PCT THIS WEEK	AVERAGE DISCIPLINE REPORTS	AVERAGE COMMEND REPORTS	OBJECTIVES COMPLETED/HOURS CREDITED RATIOS (AVERAGE)
										NOW 1 -2 3; 4

OPTION GROUP - STUDENTS AT OR ABOVE MEAN   40   AVERAGE SCORE   65

| 061 | AUTO ELECTRICS | 6 | 15.7 | 17.3 | 1.0 | 0.7 33 0.2 0 | | 1.3 | 0.5 | 1.08 1.18 1.30 2.55 1.19 |

OPTION GROUP - STUDENTS BELOW MEAN   40   AVERAGE SCORE   15

| 061 | AUTO ELECTRICS | 7 | 15.6 | 12.0 | 2.7 | 0.6 29 0.1 0 | | 2.6 | 0.1 | 0.79 0.83 0.83 0.97 0.82 |

Exhibit 14 - Special Student Report (Math Option)

SPECIAL STUDENT REPORT 03/20/72

OPTION PERCENTILE

DISTRICT NO. 62430

SCHOOL NO. 1036672

CLASS NUMBER	CLASS NAME	GROUP SIZE	AVERAGE HOURS CREDITED	AVERAGE OBJECTIVES COMPLETED	AVERAGE PERIODS MISSED	WARNING FLAGS AV PCT THIS WEEK	MERIT FLAGS AV PCT THIS WEEK	AVERAGE DISCIPLINE REPORTS	AVERAGE COMMEND. REPORTS	OBJECTIVES COMPLETED/HOURS CREDITED RATIOS (AVERAGE)
										NOW 1 2 3 4

OPTION GROUP - STUDENTS AT OR ABOVE MEAN .56 AVERAGE SCORE 73

| 061 | AUTO ELECTRICS | 6 | 14.2 | 12.8 | 2.7 | 0.5 33 0.2 | 0 | 2.8 | 0.2 | 0.89 1.03 1.16 1.87 0.96 |

OPTION GROUP - STUDENTS BELOW MEAN 56 AVERAGE SCORE 40

| 061 | AUTO ELECTRICS | 7 | 16.9 | 15.9 | 2.0 0.6 29 0.1 | 0 | 1.1 | 0.4 | 0.95 0.96 1.12 1.12 |

——Exhibit 15 - Special Student Report (Percentile Option)

71

The report follows basically the same format for each option group. First the identity of the group is given. In the case of one of the test score option groups, the identification might be:

OPTION   READING

OPTION GROUP - STUDENTS AT OR ABOVE MEAN 09.7 AVERAGE SCORE 11.4

This signifies that the next line of the report will describe the performance of students in a particular class who scored above the mean of 9.7 grade levels on the reading test submitted to the system and that the average score of the students in this group in reading was 11.4 grade levels.

In the case of an option which is not a test score, such as age, the identification would merely be:

OPTION   AGE

OPTION GROUP - YEAR OF BIRTH 1954

Then the statistics for this group would be given.

The following information is provided for each option group:

    District number
    School number
    Class number
    Option
    Option group
    Group size
    Average hours credited
    Average objectives completed
    Average periods missed
    Average number of warning flags
    Percent getting warning flags current week
    Average number of merit flags
    Percent getting merit flags current week
    Average discipline reports
    Average commendations
    Objectives completed/hours credited ratio

        now
        1 week ago
        2 weeks ago
        3 weeks ago
        4 weeks ago

In accordance with recent civil rights decisions and to safe-
guard students' rights to privacy, no student names are supplied with
this report. While the report tells how many students are in each
group, it does not list specific group memberships. If a student
record doesn't contain an information item needed to place the student
in a particular group, such as a reading score, that student's record
is totally ignored by the system in forming the option groups within
his class. He is not counted as a member of any group.

To avoid drawing false conclusions, this report should be
interpreted with extreme care. Especially if the size of a group is
very small, the averages produced by the system can be extremely mis-
leading. However, there is also little question that, if used properly,
this report adds a tool to the repertoire of the modern teacher that
could produce dramatic and beneficial results. In most classes a
teacher does not have the time or tools to assess how different sub-
groups within his class are responding to his manner, techniques, and
materials. This can easily lead to poor performance, perceptions of
pre. ice, and general feelings of alienation on the part of the students.
By judiciously utilizing the information in this report, teachers and
administrators can become aware of unsatisfactory situations and take
preventive action while the class is still going on.