THE DEVELOPMENT OF A SUGGESTED INSTRUCTIONAL PROGRAMS COST MODEL FOR K-12 DISTRICTS OF THE STATE OF MICHIGAN

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ABSTRACT

THE DEVELOPMENT OF A SUGGESTED INSTRUCTIONAL PROGRAMS COST MODEL FOR K-12 DISTRICTS OF THE STATE OF MICHIGAN

By

Byron K. Love

Purpose of the Study

The public school systems of the state of Michigan are being placed under increasing stress each year. Collective bargaining, increased inrollments, shortages of teachers, higher costs, and demands for better programs are major contributors to this stress. Boards of education and administrators have responded by attempting to obtain more resources in the form of increased state aid and increased local property taxes. The results are not encouraging. An increasing number of districts are faced with the likelihood of having sizable operating deficits at the end of this fiscal year and with little hope of meeting the increased demands for the coming year.

Legislators and others concerned with the problem of providing needed resources for support of school programs are demanding specific information which will establish the

degree of cost-effectiveness of present school programs. To make such information available the state and local districts would have to implement a system of program accounting which would identify each instructional program, its objectives, what resources were committed to the program, who was served and how well.

Many of the elements of such a system are now in existence. However, at least one important link is missing--cost information which relates directly to each individual instructional program. The financial accounting system in use is based upon the Michigan Public School Accounting Manual adopted in 1962. The basis for identifying costs is object of expenditure. The objects are categorized according to function and level of difficulty (special education, elementary, secondary, custodial services, transportation, etc.). It is not possible to determine easily and directly the costs related to, for example, Algebra I, or the third grade, or all English instruction in the high school. Neither is it possible to analyze the costs related to an individual pupil with a given schedule of classes and activities.

The model developed and reported herein represents an attempt to provide a way of obtaining individualized program costs, and to do so without replacing the present accounting system. The model is also designed so that it can be used

by large or small districts with or without computer based data processing or sophisticated accounting systems. Once the costs have been determined the whole picture involving the instructional program, the personnel responsible for its implementation, the pupils served, the facilities used, and the costs (estimated or actual) related to that particular program will be known. Cost-effectiveness and other types of analysis important to planning and administrative decision making regarding the future of the program can then be performed. The results will provide a "data bank" over the years that will help facilitate performance budgeting and program change and will enable the district to obtain more "educational mileage" within the limitations of its resources.

Procedure and Design

Current practices and studies which related directly and indirectly to the study were reviewed. Interviews with officials of the state of Michigan, Michigan Department of Education, an accountant-author of the Accounting Manual For Public Community Colleges of the state of Michigan, officials charged with the instructional and finance sections of the Midwestern States Educational Information Project for the state of Michigan, and the senior analyst of the Integrated Educational Information System for Oakland, Wayne, and Macomb Counties were held.

Visitations were made to the Michigan Department of Education Data Processing Center, to the Oakland Data Processing Center, and other school units employing some form of program accounting. Books and publications from the United States Office of Education, the Midwestern States Educational Information Project, and other sources were reviewed to obtain ideas and material relative to the structuring of the model and developing a concept of program accounting.

The model was field tested in a school district with an enrollment of approximately 5,200 pupils to determine whether or not it worked as planned.

Major Findings and Conclusions

I. The model, based upon the field test conducted in a third class district, represents a valid and workable way to determine and report the costs of instructional programs in K-12 districts of the state of Michigan.

II. Most of the information needed to implement the model would be available from such routine sources as directories, payroll records, class schedules, contracts, invoices, and blueprints.

III. The model seems to be one which can be easily adapted to both large and small districts.

IV. The results of the field test indicated a wide variation in program costs and cost patterns.

V. The cost center data sheets which were designed to be used to report program characteristics, costs, and cost patterns represent a potentially good method of summarizing such information and communicating it to other districts including the district of the state of Michigan and the Michigan Department of Education.

VI. The model does not require highly sophisticated techniques or a high degree of mechanization.

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By

Byron Kenneth Love

A THESIS

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DEDICATION

To my wife Margaret
and our lovely children,
Ellis, Margo, and Heather.

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If I were to acknowledge all those who contributed directly and indirectly to this effort this would be the longest section of all. I have chosen to be selective, therefore, and give a special vote of appreciation to the following:

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My wife and family who somehow managed to keep their composure during this period of uncertainty.

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CHAPTER I

THE PROBLEM

Statement of the Problem

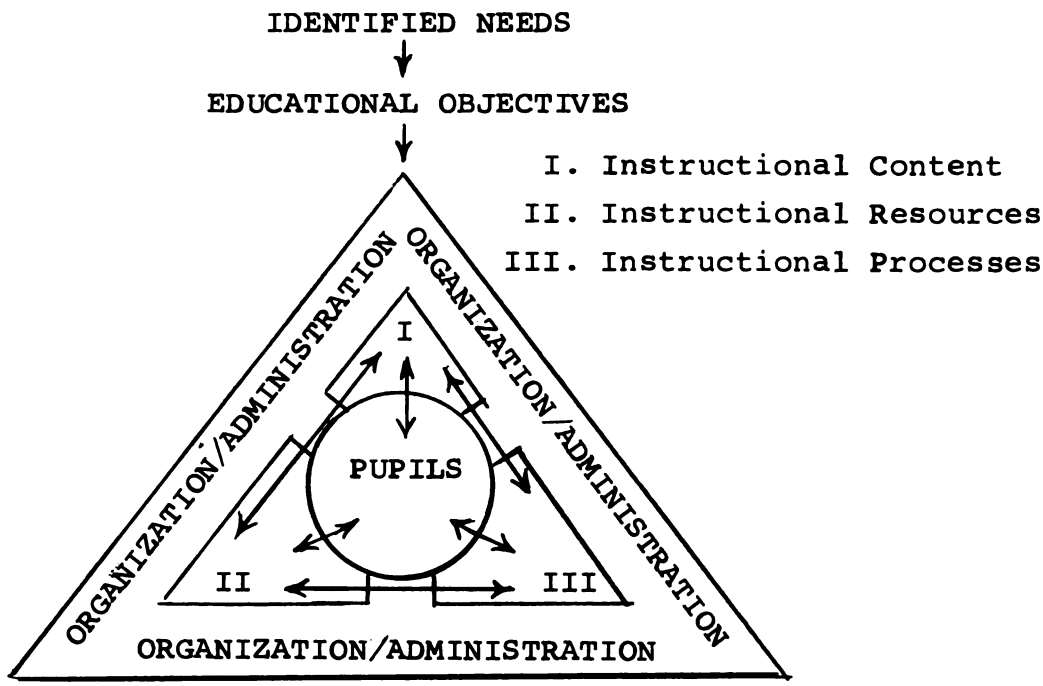
The socialization of youth is the most important task of any society. To help accomplish this task effectively and efficiently societies organize and support schools and charge the personnel employed therein with the responsibility of developing and implementing "instructional programs." Such programs may be defined as a cluster of activities designed to achieve specific, immediate objectives as a direct result of those activities when performed over a designated period of time.

The curriculum specifies the instructional activities and is the planned interaction of pupils with instructional content, instructional resources, and instructional processes for the attainment of predetermined educational objectives. Instruction relates to the methods used to accomplish the objectives outlined in the curriculum.

It is the responsibility of the administrators and school boards of districts to assess the resources available to the district, define in cooperation with staff and public the extent and nature of the needs of those to be served,

establish the educational objectives, organize the resources to achieve the objectives and schedule the interaction between the pupils and the resources, content, and processes of instruction.

The entire process can be visualized with the help of the following diagram:[1]



The administration by scheduling a class commits a teacher, a teaching station, equipment, supplies and all things necessary so that the teacher can interact with a group of pupils (instruction) and achieve a specific set of

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[1]U. S. Department of Health, Education and Welfare Office of Education: Handbook VI, Standard Terminology For Instruction In Local and State School Systems, Washington, D. C.: United States Government Printing Office, May, 1967, p. 4.

objectives (instructional content). The information available concerning the class is usually sufficient to identify it as a cost center and to evaluate it educationally but not sufficient to determine the cost of the instructional **RESOURCES** expended. The decisions made regarding the class might have been very different had this cost factor been known, and possibly, at least, the program would have been better as a result.

The challenge of meeting effectively all of the objectives established in the curriculum is usually made difficult by limited resources. The basic resource of a district is money which can be converted into a wide variety of services and things which are needed to implement programs. Each time a class or activity is scheduled a financial commitment is made. It is not logical or business-like to make such a commitment without knowing what the cost is likely to be.

The plan for commitment of financial resources, the budget, contains two subplans. The first is the revenue plan specifying the sources and amounts of revenue to be received. The second is the expenditure plan specifying what is to be purchased and the anticipated cost. The relationship of the expenditure plan to the instructional program may be structured in a wide variety of ways. The basis for outlining the costs (actual or anticipated) is referred to as a dimension. The grouping of costs along the dimension is referred to as categorization. Unless the costs are

outlined and categorized according to the curriculum there is not likely to be any way whereby the financial commitment made by scheduling and implementing a class or activity can be determined.

Administrators and board members work hard to prescribe a curriculum and administer the resulting program, but they do little to budget for each program, class or activity as an entity or to determine the cost for each once it is completed. The cost information, not having been determined, is not, therefore, available for planning and budgeting the program, classes and activities of the next year. The loss of this valuable and relevant information makes it less likely that the pattern of commitment of the limited resources of the district for the coming year will be as effective and appropriate in meeting the declared objectives of the program as it could and should be.

This is the nature of the problem. Those responsible for the educational program should be able to set objectives, plan to fulfill those objectives by means of a curriculum and instruction based upon it, budget for what is planned and account for what happens. There should be a complete set of information for each program. If a physics class is considered to be a program of the district, then information concerning the objectives of the course, who taught it, who attended the class, the nature of the instruction, materials used, location, time scheduled, amount of money budgeted

for it and the cost, and the objects of expenditure that were involved should be available. With this set of information the program can be meaningfully evaluated both educationally--in terms of how well it met the objectives--and in terms of the resources needed to implement it.

When resources are limited the setting of priorities is essential. Sets of information which all relate to the same entity (program) help provide a sound basis for establishing such priorities. One program that might be very effective educationally may, because of its high cost, tend to defeat other programs. Looking at the problem from a sense of fair play and from a desire to serve all students according to their needs such programs may or may not be defensible. With appropriate sets of information available the administrator can quickly weigh the evidence for continuing the program or making a change.

> One of the most difficult, and often the most neglected processes in school system management, is communication upward, downward, and laterally in the organization with the central purpose of improving quality. With "programs" identified, planned through staff involvement, budgeted for with an understanding of what is economically feasible, and accounted for in terms of all resources committed to the objectives, there is something to communicate about.[1]

The problem is, in sum, that a complete set of information for each instructional program defined in terms of

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[1]"Program Planning, Budgeting, and Accounting in School System Operation," a position paper by Allan R. Lichtenberger, Chief, Terminology Compatibility Branch, U. S. Office of Education, September 20, 1967, p. 4.

subject-matter courses of instruction, grade levels, or other activities is not possible at present in K-12 public school programs of the state of Michigan. The missing link is financial program accounting which relates the program and its costs directly.

Purpose

The purpose of the study is to develop a suggested model for costing K-12 instructional programs which is adapted to the budgeting and accounting codes of the school districts of the state of Michigan. The model will be designed to serve as a guide for determining and reporting the following information:

A. Program identification including the name and content of the course or activity, who taught or directed the class or activity, school year and term, organizational unit, type of school, building, room, type of program, sequential year, level of difficulty, grade level, section, credit units, required or elective, number of male pupils, number of female pupils, type of pupil for whom class is oriented, number of days course is taught per year, number of minutes per week, percentage of laboratory time, texts used, teaching method, materials and media.

B. Cost information per pupil, per class, per subject, per grade, per building, or per any item used in the

program identification for each cost center (program) per appropriation number based upon the Michigan Public School Accounting Manual.

The information noted above will be summarized for each program on a specially designed cost center data sheet. The model will also be field tested in a medium-sized school district in an effort to determine whether or not: (1) It provides the cost data required of it, (2) It represents a fast, efficient way of obtaining cost data and appears to be adaptable to both large districts and small districts with or without data processing and computer capability or sophisticated accounting systems, and (3) What modifications of the model are recommended.

Importance of the Study

The educational enterprise at present has one key overall problem--lack of sufficient resources. Those who control the resources have shown great reluctance to increase the level of support of school programs in proportion to the rate of increasing costs and demands for service. A major court test of the constitutionality of the present system of state aid has been initiated by the school board of the city of Detroit, Michigan. A prominent legislator has stated that educators of the state by demanding more funds from the legislature ". . . have cried 'wolf' once too often."

The problem has many facets one of which is that of communicating cost information concerning specific programs

to the legislators, taxpayers, voters and others who help determine the level of support. Without this information the "cost picture" cannot be related to the quality of the program and a case developed for increasing support which is informed and specific.

Several factors which tend to aggravate the situation include:

1. The inadequacy and inequity of the property tax as a basis for additional funds for school programs.
2. Collective bargaining and increasing demands for higher wages by school district employees.
3. Inflation.
4. The rapid escalation of costs for all educational services, facilities, supplies, and equipment.
5. Increasing demands for more service, greater variety of service, and better quality of service from schools.

The study is, therefore, believed to be important for the following reasons: (a) It fulfills an immediate need for a method of obtaining data which is relevant and important to the decision-making process. It is not logical or business-like for a district to invest in instructional programs for which it has insufficient cost data. (2) It will provide specific cost information for individual programs defined by school district authorities in such formats that

it will help facilitate both Program Planning and Budgeting Systems and studies in cost-effectiveness. (3) It will provide a way to help legislators, voters, researchers and others interested in the educational enterprise study the relative costs of various school programs on a class, department, school or school district scale. (4) It will provide the implementing districts with a way of sharing data about programs defined on a class or activity basis.

Assumptions

The study is based upon the following basic assumptions:

A. That the concept of program accounting has excellent potential for providing administrators and other decision-makers of the educational enterprise with relevant data which will aid them in designing more effective educational programs.

B. That the need for developing a financial subsystem for costing educational programs is immediate and recognized by authorities at both the state and national level, thus increasing the likelihood that a suitable model for cost analysis will be implemented in districts of the state.

C. That a model for cost analysis can be developed which can be adapted to all districts of the state (including intermediate districts and the district

of the state of Michigan) that will not require sophisticated accounting processes or computerized data processing but which will, nevertheless, be facilitated by both.

D. That the Michigan Department of Education will not make any major changes in the Accounting Code currently used within the next five years.

Scope and Delimitations of the Study

The concept of program accounting is very broad and inclusive. It can be broken down into five major areas; (a) pupils, (b) personnel, (c) finances, (d) facilities, and (e) instructional programs. In a total information system each of the subsystems represented by these areas would be integrated and associated with information from each and all of the other areas thus permitting summary and research along any desired dimension.

The financial system currently used in the state is integrated with and associated with facilities and debt retirement and certain programs such as special education and transportation, but only in a limited way for programs that are defined on a subject-matter or grade level basis. The latter programs constitute the most important part of the total educational effort both educationally and financially. The model will be an attempt to establish a

relationship between costs and individual programs along a subject-matter dimension.

A financial subsystem which would function within an integrated total information system consisting of the five areas noted above would involve both revenue and expenditure sections for each of the several funds including the general operating fund, building and site fund, and debt retirement fund. Since the costs related to educational programs are mainly concerned with the operation of schools the model will likewise be mainly concerned with the accounts of the general operating fund. Further, since costs relate only to the expenditure section of the fund the model will also be so restricted.

A total information system implemented on a state wide basis would require strict adherence to a standard nomenclature and codification system. It is not within the scope of this study to attempt to develop either a system of standard nomenclature or a uniform codification system. The model will rely on other systems that have been developed as appropriate.

Definition of Terms

The following terms are used repeatedly in the study and have rather specific definitions as they relate to the study:

Categories	A basis for clustering cost centers along a chosen dimension. Each cost center is placed in one cluster per dimension.
Cost Accounting	A division of program accounting specifically concerned with determining and recording for analysis the costs of implementing a given program.
Cost Center	A subdivision of the total instructional program which for accounting purposes is treated as an entity. For example, Physics I could be so treated.
Dimension	A basis for classifying and codifying cost centers. Examples could include subject matter, level of instruction, funding plan, function, clientele, or longevity.
Effectiveness	The amount or degree of progress made toward stated objectives.
Efficiency	Achieving without waste of resources.
Program Accounting	The process of classifying, recording, and reporting revenue and expenditures so that financial aspects of the instructional program can be properly controlled, reported, and analyzed.
Program of Instruction	An activity or group of activities designed to achieve specific, immediate objectives as a result of those activities when performed over a designated period of time such as a semester, or school year.

The benefits of program accounting are not being realized by districts primarily because cost accounting, an essential ingredient of program accounting, is not required by or facilitated by the Michigan Public School Accounting Manual and the system of accounting which is based upon it. Further background regarding the nature of this problem is provided in the next chapter on related literature and resources.

CHAPTER II

RELATED LITERATURE AND RESOURCES

The suggested instructional programs cost model which is outlined in Chapter III was designed to serve a rather specific purpose, namely, to provide a means of determining and analyzing cost data related to instructional programs. The term instructional program as used herein may refer to any program or combination of programs ranging from the entire public elementary-secondary school program of the state of Michigan to the individual program of one pupil.

The cost data, once determined, should be useful in planning and decision-making at all levels of the educational enterprise. Regarding planning and decision-making the following statements and recommendations were included in the special report to the Board of Education of the state of Michigan which was prepared and submitted by Dr. J. Alan Thomas of the University of Chicago in December, 1967.

Planning and Decision-Making

> If educational opportunities in Michigan are to be expanded at a reasonable cost, careful short and long term planning is needed. This requires the improvement of data-gathering, storing, retrieving, and analyzing, since decision-making for the present and planning for

the future rest on the availability of information and upon care projections of future requirements.

. . . The state, in its role as an educational leader and coordinator of planning, also needs to improve its abilities in these area.

Recommendation 1. The Michigan State Department of Education should expand and strengthen the Bureau of Research, Planning and Development. . . .

Recommendation 2. The Michigan State Department of Education should be provided with the staff and the computer facilities needed to gather and process information. A central information system, in which the interrelationships between programs, finance, and staffing may be examined, should be the goal of this department. Ongoing attempts should be made by school districts and the state to devise standards and means of assessing the effectiveness of educational programs.

Recommendation 3. In view of the increased usefulness of the computer as a tool in administration and instruction, strategically located computation facilities should eventually be provided throughout the state. The pilot project designed to serve Oakland, Wayne, and Macomb Counties is a possible prototype of these centers. State advice and encouragement in the location and planning of these centers are essential.

Recommendation 4. The State Department of Education should continue to evaluate and revise its data collection procedures. Particular attention should be paid to the need for consolidating the wide variety of report forms. Attention should also be given to the extent and usefulness of data which are gathered. Once collected, information should be processed electronically, thus ensuring reporting and utilization.

Recommendation 5. The State Department of Education should continue to make studies of the most appropriate ways to sample student population, in the hope of determining whether there is a better method than the fourth Friday membership statistic now used.

Recommendation 6. As part of the planning process, attempts should be made to determine the unit costs of educational programs. Efforts should be made, through appropriate accounting and statistical techniques (for example, program budgeting . . .), to determine the factors which are associated with the costs of educational programs.

An instructional programs cost model is clearly recommended by Dr. Thomas although not necessarily the one included in Chapter III.

Speaking more generally the major purposes of any accounting system are: (A) To provide control over fiscal resources and (B) To provide relevant information for planning, decision-making, and evaluation of programs. The present system of accounting, based upon the Michigan Public School Accounting Manual, serves to provide the control noted in (A) above very well, but fails in its information role rather badly. That this is a general problem not specific to this state is obvious from the following.

> Cost analysis in public education is superficial--we pretend to have a cost analysis system when we are able to compute the "total ADA per pupil cost." Too often local district cost analyses are designed for convenient comparisons with those of other districts and do not provide information in an appropriate form that can be utilized in local district management decisions. How many accounting systems provide the following data?
>
> 1. Cost per ADM for school district.
> 2. Cost per ADM by attendance centers.
> 3. Cost per ADM by grade or subject matter area.
> 4. Cost by attendance center and by grade or subject matter area for:
>
>   A. Teachers' salaries.
>   B. Supplies.
>   C. Equipment.
>   D. Other.
>
> Today educational literature strongly recommends program and/or performance budgeting, but little attention is being given to changing the accounting system

> which must provide financial data to help evaluate the "programs."[1]

It is the intent of this project to provide a means of doing all that is noted above in detail. Further, a summary system designed to facilitate reporting such information to any of the several important "audiences" which need the information including Federal Agencies, the State Legislature, the Michigan State Department of Education, Intermediate Boards of Education, the central administrative staff of the district, board of education, building and teaching staffs, citizen committees and others as appropriate will be included.

The model is a suggested subsystem of a general program accounting system. It can be adapted to: (A) Either accrual or cash basis financial accounting, (B) Serve as a basis for performance budgeting, and (C) Depreciation accounting of capital outlay expenditures.

Cost accounting, to be most effective, would serve as one of many subsystems of a general program accounting system. A general program accounting system is one possible form of a total information system. The Midwestern States Educational Information Project Financial Subsystem Subcommittee cites the following reason for moving to program accounting:

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[1]George A. Chambers and E. Gordon Richardson, "Criticisms And Challenges to School District Financial Accounting Practice," School Business Affairs, July, 1967, p. 173.

> Program accounting provides information and assists school administrators in making choices, regarding optimum allocation of resources among alternative programs or educational needs, based on an evaluation of effectiveness of individual programs.
>
> Program accounting describes desired accomplishments, rather than merely the objects of expenditure.
>
> Program accounting developes a cost-quality awareness among school administrators, school boards, and lay citizens.
>
> Program accounting will enable fiscal administrators to group all operational units or programs together for individual or collective analysis according to comparative standards defined by the professional educators.
>
> Program accounting will enable more uniform and accurate comparisons of both fiscal programs'--and educational programs'--effectiveness among the various educational agencies.
>
> Program accounting procedures will provide the type and degree of data specifically needed for intelligent predictions of future fiscal and educational programs through the budget preparation.
>
> Program accounting will help establish fiscal responsibility and accountability, thereby safeguarding the stewardship of public funds.[1]

The ratio of output to input in a system is often called cost-effectiveness. The struggle to determine degrees of cost-effectiveness in regard to educational programs has been, and is likely to continue to be, filled with headaches just as it has been for business, industry, and government--for many of the same reasons. Benson states,

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[1]Midwestern States Educational Information Project, P. L. 89-10, Title V, Section 505, "Accounting Manual For Program Accounting," First Draft, December, 1967, p. 1.

> . . . Possibly there will come a day when productivity measures will exist in education, and we ought thus to see what kind of data are required in order that such a tool of research can be made available. We will want to examine the process of weighing alternative costs to accomplish given, specific ends. . . . (also) . . . from the economists's point of view, only as school systems go beyond the measurement of productivity to study the contribution of specific inputs (various types of human services and various types of physical goods) to educational ends, i.e., to explore the interrelations between inputs and outputs can productivity advance in education be assured. . . .[1]

> . . . While a strong case exists a priori for the statement that advances in productivity in the industrialized nations cannot continue unless a certain (somewhat undefined) level of schooling is maintained, it is exceedingly difficult to relate a given change in expenditure on public education to a corresponding quantitative improvement in economic productivity. (Further) it is sometimes held that education is handicapped by not being able to relate changes in dollar value to inputs to some series of outputs. We do not have any widely accepted index of productivity for the education industry itself. It would be well if we could measure the <u>indirect</u> contribution of education to productivity, i.e., the effects of changes in quality of schooling on changes in output in the private economy, say. But it would also be well if we could measure the <u>direct</u> contribution of change in expenditures to change in outputs of the education industry itself.

> The lack of these kinds of measurements does not place education in any unique position. (1) The identification of the more basic kinds of causal relationships in productivity is at present an insuperable problem. In fact, the existing measures of productivity change for the private economy--and even the measures for particular industries (including those whose products are tangible)--are known to have very serious defects simply as descriptive instruments. (2) For broad sectors of the economy (the whole public sector and, in the private sector, trade and service activities generally), not just in education, no accepted productivity measures exist.[2]

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[1]Charles S. Benson, <u>The Economics of Public Education</u>. (Boston: Houghton Mifflin Company, 1961), p. 336.

[2]Ibid., p. 338.

There are many factors which are closely related to changes in productivity. Mills suggests the following list as being worthy of consideration in this regard.

> The quantity or quality of capital equipment used.
>
> The quality of effort input (This may be a change in intensity or a change in average degree of skill. Such a change in average skill may result from a change in the competence of individuals or groups or from a shift in the composition of the work force.).
>
> The ratio of effort input to productive instruments used or to natural resources used (A change in average productivity resulting from the play of diminishing returns would be included in this category.).
>
> The quality of natural resources or material used.
>
> The quantity of materials or intermediate products used to produce a standard unit of final product.
>
> The amount of non-human power used or the manner of its use.
>
> The organization of productive units.
>
> Working conditions.
>
> The effectiveness of administration.[1]

The list is not as appropriate for education as for business or industry, but it does point out that there is a large number of factors involved and an even larger number of possible combinations of factors.

The problem of cost-effectiveness is further complicated by the fact that it involves more than just dollar value

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[1]C. Wright Mills, quoted by Benson, ibid., p. 346.

costs. It includes direct and indirect costs, fixed and variable costs, foregone earnings of pupils, services by public agencies, costs due to loss of tax base when school districts buy property (imputed to be $51,210,000 in 1965-66), and costs related to misuse and idleness of facilities. The problem is one of maximizing the flow of educational services from a fixed amount of resources. The resources involved have more than just dollar dimensions. Program accounting, in its complete sense, would include performance information, evaluation and testing permitting a more complete appraisal of the resources and facilitating the process of determining cost-effectiveness.

The plan for utilization of resources includes the operating budget. Benson poses the problem of preparing such a budget as follows:

> To prepare an ideal educational budget is difficult, more difficult than the corresponding process in a private business firm. The objectives of school systems are multiple, and there is not absolute agreement among parents, educators and taxpayers on the importance--or relative weighting--of these different objectives. More distressing, it is very hard to measure closely the effects of given change in school practice. It is thus, an imposing task to choose rationally among alternative means to accomplish stated ends.[1]

However, educators must choose. The public schools will continue to operate in an economic system that has a scarcity of resources for many years to come. The competition for those resources which are available will increase

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[1]Benson, ibid., p. 4.

in intensity as long as they continue to have alternate uses. The decisions ideally should be made to select the minimum-cost mix of resources to achieve organizational goals. Benson concludes, ". . . that a necessary condition for sustained progress in education is the accumulation of information on the particular outcomes that result from specific combinations of inputs."[1]

The chief advantage of program accounting is that it relates a set of outcomes (progress toward stated and unstated objectives) and a specific set of inputs (and their related costs) in such a manner that it makes cost-effectiveness studies possible--if not easy. The two "sets" combine to form the basis for an educational program.

Among the many reasons given for not wanting to implement program accounting complete with cost accounting are these:

A. It is simply a device for increasing state and federal control of education.

B. Even if the cost of English instruction (for example) were known it would still be included in the curriculum so why bother to cost it?

C. If program accounting is used prorating of cost will become necessary and the data will become a bunch of "guesses"--it won't be "clean" like that which is

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[1]Ibid., p. 361.

related to object of expenditure accounting.

D. The amount of effort, confusion and mechanization required is too great considering the limited value of the information obtained.

Regarding (A) this has been part of the rationale for preserving local control of education for decades. Local control has failed to solve the problems of education that exist nation-wide. (B) can be expressed as, ". . . since it will require use of a car anyway why not purchase a Rolls Royce? . . ." It may be that the district cannot afford a Rolls Royce and that the purchase of such a car would jeopardize other programs by depriving them of needed resources. In regard to (C) it is true, but there is much more to the story that will be discussed in Chapter III. (D) is also true to the extent that there is no reason why a district should incur the trouble and expense of obtaining information that is not perceived to be important and relevant to the administration of the district.

In regard to the general problem of relating cost and quality in education Clark states,

> Economists are interested in getting whatever it is society wants with less effort, or getting more of whatever it is society wants with the same effort. Surely no one in the field of education would object seriously to getting more of whatever it wanted with the effort that is now being made. . . . The problem is further complicated in the schools by the widely held view that the concept of efficiency does not apply to education. Many persons are under the misapprehension that the effort to increase efficiency necessarily

> and ordinarily changes the goals of education. If it could be explained that what is involved is to get a greater output with the same input, it is difficult to see how anyone could object.
>
> There are two basic problems: One is to get a reasonable amount of interest in and attention to the problem of trying to increase the output of what each of us wants from education with any given input. The second part of the problem is to begin to get widespread understanding that more people are going to have a great deal more education, and that consequently more efficient methods will have to be found to provide the increased amount.[1]

There is much experimentation and research currently in education designed to find the best educational answers to educational problems. Most of the research is designed to test the educational effectiveness of various new approaches. Very little is aimed at ways of providing detailed cost information on a program basis. The reason may, paradoxically, be one of cost. Individual researchers may not be able to do the job. Team approaches and bigger studies are required. One such study which is very pertinent to Michigan reports the following:

> . . . as the body of reliable program cost/benefit statistics accumulates, school administrators should be able to configure with greater ease and reliability alternative mixes of course offerings to fit budget restraints. Along with this, the comparison of alternative instructional methods (team teaching, programmed learning, etc.) with similar programs, should provide guides as to the optimal method. . . .

Efficiency in Education; Measuring Quality

Efficiency in this context means the ability to "work smarter not harder" and does not necessarily

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[1]Harold F Clark, Cost and Quality In Public Education. New York: Syracuse University Press, 1963, p. 11.

> involve greater demands on individual teachers and administrators. On the contrary, the individual teacher stands to gain much from better measures of quality of education . . . (such as):
>
> - Curriculum
> - Class size
> - Qualification and allocation of teachers
> - Space
> - Instructional materials
>
> As more familiarity is gained in measuring these cost factors and with the widespread use of uniform achievement testing in the State, it should be possible to measure the relative importance of these cost factors. The use of Multiple Regression Analysis in associating variations in mean achievement test scores with such variables as teacher experience, class size, age of building and teacher salaries, has already been demonstrated. The revised system should accumulate a reliable "data base" for such statistical analysis, the benefits of which could be of great use.[1]

It would also be possible and helpful to provide each teacher with a record of the itemized costs related to his particular classes and activities. This type of record is not now available and this fact negates a function of the teacher which is often talked about, but seldom accomplished--involving the teacher in the budgeting process and the planning process. If each teacher could review the costs of the program(s) for which he was mainly responsible his responses might include: (A) Helpful suggestions regarding priorities involved in the program which, in turn, would help facilitate a better budget, (B) An excellent opportunity for general relevant communication between the teacher and the

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[1]Lybrand, Ross Bros. & Montgomery, School District Financial Reporting For Resource Allocation, a report prepared for inclusion in the study of Financing of Elementary and Secondary Education in Michigan, November 15, 1967, pp. 34-35.

administrator regarding the evaluation of the program, its objectives, etc., (C) A better attitude toward costs and their role in choosing alternatives, and (D) Less suspicion of the Board and the Administration regarding their position taken in collective bargaining.

Teachers simply do not understand the financial programs and problems of school districts well enough to interpret budgets and audits based upon such programs and problems. Individual program cost analysis related to the item of expenditure dimension of the Michigan Public School Accounting Manual would provide each teacher with a cost summary for the programs for which he is responsible. It would also be possible to codify each subject-matter based instructional program of the district and require that each teacher or employee requisitioning goods or services record the code on the requisition. This would help to insure that the correct program was charged for the purchase if one were made thus permitting an accounting of the cost of the purchase on the final cost report. The "mystery" as to how much was spent for what for which program in a high school, for example, would be eliminated or at least reduced. This could have a very positive effect on the morale of the staff in buildings and systems where the budget and purchasing practices are kept secret and used for purposes of control and favoratism.

Lybrand, Ross Bros. & Montgomery proposed a program accounting and budgeting system with the following important

characteristics and criteria for Michigan:

a. Programs as described herein encompass a wide range of school activities including:

   . Instructional Programs
      .. Type of education (secondary)
      .. Subject area (science)
      .. Course of instruction (10th grade biology)
      .. Grade level (4th grade)

   . Service function (pupil transportation)

   . Administration

   . School plant

b. All costs, revenues and operating statistics directly related to an instructional program, service or school plant are reported on the same report.

c. Program costs include:

   . Normal spending costs generally recorded in the General Fund.

   . Depreciation of special equipment or facilities used exclusively or primarily in the program.

   . Pension and social security costs (paid for by the State) assignable on the basis of direct payroll costs.

d. Service costs, such as pupil transportation, are assigned to instructional programs or to individual schools on the basis of the usage of the service. No flat or arbitrary allocations are made.

e. Administrative and plant costs associated with each school plant, or with the district as a whole, are treated as a "program" and are not allocated to instructional programs. . . .[1]

Items (d) and (e) above should be reversed. Service costs such as transportation, food services, should NOT be charged to the instructional program, and administrative and

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[1]Ibid., p. 8.

plant costs which must be incurred in any instructional program SHOULD be charged to the instructional program. Regarding transportation as an example of a service the following statement, which is repeated later in the study for emphasis, appears in the Thomas Report,

> However, under present circumstances, transportation services are not an ingredient in the provision of education. . . . The purposes of transportation are; (1) to make it possible for groups of students to be brought to one place for instruction, and (2) to bring about certain economies of scale.[1]

It is true that the economies of scale noted above tend to reduce the costs of instructional programs, the inclusion of these costs in the instructional program would tend to offset this reduction and, perhaps, more realistically represent the actual cost of the program. However, the relationship is nebulous mathematically and should be disregarded.

In regard to administrative and plant costs it is difficult to conceive of an instructional program in English, for example, conducted in a high school in Michigan that didn't require a building or classroom, or no administrative, custodial, or maintenance services. To omit such costs and others such as depreciation of physical plant is to distort the cost of the program.

Later in their report Lybrand, Ross Bros. & Montgomery develop a case for depreciation accounting and discredit the

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[1]Alan J. Thomas, "Financing of Elementary and Secondary Education in Michigan," Special Report to the Board of Education of the State of Michigan, December, 1967, pp. 6-7.

present system which does not employ it. They also object to the position taken by the Association of School Business Officials of the United States and Canada which does not support depreciation accounting. They state:

> . . . Background: Depreciation accounting allocates the cost of facilities and equipment over their useful lives. Historically, depreciation has not been provided for in School District accounting since the determination of income through the matching of costs and revenues is not required. Under present accounting procedures, school facility costs may be charged to either the Building and Site Fund, the Capital Outlay account in the General Fund or a separate construction fund. At present, annual per pupil expenditure computation includes the cost of capital asset replacements and ignores the cost of new or expended school facilities. Both treatments distort the actual cost of education.
>
> The arguments against recognizing depreciation expense on school facilities are numerous and wide-ranging. They include the belief that depreciation accounting is:
>
> - Unnecessary since schools are not involved in recovering costs such as is the case in business and industry.
> - Unnecessary for administrative decision-making.
> - Would be difficult to establish and maintain.
>
> In addition, . . . (the) . . . Association of School Business Officials believes that depreciation on a capital asset basis should be recorded on the books only if the cash for replacement of those assets can legally be set aside.
>
> Need for Depreciation Accounting: The opponents of depreciation accounting for schools ignore the fact that:
>
> - The "using up" of facilities is a cost of education.
> - This element of cost can be expected to increase by the compounding of an increasing rate of construction and increasing unit costs of construction.

- The facilities costs can vary widely by program.

Clearly, depreciation accounting is required if:

- An accurate cost of education is to be calculated by program areas on an annual basis.
- The resources expended are to be related meaningfully to the services that are performed.[1]

Clearly too, administrative, custodial and maintenance costs which result from designing, scheduling, implementing and supporting instructional programs must be included if an accurate cost per program is to become known.

Chambers and Richardson support the position taken by Lybrand, Ross Bros. & Montgomery. They state:

> . . . The important facts are that assets do decline in value, must be replaced, and represent an expense over a period of time. Isn't the depreciation cost plus interest a more justifiable and realistic cost, in many cases, than the outright purchase price or principal and interest costs?[2]

Chambers and Richardson also noted the position taken by the Association of School Business Officials, but their reaction to it was opposite to that taken by Lybrand, Ross Bros. & Montgomery. The matter might be more clear if the A.S.B.O. position were more clearly defined. The official position statement appears below:

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[1]Lybrand, Ross Bros. & Montgomery, School District Financial Reporting For Resource Allocation, a report prepared for inclusion in the study of Financing of Elementary and Secondary Education in Michigan, November 15, 1967, pp. 24-25.

[2]George A. Chambers and E. Gordon Richardson, "Why Not Depreciation?" School Business Affairs, August, 1967, pp. 208-209.

> Depreciation on the general fixed assets of a school district should not be recorded in the accounts unless cash replacements can legally be set aside. Depreciation on such assets may be computed for unit cost purposes even if cash for replacement cannot legally be set aside providing these depreciation charges are used for memorandum purposes only and are not reflected in the accounts.[1]

A.S.B.O. further states in the Recommended School Accounting Principles and Procedures that:

> A school district's accounting system must make it possible to . . . reflect the financial condition and financial operation of the district.[2]

Chambers and Richardson regarded the above statements as reflecting good accounting procedures and asked, ". . . why, then, are the majority of school districts reporting cost data on a net operating basis and not reflecting a total educational cost including depreciation?"[3]

In sum, it is important to consider both cash and noncash costs of education and educational programs.

Allan R. Lichtenberger, Chief, Terminology Compatibility Branch, U. S. Office of Education states that a school district which employs a system of program planning, budgeting and accounting should expect the following:

> Improved assessment of the efficiency of allocation of educational resources.

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[1]Adopted by the 50th A.S.B.O. meeting in San Francisco, California, October 21, 1964.

[2]Ibid.

[3]George A. Chambers and E. Gordon Richardson, "Why Not Depreciation?" School Business Affairs, August, 1967, p. 208.

In plain words, this means that a better job can be done of assigning staff, plant use, equipment, supplies and funds to accomplish what is believed to be worth accomplishing.

- A more continuous and consistent consideration and review of educational objectives.

The very fact of planning, budgeting, and accounting for the comparatively small "units of behavior" or "programs" geared to specific, expected accomplishment virtually forces attention to objectives.

- Sharper and more consistent examination of essential sequences of educational development.

Education is a highly sequential process. These sequences both within and among "program" are much more easily observed, studied, and managed when there is a process of deliberate planning, budgeting for, and accounting for each "program".

- More effective communication through all levels of management concerning processes and operations as they relate to achievement of objectives.

One of the most difficult, and often the most neglected processes in school system management, is communication upward, downward, and laterally in the organization with the central purpose of improving quality. With "programs" identified, planned through staff involvement, budgeted for with an understanding of what is economically feasible, and accounted for in terms of all resources committed to the objectives there is something definite to communicate about.

- Better understanding of how educational resources and effort relate to accomplishment.

If more money and more effort do not result in more effective education, the educational enterprise is ironically unique. Still, education has seldom shown clearly that more resources result in improved accomplishment. With "programs" the opportunities to clarify this relationship are at their best.

- Disclosure of the kinds of educational development foregone when resources are limited.

Entirely too often the statement, "We have a good school system", implies that the school system is

meeting more needs than it really is. Frequently, too, a school system is criticized for not providing certain kinds of educational development when their provision is not possible in terms of available resources. When "programs" go through the process of planning, budgeting, and accounting, the kinds of educational development they make possible show with clarity the kinds that are foregone. It is common sense to make such exclusions evident.

. Better opportunity to set educational priorities.

Seldom does a school system have sufficient resources to do all that needs to be done. Setting of priorities is essential. "Programs" bring these into focus, and the people who make decisions have a much better basis for determining orders of importance in view of resources available.[1]

Program cost accounting is thus seen to be part of the total process of program management. The advantages noted above, however, will not be fully realized unless program planning, program budgeting, and program accounting are all implemented. Lichtenberger offers the following brief, but adequate, definitions of these terms.

The determination of what is to be done to achieve the objectives of a "program" is program planning.

The process of carefully estimating the cost of doing what is to be done to achieve the objectives of a "program" is program budgeting.

The recording of what is done in the operation of a "program", of what is spent, and of what is accomplished is program accounting.[2]

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[1]"Program Planning, Budgeting, and Accounting in School System Operation," a position paper by Allen R. Lichtenberger, Chief, Terminology Compatibility Branch, U. S. Office of Education, September 20, 1967, pp. 3-5.

[2]Ibid., p. 2.

The model will provide a way of determining "what is spent" for each program in each appropriation category. This information can be used for planning and budgeting as well as for cost analysis and evaluation. The model suggests a way of identifying the "program" which includes information about the nature of the program, who was effected, how many equated full-time teacher efforts were required for its implementation, what methods and facilities were used, what objectives were involved and what progress was made toward those objectives.

The model is intended to be consistent with the concept of systems analysis. Systems analysis has been defined as:

> . . . inquiry to aid a decisionmaker choose a course of action by systematically investigating his proper objectives, comparing quantitatively where possible the costs, effectiveness, and risks associated with the alternative policies or strategies for achieving them, and formulating additional alternatives if those examined are found wanting. Systems analysis represents an approach to, or way of looking at, complex problems of choice under uncertainty, such as those associated with national security. In such problems, objectives are usually multiple, and possibly conflicting, and analysis designed to assist the decisionmaker must necessarily involve a large element of judgment.[1]
>
> Systems analysis is primarily a managerial approach to decisionmaking wherein over-all system effectiveness analysis are two approaches to the task; other, more specific tools and techniques can be supplied where appropriate.[2]

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[1]Richard A. Johnson, Fremont E. Kast, and James E. Rosenzweig, The Theory and Management of Systems (New York: McGraw-Hill Book Co., 1967), p. 144.

[2]Ibid., p. 291.

The model may be described as an example of one of the "specific tools and techniques" noted above. It is mainly concerned with obtaining cost data and relating that data to the objectives, evaluation, and selected characteristics of the programs. The resultant information "package" can then be used as relevant data for planning, and decision-making. The model is also concerned with analysis, the breaking down and distribution of costs, as an important prelude to synthesis of new and revised programs.

A Planning-Programming-Budgeting System (PPBS) is another important set of tools and techniques for helping management make better decisions in regard to allocation of resources. The primary characteristics of PPBS are:

1. It identifies the fundamental objectives of the school.
2. All activities, regardless of organizational placement, are related to these objectives.
3. Implication of programs in future years are considered.
4. All related costs are considered.
5. Systematic analysis of alternatives is undertaken.[1]

Systems approaches tend to emphasize objectives, evaluation and the study of alternative ways to progress toward objectives, consideration of costs and use of resources, and

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[1]Unpublished paper by J. A. Jungherr, Assistant Superintendent-Business, Pearl River School District, New York, "Planning-Programming-Budgeting System For Public School Districts," October 10, 1967, p. 2.

planning for the future.

Stating the objectives for each program is a difficult task. It is assumed that all instructional programs have objectives and that they are not so obscure, mysterious, or secret that they cannot be expressed in written form. Stating the objectives in behavioral terms may be the most difficult of all, but it offers the important advantage of producing something observable and testable. This tends to make evaluation of progress made toward the objectives more measurable and useful in terms of cost-effectiveness considerations. Indeed, it would be almost impossible to measure cost-effectiveness of programs for which the objectives are expressed as to know, to enjoy, to believe, to understand, to grasp the significance of, and so forth. Mager has defined the problems related to stating objectives in behavioral terms and concludes that:

1. A statement of instruction objectives is a collection of words or symbols describing one of your educational intents.

2. An objective will communicate your intent to the degree you described what the learner will be DOING when demonstrating his achievement and how you will know when he is doing it.

3. To describe terminal behavior (what the learner will be DOING).

    a. Identify and name the over-all behavior act.
    b. Define the important conditions under which the behavior is to occur (givens or restrictions, or both).
    c. Define the criterion of acceptable performance.

4. Write a separate statement for each objective; the more statements you have, the better chance you have of making clear your intent.

5. If you give each learner a copy of your objectives, you may not have to do much else.[1]

Regarding evaluation which is necessary to determine whether or not objectives have been reached Mager states,

> It is not always possible to specify a criterion with as much detail as you would like, but this should not prevent you from trying to communicate as fully as possible with the learner and with each other. But certainly you should be able to find some way to evaluate anything you think important enough to spend a significant amount of time teaching. If you find something you feel sure you cannot measure, the place to put the effort is in trying to develop some way to measure it.[2]

Some examples of behavioral objectives appear below.

> If we wish students to know and understand the process of osmosis, then it must be made clear what is to be accomplished as indicated by the behavior of the students. . . .
>
> The students should be able to:
>
> 1. Construct a definition of the word "osmosis".
>
> 2. Identify a situation involving the process of osmosis from a list of written situations.
>
> 3. Describe in writing how the process of osmosis is involved in a particular experiment.
>
> 4. Construct an apparatus illustrating the process of osmosis when given the necessary equipment in the laboratory.

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[1]Robert F. Mager, Preparing Educational Objectives (Palo Alto: Fearon Publishers, 1962), p. 53.

[2]Ibid., p. 50.

5. Construct a brief explanation of the process of osmosis in living systems and give an example from the plant or animal world of osmosis as a process in the nutrition of the organism.[1]

If the objectives of a program or course were to be defined in the manner illustrated above the result would be a volume not a page or two. The process of evaluation regarding such a large number of objectives and reporting results would also involve voluminous records. Obviously, for the purposes of the model and for managerial decision-making regarding all of the programs of a district a much more simplified expression of the objectives and evaluation must be used.

The "quality" of the program is simply an expression of its effectiveness. The important question regarding whether or not the class or activity is appropriate to the needs of the pupils enrolled is involved only peripherally. The model assumes that the objectives will be as appropriate as those who select them know how to make them and that the task of expressing them will force attention to this issue. The problem is to express the objectives in summary form, evaluate the progress made toward them by whatever means seems best, and compare the results with the costs. Progress toward inappropriate objectives may be of little educational value.

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[1]Earl J. Montague, and David P. Butts, "Behavioral Objectives," The Science Teacher, March 1968, pp. 33-34.

However, that is the basis of another set of studies and is outside the limits set for the model.

Interviews With Resource Persons

The interviews are reported below. The purposes of the interviews were:

A. Determine whether or not cost accounting by program was a necessary or desirable supplement to general accounting for accountability and control in governmental agencies especially schools.

B. Determine what efforts were being made at the state level to design and implement program cost accounting.

C. Obtain information and ideas regarding the best approaches to cost accounting in school districts of this state.

D. Obtain feedback regarding the parts of the model which were completed and available for review at the time of the interview.

Not all of the interviews are reported herein. Indeed, perhaps the most important interviews will be held, if possible, after the completion of the study. These will be held for the purpose of introducing the model to a member of the Michigan Department of Education, the State Superintendent of Schools, or Dr. J. Allan Thomas with the hope that the model will be given consideration as an "alternate method" for costing educational programs of the state of Michigan.

Interview #1: The first interview to be reported was with Mr. James Wresinski, State Budget Director, Secretary of State Department, state of Michigan. Mr. Wresinski made the following points which are paraphrased and not direct quotations:

The state does not have anything very sophisticated in the way of performance budgeting at present. It does not prorate costs since it takes time and to do a complete job would require much more data processing capability and more personnel than is now available. It is futility short of this.

The state has four programs, each of which has components. Each component, in turn, has several subprograms. The main idea, were we to implement cost accounting, would be to identify the cost centers and code the requisitions and purchases according to the cost center(s) effected.

The state refuses to prorate administrators salaries. Administration is considered to be a separate program. This causes trouble, because it is isolated and not being identified with the program--it is vulnerable.

Program budgeting does make people cost conscious.

Interview #2: The second interview was with Mr. Robert McKerr, Head of the Bureau of Administrative Services, Michigan Department of Education. Mr. McKerr made, among others, the following significant comments:

The state will go to some type of restructuring along instructional program lines within five years.

The whole trend of thinking is to make the accounting information useful for planning both short and long-range.

The present system is simply not good enough. However, we must keep the present dimension or one like it for control of funds and accountability. We need an object of expenditure code. I like the idea of more than one dimension.

Interview #3: The third interview to be reported was with Mr. Casimir J. Wojcik, Auditor, Harris Reames & Ambrose,

Certified Public Accountants, Lansing, Michigan. Mr. Wojcik was the principle author of the Accounting Manual For Public Community Colleges of the state of Michigan, published in May, 1967. He reviewed the initial drafts of chapters II and III of the study and in a two and one-half hour conversation at his home made the following suggestions among others:

"Cost collection centers" should be used to collect cost information on the many items which, because of their nature, require prorating.

The process of prorating should be approached with enthusiasm, not pessimism. The use of engineering manuals, meter readings, use studies, and consultant help would help to increase the accuracy of the results and the confidence of those who use the data for planning and reporting.

Emphasis should be placed on the organization of the cost centers. An organization plan relating the cost centers must be carefully worked out and criteria established to measure the performance of the cost centers.

The accounting practices used for the cost centers must be uniform to avoid unfair comparisons between centers.

Instructional programs accounting is, in sum, a system whereby what is to be done (objectives) are carefully formulated, methods of evaluation defined, resources (personnel, facilities, supplies and equipment) assigned according to a plan and schedule, after which the program is implemented, evaluations made, and costs determined. A new cycle, based in part on the experiences with the last cycle, is then planned for and implemented.

The implementation of the model will not fulfill all of the many requirements of instructional programs accounting--it has not been designed to do so. It will, hopefully,

serve to move a district closer to that goal. Districts are presently performing many, perhaps most, of the acts required to relate costs to programs. Implementation of the model should help the district take the few remaining steps toward that goal. The next chapter includes a description of the model and some suggestions concerning its implementation.

CHAPTER III

DEVELOPING THE MODEL

The model is an assemblage of information, suggestions, and formats which is intended to help facilitate the process of cost accounting of instructional programs. It does not represent the only way for costing programs. Although it is adapted to the Michigan Public School Accounting System the model can be easily applied to any school accounting system which uses object of expenditure reporting.

Appraisal of the cost-effectiveness of programs is a very worthwhile endeavor. However, it requires that the objectives of the programs so treated are stated, evaluation of progress made toward the objectives measured and reported, and that the costs of the program are determined and reported. The model treats costs, but assumes that the objectives and evaluations are given.

To begin the presentation of the model and its development several key terms which were introduced in Chapter I are further defined and clarified. The first term to be so treated is "cost center."

Cost center: A cost center may be regarded as the smallest segment of the total program for which separate records, budgets, and accounts are kept. It is a "sub-program," a part of the total program which, if it were further divided, would lose its identity. An Algebra class would qualify in this regard, but not half an Algebra class with half of the objectives, assignments, pupils, teachers, or anything else usually associated with a complete set. A class of third graders taught by Mrs. Jones or an extra-curricular activity could also qualify since both represent a "programmed" activity. However, many programs qualify which, if considered cost centers, tend to complicate and distort the instructional cost picture. Since it is the responsibility of the administrators of the district to define cost centers in such a manner so as to avoid this distortion the following statements are offered as guides:

A. Define as many cost centers on the basis of curricular (classes) and extra-curricular activities as possible. The basic role of the district is to provide instruction based upon the curriculum (objectives) of the district. Classes and extra-curricular activities represent this instruction and costs should, therefore, be related to those classes and activities rather than such programs as transportation, or custodial services. There are many other bases for defining cost centers within the overall

realm of instruction. Examples include subject-matter, grade levels or levels of instruction, level of difficulty (retarded, honors, tracks, etc.), among others. Classes and activities are recommended above all others partly because they represent discreet basic units of the total program and partly because many of the advantages of the other bases can be realized by use of appropriate dimensions and categorizations which are discussed later.

B. If the cost center records are to be grouped and categorized to represent larger programs within the total program of the district such as the math program of the high school or the fourth grade program of the district in order to facilitate planning, evaluation, or analysis each cost center record should be complete with the following information:

1. Identification of teacher
2. School year
3. Term
4. School Organization Unit by Grade Level
5. Type of School
6. Building
7. Room or Teaching Station
8. Type of Program for Special Funding (is appropriate)
9. Course Title or Activity Title and Code

10. Sequential Year
11. Level of Difficulty
12. Year or Grade Level
13. Class or Activity Section
14. Units or Credits
15. Required or Elective
16. Number of Male Pupils in Class
17. Number of Female Pupils in Class
18. Type of Pupil for Whom Class is Oriented
19. Number of Days
20. Total Minutes Per Week, Including Labs
21. Percentage of Total Time in Lab
22. One-Text, Multi-Text, No Text
23. Other Teaching Media Used
24. Extent to Which Teaching Media are Used.
25. Content Descriptors.

In addition to the items listed above a brief statement of the objectives of the course, and a brief statement of the methods of evaluation and results if known should be prepared and attached to the cost center data sheet. Items 1-25 listed above are taken from the Manual For Reporting Instructional Programs[1]--A Subsystem in the Midwestern States

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[1]Midwestern States Educational Information Project, P. L. 89-10, Title V, Section 505, Manual For Reporting Instructional Programs, A Subsystem in the MSEIP Operational System (State of Iowa, Department of Public Instruction, October 24, 1967).

Educational Information Project which is a system designed specifically for this task.

C. Avoid the temptation of identifying custodial services, maintenance and administrative services (including general administrative services) as cost centers. It is true that they can qualify as cost centers and often are used as such. However, the reason for having such services is to design, schedule, staff, facilitate, operate and maintain the instructional program. These services support the program. Their existence depends upon the program and the costs which result from them should be included in the cost centers of the instructional program. To do otherwise would distort the cost picture of the instructional programs.

D. There are exceptions to (C) above. Some services and programs are neither curricular or directly supportive. The most obvious example is that of transportation. Others might include recreational activities, various community services, adult education, building programs, and some "management" activities related to such programs or services. These programs and services and others of the same type should be treated as separate cost centers.

Dimension: The second term to be given expanded treatment is dimension. It is the basis for classifying and

codifying cost centers. It is also the basis for placing the cost centers in "order" such that they can be grouped by category. One of the many possible and useful dimensions which can be used is that of subject-matter. This base is excellent for several reasons. One is that as the instructional program tends toward specialization in the upper grades it does so along subject-matter lines. The math program becomes more specialized and departmentalized making it easy and appropriate to establish cost centers within the department. Another reason is that subject-matter areas have different requirements, objectives and cost patterns. Separating cost centers along a subject-matter dimension helps to identify and clarify these differences and make better planning and evaluation possible. Cost centers which are repeated year after year will build a performance and cost history which can be very helpful in planning.

Subject-matter has one important disadvantage as a dimension. It does not work well in the elementary grades where specialization has not reached the stage which results in the assignment of a teaching station and a teacher per subject. It would be very difficult to isolate the cost of third grade social studies, for example, unless the exact amount of time devoted to the subject as well as the supplies and equipment involved were known. If such information were available the problem could be solved by prorating.

Another important dimension is that of grade level or instructional level where no grades are designated. The cost centers for a given grade level such as the third grade could be grouped and summarized thus permitting the costing of the entire third grade "program." This would be appropriate in most elementary programs, but not, necessarily, in secondary programs.

Categories: The third key concept, categories, refers to bases for grouping cost centers along a dimension. Categories are used as measuring points along the dimension much like street numbers or blocks of street numbers along a city street. If instructional level was chosen as a dimension, for example, appropriate categories might include; pre-school program, kindergarten program, early elementary (grades one through three) upper elementary program (grades four and five), middle school program (grades six through eight), and the high school program. It is possible to "over-categorize" and atomize the program too much. However, since categorization is a relatively simple process whenever a given set of categories proves unsatisfactory changes can be made quickly to remedy the problem.

Program: Reference to the key concept of program can now be expanded by use of the concept of cost centers. A program may be considered as any one or more cost centers that are perceived to be "alike" in terms of any rational basis for comparing them. Algebra I can simultaneously be

part of the mathematics program of the entire school or district and part of the ninth grade program, because it has "likeness" to both mathematics and the ninth grade. It would, however, appear as part of the mathematics program on one dimension and as part of the ninth grade program on another dimension.

Once the cost centers have been defined and codified by name, number, or both the dimensions chosen and the categorizations specified a chart showing the assignment of each cost center to a category per dimension can be prepared. It is very important that each cost center be assigned to one and only one category per dimension. If the cost centers were treated as pages of a book, for example, the basis for ordering the pages would be the dimension and the chapter headings would serve as categories. If the pages could be ordered in many different series each telling a different but true story the basis for each new order would be the new dimension and the categorizations (chapter headings) would be those the "author" (administrator) thought most appropriate. In every such "book" all of the pages or cost centers must appear once, and only once.

Prorating: The last key concept to be expanded is that of prorating. It is the basic tool for allocating costs to cost centers when more than one cost center is involved per cost item. Cost accounting is impossible without it. Without effort and planning it is improbable with it. The initial

reaction to prorating is often negative primarily because it involves "judgments" and ratios which do not have the clear-cut exactness and accounting niceness that object of expenditure cost have. To those used to thinking in accounting for costs "to the penny" the idea of doing anything less exact is disturbing. It need not be. Especially if it prevents the administration from getting relevant and valuable information about the costs of what is being done program by program. Especially too, if it can be accomplished without replacing the object of expenditure type accounting with all of its exactness, accountability, and control. Information supplied by this type of accounting is a necessary base for the prorating process.

Confidence in cost data that has been accumulated by use of prorating wholly or in part will increase if some of the precautions listed below are observed:

A. Choose the method of prorating that will produce results which seem to best represent the "reality" of the situation. The person in charge of the program of the cost center is in a unique position to give valuable assistance in structuring a concept of reality. The inability to prorate with confidence is usually an indication of lack of knowledge about the operation of the cost centers within the program.

B. Don't keep the problem bottled up in the superintendents' office or the business office. Inform the

instructional staff and others as appropriate of the nature of the instructional programs cost accounting process and what it can mean to staff members and their programs. They will be able to provide very valuable information regarding the objectives and evaluation of the programs as well as information concerning methods, use of materials, etc.

C. Solicite information from employees who commit district funds regarding what cost centers and what amounts are involved in each commitment. The Director of Personnel, for example, can routinely provide the prorated salaries and cost centers involved for all newly hired, released, and reassigned personnel. Maintenance personnel can keep logs on meter, repairs, and other information which make cost allocations easier and more accurate.

D. Establish procedures whereby all requisitions submitted include a breakdown of what items are to be used in each cost center involved and for what school year or term. This permits grouping requisitions in a manner that may partially or totally eliminate the need for prorating for some appropriation numbers. It also provides important information that will serve as a basis for prorating when such is required.

E. Employ the expertise of auditors, architects, engineers and others outside the system whenever special problems arise. Prorating is not new. Business and industry have built up a reservoir of information and techniques which are known to the experts noted above and can be applied in school districts.

F. Many items of information related to prorating such as the floor area of teaching stations and buildings can be used year after year with little or no revision. Much of the work required the first year will not have to be repeated.

G. There is no point in skimping on the time and effort required by prorating. Like most tasks it requires certain skills which, when mastered, serve to reduce the time and effort required to do the job. The use of prorating will yield results accurate enough for planning and budgeting. The control and accountability of funds will not be effected by it. The difference will be that cost accounting with prorating may help produce better budgets and better programs for the same funds and similar expenditures. The time and energy saved in budgeting and planning from a more detailed and appropriate base of information provided, in part, by program cost accounting will tend to offset the time spent in prorating.

There are several methods for prorating.[1] The following paragraphs are intended to identify some of the methods and provide suggestions as to their employment in school system instructional programs cost accounting.

Time method: This method is perhaps the easiest and most important of all primarily because it can be used on salaries. It consists of dividing an employees' contract sum in the same proportion of his time commitment on the job. If a teacher, for example, teaches two periods of Physics I and three periods of Algebra I as his basic assignment for a salary of $7,500 per year 20% or 1/5 of his salary ($1,500) would be allocated to each physics cost center and a like amount to each algebra cost center. If an administrator works an average of 25% of his time in one activity, 60% in another, and the remaining 15% in another his salary can be prorated in like proportion to the cost centers represented by each activity. If the depreciation costs of a movie projector are $100 per year and the projector is shared equally in terms of time by four classrooms in an elementary school the sum of $25 can be prorated to each cost center.

Hour-consumption method: A combination of the time method and the quantity consumed method of prorating the

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[1]The methods reported herein are adapted or adopted from those listed in the U. S. Department of Health, Education, and Welfare Office of Education, State Educational Records and Reports Series: Handbook II OE-22017, Financial Accounting For Local and State School Systems, Standard Receipt and Expenditure Accounts. Washington, D.C.: United States Government Printing Office, 1957. A revised edition of this handbook is currently being written.

hour-consumption method consists of charging a part of the total expenditure for some item for which a unit hourly cost is known according to the number of hours the item is consumed in the use of the facility. The charge is made to the cost center represented by the class or group using the facility. This method is usually restricted to utilities but can be applied to other items for which the hour rate is known. It is not an especially significant method, but does have advantages with respect to outside groups and situations involving occasional use of facilities. If a group uses the football field at night for example, meter readings or wattage ratings multiplied by the cost per kilowatt-hour will provide a reasonably accurate estimate of the total cost or cost per hour for lights. Once a cost per hour figure is determined it can be used for years unless the rate for each kilowatt-hour is changed necessitating a like change in the cost per hour figure. The total cost of replacing all of the bulbs divided by the average life expectancy will yield the appropriate rate for depreciation of the bulbs or wear and tear. The operating costs per hour plus the depreciation cost per hour can be combined into one cost per hour rate. Once such rates have been determined for all of the items of expense involved in the use of a facility they can be used to calculate the appropriate charge for use of the facility.

Number served method: This method consists of dividing the total cost of an object of expenditure by the total

number of pupils benefited by the object of expenditure to obtain a per pupil cost. The method may be referred to as a per pupil method since those served are pupils of the district. The per pupil cost can be multiplied by the number of pupils in the cost center involved and the resulting amount charged to the center. This method is complicated by time factors and fluctuating enrollments. Both factors have to be considered whenever this method is used. For example, if the total allocation for salaries for the administrative staff of a high school was $72,000 and the enrollment of the school totaled 1,200 pupils the per pupil cost for this service would be $60.00 per year. Assuming that the school schedule included a six period day this would yield $10.00 per pupil per period per year or $5.00 per pupil per period per semester. A cost center (class) with an average daily membership of 25 pupils would be charged $250 per year or $125 per semester for this item of expenditure. Once the cost per pupil per year or semester is known it is a routine task to determine the cost per cost center for each and all cost centers of the high school.

Quantity consumed method: This method is based upon the proportion of the given lot or supply of an item consumed by use in a cost center. The cost assigned to the cost center is in direct proportion to the total cost of the item involved. If, for example, an activity used eighteen (18) reams of paper out of a total of 1,000 purchased in one lot

and for which an expenditure of $2,200 was made the amount charged to the cost center of the activity would be 18 x $2,200/1,000 or $39.60.

Floor area-Time method: This is an important method for prorating most operational and some maintenance costs especially those related to utilities. It is based on the assumption that these costs are in direct proportion to the floor area of the center and the time that this area is used. School districts are usually invoiced by utility companies on a per building per period of time basis. The breakdown of these costs by classroom and period can be accomplished by use of appropriate unit costs such as a square-foot-period cost. This unit can be calculated by dividing the appropriate cost by the total square footage involved (which may or may not be the total for the building) and by the number of periods of the schedule. Other adjustments such as required for a semester can be made as appropriate. The objective is to use area and time data to develop a unit such as the square-foot-period unit that can be multiplied by the area occupied by the cost center to determine the amount of cost to be distributed to it.

There are two basic factors involved in the implementation of this method as suggested in the title--floor area and time. The floor area which is assigned to instruction is the only area which should normally be used for prorating by this method. The costs related to areas of the building

which are for non-instructional use such as hallways, furnace rooms, auditoriums, offices, libraries, etc., should be prorated on a per pupil basis since they benefit the pupils equally. To do otherwise will reduce the discriminating power of the prorating process.[1]

To determine the fraction of the total cost which is to be prorated by the floor area-time method and that which is to be prorated by the per pupil method the instructional square footage is divided by the total building square footage. The resulting fraction is then multiplied by the total cost which is to be distributed. The result represents the amount to be distributed by the floor area-time method and the remainder (total cost less the floor area-time amount) is to be distributed by the number served or per pupil method.

Implementing the floor area-time method in secondary schools is facilitated by use of the square foot-period unit noted above. The unit may be expressed ft.^{2}-p where p represents the appropriate period of time--day, half day, team teaching period, elective period, or regular period. This unit, as the name implies, represents the costs related to the assignment of one square foot of floor area for one period. If a class meets in a room with a floor area of 850 ft.^{2} for one period it is assigned 850 ft.^{2}-p for prorating purposes. A program including 8 classes would be assigned

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[1]A likely exception would be the elementary school where classroom size and enrollment tend to be more uniform and the costs can simply be divided by the number of classrooms to produce a cost per classroom per year.

the sum of the products of the square footage of the teaching stations (rooms) and the number of periods used. The grand total of the ft.^{2}-p for the building will be the product of the total square footage of the instructional program and the number of periods in the schedule[1]--regardless of whether or not all scheduled classes meet every day. For example, a schedule which employs a five period day with a floating sixth period and requires each student to enroll in a total of six courses is considered to be a six period schedule.

The distribution ratio which is used for prorating by the time-floor area method is determined by dividing the appropriate fraction of the total cost which is to be prorated by this method by the grand total of the square foot periods for the instructional area of the building. The resulting ratio will be small and should be expressed with at least five significant digits. The product of the ratio and the number of the square foot periods for the cost center will equal the amount to be prorated to the cost center for a given appropriation number by this method. The amount can be added to the amounts prorated to the same appropriation number by all other methods to determine the final sum.

If the floor area of a given cost center such as a pool or a gymnasium does not fairly represent the fraction of cost

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[1]An exception will result if some classrooms are vacant during some periods. The total ft.^{2}-p for these can be divided by the number of periods in the schedule to reconvert them to ft.^{2} and the area added to the non-instructional area for prorating on a per pupil basis.

which should be assigned to it when compared to the total instructional program area, the area of the cost center may be increased by a factor which is believed to represent a closer approximation to the realities of the situation. This will produce an additional square footage for prorating purposes which should be added to the total square footage of the instructional area and the total square footage of the building. Thus it is quite possible that the total area used for prorating will exceed the actual floor area of the building.

Care should be taken to include all of the area assigned to a class. If a physics lab/classroom has an attached work-storage room which is for use of physics and no other class or activity the area of the physics cost center should include the area of the work-storage room. The areas used in this type of prorating can be easily obtained from the blueprints of the building. A list of the teaching stations and the area assigned to each can be prepared and used year after year unless the building or pattern of use of the building are changed. With this list and the sub-totals and the grand total related to it one can quickly distribute the costs for a given appropriation number by this method, or estimate the costs based on a total estimate (new budget).

Mileage Method: This method consists of distributing to each cost center effected a fraction of the yearly cost of operation of the vehicles according to the number of trip

miles the vehicles served the cost center program and the cost per mile per appropriation number for each vehicle. The total cost of operation for a given appropriation number for a given period (usually a year) divided by the number of trip miles yields the cost per mile for the vehicle. This rate can be multiplied by the number of miles the vehicle is used for each cost center to produce the required amount to be distributed. Not all costs related to operation of vehicles can be prorated in this manner. The major exception is salaries of drivers for field trips. However, items such as fuel costs, maintenance, insurance, and depreciation costs can be prorated by the mileage method.

The overall challenge, as stated previously, is to approximate reality regarding costs. Whatever can be done to relate requisitions, purchase orders, contracts, encumberances, payments and other cost records directly to the individual cost centers thus obviating the need for prorating should be given careful consideration. The nature of the cost information which is available together with the situations involved determine the need for prorating or the lack of it. The state of Michigan requires that school districts account for expenditures on a report form entitled "The Annual Financial Report." This report is submitted each year approximately two months after the close of the fiscal year involved. The appropriation numbers used in the report and their associated titles are taken from the Michigan

Public School Accounting Manual. The system which appears below is designed to provide a suggested method and base for distributing the costs related to each appropriation area and title of the expenditure section of the Annual Financial Report.

To simplify the communication problems related to this task a system of codes is used to designate the suggested method of prorating, if any, and the base to be used for prorating for each appropriation number and title.

The first series of codes relate to the method suggested for distributing costs. The codes designate the type of ACTION suggested.

Method Codes:

T Refers to prorating according to the "Time" method.

H Refers to prorating according to the "Hour-consumption" method.

P Refers to prorating according to the "Number of pupils served or Per Pupil" method.

Q Refers to prorating by the "Quantity consumed" method.

A Refers to prorating costs by the "Floor area-time" method.

M Refers to prorating according to the "Mileage" method.

D Refers to "Direct assignment" of costs to cost centers--no prorating involved.

The second series of codes refers to the total quantity which is to serve as a base for determining the prorating

fraction or distribution ratio. The fraction or ratio multiplied by the appropriate characteristic of the cost center (number of pupils, feet squared--periods, etc.) will equal the amount to be distributed to the individual cost center.

Base Codes:

B Refers to the building which houses the cost center. If, for example, the floor-time area method is used the floor area assigned to instruction within the building would be used as the base or denominator. If the per pupil method were used the denominator would be the number of pupils (average daily attendance) of the building would serve as the base.

S Refers to the entire school district or system. If the salary of the superintendent is to be prorated by use of the number served method the number of pupils (ADA) of the entire system would be used to determine the per pupil per year amount. This would, in the case of the high school, be further divided by the number of periods in the schedule to produce a per pupil per period per year amount. The latter, when multiplied by the number of pupils in an instrumental music class, would produce the portion of the superintendents' salary to be charged to the class.

C Refers to the total of the contract or purchase order. If a teacher is to teach five sections the time spent on any one of them would constitute one-fifth of his assignment. This fraction would be multiplied by the amount of his total contract (base) to determine the amount to be charged to the cost centers in which he works.

U Refers to the appropriate administrative unit involved. This base is similar to B and S except that it may involve any combination of grades or buildings.

N Refers to no base or none. Whenever distributions are made directly no base for prorating is required.

M Refers to the total mileage of a vehicle or fleet of vehicles. The trip mileage multiplied by a cost per mile for the vehicle involved will produce the appropriate amount to be distributed.

The method code in combination with the base code tells what action is recommended and upon what it is to be based. Code TC refers to prorating according to the time method based upon the appropriate contract. Code AB refers to prorating by the floor-time area method based upon the total floor area assigned to instruction or to the building, and to the time schedule of the program which uses the area. Code QC refers to prorating by the quantity-consumed method based upon the total amount of the purchase order or total cost of the item consumed. DN refers to distribution by direct assignment. PS refers to prorating by the number of pupils served method based upon the total enrollment of the system.

The combinations referred to above are used to suggest the action and base for action in distributing the costs identified by appropriation number and title. The Michigan Public School Accounting Manual uses a four digit code. The first two digits relate to function and the last two to the area or object of expenditure. The function code appears below:

10__ Instruction:

- 11__ Elementary
- 12__ Intermediate and Secondary
- 13__ Special Education
- 14__ Summer School
- 15__ Adult Education
- 19__ Unclassified

21__ Administration

22__ Attendance

23__ Health Services

24__ Pupil Transportation

25__ Operation of Plant

26__ Maintenance of Plant

27__ Fixed Charges

28__ Capital Outlay

29__ Community Services

30__ Student Services--Food Services

31__ Student Services--Book Store

32__ Student Services--Student-body Activities

The third and fourth digits of the code relate to the nature of the object of expenditure. For example, 1141 refers to 11__ (elementary instruction) and 41 (textbooks). 2554 refers to 25__ (operation) and __54 (custodial supplies). The third and fourth digits, representing an object of expenditure code, the method and base code referred to above, and the expenditure title are listed below.

Expenditure Code	Method-Base Code	Expenditure Title
Salaries		
__01	PB or PU	Principals
__02	PU	Consultants & Supervisors
__03	TC	Regular Teachers
__04	TR	Substitute Teachers
__05	TC	Librarians

__06	TC or TR	Audio-Visual
__07	TC	Guidance
__08	TC	Psychological
__12	PS or PU	Superintendent & Assistants
__13	PS	Business Administration
__14	PS or PB	Personnel Office
__15	PS or PU	Central Research
__16	PU	Attendance
__18	DN	Transportation
__19	PB or PU	Plant Engineers
__21	PB and AB	Custodians
__22	PB or PU	Maintenance
__23	DN	Food Service
__28	PU	Clerical
__29	PU or DN	Other

Contracted Service

__31	DN, PS, or PU	Professional
__34	PB	Plant Operation
__35	PB	Plant Maintenance

Supplies

__41	DN or QC or PU	Textbooks
__42	DN or QC or PU	Teaching Supplies
__43	PB or PU	Library Books
__44	PB or PU	Periodicals
__45	PB or PU	Audio-visual

__47	DN	Gas, Oil, and Grease
__48	DN	Tires, Tubes, and Batteries
__51	DN	Transportation Supplies
__52	AB	Heating Fuel
__53	AB or PU	Utilities (except fuel)
__54	AB	Custodial Supplies
__55	PB	Grounds Supplies
__56	DN	Food
__58	PB or PU	Office Supplies
__59	DN	Miscellaneous
Other Expenses		
__61	DN or MM	Travel and Mileage
__62	DN or PU or PS	Equipment Rental
__63	PU or PB or PS	Printing
__64	DN or MU	Vehicle Replacement
__65	DN or MU	Transportation Insurance
__66	PB*or PU*or PS*	Equipment replacement
__67	DN	Food Service Expenses
__69	DN	Miscellaneous
Fixed Charges		
__83	PB	Building Insurance
__83	DC or PS	Employee Insurance
__83	PS	Fiedlity Bond
__84	DN	Rental of Land or Buildings
__85	PS	Interest

__86	DN	Other
__87	PU or PS	Data Processing Equipment

Capital Outlay

__91	PS*	Site Acquisition & Improvement
__92	PS* or PU*	Buildings and Additions
__93	PS*	Remodeling
__94	DN*	Furniture and Equipment

Equipment replacement items and capital outlay items should be placed on inventory and depreciated according to any system which seems to represent the reality of the situation. If the equipment item is assigned to a cost center the depreciation for the particular year can be charged to the center, but NOT the purchase price. Buildings can be depreciated on a linear basis over a period of 50 years and the amount divided by both floor-time area and per pupil methods among the cost centers housed in the building.

Interest and maintenance charges on district debt can be prorated on a per pupil basis for the whole district. The combination of depreciation costs and interest and maintenance charges will fairly represent the cost of facilities and equipment for the cost centers.

To implement the model it will be necessary to accomplish the following tasks although not necessarily in the

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*Costs which are usually best distributed by depreciation schedules.

order given:

A. Establish and codify cost centers.

B. Prepare a statement of the objectives, methods of evaluation, and results of evaluation (if known) for each cost center.

C. Supply all required information for each center on a cost center data sheet (top section).

D. Choose the dimensions and categories for each which are desired.

E. Prepare a chart of the cost centers distributed along the dimensions noted in (C) according to the chosen categories.

F. Distribute all costs, encumberances, or appropriations as necessary to the cost centers depending on the time of the fiscal year and the nature of information available.

G. Record the cost information on the cost center data sheets.

H. Prepare duplicate copies of the complete set of cost center data sheets and statements of objectives and evaluations.

I. Group the cost centers according to the categories along each dimension. A COMPLETE SET of cost center records will appear along each dimension.

J. Prepare a cost center record **SUMMARY** for each group of cost centers which are to be considered a larger segment of the program than one class or course. For example, all sections of History 10 can be grouped and a cost center record summary sheet prepared representing all sections. The amounts which were distributed to each appropriation category for each center can be added to produce one sum for each category and the sums recorded on the summary sheet.

K. Assemble the sets of cost center records and summary sheets into complete sets for each dimension.

The data is now in a form for study and comparisons. The nature of the study that will take place is optional with those who have the data. Studies in patterns of expenditure, cost-effectiveness, maximum and minimum per pupil costs, means, modes, relationships to revenue, comparisons with other districts, and many other studies are possible.

The next chapter is a report on an actual field study in a school district with an enrollment of approximately 5,200 pupils. The results of the study and the recommendations and conclusions appear in the last two chapters.

CHAPTER IV

FIELD TESTING THE MODEL

Description of the District

The model was field tested in a third class district situated in a suburban community with above average wealth and educational aspiration. The district had an enrollment of 5,200 pupils in grades K-12 and was organized on a K-6, 7-8, and 9-12 basis. It had one high school, one junior high school, and nine elementary schools.

The elementary program was ungraded through the seventh year (comparable to the sixth grade). Consultants in instrumental and vocal music, art, foreign languages, physical education, reading, and speech assisted the regular classroom teachers. In addition, each school had at least one non-certified librarian, and the larger schools also had one instructional aide. Individualized instruction in reading and mathematics, and various types of grouping were used.

The junior high school program combined team teaching in English, science, mathematics, and social studies, with an elective program in various other subjects. Each student chose three electives.

The senior high school program featured a five 70 minute period day with no study halls and a rotating sixth period. All students were required to take six subjects. Each class met four times per week for a total of 280 minutes. The curriculum emphasized a wide variety of course offerings which were designed, in most cases, to serve the needs of the college-bound student.

Implementation of the Test

The field test was begun March 18, and completed May 15, 1968. It included approximately 400 hours of effort to collect data, process it, and record the results. The data was obtained from a variety of sources including interviews with school officials and clerical personnel, and printed matter such as directories, payroll records, budgets, contracts, insurance policies, class schedules, enrollment reports, budget balance reports, and blueprints.

After the data had been collected the cost centers were defined and a cost center data sheet prepared for each. The cost centers consisted of individual courses (as contrasted with individual classes) taught by each teacher in the high school and junior high and each grade level per building in the elementary. The elementary program was considered to be ungraded. However, the official school directory listed the grades for each school and there seemed to be no inconsistency related to using grades per building as programs for cost

centers. This was due to the recency of the ungrading process in most schools and to the practice of grouping with grade levels.

The cost center data sheets for each cost center were prepared listing the name of the teacher, school year and term, organizational unit, type of school, building, room number if appropriate (not used in elementary) grade level, credit units, whether required or elective, number of male pupils, number of female pupils, type of program number of days per year, and minutes per week. The remaining information which the sheets call for was not available. This was not considered to be a loss since the required information for cost analysis and basic identification of the program by name was available. The missing information would have served mainly to increase the number of dimensions along which the cost centers could have been organized and to further identify the nature of the instruction in the center.

Teachers' salaries were prorated on a time method basis using the base salary of the teacher (total contract less additional salary for coaching, extra-curricular assignments, being head of a department, etc.). An amount prorated on a per pupil basis representing a portion of the sabbatical leave program was added to the amount noted above.

The next task was to prepare a list of all of the distribution ratios and methods to be used for each school. The ratios and methods were listed on a regular cost center

data sheet except for those appropriation numbers which required several ratios each. This phase of the process was the most crucial of all. Care was taken to insure that all of the costs which were related to any given cost center were known and that they were distributed by the most appropriate method possible.

After the lists were complete the distribution was begun. The task proved to be time-consuming but not especially difficult. There were several ways in which the work could be accomplished. The best way seemed to be to place the distribution ratio in the machine, lock the keyboard, and calculate the amounts by use of either the enrollment or the square footage as appropriate for each cost center.

The calculation of the ratios involved several important stages including:

A. Determining the total costs that were to be distributed.

B. Determining which cost centers were involved with the totals of (A) above.

C. Deciding which method of distribution of costs best represented the reality of the situation.

D. Calculating the ratios from the above data to at least 5 digit accuracy.

The Michigan Public School Accounting Manual Accounting Code tends to separate like appropriation items by function.

For example, the secretarial distribution ratio for an elementary school might well include appropriation number 1128 (Secretarial Personnel--Elementary), 2128 (Secretarial Personnel--General Administration), and 2328 (Secretarial Personnel--Health Services). The amount for the school for 1128 would be prorated on a per pupil basis using the full-time equivalent enrollment of the school as a base, and the 2128 and 2328 amounts would be prorated on a per pupil basis using the full-time equivalent enrollment of the entire district as a base. The final distribution ratio would be the simple arithmetic sum of the individual ratios.

There were several instances where this type of summing ratios was involved. However, in some instances the individual ratios differed in type and could not be summed. This required the use of two or more ratios and summing the resulting amounts to obtain the entry for the given appropriation number on the cost center data sheet. An example of this concerned appropriation number 2521 (Custodial Salaries) for the high school. The total square footage of the building was determined to be 151,720 for prorating purposes. This amount included 7,255 ft.^{2} for general administration offices, 79,299 ft.^{2} in instructional spaces, and 65,166 ft.^{2} in other non-instructional spaces.

The total to be distributed for custodial salaries was approximately $61,000. The portion of this to be distributed for each category was calculated as follows:

General administration--to be distributed throughout the district on a per pupil basis.

$$\frac{7{,}255 \text{ ft.}^2}{151{,}720 \text{ ft.}^2} \times \$61{,}000 =$$

High School non-instructional spaces.

$$\frac{65{,}166 \text{ ft.}^2}{151{,}720 \text{ ft.}^2} \times \$61{,}000 =$$

High School instructional spaces.

$$\frac{79{,}299 \text{ ft.}^2}{151{,}720 \text{ ft.}^2} \times \$61{,}000 =$$

The general administration portion was then divided by the full-time enrollment of the district to produce a per pupil figure for all pupils in the district including the high school. This figure was divided by six to convert it to a per pupil per period ratio for the high school.

The high school non-instructional spaces portion was divided by the total number of pupil-periods for the high school (product of the total number of full-time equivalent pupils enrolled and the number of periods for which they are assigned classes) to convert it to a per pupil per period distribution ratio for the high school. The two per pupil per period ratios noted above were then summed to produce the final ratio which was used to determine the amounts to be distributed to the cost centers on a per pupil per period basis.

The instructional space portion was divided by the square footage of the instructional space and the number of periods to convert it to a per square foot per period ratio.

The product of this ratio and the area of the instructional space occupied by the activity of the cost center and the product of the combined per pupil per period ratio noted above were added to produce the amount distributed for 2521 for each high school cost center.

To summarize and illustrate the process the calculations for an imaginary cost center having an enrollment of 25 pupils and using 1,000 ft.^{2} would be as follows:

\$3.4481/p	x	25p	= \$83.20
\$0.068024/ft.^{2}	x	1,000 ft.^{2}	= \$68.02
			\$151.22

The junior high school posed a special problem because of the combination of team teaching and electives in the schedule. Each student attended classes taught by a team of teachers 262.5 minutes per week per subject for a total of four subjects. He also attended each of three elective classes 210 minutes per week per elective. The total number of minutes of instruction per week was 1.680. Each team-taught subject was 0.15625 of the total and each elective was 0.125 of the total. Whenever a per pupil amount (total amount for the appropriation number divided by the enrollment of 700 pupils) was used as a base it was multiplied by 0.15625 to determine the amount per pupil per period for team taught subjects and 0.125 to determine the amount per pupil per period for electives. This necessitated the preparation of two sets of ratios, one to be used for team subjects and the

other for electives. The two ratios for team-taught and elective classes were also used to convert cost per square foot ratios to cost per square foot per period ratios.

The school system employed department heads in the high school and charged them with the responsibility of coordinating the curriculum effort for their respective subject-matter area in grades 7 through 12. The department heads were given a 40% reduction in class load to provide them with time for coordination and were also given an additional stipend of 10% of their base salary. The prorated share of their salaries was added to their stipends and the sum distributed to all of the cost centers of the subject area on a per pupil basis.

In addition to the department heads the system assigned coordinators and charged them with the same type of responsibility except that they were given no stipend and a 20% reduction in class load. The prorated portion of their salary was also distributed to all of the cost centers in their respective subject area.

To effect the distributions noted above the total amount to be distributed was determined for each subject area and divided by the number of pupils from both the junior and senior high enrolled in courses in that subject area. The resulting distribution ratio was added to that which had been calculated for the guidance counsellors and reading improvement instructors (junior high only) to obtain a final

distribution ratio for appropriation number 12Q2 (Salaries--Consultants) for all cost centers in the particular subject area. The product of this ratio and the enrollment in the cost center equalled the amount that was distributed.

The task was similar to the above in the elementary schools for the elementary consultants except that it was more complex and involved more schools. The fact that like ratios are additive tended to simplify the process by reducing the number of calculations needed for the final distribution.

The depreciation of buildings and built-in equipment was calculated on a linear basis of two percent per year of replacement value. The replacement values were calculated by multiplying the appraisal value for insurance purposes by a factor of 10/9 to correct for the practice of insuring a building at 90% of replacement value. This value was multiplied by the depreciation ratio of 2% and the result divided by the full-time equivalent enrollment of the school and by whatever other fraction was appropriate to convert the per pupil amount to a per pupil per period amount if required.

In regard to debt the total amount paid for interest during the school year on various bond issues plus the amount paid for maintenance charges related to the debt accounts was divided by the total full-time enrollment of the system. This per pupil distribution ratio was converted

when necessary to a per pupil per period ratio. The combination of the depreciation of the buildings and built-in equipment, and the interest and maintenance charges represented the costs related to having the facilities to use. There was no suitable equipment inventory with which to work so that item was not distributed. The alternative of distributing 2894 (Capital Outlay) was taken and this was distributed on a per pupil basis except for instrumental music which was known to be $7,222.00.

A Friden Calculator and a ten key electric adding machine were used for all calculations. Five digit or more accuracy was maintained on all ratios. The ratios were summarized on cost center data sheets or notebook paper. When all of the ratios had been calculated the process of distributing was begun. It took 12 to 18 minutes to process one cost center in the "cost mode."[1] Approximately 50 calculations were required producing approximately 35 cost figures. In addition to these calculations the following processes were accomplished in order:

A. Salaries, contracted services, supplies, other expenses, fixed charges, capital outlay, and depreciation and debt were subtotalled.

B. The subtotals of (A) were totalled providing a grand total.

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[1]Multiple use of the cost center data sheet by adapting it to any one of three modes (cost mode, per pupil cost mode, and percentage mode) was the result of evaluation in the field test of the original format.

C. The grand total for each cost center was divided by the full-time equivalent enrollment for the cost center to yield a total per pupil amount.[1]

D. The individual cost center data sheets were combined into a few sample combinations to illustrate the flexibility of the model in this regard. A new summary cost center data sheet was prepared to represent all of the cost centers included in the set. If five cost centers were combined into one the five amounts for each appropriation number were summed and recorded on the new summary cost center data sheet.[2]

E. A cost center data sheet was prepared in the "percentage mode" for all summary cost centers and another in the "per pupil cost mode" for the same centers.[3]

F. Several sample appropriation numbers for different

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[1]This was changed in the final format of the cost center data sheet so this total appears only if the per pupil cost mode is reported.

[2]The cost center data sheet is designed to serve as a record of one cost center in any one of three modes or as a summary sheet for several other cost center data sheets. To indicate that the sheet is being used to summarize others an entry is made in the upper right hand corner that this is, for example, 1 of 5, or a summary of four other sheets.

[3]Both modes are calculated from the cost mode and are reported in the same manner as the cost mode and on the same type cost center data sheets.

schools were totalled to determine whether or not the total equalled the amount that was to have been distributed.

G. The cost center data sheets were inspected to see whether or not the differences in cost per pupil were as great as expected and whether or not they followed the expected pattern.

Problems Encounted in the Field Test

The problems that were encountered that served to complicate the field test were of three basic types: (A) Those due to the fact that the district was not prepared for this type of cost analysis; (B) Unusual circumstances; and (C) The lack of experience with this type of activity on the part of both the experimentor and those from whom he attempted to obtain information.

The first set of problems would confront any district which attempted to use the model without prior preparation. There was no system of cost centers and no accounting or purchasing by cost center. There was no up-to-date equipment inventory. There was no established system of depreciation for buildings and equipment. There was no system of filing purchase orders or other comparable records that would facilitate relating costs to cost centers. Dialogue with employees was pleasant, but time-consuming in terms of collecting data. There was a general lack of understanding of what was wanted

and what was available that contained the information in some form.

This made it impossible to assign many costs to cost centers directly and forced the use of prorating where prorating was inappropriate. The instructional supplies costs illustrated this. In both the elementary and senior high there was no way to assign the costs directly to the cost centers. However, there was an accounting of the costs by course and department for the junior high and this was used for cost distribution. The differences were marked and the discriminating ability of the direct assignment method was evident.

In regard to unusual circumstances several problems were encountered. The most serious were those resulting from the systems' changing from an electro-mechanical to an electronic data processing system. This caused stresses in the system which delated posting, reduced the number of routine budget balance reports to one dated March 31, 1968, and prevented the business office staff from providing what would ordinarily be routine information.

Another unusual circumstance related to the time of the field test. The fiscal year of the district had three months left when the data for which the test was run was reported. This forced the experimenter to make several estimates as to the probable expenditure for the entire year. Fortunately, most of the expense for the year could either be estimated

with a fair degree of certainty due to the experimenter's familiarity with the system and the budget, or was encumbered for the year and known with a high degree of certainty as a result.

The entire junior high program was moved to a new location during the period of the test. This disruption of program and the resulting stress on the administrative and clerical personnel made cooperation difficult. However, in all cases including the junior high the level of cooperation considering the circumstances was very high.

The lack of experience with this type of analysis caused the experimenter several extra trips to ask one last question that would clear up the answers to the many that had gone before, or to make errors due to omissions of data, or to choose a method of prorating only to discover that another method was more suitable. There were some machine errors due to a malfunctioning calculator, and others due to misuse of the machine. One error resulted a whole series of faulty ratios. This forced the experimenter to do the entire junior high program a second time. Aside from learning the high price of such an error it was also learned that the task could be done much more quickly when one was familiar with the data and the program.

There were many other problems of a minor nature most of which were related to the fact that experimenter was working from the outside of the district operation and did not

have the freedom of access to people and data that someone who was a member of the staff would enjoy.

CHAPTER V

EVALUATION

Results of the Field Test

Most of the costs determined in the field test were recorded on 258 cost center data sheets and represented the same number of instructional cost centers. The centers were defined on a subject-matter dimension for secondary instruction and on a level of difficulty or grade level dimension for elementary instruction.

Each cost center data sheet was as complete as available information would permit. This included all costs and as much information concerning the characteristics of the program as it was possible to obtain without involving teachers or disrupting the program. The class/activity key and content descriptors, information regarding materials and teaching method, and percentage of laboratory time were not available.

All costs related to the programs of the centers were distributed including those related to administration, operation, maintenance, debt, and depreciation of facilities. Transportation, food services, summer school, Federal programs,

and others of like consequence not considered to be part of the instructional program or directly supportive of same were excluded.

There were approximately 36 costs, 7 sub-totals, one grand total and one cost per pupil total for each cost center data sheet. These totaled approximately 9,250 costs, 1,800 cost sub-totals, 258 grand totals, and 258 cost per pupil totals. In addition a few programs were summarized into larger programs and summary cost center data sheets prepared for each larger program in all three modes.

In sum there were over 11,000 cost, sub-totals, grand totals, costs per pupil, and percentages which were made available for analysis, cost-effectiveness studies, synthesis, budget-making, decision-making, or other purposes as desired. It would take many days and possibly weeks to obtain the full value of the results. The number of possible combinations that could be summed to provide information concerning larger programs than those represented by the cost center data sheets is not known, but is believed to be in the hundreds. The summary of individual programs into larger programs is best done <u>prior</u> to working out the costs, costs per pupil, and percentages if the total program is the only one of interest. If <u>both</u> the total program and the individual programs are of interest it matters not which is done first.

It would not be practical or desirable to list all of the costs and possible combinations of costs in this paper.

However, an attempt has been made as noted above to provide a few sample summaries of data which were made possible by the implementation of the model. These summaries appear in the following pages as tables. Other summaries can be designed and prepared at will. The limiting factors seem to be imagination and time.

The basic format for summarizing the costs and other information related to an individual program is the cost center data sheet. A copy of the data sheets that were prepared during the field test for each of the ten programs selected for summary appear as the next thirty pages. There are three sheets for each program. The first is expressed in the total cost mode, the second in the cost per pupil mode, and the last in the percentage of total mode. If the codes which were used for the format of the sheets are known the sheets can be quickly read and understood. If not, these sheets will not be too helpful and it would be more appropriate to turn to the summary of the programs which appears beginning with the introductory paragraphs on page 118.

COST CENTER DATA SHEET Summary of KINDERGARTEN Program 1 of 12

CC#	No. Tchrs	FTTE's	School Yr.	Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	12	1050	68	8	BH	7	+		+			0	OK		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
248	249	0	182	750	+	-	-	-							

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

2519		47		Total	1,138.78		
2521	8,531.16	2448		Fixed Charges			
2622	2,240.91	2449		2781			
Salaries							
1101	10,370.95	28	6,950.44	2451		2782	
1102	2,032.74	29	6,439.76	2552	2,209.75	2783	1,731.74
1103	90,491.22	Total	133,654.73	2553	2,265.68	2784	
1104	1,167.95	Contracted Services		2554	482.04	2785	582.47
1105	469.09	31	1,250.87	2555		2786	261.96
06		2432		58	448.37	2787	
07		2433		59		Total	2,763.58
08		2534	145.15	Total	13,089.45	Depreciation	
09		35	533.82	Other Expenses		Bldg.	7,598.30
2111		Total	1,929.84	61	350.26	Equip.	2,181.70
2112	1,139.18	Supplies		62	3.55	Total	9,780.00
2113	1,131.41	1141	1,297.14	63	155.35	Debt	
2114	776.70	1142	3,499.06	2464		Int.	
2115	893.22	1143	1,294.64	2465		Maint.	
2216		1144	140.52	69	629.62	Total	18,167.24
2317		1145	1,452.25	3374		Program GRAND TOTAL	
2418		2346		3375		179,523.62	

COST CENTER DATA SHEET Summary of KINDERGARTEN Program 2 of 12

CC#	No. Tchrs	FTTE's	School Yr.	Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	12	10.50	68	8	BH	7						0	0K		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk.	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
248	249	0	182	750											

Total Cost Mode
X Cost/pupil Mode
% of Total Mode

Salaries		2519		47		Total	4.58
1101	$ 41.81	2521	34.33	2448		Fixed Charges	
1102	8.18	2622	9.02	2449		2781	
1103	364.15	28	27.97	2451		2782	
1104	4.70	29	25.91	2552	8.89	2783	6.97
1105	1.89	Total	533.82	2553	9.12	2784	
06		Contracted Services		2554	1.94	2785	2.34
07		31	5.03	2555		2786	1.05
08		2432		58	1.80	2787	
09		2433		59		Total	11.12
2111		2534	.58	Total	52.67	Depreciation	
2112	4.58	35	2.15	Other Expenses		Bldg.	30.58
2113	4.55	Total	7.77	61	1.41	Equip.	8.78
2114	3.13	Supplies		62	.01	Total	39.36
2115	3.59	1141	5.22	63	.63	Debt	
2216		1142	14.08	2464		Int.	
2317		1143	5.21	2465		Maint.	
2418		1144	.57	69	2.53	Total	73.11
		1145	5.84	3374		Program GRAND TOTAL	
		2346		3375		$ 722.43 *	

* USING FULL-TIME EQUIVALENTS

COST CENTER DATA SHEET Summary of KINDERGARTEN Program 3 of 12

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	12	1050	68	8	84	7						0	0K		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
248	249	0	182	750											

___ Total Cost Mode ___ Cost/pupil Mode X % of Total Mode	2519		47		Total	0.634
Salaries	2521	4.752	2448		Fixed Charges	
1101 5.79%	2622	1.248	2449		2781	
1102 1.13	28	3.872	2451		2782	
1103 50.41	29	3.587	2552	1.231	2783	0.965
1104 0.651	Total	73.893	2553	1.262	2784	
1105 0.261	Contracted Services		2554	0.269	2785	0.324
06	31	0.697	2555		2786	0.146
07	2432		58	0.250	2787	
08	2433		59		Total	1.539
09	2534	0.081	Total	7.291	Depreciation	
2111	35	0.297	Other Expenses		Bldg.	4.232
2112 0.635	Total	1.075	61	0.195	Equip.	1.215
2113 0.630	Supplies		62	0.002	Total	5.447
2114 0.433	1141	0.723	63	0.087	Debt	
2115 0.498	1142	1.949	2464		Int.	
2216	1143	0.721	2465		Maint.	
2317	1144	0.078	69	0.351	Total	10.120
2418	1145	0.809	3374		Program GRAND TOTAL	
	2346		3375		100.00%	

COST CENTER DATA SHEET Summary of SECOND GRADE Program 1 of 12

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	19	18.3	68	8	BH	7						0	02		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk.	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
245	215	0	182	1500											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1101	18,931.38	28	12,276.73
1102	18,449.88	29	11,841.78
1103	146,039.97	Total	238,756.59
1104	2,029.46		
1105	1,053.42		
06			
07			
08			
09			
2111			
2112	2,094.99		
2113	2,080.72		
2114	1,428.39		
2115	1,642.70		
2216			
2317			
2418			

Contracted Services

2519		31	2,300.40
2521	16,374.23	2432	
2622	4,512.94	2433	
		2534	282.68
		35	960.58
		Total	3,543.66

Supplies

		1141	2,369.30
		1142	6,193.33
		1143	2,066.58
		1144	368.15
		1145	1,301.27
		2346	

47		2554	931.14
2448		2555	
2449		58	837.47
2451		2433	
2552	4,477.44	59	
2553	4,445.50	Total	22,990.18

Other Expenses

		61	644.15
		62	6.53
		63	285.68
		2464	
		2465	
		69	1,154.40
		3374	
		3375	

Total	2,090.76

Fixed Charges

2781	
2782	
2783	3,418.18
2784	
2785	1,089.92
2786	287.28
2787	
Total	4,795.38

Depreciation

Bldg.	13,974.47
Equip.	4,624.15
Total	18,598.62

Debt

Int.	
Maint.	
Total	33,410.18

Program GRAND TOTAL
$ 324,185.37

COST CENTER DATA SHEET Summary of SECOND GRADE Program 2 of 12

CC#	No. Tchrs	FTTE's	-School- Yr.	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	19	18.3	68	8	64	7						0	02	+	000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk.	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
25	21	5	0	182	1500	+	-	-	+						

Total Cost Mode
X Cost/pupil Mode
% of Total Mode

Salaries

1101	$41.16	2519		47		Total	4.55		
1102	40.11	2521	35.60	2448		Fixed Charges			
1103	317.48	2622	9.81	2449		2781			
1104	4.41	28	26.69	2451		2782			
1105	2.29	29	25.74	2552	9.73	2783	7.43		
06		Total	519.04	2553	9.66	2784			
07		Contracted Services		2554	2.02	2785	2.37		
08		31	5.00	2555		2786	.62		
09		2432		58	1.82	2787			
2111		2433		59		Total	10.42		
2112	4.55	2534	.61	Total	49.98	Depreciation			
2113	4.52	35	2.09	Other Expenses		Bldg.	30.38		
2114	3.11	Total	7.70	61	1.40	Equip.	10.05		
2115	3.57	Supplies		62	.01	Total	40.43		
2216		1141	5.15	63	.62	Debt			
2317		1142	13.46	2464		Int.			
2418		1143	4.49	2465		Maint.			
		1144	.80	69	2.51	Total	72.63		
		1145	2.83	3374		Program GRAND TOTAL			
		2346		3375		$704.75			

COST CENTER DATA SHEET Summary of SECOND GRADE Program 3 of 12

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	School Program Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	19	18.3	68	8	6H	7						0	02		000	1

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
245	215	0	182	1500											

____ Total Cost Mode	2519	____	47	____	Total	0.645
____ Cost/pupil Mode	2521	5.051	2448	____	Fixed Charges	
X % of Total Mode	2622	1.392	2449	____	2781	____
Salaries	28	3.787	2451	____	2782	____
1101 5.840%	29	3.653	2552	1.381	2783	1.054
1102 5.691	Total	73.648	2553	1.371	2784	____
1103 45.048	Contracted Services		2554	0.287	2785	0.336
1104 0.626	31	0.709	2555	____	2786	0.089
1105 0.325	2432	____	58	0.258	2787	____
06 ____	2433	____	59	____	Total	1.479
07 ____	2534	0.087	Total	7.092	Depreciation	
08 ____	35	0.296	Other Expenses		Bldg.	4.311
09 ____	Total	1.093	61	0.199	Equip.	1.426
2111 ____	Supplies		62	0.020	Total	5.737
2112 0.646	1141	0.731	63	0.088	Debt	
2113 0.642	1142	1.910	2464	____	Int.	____
2114 0.441	1143	0.637	2465	____	Maint.	____
2115 0.507	1144	0.114	69	0.356	Total	10.305
2216 ____	1145	0.401	3374	____	Program GRAND TOTAL	
2317 ____	2346	____	3375	____	100.00%	
2418 ____						

COST CENTER DATA SHEET Summary of SIXTH GRADE Program 1 of 11

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	15	13.91	68	8	BH	7						0	06		000	1

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
260	200	0	182	1500											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1101	$ 4,420.12	28	9,444.11
1102	27,401.84	29	8,673.44
1103	124,726.31	Total	207,753.05
1104	1,635.33	**Contracted Services**	
1105	756.07	31	1,751.74
06		2432	
07		2433	
08		2534	247.33
09		35	818.11
2111		Total	2,817.18
2112	1,595.32	**Supplies**	
2113	1,584.46	1141	1,522.98
2114	1,087.70	1142	4,564.50
2115	1,250.88	1143	1,673.13
2216		1144	208.01
2317		1145	968.41
2418		2346	

2519		47	
2521	13,590.17	2448	
2622	3,587.30	2449	
		2451	
		2552	3,348.04
		2553	3,446.67
		2554	648.86
		2555	
		58	686.83
		59	
		Total	17,067.43
		Other Expenses	
		61	490.52
		62	4.98
		63	217.53
		2464	
		2465	
		69	870.33
		3374	
		3375	

Total	1,583.36
Fixed Charges	
2781	
2782	
2783	2,639.71
2784	
2785	815.67
2786	215.00
2787	
Total	3,670.38
Depreciation	
Bldg.	10,360.19
Equip	4,259.06
Total	14,619.25
Debt	
Int	
Maint.	
Total	25,441.43

Program GRAND TOTAL
$ 274,952.08

COST CENTER DATA SHEET Summary of SIXTH GRADE Program 2 of 11

CC#	No. Tchrs	FTTE's	-School- Yr.	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req Elec
	15	39.1	68	8	BH	7						0	06		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
260	200	0	182	1500											

____ Total Cost Mode
X Cost/pupil Mode
____ % of Total Mode

Salaries

1101	# 41.44	2519		47		Total	4 55		
1102	78.74	2521	39.05	2448		Fixed Charges			
1103	358.41	2622	10.31	2449		2781			
1104	4.70	28	27.14	2451		2782			
1105	2.17	29	# 24.92	2552	9.62	2783	7.59		
06		Total	# 602.74	2553	9.90	2784			
07		Contracted Services		2554	1.86	2785	2.34		
08		31	5.03	2555		2786	62		
09		2432		58	1 97	2787			
2111		2433		59		Total	10.55		
2112	4 58	2534	.71	Total	49.04	Depreciation			
2113	4.55	35	2.35	Other Expenses		Bldg.	29.71		
2114	3.13	Total	8.09	61	1.41	Equip.	12.24		
2115	3.59	Supplies		62	01	Total	42.01		
2216		1141	4.38	63	63	Debt			
2317		1142	13.12	2464		Int.			
2418		1143	4.81	2465		Maint.			
		1144	60	69	2.50	Total	73.11		
		1145	2 78	3374		Program GRAND TOTAL			
		2346		3375		# 790.09			

COST CENTER DATA SHEET Summary of SIXTH GRADE Program 3 of 11

CC#	No. Tchrs	FTTE's	-School- Yr	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	1 5	1 3 9	6 8	8	BH	7						0	0 6		0 0	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
2 6 0	2 0 0	0	1 8 2	1 5 0 0											

____ Total Cost Mode
____ Cost/pupil Mode
X % of Total Mode

Salaries

1101	5.24%	2519		47		Total	0.58
1102	9.97	2521	4.94	2448		**Fixed Charges**	
1103	45.36	2622	1.31	2449		2781	
1104	0.59	28	3.44	2451		2782	
1105	0.28	29	3.16	2552	1.22	2783	0.96
06		Total	76.29	2553	1.25	2784	
07		**Contracted Services**		2554	0.24	2785	0.30
08		31	0.64	2555		2786	0.08
09		2432		58	0.25	2787	
2111		2433		59		Total	1.34
2112	0.58	2534	0.09	Total	6.21	**Depreciation**	
2113	0.58	35	0.30	**Other Expenses**		Bldg.	3.77
2114	0.40	Total	1.03	61	0.18	Equip	1.55
2115	0.45	**Supplies**		62	0.00	Total	5.32
2216		1141	0.55	63	0.01	**Debt**	
2317		1142	1.66	2464		Int	
2418		1143	0.61	2465		Maint	
		1144	0.08	69	0.32	Total	9.25
		1145	0.35	3374		Program GRAND TOTAL	
		2346		3375		100.00%	

COST CENTER DATA SHEET Summary of INSTRUMENTAL MUSIC Program 1 of 9

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	4	463	68	8	JK	1	JH	6436				0	78		000	2

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
132	61	0	120	210											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	$ 965.00
1202	654.82
1203	12,140.24
1204	91.55
1205	25.61
06	
07	
08	
09	
2111	
2112	110.59
2113	109.84
2114	75.40
2115	88.56
2216	
2317	
2418	

2519	
2521	998.42
2622	
28	4,180.79
29	510.22
Total	16,951.04

Contracted Services

31	144.89
2432	
2433	
2534	5.83
35	44.42
Total	195.12

Supplies

1241	344.63
1242	983.09
1243	86.19
1244	22.31
1245	89.61
2346	

47	
2448	
2449	
2451	
2552	109.55
2553	326.43
2554	60.91
2555	
58	114.31
2787	
59	28.42
Total	2,165.45

Other Expenses

61	16.30
62	1.79
63	15.08
2464	
2465	
69	127.95
3374	
3375	

Total	161.12

Fixed Charges

2781	
2782	
2783	184.57
2784	
2785	56.54
2786	14.89
2787	
Total	256.00

Depreciation

Bldg.	728.03
Equip.	155.08
Total	883.11

Debt

Int	
Maint.	
Total	1,763.72

Program GRAND TOTAL
$ 22,375.56

COST CENTER DATA SHEET Summary of INSTRUMENTAL MUSIC Program 2 of 9

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	4	063	68	8	JK	1	JH	6436				0	78		000	2

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
132	61	0	120	210											

____ Total Cost Mode
__X__ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	$ 5.00	2519		47		Total	83
1202	3.39	2521	5.17	2448		Fixed Charges	
1203	62.91	2622		2449		2781	
1204	.47	28	6.12	2451		2782	
1205	.13	Total	87.83	2552	.57	2783	.96
06		Contracted Services		2553	1.69	2784	
07		31	.76	2554	.32	2785	.29
08		2432		2555		2786	.08
09		2433		58	.59	2787	
2111		2534	.03	59	.15	Total	1.33
2112	.57	35	.23	Total	11.22	Depreciation	
2113	.57	Total	1.01	Other Expenses		Bldg.	3.77
2114	.39	Supplies		61	.08	Equip.	.80
2115	.46	1241	1.79	62	.01	Total	4.57
2216		1242	5.09	63	.08	Debt	
2317		1243	.45	2464		Int	
2418		1244	.12	2465		Maint	
		1245	.46	69	.66	Total	9.13
		2346		3374		Program GRAND TOTAL	
				3375		$ 115.94	

COST CENTER DATA SHEET Summary of INSTRUMENTAL MUSIC Program 3 of 9

CC#	No. Tchrs	FTTE's	-School- Yr.	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	41	063	68	8	JK	1	JA	64360				0	78		000	2

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
132	61	0	120	210											

____ Total Cost Mode
____ Cost/pupil Mode
X % of Total Mode

Salaries

01	4.31%	28	5.277	2519		47		Total	0.720		
02	2.926	29	2.280	2521	4.462	2448		Fixed Charges			
03	54.257	Total	75.76	2622		2449		2781			
04	0.404	Contracted Services		2451		2552	0.490	2782			
05	0.114	31	0.647	2553	1.459	2783	0.825				
06		2432		2554	0.272	2784					
07		2433		2555		2785	0.253				
08		2534	0.026	58	0.511	2786	0.067				
09		35	0.199	59	0.127	2787					
2111		Total	0.872	Total	9.678	Total	1.144				
2112	0.494	Supplies		Other Expenses		Depreciation					
2113	0.491	41	1.540	61	0.073	Bldg.	3.254				
2114	0.339	42	4.394	62	0.008	Equip.	0.693				
2115	0.396	43	0.385	63	0.067	Total	3.947				
2216		44	0.100	2464		Debt					
2317		45	0.400	2465		Int.					
2418		2346		69	0.572	Maint.					
				3374		Total	7.882				
				3375		Program GRAND TOTAL	100.00%				

COST CENTER DATA SHEET Summary of CHOIR (JH) Program 1 of 4

CC#	No. Tchrs	FTTE's	School Yr.	Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	01	1.00	68	8	78	1	JH	4435				0	78		000	2

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
1	7	0	1	202	10										

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

01	$ 1,435.00	28	1,755.89	2519		47		Total	239.60
02	973.75	29	758.72	2521	329.74	2448		**Fixed Charges**	
03	16,149.50	Total	17,148.45	2622		2449		2781	
04	136.14	**Contracted Services**		2551	132.33	2552		2782	
05	38.09	31	215.43	2553	394.84	2783	274.45		
06		2432		2554	73.24	2784			
07		2433		2555		2785	84.08		
08		2534	8.68	58	169.98	2786	22.16		
09		35	66.06	59	42.28	2787			
2111		Total	290.17	Total	2,696.66	Total	380.69		
2112	164.46	**Supplies**		**Other Expenses**		**Depreciation**			
2113	163.33	41	512.49	61	24.24	Bldg.	887.14		
2114	112.13	42	4,076.88	62	2.67	Equip.	230.63		
2115	131.70	43	128.18	63	22.43	Total	4117.67		
2216		44	33.19	69	190.26	**Debt**			
2317		45	133.25	3374		Int.			
2418		2346		3375		Maint.			
						Total	3496.98		

Program GRAND TOTAL
$ 25,370.32

COST CENTER DATA SHEET Summary of CHOIR (JH) Program 2 of 4

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	01	100	68	8	78	1	JH	44	35			0	78		000	3

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
17	170	1	120	210											

____ Total Cost Mode
X Cost/pupil Mode
____ % of Total Mode

Salaries

1201	$ 5.00	2519		47		Total	83
1202	3.39	2521	1.15	2448		Fixed Charges	
1203	38.85	2622		2449		2781	
1204	.47	28	6.12	2451		2782	
1205	.13	29	2.64	2552	.46	2783	.96
06		Total	59.75	2553	1.38	2784	
07		Contracted Services		2554	.26	2785	.29
08		31	.75	2555		2786	.08
09		2432		58	.59	2787	
2111		2433		59	.15	Total	1.33
2112	.57	2534	.03	Total	9.40	Depreciation	
2113	.57	35	.23	Other Expenses		Bldg.	3.09
2114	.39	Total	1.01	61	.08	Equip.	.82
2115	.46	Supplies		62	.01	Total	3.91
2216		1241	1.79	63	.08	Debt	
2317		1242	3.75	2464		Int.	
2418		1243	.45	2465		Maint.	
		1244	.12	69	.66	Total	9.14
		1245	.46	3374		Program GRAND TOTAL	
		2346		3375		$	88.40

COST CENTER DATA SHEET Summary of CHOIR (JH) Program 3 of 4

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	01	100	68	8	78	1	JH	4435				0	78		000	2

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk.	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
1	1	1	70	1	200	2	10										

____ Total Cost Mode
____ Cost/pupil Mode
X % of Total Mode

Salaries

1201	5.656%	28	6.921	2519		47		Total	0.944
1202	3.838	29	2.991	2521	1.299	2448		**Fixed Charges**	
1203	43.947	Total	67.593	2622		2449		2781	
1204	0.537	**Contracted Services**		2551		2451		2782	
1205	0.150	31	0.849	2432		2552	0.522	2783	1.082
1206		2433		2534	0.034	2553	1.556	2784	
07		2534	0.034	35	0.260	2554	0.289	2785	0.331
08		35	0.260	Total	1.144	2555		2786	0.087
09		Total	1.144	**Supplies**		58	0.670	2787	
2111		**Supplies**		1241	2.020	59	0.167	Total	1.501
2112	0.648	1241	2.020	1242	4.245	Total	10.629	**Depreciation**	
2113	0.644	1242	4.245	1243	0.505	**Other Expenses**		Bldg.	3.497
2114	0.442	1243	0.505	1244	0.131	61	0.096	Equip.	0.909
2115	0.519	1244	0.131	1245	0.525	62	0.011	Total	4.406
2216		1245	0.525	2346		63	0.088	**Debt**	
2317		2346				2464		Int.	
2418						2465		Maint.	
						69	0.750	Total	13.784
						3374		Program GRAND TOTAL	
						3375			100.00%

COST CENTER DATA SHEET Summary of Social Studies (JH) Program 1 of 9

CC#	No. Tchrs	FTTE's	-School- Yr	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	6	4.00	68	8	JK	1	JH	17891				0	78		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
306	351	0	182	263											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	4,106.21	2519		47		Total	685.57
1202	3,225.19	2521	3,991.54	2448		Fixed Charges	
1203	57,756.47	2622		2449		2781	
1204	389.57	28	5,024.46	2451		2782	
1205	153.25	29	2,171.09	2552	433.53	2783	785.38
06		Total	78,453.47	2553	1,294.57	2784	
07		Contracted Services		2554		2785	240.61
08		31	616.45	2555		2786	63.43
09		2432		58	486.40	2787	
2111		2433		59	208.98	Total	1,089.42
2112	470.59	2534	24.82	Total	5,947.89	Depreciation	
2113	467.40	35	189.04	Other Expenses		Bldg.	2,906.72
2114	320.85	Total	830.31	61	69.34	Equip.	659.95
2115	376.85	Supplies		62	7.64	Total	3,566.67
2216		1241	1,466.50	63	64.18	Debt	
2317		1242	1,214.67	2464		Int	
2418		1243	366.97	2465		Maint	
		1244	94.97	69	544.41	Total	7,504.96
		1245	381.30	3374		Program GRAND TOTAL	
		2346		3375		#	98,078.29

COST CENTER DATA SHEET Summary of SOCIAL STUDIES (JH) Program 2 of 9

CC#	No. Tchrs	FTTE's	-School- Yr.	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	6	600	68	8	JK	1	JH	17891				0	78		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
306	351	0	182	263											

____ Total Cost Mode
X Cost/pupil Mode
____ % of Total Mode

Salaries

	$
1201	6.25
1202	4.91
1203	87.91
1204	0.59
1205	0.23
06	
07	
08	
09	
2111	
2112	.72
2113	.71
2114	.49
2115	.57
2216	
2317	
2418	

2519	
2521	6.05
2622	
28	7.65
29	3.30
Total	125.46

Contracted Services

31	.94
2432	
2433	
2534	.04
35	.29
Total	1.26

Supplies

1241	2.23
1242	1.85
1243	.56
1244	1.4
1245	.58
2346	

47	
2448	
2449	
2451	
2552	.65
2553	1.97
2554	
2555	
58	.74
59	.32
Total	9.70

Other Expenses

61	.11
62	.01
63	.10
2464	
2465	
69	.83
3374	
3375	

Total	1.04

Fixed Charges

2781	
2782	
2783	1.20
2784	
2785	.37
2786	.10
2787	
Total	1.67

Depreciation

Bldg.	4.42
Equip.	1.00
Total	5.42

Debt

Int.	
Maint.	
Total	11.42

Program GRAND TOTAL
$ 155.98

COST CENTER DATA SHEET Summary of SOCIAL STUDIES (JH) Program 3 of 9

CC#	No. Tchrs	FTTE's	School Yr.	School Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Sec-tion	Credit Units	Req. Elec
	6	600	68	8	JK	1	JH	17891				0	78		000	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
306	351	1	0	182	263										

____ Total Cost Mode	2519	____	47	____	Total	0 699	
____ Cost/pupil Mode	2521	4.070	2448	____	Fixed Charges		
X % of Total Mode	2622	____	2449	____	2781	____	
Salaries	28	5.123	2451	____	2782	____	
1201 4.187%	29	3.214	2552	0.442	2783	0.801	
1202 3.288	Total	79.991	2553	1.319	2784	____	
1203 58.888	Contracted Services		2554	____	2785	0.295	
1204 0.397	31	0.629	2555	____	2786	0.065	
1205 0.156	2432	____	58	0.496	2787	____	
06 ____	2433	____	59	0.213	Total	1.111	
07 ____	2534	0.025	Total	1.064	Depreciation		
08 ____	35	0.193	Other Expenses		Bldg.	2.962	
09 ____	Total	0.847	61	0.071	Equip.	0.673	
2111 ____	Supplies		62	0.007	Total	3.635	
2112 0.480	1241	1.495	63	0.065	Debt		
2113 0.477	1242	1.238	2464	____	Int.	____	
2114 0.327	1243	0.374	2465	____	Maint.	____	
2115 0.384	1244	0.097	69	0.555	Total	7.652	
2216 ____	1245	0.389	3374	____	Program GRAND TOTAL		
2317 ____	2346	____	3375	____	100.00%		
2418 ____							

COST CENTER DATA SHEET Summary of ART (JK) Program 1 of 5

CC#	No. Tchrs	FTTE's	School Yr.	Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	2	1.40	68	8	JK	1	JH	14576				0	78		090	2

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
74	95	0	120	210											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	$ 845.00	2519		47		Total	141.08				
1202	573.39	2521	1,339.80	2448		Fixed Charges					
1203	14,228.03	2622		2449		2781					
1204	80.17	28	1,033.96	2451		2782					
1205	22.43	29	446.77	2552	145.85	2783	161.62				
06		Total	18,906.16	2553	435.31	2784					
07		Contracted Services		2554	80.73	2785	49.51				
08		31	126.85	2555		2786	13.05				
09		2432		58	100.09	2787					
2111		2433		59	24.90	Total	224.18				
2112	96.84	2534	5.11	Total	1,920.92	Depreciation					
2113	96.19	35	38.90	Other Expenses		Bldg.	977.82				
2114	66.03	Total	170.86	61	14.27	Equip.	135.80				
2115	77.55	Supplies		62	1.57	Total	1,113.62				
2216		1241	301.78	63	13.21	Debt					
2317		1242	658.87	2464		Int.					
2418		1243	75.48	2465		Maint.					
		1244	19.54	69	112.03	Total	1,544.39				
		1245	78.47	3374		Program GRAND TOTAL					
		2346		3375		$	24,021.21				

COST CENTER DATA SHEET Summary of Art (JH) Program 2 of 5

CC#	No. Tchrs	FTTE's	-School- Yr.	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	2	1.40	68	8	JK	1	JH	14576				0	78		000	2

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk.	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
74	95	0	120	210											

Total Cost Mode
X Cost/pupil Mode
% of Total Mode

Salaries

1201	$ 5.00	28	6.12	2451		86	2783		.96
1202	3.39	29	2.64	2552		2.58	2784		
1203	84.19	Total	111.87	2553		.48	2785		.29
1204	.47	**Contracted Services**		2554			2786		.08
1205	.13	31	.75	2555		59	2787		
06		2432		58		.15	Total		1.33
07		2433		59		11.37	**Depreciation**		
08		2534	.03	Total		.08	Bldg.		5.79
09		35	.23	**Other Expenses**			Equip.		.80
2111		Total	1.01	61		.01	Total		6.59
2112	.57	**Supplies**		62		.08	**Debt**		
2113	.57	1241	1.79	63			Int.		
2114	.39	1242	3.90	2464			Maint.		
2115	.46	1243	.45	2465			Total		9.14
2216		1244	.12	69		.66	Program GRAND TOTAL		
2317		1245	.46	3374			$		142.14
2418		2346		3375					
2519		47		Total		83			
2521	7.93	2448		**Fixed Charges**					
2622		2449		2781					
				2782					

COST CENTER DATA SHEET Summary of ART (JH) Program 3 of 5

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	2	1.40	68	8	JK	1	JH	14576				0	78		000	2

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
74	95	0	120	210											

____ Total Cost Mode
____ Cost/pupil Mode
X % of Total Mode

Salaries

1201	3.52%	28	4.304	2519		47		Total	0.587		
1202	2.387	29	1.860	2521	5.578	2448		**Fixed Charges**			
1203	59.231	Total	78.706	2622		2449		2781			
1204	0.334	**Contracted Services**		2451		2552	0.607	2782			
1205	0.093	31	0.528	2555		2553	1.812	2783	0.673		
06		2432		58	0.417	2554	0.336	2784			
07		2433		59	0.104	2785	0.206				
08		2534	0.021	Total	7.997	2786	0.054				
09		35	0.162	**Other Expenses**		2787					
2111		Total	0.711	61	0.057	Total	0.933				
2112	0.403	**Supplies**		62	0.007	**Depreciation**					
2113	0.400	1241	1.256	63	0.055	Bldg.	4.071				
2114	0.275	1242	2.743	2464		Equip.	0.565				
2115	0.323	1243	0.314	2465		Total	4.636				
2216		1244	0.081	69	0.466	**Debt**					
2317		1245	0.327	3374		Int.					
2418		2346		3375		Maint.					
						Total	6.429				

Program GRAND TOTAL 100.00%

COST CENTER DATA SHEET Summary of Social Science Dept. Program 1 of 26

CC#	No. Tchrs	FTTE's	-School- Yr	Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	12	10.00	68	8	LP	1	45	40882				0	12		100	1

Pupils Data No. Male	No Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
125	3.5(FTE)	0	160	280											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries #

1201	5,865.71	2519		47		Total	1,572.00
1202	7,031.38	2521	7,378.61	2448		Fixed Charges	
1203	85,348.03	2622	2,177.20	2449		2781	
1204	1,961.88	28	5,848.26	2451		2782	
1205	2,712.50	29	2,116.19	2552	2,104.32	2783	1,053.67
06		Total	123,703.79	2553	3,546.65	2784	
07		Contracted Services		2554	533.23	2785	484.00
08		31	1,133.31	2555		2786	130.08
09		2432		58	640.55	2787	
2111		2433		59		Total	1,667.75
2112	964.57	2534	68.67	Total	13,111.99	Depreciation	
2113	969.37	35	405.19	Other Expenses		Bldg.	8,627.53
2114	657.66	Total	1,607.19	61	14.31	Equip.	2,945.99
2115	772.43	Supplies		62	127.50	Total	11,573.52
2216		1241	1,104.85	63	131.54	Debt	
2317		1242	3,271.66	2464		Int	
2418		1243	1,055.64	2465		Maint	
		1244	220.03	69	1,238.65	Total	15,383.05
		1245	635.06	3374		Program GRAND TOTAL	
		2346		3375		#	168,559.29

COST CENTER DATA SHEET Summary of Social Science Dept. Program 2 of 26

CC#	No. Tchrs	FTTE's	School Yr	School Term	Org. Unit	School Program Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	12	1000	68	8	LP	1	45	4082				0	12		100	1

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
125	35 (FTE)	0	150	280											

____ Total Cost Mode
X Cost/pupil Mode
____ % of Total Mode

Salaries $

12 01	4.68	2519		47		Total	1.21		
12 02	5.61	2521	5.89	2448		Fixed Charges			
12 03	68.09	2622	1.74	2449		2781			
12 04	1.57	28	4.66	2451		2782			
12 05	2.16	29	1.69	2552	1.68	2783	.84		
06		Total	98.69	2553	2.83	2784			
07		**Contracted Services**		2554	.43	2785	.39		
08		31	.90	2555		2786	.10		
09		2432		58	.51	2787			
2111		2433		59		Total	1.33		
2112	.77	2534	.05	Total	10.46	Depreciation			
2113	.77	35	.32	**Other Expenses**		Bldg.	6.88		
2114	.52	Total	1.28	61	.01	Equip.	2.35		
2115	.62	**Supplies**		62	.10	Total	9.23		
2216		1241	.88	63	.10	Debt			
2317		1242	2.61	2464		Int.			
2418		1243	.84	2465		Maint.			
		1244	.18	69	.97	Total	12.27		
		1245	.51	3374		Program GRAND TOTAL $	134.47		
		2346		3375					

COST CENTER DATA SHEET Summary of Social Science Dept. Program 3 of 20

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	12	10.00	68	S	LP	1	45	4082				0	12		100	1

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
125	3.3 (FTE)	0	150	280											

	Total Cost Mode
	Cost/pupil Mode
X	% of Total Mode

Salaries

1201	3.48%	28	3.47	2519		47		Total	0.89
1202	4.17	29	1.26	2521	4.38	2448		Fixed Charges	
1203	50.63	Total	73.39	2622	1.29	2449		2781	
1204	1.16	Contracted Services		2451		2552	1.25	2782	
1205	1.61	31	0.67	2555		2553	2.10	2783	0.63
06		2432		58	0.38	2554	0.32	2784	
07		2433		59		2555		2785	0.28
08		2534	0.04	Total	7.78	2556		2786	0.08
09		35	.24	Other Expenses		2557		2787	
2111		Total	0.95	61	0.01	2558		Total	0.99
2112	0.57	Supplies		62	0.08	2559		Depreciation	
2113	0.58	1241	0.66	63	0.08	2560		Bldg.	5.12
2114	0.39	1242	1.94	2464		2561		Equip.	1.75
2115	0.46	1243	0.63	2465		2562		Total	6.87
2216		1244	0.13	69	0.73	2563		Debt	
2317		1245	0.38	3374		2564		Int.	
2418		2346		3375		2565		Maint.	
								Total	9.13

Program GRAND TOTAL 100.00%

COST CENTER DATA SHEET Summary of FRENCH III & IV Program 1 of 7

CC#	No. Tchrs	FTTE's	-School- Yr	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	3	1.00	68	8	20	1	145	41/13		060208		0	12		100	2

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
NV	(FTE)	0	150	280											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	515.71	2519		47		Total	133.72		
1202	618.20	2521	663.68	2448		Fixed Charges			
1203	7,732.18	2622	191.51	2449		2781			
1204	172.40	28	514.01	2451		2782			
1205	238.49	29	186.07	2552	177.29	2783	95.96		
06		Total	4,128.14	2553	329.10	2784			
07		Contracted Services		2554	49.33	2785	43.36		
08		31	111.05	2555		2786	11.43		
09		2432		58	54.01	2787			
2111		2433		59		Total	150.75		
2112	84.81	2534	6.29	Total	1,140.00	Depreciation			
2113	85.34	35	35.93	Other Expenses		Bldg.	803.85		
2114	57.83	Total	153.27	61	1.39	Equip	257.01		
2115	67.91	Supplies		62	11.21	Total	1,062.86		
2216		1241	97.14	63	11.56	Debt			
2317		1242	287.64	2464		Int.			
2418		1243	92.85	2465		Maint.			
		1244	9.92	69	109.56	Total	1,352.49		
		1245	42.66	3374		Program GRAND TOTAL			
		2346		3375		$	15,121.23		

COST CENTER DATA SHEET Summary of FRENCH III & IV Program 2 of 7

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	3	100	68	S	L	P	1	HS	4113							
										060208		0	12		100	2

Pupils Data No. Male	No. Female	Type	Time No. Days	Minutes Per Wk	% Lab Time	Materials Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
N	(FTE)	0	150	280											

Total Cost Mode
X Cost/pupil Mode
% of Total Mode

Salaries #

1201	4.65	2519		47		Total	1.20		
1202	5.57	2521	5.98	2448		Fixed Charges			
1203	69.66	2622	1.73	2449		2781			
1204	1.55	28	4.63	2451		2782			
1205	2.15	29	1.68	2552	1.60	2783	.86		
06		Total	100.25	2553	2.96	2784			
07		Contracted Services		2554	.44	2785	.39		
08		2534	.06	2555		2786	.10		
09		35	.32	58	.49	2787			
2111		Total	1.38	Total	10.27	Total	1.36		
2112	.76	Supplies		Other Expenses		Depreciation			
2113	.77	1241	.87	61	.01	Bldg.	7.24		
2114	.52	1242	2.59	62	.10	Equip.	2.33		
2115	.61	1243	.84	63	.10	Total	9.57		
2216		1244	.09	69	.99	Debt			
2317		1245	.39	3374		Int.			
2418		2346		3375		Maint.			
						Total	12.18		

Program GRAND TOTAL #
136.22

COST CENTER DATA SHEET Summary of FRENCH III & IV Program 3 of 7

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	3	100	68	8	20	1	145	4113		06020B		0	12		100	2

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors #1	#2	#3	#4	#5	#6	#7
11	(ATE)	0	150	280											

Total Cost Mode
Cost/pupil Mode
X % of Total Mode

Salaries

1201	3.411%	28	3.399	2519		47		Total	0.884		
1202	4.088	29	1.231	2521	4.389	2448		Fixed Charges			
1203	51.135	Total	73.573	2622	1.266	2449		2781			
1204	1.14	Contracted Services		2451		2552	1.172	2782			
1205	1.571	31	0.734	2555		2553	2.176	2783	0.635		
06		2432		58	0.357	2554	0.326	2784			
07		2433		59		2555		2785	0.287		
08		2534	0.042	Total	7.539	2786	0.076				
09		35	0.238	Other Expenses		2787		Depreciation			
2111		Total	1.014	61	0.004	Total	0.997	Bldg.	5.316		
2112	0.561	Supplies		62	0.074			Equip	1.713		
2113	0.564	1241	0.642	63	0.076			Total	7.029		
2114	0.382	1242	1.902	2464				Debt			
2115	0.449	1243	0.614	2465				Int.			
2216		1244	0.066	69	0.724			Maint.			
2317		1245	0.282	3374				Total	8.944		
2418		2346		3375				Program GRAND TOTAL	100.00%		

COST CENTER DATA SHEET Summary of PHYSICAL EDUCATION/Program 1 of 9

CC#	No. Tchrs	FTTE's	-School- Yr	Term	School Program: Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Sec-tion	Credit Units	Req. Elec
	6	5.00	68	8	40	1	45	137250				0	12		100	R

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
55	45	1	145	280											

X Total Cost Mode
____ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	4,683.27	28	4,667.74	2451		2782	
1202	5,613.96	29	1,689.61	2552	3,758.92	2783	635.23
1203	47,624.99	Total	85,248.92	2553	6,402.87	2784	
1204	1,565.63	Contracted Services		2554	958.49	2785	393.78
1205	2,165.69	31	1,008.45	2555		2786	103.79
06		2432		58	491.04	2787	
07		2433		59		Total	1,132.80
08		2534	121.76	Total	17,239.94	Depreciation	
09		35	693.10	Other Expenses		Bldg.	9,643.71
2111		Total	1,823.31	61	12.60	Equip	2,352.07
2112	770.14	Supplies		62	101.81	Total	11,995.78
2113	774.98	1241	882.15	63	105.03	Debt	
2114	525.10	1242	2,612.13	2464		Int.	12,282.08
2115	616.72	1243	843.19	2465		Maint.	—
2216		1244	900.95	69	994.90	Total	13,282.08
2317		1245	390.20	3374		Program GRAND TOTAL	
2418		2346		3375			130,937.17

COST CENTER DATA SHEET Summary of PHYSICAL EDUCATION Program 2 of 9

CC#	No. Tchrs	FTTE's	School Yr	School Term	Org. Unit	School Program: Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Title: Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	6	5.00	68	8	LP	1	45	37,250				0	12		10	0

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
55	45	4	1	185	280	1									

____ Total Cost Mode
__X__ Cost/pupil Mode
____ % of Total Mode

Salaries

1201	$ 4.65	2519		47		Total	1.20		
1202	5.57	2521	12.71	2448		**Fixed Charges**			
1203	47.25	2622	1.73	2449		2781			
1204	1.55	28	4.63	2451		2782			
1205	2.15	29	1.68	2552	3 73	2783	.63		
06		Total	84.58	2553	6.35	2784			
07		**Contracted Services**		2554	.95	2785	.39		
08		31	1.00	2555		2786	.10		
09		2432		58	.47	2787			
2111		2433		59		Total	1.12		
2112	0 764	2534	.12	Total	17.10	**Depreciation**			
2113	0.769	35	.69	**Other Expenses**		Bldg.	9.57		
2114	0 521	Total	1.81	61	.01	Equip.	2.33		
2115	0.612	**Supplies**		62	.10	Total	11.90		
2216		1241	.88	63	.10	**Debt**			
2317		1242	2.57	2464		Int.			
2418		1243	.84	2465		Maint.			
		1244	.89	69	.99	Total	12.18		
		1245	.39	3374		**Program GRAND TOTAL**			
		2346		3375		$	129.90		

COST CENTER DATA SHEET Summary of PHYSICAL EDUCATION Program 3 of 9

CC#	No. Tchrs	FTTE's	School Yr.	School Term	Org. Unit	Type Sch	Bldg	Ft.2-P's CC Total	Type Prog	Class/Activity Key	Sq Yr	Lvl Dif	Grd Lvl	Section	Credit Units	Req. Elec
	6	5.00	68	8	40	1	145	137250				0	12		100	R

Pupils Data: No. Male	No. Female	Type	Time: No. Days	Minutes Per Wk	% Lab Time	Materials: Txt Used	Tch Meth	Use Med	Content Descriptors: #1	#2	#3	#4	#5	#6	#7
55	44	5	4	1	145	280									

Total Cost Mode
Cost/pupil Mode
X % of Total Mode

2519		47		Total	0.927
2521	9.785	2448		Fixed Charges	
2622	1.328	2449		2781	
Salaries					
1201	3.577%	28	3.565	2451		2782	
1202	4.288	29	1.290	2552	2.891	2783	0.485
1203	36.372	Total	65.107	2553	4.870	2784	
1204	1.196	**Contracted Services**		2554	0.732	2785	0.301
1205	1.654	31	0.770	2555		2786	0.079
06		2432		58	0.375	2787	
07		2433		59		Total	0.865
08		2534	0.093	Total	13.167	**Depreciation**	
09		35	0.529	**Other Expenses**		Bldg.	7.365
2111		Total	1.393	61	0.010	Equip.	1.796
2112	0.588	**Supplies**		62	0.078	Total	9.161
2113	0.592	1241	0.674	63	0.080	**Debt**	
2114	0.401	1242	1.995	2464		Int.	9.380
2115	0.471	1243	0.644	2465		Maint.	
2216		1244	0.688	69	0.760	Total	9.380
2317		1245	0.298	3374		Program GRAND TOTAL	
2418		2346		3375		100.00%	

The cost summary sheets which appear above are summarized, in part, in the table below. The table is intended to demonstrate how the costs of selected programs can be summarized in such a manner that total costs, costs per pupil, and percentage of total figures can be easily compared. When the data is arranged in this form a given item can be compared for ten programs in any appropriate mode in a matter of seconds. Choosing the appropriate mode is not difficult. The programs vary in the percentage of the total program of a pupil that they represent and in the number of pupils enrolled in the program. Kindergarten, for instance, is a half day program. However, for reporting purposes it is treated as a full day program in the sense that full-time equivalent pupils are used for the calculations. The second and sixth grade programs are full day programs and reported as such. It is appropriate, therefore, to compare these programs in either the cost per pupil or the percentage modes. The junior high program has both required and elective courses. The required courses represent 15.625% of the pupil's program and the electives 12.5% of the pupils program. The percentage mode is most appropriate for comparisons of electives and required courses and both cost per pupil and percentage modes for either required or electives when compared to the same type. The senior high courses represent 16.667% of the total program of an individual pupil and all courses can be compared one to another. All courses and programs can be compared in

the percentage or in an "extended mode" where all programs are shown extended to full-time equivalent programs.

The table appears on the next page. A sample comparison may prove helpful in getting started. To compare the costs per pupil and percentage of total costs for the three elementary programs regarding Consultants and Supervisors one simply follows the line across to the right noting the amounts beneath the appropriate program. There are three lines across for each appropriation number. The top line lists the total cost mode, the second the cost per pupil mode, and the third the percentage of total cost mode. The total costs are $2,032.74 for kindergarten, $18,449.88 for 2nd grade, and $27,401.84 for 6th grade. The costs per pupil are $8.18 for kindergarten, $40.11 for 2nd grade, and $78.74 for 6th grade. The percentages of total are 1.13% for kindergarten, 5.691% for 2nd grade and 9.97% for 6th grade.

A more comprehensive, but less detailed summary of the programs costed during the field test appears in Table 2. The cost per pupil is given for each program and extended to a full-time program equivalent where necessary. The full-time equivalent tends to place all programs on the same time basis and makes comparisons more meaningful.

TABLE 1

PROGRAM SUMMARIES

Exp. Code	Title/Item	Kinder-garten	2nd Grade	2th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
	# Served	497*	460	460	193	287	657	169	1,253.5	111	1,008
	Min./Week	750	1,500	1500	210	210	263	210	280	280	280
	Salaries										
01	Principals	$10,370.95	18931.38	14,420.12	965.00	1,435.00	4,106.21	845.00	5,865.71	515.71	4,483.27
		$41.81	41.16	41.44	5.00	5.00	6.25	5.00	4.68	4.65	4.65
		5.79%	5.84	5.24	4.31	5.656	4.187	3.52	3.48	3.287	3.577
02	Consultants and Supervisors	2,032.74	18,449.88	27,401.84	654.82	973.75	3,225.19	573.37	7,031.38	618.20	5,613.96
		8.18	40.11	78.74	3.39	3.39	4.91	3.39	5.61	5.57	5.57
		1.13	5.691	9.97	2.926	3.838	3.288	2.387	4.17	3.741	4.288
03	Regular Teachers	90,491.22	46,039.97	124,726.31	12,140.24	11,149.50	57,756.47	14,228.03	85,348.03	7,732.18	47,624.99
		364.15	317.48	358.41	62.91	38.85	87.91	84.19	68.09	69.66	47.25
		50.41	45.048	45.36	54.257	43.947	58.888	59.231	50.63	49.289	36.372
04	Substitute Teachers	1,167.95	2,029.46	1,635.33	91.55	136.14	389.57	80.17	1,961.88	410.04	1,565.63
		4.70	4.41	4.70	0.47	.47	.59	.47	1.57	1.55	1.55
		0.651	0.626	0.59	0.409	0.537	0.397	0.334	1.16	1.14	1.196
05	Librarians	469.09	1,053.42	756.07	25.61	38.09	153.25	22.43	2,712.50	567.21	2,165.69
		1.89	2.29	2.17	0.13	.13	.23	.13	2.16	2.15	2.15
		0.261	0.325	0.28	0.114	0.15	0.156	0.093	1.61	1.577	1.654

*Used 248.5 full-time equivalents for cost per pupil calculations.

continued

Exp.	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
2112	Supt. & Assistants	1139.18	2094.99	1595.32	110.59	164.46	470.59	96.84	964.57	84.81	770.14
		4.58	4.55	4.58	.57	.57	.72	.57	.77	.76	.76
		0.635	0.646	0.58	0.494	0.648	0.480	0.403	0.57	0.561	0.588
2113	Business Admin.	1131.41	2080.72	1584.46	109.59	163.33	461.40	96.19	969.37	85.34	774.98
		4.55	4.52	4.55	.57	.57	.11	.57	.77	.77	.77
		0.630	0.642	0.58	0.491	0.644	0.477	0.400	0.58	0.564	0.572
2114	Personnel Office	776.70	1428.39	1087.70	75.40	112.13	320.85	66.05	651.66	57.83	525.10
		3.13	3.11	3.13	.39	.39	.49	.39	.52	.52	.52
		0.433	0.441	0.40	0.339	0.442	0.329	0.275	0.39	0.382	0.401
2115	Central Research	873.22	1642.70	1,250.88	88.56	131.70	376.85	77.55	772.43	67.91	616.72
		3.59	3.57	3.59	.46	.46	.57	.46	.62	.61	.61
		0.498	0.507	0.45	0.396	0.519	0.384	0.323	0.46	0.449	0.471
2521	Custodians	8,531.16	16,374.23	13,590.17	998.42	329.74	3991.54	1,339.80	7,378.61	663.68	12,811.97
		34.33	35.60	37.05	5.17	1.15	6.05	7.93	5.87	5.98	12.71
		4.752	5.057	4.94	4.462	1.299	4.070	5.578	4.38	4.389	9.185
2622	Maintenance Personnel	2,240.91	4,512.94	3587.30	0.00	0.00	0.00	0.00	2,171.20	191.57	4,739.12
		9.02	9.81	10.31	0.00	0.00	0.00	0.00	1.74	1.73	1.73
		1.248	1.392	1.31	0.00	0.00	0.00	0.00	1.29	1.266	1.328
28	Clerical Personnel	6,950.44	12,276.73	9,444.11	1,180.79	1,755.89	5,024.46	1033.96	5,848.26	514.01	4,667.74
		27.97	26.69	27.14	6.12	6.12	7.65	6.12	4.66	4.63	4.63
		3.872	3.787	3.44	5.277	6.921	5.123	4.304	3.47	3.379	3.665

continued

Exp. Code	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
29	Other Salaries #	4,439.76	11,841.78	8,673.44	510.22	758.72	2,171.09	446.77	2,116.19	186.07	1,689.61
	#	25.91	25.74	24.92	2.64	2.64	3.30	2.64	1.69	1.68	1.68
		3.587%	3.653	3.16	2.280	2.791	2.214	1.86	1.26	1.231	1.290
	Totals All Salaries	132,654.73	238,756.59	209,753.05	16,951.04	17,148.45	78,453.47	18,906.16	123,703.79	11,694.50	85,248.92
		533.82	519.04	602.74	87.83	54.75	125.46	111.87	98.69	100.25	84.58
		73.893	73.648	76.29	75.76	67.593	79.991	78.706	73.37	73.593	65.107
	Contracted Services										
31	Professional	1,250.87	2,300.40	1,751.74	144.89	215.43	616.45	126.85	1,133.31	111.05	1,008.45
		5.03	5.00	5.03	.75	.75	0.94	.75	.90	1.00	1.00
		0.697	0.709	0.64	0.647	0.849	0.629	0.528	0.67	.734	0.770
2534	Plant Operation	145.15	282.68	247.33	5.83	8.68	24.82	5.11	68.69	6.29	121.76
		0.58	.61	.71	.03	.03	.04	.03	.05	.06	.12
		0.081	0.087	0.07	0.026	0.034	0.025	0.021	0.04	.042	0.073
35	Plant Maintenance	533.82	960.58	818.11	44.42	66.01	189.04	38.90	405.19	35.93	693.10
		2.15	2.09	2.35	.23	.23	.29	.23	.32	.32	.69
		0.297	0.296	0.30	0.199	0.260	0.193	0.162	0.24	0.238	0.529
	Totals Contracted Services	1,929.84	3,543.66	2,817.18	195.12	290.17	830.31	170.86	1,607.19	153.27	1,823.31
		7.77	7.70	8.07	1.01	1.01	1.26	1.01	1.28	1.38	1.81
		1.075	1.093	1.03	0.872	1.144	0.847	0.711	0.75	1.014	1.393

continued

Exp. Code	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
	Supplies										
41	Textbooks	# 4,297.14	2369.30	1522.98	344.63	512.41	1466.50	301.78	1104.85	97.14	882.15
		$ 5.22	5.15	4.38	1.79	1.79	2.23	1.74	.88	.87	.88
		0.723%	0.731	0.55	1.54	2.02	1.495	1.256	0.66	.642	0.674
42	Teaching Supplies	3499.06	6,193.33	4,564.50	983.09	1,076.88	1,214.67	658.87	3,371.66	287.64	2,612.13
		14.08	13.46	13.12	5.09	3.75	1.85	3.90	2.61	2.53	2.59
		1.949	1.910	1.66	4.374	4.245	1.238	2.743	1.94	1.902	1.995
43	Library Books	1,294.64	2,066.58	1,673.13	86.19	128.18	366.97	75.48	1,055.64	92.85	843.19
		5.21	4.49	4.81	.45	.45	.56	.45	.84	.84	.84
		0.721	0.637	0.61	0.385	0.505	0.374	0.34	0.63	.614	0.644
44	Periodicals	140.52	368.15	208.01	22.31	33.19	94.97	19.54	220.03	9.92	900.95
		.57	.80	.60	.12	.12	.14	.12	.18	.09	.89
		0.078	0.114	0.08	0.10	0.131	0.047	0.081	0.13	0.066	0.688
45	Audio-Visual	1,452.25	1,301.27	968.41	89.61	133.25	381.30	78.47	635.06	42.66	390.20
		5.84	2.83	2.78	.46	.46	.58	.46	.51	.39	.39
		0.809	0.401	0.35	0.40	0.525	0.389	0.327	0.38	0.282	0.298
2552	Heating Fuel	2,209.75	4,477.44	3348.04	109.55	132.33	433.53	145.85	2,104.32	177.29	3,758.92
		8.89	9.73	9.62	.57	.46	.65	.86	1.68	1.60	3.73
		1.231	1.381	1.22	0.49	0.522	0.442	0.607	1.25	1.172	2.871

continued

Exp. Code	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
2553	Utilities (except fuel)	# 2,265.68	4,445.50	3,446.67	326.43	394.84	4,294.57	435.21	3,546.65	329.10	6,402.87
		# 9.12	9.66	9.90	1.64	1.38	1.97	2.58	2.83	2.96	6.35
		1.262%	1.371	1.25	1.459	1.556	1.319	1.812	2.10	2.176	4.890
2554	Custodial Supplies	482.04	931.14	648.86	60.91	73.24	0.00*	80.73	535.23	49.33	958.49
		1.94	2.02	1.86	.32	.26	0.00	.48	.43	.44	.76
		0.269	0.287	0.24	0.272	0.289	0.00	0.33	0.32	.326	0.732
59	Office Supplies	448.37	837.47	686.83	114.31	169.98	486.40	100.07	640.55	54.07	491.04
		1.80	1.82	1.97	.59	.59	.74	.59	.57	.49	.49
		0.250	0.258	0.25	0.511	0.670	0.496	0.417	0.38	.357	0.375
59	Miscel-laneous	0.00	0.00	0.00	28.42	42.28	208.98	24.90	0.00	0.00	0.00
		0.00	0.00	0.00	.15	.15	.32	.15	0.00	0.00	0.00
		0.00	0.00	0.00	0.127	0.167	0.213	0.104	0.00	0.00	0.00
	Totals Supplies	13087.45	22,990.18	17,067.43	2,165.45	2,696.66	5,941.89	1,920.92	13,111.99	1,140.00	17,239.94
		52.67	49.98	49.04	11.22	9.40	9.70	11.31	10.46	10.27	17.10
		7.291	7.072	6.21	7.678	10.629	6.064	7.997	7.78	7.539	13.161
	Other Expenses										
61	Travel & Mileage	350.26	644.15	490.52	16.30	24.24	69.34	14.27	14.31	1.39	12.60
		1.41	1.40	1.41	.08	.08	.11	.08	.01	.01	.01
		0.195	0.199	0.18	0.073	0.096	0.071	0.059	0.01	.009	0.010

*Error

continued

Exp Code	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
62	Equipment Rental	$ 3.55	6.53	4.98	1.79	2.67	7.64	1.57	127.50	11.21	101.81
		$ .01	.01	.01	.01	.01	.01	.01	.10	.10	.10
		0.002%	.02	0.00	0.008	0.011	0.007	0.007	0.08	.074	0.078
63	Printing	155.35	285.68	217.53	15.08	22.43	64.18	13.21	131.54	11.56	105.03
		.63	.62	.63	.08	.08	.10	.08	.10	.10	.10
		0.087	.088	0.01	0.067	0.058	0.065	0.055	0.08	.076	0.080
69	Miscel-laneous	629.62	1,154.40	870.33	127.95	190.26	544.41	112.03	1,238.65	107.56	794.90
		2.53	2.51	2.50	.66	.66	.83	.66	.99	.99	.99
		0.351	.356	0.32	0.572	0.750	.	0.466	0.73	.724	0.760
	Totals Other Expenses	1,138.78	2,090.76	1,583.36	161.12	239.60	685.57	141.08	1,572.00	133.72	1,214.34
		4.58	4.55	4.55	.83	.83	1.04	.83	1.21	1.20	1.20
		0.634	0.645	0.58	0.72	0.944	0.555	0.587	0.89	.884	0.927
	Fixed Charges										
2783	Insurance and Bonds	1,731.74	3,418.18	2,639.71	184.57	274.45	785.38	161.62	1,053.67	95.96	635.23
		6.97	7.43	7.59	.96	.96	1.20	.96	.84	.86	.63
		0.965	1.054	0.96	0.825	1.082	0.801	0.673	0.63	.635	0.485
2784	Rental of Land or Buildings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

continued

Exp. Code	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH Social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
2785	Interest	# 582.47	1,089.92	815.67	56.54	84.08	240.61	49.51	484.00	43.36	393.78
		# 2.34	2.37	2.34	.29	.29	.37	.29	.37	.34	.37
		0.324%	0.336	0.30	.263	0.331	0.245	0.206	0.28	.287	0.301
2786	Other	261.96	287.28	215.00	14.89	22.16	63.43	13.05	130.08	11.43	103.79
		1.05	.62	.62	.08	.08	.10	.08	.10	.10	.10
		0.146	0.389	0.08	.067	0.087	0.065	0.054	0.08	.076	0.079
	Totals Fixed Charges	2,763.58	4,795.38	3,670.38	256.00	380.69	1,089.42	224.18	1667.75	150.75	1,132.80
		11.12	10.42	10.55	1.33	1.33	1.67	1.33	1.33	1.36	1.12
		1.539	1.479	1.34	1.144	1.501	1.111	0.933	0.99	0.997	0.865
	Depreciation										
____	Buildings & Built-in Equipment	7,598.30	13,974.47	10,360.19	728.03	887.14	2,906.72	977.82	8,627.53	803.85	9,643.71
		30.58	30.38	29.77	3.77	3.09	4.42	5.77	6.88	7.24	9.57
		4.232	4.311	3.27	3.254	3.497	2.962	4.071	5.12	5.316	7.365
____	Equipment not Built-in	2,181.70	4,624.15	4,259.06	155.08	230.63	659.95	135.80	2,945.99	259.01	2,352.07
		8.78	10.05	12.34	.80	.82	1.00	.80	2.35	2.33	2.33
		1.215	1.426	1.55	0.693	.909	0.673	0.565	1.75	1.713	1.796
	Totals Depreci-ation	9,780.00	18,598.62	14,619.25	883.11	1,117.67	3,566.67	1,113.62	11,573.52	1,062.86	11,995.78
		39.36	40.43	42.01	4.57	3.91	5.42	6.59	9.23	9.57	11.90
		5.447	5.737	5.32	3.947	4.406	3.635	4.634	6.87	7.029	9.161

continued

Exp. Code	Title/Item	Kinder-garten	2nd Grade	6th Grade	JH Inst. Music	JH Vocal Music	JH social Studies	JH Art	HS Social Studies	HS French III & IV	HS P.E.
	Debt										
____	Totals	# 18,167.24	33410.18	25,441.43	1,763.72	3416.98	1,504.96	1,544.39	15,383.05	1,352.49	12,282.08
		# 73.11	72.63	73.11	9.13	9.14	11.42	9.14	12.27	12.18	12.18
		10.12%	10.305	9.25	7.882	13.784	7.652	6.429	9.13	8.944	9.380
	Program Grand Totals										
		# 179,523.62	324,410.18	274,952.43	22,375.72	25,370.98	98,078.29	24,021.21	168,559.29	15,687.59	137,138.63
		# 722.43	704.75	790.09	115.94	88.46	155.98	142.14	134.47	136.22	136.05
		100.00%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE 2

TOTAL COST PER PUPIL PER PROGRAM--EXTENDED

Program	Enrollment	Total Cost	Cost/pupil	Cost/pupil Extended
Elementary				
Kindergarten	248.5*	$179,523.62	$722.43	$722.43
First Grade	467	327,910.85	702.16	702.16
Second Grade	460	324,185.37	704.75	704.75
Third Grade	387	284,752.73	735.80	735.80
Fourth Grade	346	266,801.27	771.10	771.10
Fifth Grade	341	253,462.78	743.29	743.29
Sixth Grade	460	274,952.08	790.09	790.09
Junior High (Required --15.625% of pupil's total program each)				
English	657	89,526.67	136.27	872.13
Mathematics	657	86,018.93	130.93	857.95
Science	657	88,398.89	134.54	861.06
Social Studies	657	98,098.29	155.98	998.27
Math-Science & English Social Studies[1]	100	20,809.23	208.09	1,331.78
Junior High (Electives--12.5 of pupil's total program each)				
Adventures in Appreciation	74	8,092.11	109.35	874.80
Art	169	24,021.21	142.14	1,137.12
French	145	18,419.69	120.70	965.60
Homemaking	169	20,444.19	120.97	967.76
Industrial Arts	217	27,903.02	128.59	1,030.72
Music (Instrumental)	193	22,375.66	115.74	927.52
Music (Vocal)	287	25,370.32	88.40	707.20
Physical Education	700	69,623.58	99.46	795.68
Speech	125	15,945.58	127.56	1,020.48

continued

[1]A special program for the slower pupils. The enrollment for each period was 25 pupils. The total equivalent enrollment for the four subjects taken as a block was, therefore, 100.

Program	Enrollment	Total Cost	Cost/pupil	Cost/pupil Extended
High School				
Art Department:				
Art	288	37,593.31	130.53	783.18
Commercial Department:				
Bookkeeping and Shorthand	71	10,836.33	152.62	915.72
Typing	234.5	32,580.23	133.80	802.80
English Department:				
Debate/Drama	15	3,018.85	201.26	1,207.56
English	1,488.5	206,442.22	138.69	832.14
Reading Improvement	70	14,830.65	211.86	1,271.16
Speech	227	25,916.28	114.17	685.02
Home Economics Department:				
Home Economics	83	14,946.38	180.08	1,080.48
Industrial Arts Department:				
Mechanical Drawing	101	13,059.81	129.31	775.86
Shop	104	16,674.35	160.33	961.98
Language Department:				
French	203	30,185.61	148.70	892.20
German	124	20,251.41	163.32	979.92
Latin	42	7,021.53	167.18	1,003.08
Spanish	228	32,726.55	143.54	861.24
Mathematics Department:				
Algebra	527	73,445.24	139.26	836.16
Business Arithmetic	40	4,695.77	117.39	704.34
General Mathematics	75	10,090.53	134.60	807.60
Geometry	335	48,624.75	145.15	870.90
Senior Mathematics	68	7,694.76	113.16	678.96
Senior Math(honors)	68	10,919.93	160.58	963.48

continued

Program	Enrollment	Total Cost	Cost/pupil	Cost/pupil Extended
Music Department:				
Instrumental Music	182	28,052.60	154.14	924.84
Vocal Music	200	24,329.42	121.65	729.90
Physical Education Department:				
Physical Education	1,008	130,937.17	129.90	779.40
Science Department:				
Biology	279	42,257.47	151.46	908.76
Chemistry	189	28,008.10	148.19	889.14
General Science	40	7,142.63	178.56	1,071.36
Physical Science	152	22,087.32	145.31	871.86
Physics	106	14,785.06	139.48	836.88
Social Studies Department:				
Social Sciences	1,253.5	168,559.29	134.47	806.82

The two tables (Table 1 and Table 2) which appear above tend to reveal and, paradoxically, to conceal important data at the same time. The cause of the concealment is very important and is one of the main roots from which the study grew. It is the act of combining large segments of the program and using this conglomerate to determine one cost per pupil figure. In most cases in most districts of the state there was only one such figure calculated for the entire program of the district once each year. The mean cost was determined, but the variations regarding support levels and support patterns for the many subprograms within the total program were never considered. Thus, in effect, for every

program that was over-budgeted and supported there was a comparable program equally under-budgeted and lacking in support. Since neither variation from the mean was known with any precision nothing was done in too many cases.

To illustrate this variance or range of per pupil costs within a program a few examples are outlined in Table 3 on the following page.

Variability among the various programs of a district is to be expected. Much of it can be explained by the differences in teachers salaries, and class enrollments. Other important factors are present a few of which relate to operating costs of various sized schools. Table 4 which appears on page 133 is a testimonial to the high per pupil costs of smaller schools. The data is relevant to decision-making regarding staffing and operational support for programs.

Table 4 shows that if School M (a medium size elementary school) were supported at the same expenditure level as School C (the smallest elementary school) it would require approximately $36,300 more per year for these items alone. Conversely, if School C were supported comparably to School M in regard to these items it would involve a reduction of approximately $12,850. It is also interesting to compare the high school and junior high costs. To bring the level of support to the high school regarding these items up to the level of the junior high would require approximately $68,000

TABLE 3

COST PER PUPIL AMOUNTS FOR SAMPLE AREAS OF PROGRAM

Programs & Subprograms	Enrollment	Cost/pupil	Cost/pupil Extended
Third Grade:			
School B	48	$811.47	$811.47
School C	27	641.93	641.93
School D	26	855.86	855.86
School G	27	678.89	678.89
School M	82	623.03	623.03
School P	56	618.75	618.75
School RC	39	939.18	939.18
School SV	47	741.27	741.27
School WH	35	791.91	791.91
Instrumental Music--Junior High			
Strings	17	183.76	1,470.08
Strings	20	141.96	1,135.68
Activity Band	67	133.69	1,069.52
Beginning Band	32	104.51	836.08
"C" Band	57	91.39	731.12
French--High School			
French I	83	140.96	845.76
French II	120	154.05	924.30
French III	51	121.25	727.50
French III	17	215.11	1,290.66
French IV	43	122.80	740.80
Home Economics--High School			
Home Economics I	58	148.41	890.46
Home Economics II	15	221.14	1,326.84
Home Economics III	10	302.16	1,812.96

TABLE 4

COSTS BY SELECTED STAFF CATEGORIES IN VARIOUS SIZED SCHOOLS

School	Enrollment	Per Pupil Cost for Principals	Per Pupil Cost for Custodians	Per Pupil Cost for Secretaries	Per Pupil Cost for Other Clerical	Total
B	310	$41.29	$39.03	$24.88	$29.79	$134.99
C	196	63.78	51.02	32.41	16.14	165.35
D	215	64.71	39.54	30.46	24.09	158.80
G	221	56.56	49.09	30.82	22.67	159.14
M	554	24.01	28.34	25,81	19.61	97.77
P	353	27.15	43.34	23.03	16.35	109.87
RC	274	43.07	50.91	26.98	31.88	152.84
SV	296	40.54	31.58	25.32	29.73	127.17
WH	280	44.64	37.85	28.14	39.47	150.10
JH	700	40.00	47.41	48.98	21.12	157.47
SH	1,408	27.88	43.34	27.78	10.06	109.06

more per year. This is roughly equivalent to two additional assistant principals, four additional custodians and four secretarial and clerical personnel.

Continuing with the school comparisons a table of the schools placed in rank order according to enrollment and a comparison of this rank with that of a reverse rank of the costs appears on the following page. The correlation was not calculated statistically but is obviously high. Eight out of eleven schools ranked within one position of being the same for both enrollment and cost. A sample question that might well be asked concerning this data is how reasonable is it to have the most complex and involved school program of the district supported at a level second from the lowest level of support of the entire district?

One of the many difficult tasks of administration is to schedule consultants (special teachers in this case) for the various schools and programs of the district. Table 6, on page 136, outlines the costs for elementary consultants on a cost per pupil basis for two of the schools of the district. This data further emphasizes the difference in support levels of the small versus the large schools of the system.

The differences in expenditures for consultive services noted in Table 6 range up to $46.81 per pupil at the sixth grade level. This is approximately three times the total money spent in the system for textbooks, instructional supplies, stockroom supplies, library books, library periodicals and

TABLE 5

RANK ORDER OF SCHOOLS AND COMPARISON WITH SELECTED COSTS

School	Rank Order Small to Large Enrollments	Total Costs From Table 5	Rank Order Large to Small Costs Per Pupil
C	1	$165.35	1
D	2	158.80	3
G	3	159.14	2
RC	4	152.84	5
WH	5	150.10	6
SV	6	127.17	8
B	7	134.99	7
P	8	109.87	9
M	9	97.77	11
JH	10	157.47	4
SH	11	109.06	10

audio-visual supplies combined. Again the difference favors the smaller school.

The basic question of how much support should be given to each program on a per pupil basis and in regard to what line items was not answered by the results of the field test but it was further clarified. The answer to the question cannot be made on the basis of cost data alone. It requires a combination of cost data, evaluation of objectives and progress made toward those objectives. The program which, on the basis of cost data alone, appears to be the most expensive may appear within the total information package to

TABLE 6

PRORATED COSTS PER PUPIL FOR SELECTED ELEMENTARY SCHOOLS FOR CONSULTANTS(SPECIAL TEACHERS)

Subject/Service	Grades				
	K	1	2-4	5	6
School C (196 pupils)					
Art	-	$8.943	$8.943	$8.943	$8.943
French	-	0.00	0.00	0.00	32.977
Music (Instrumental)	-	0.00	0.00	33.1526	33.1526
Music (Vocal)	-	13.5471	13.5471	13.5471	13.5471
Physical Education	-	18.3304	18.3304	18.3304	18.3304
Remedial Reading	-		3.0327	3.0327	3.0327
Speech	4.0923	4.0923	4.0923	4.0923	4.0923
E. I. P.	4.0550	4.0550	4.0550	4.0550	4.0550
Totals	8.1473	48.9678	52.0005	85.1531	118.1301
School M (554 pupils)					
Art	-	8.9430	8.943	8.943	8.943
French		0.00	0.00	0.00	6.364
Music (Instrumental)	-			16.3726	16.3726
Music (Vocal)	-			15.835	15.835
Physical Education	-	13.048	13.048	13.048	13.048
Remedial Reading	-		3.0327	3.0327	3.0327
Speech	4.0923	4.0923	4.0923	4.0923	4.0923
E. I. P.	4.0550	4.0550	4.0550	4.0550	4.0550
Totals	8.1473	29.6253	32.6580	64.8656	71.2296

be the "best buy" of all. This makes the study of cost-effectiveness more interesting and worthy of more effort.

Correlation of Results and Expectations

It was expected that the results would reinforce "beliefs and intuitions" concerning the inequities of resource allocation for various programs within the district. These were shared by the Board of Education, administration, many teachers, and many citizens. Some were supported and some were not. It was not shop, instrumental music, physical education, laboratory science, or art that proved to be the most expensive programs. The expensive programs were those which combined low pupil-teacher ratios, highly paid teachers, large instructional space and a high demand for supplies and equipment.

The impact of computer scheduling was evident. The high school class enrollments were uniform within subject areas although there was variation among subject areas. The variations had a marked effect on cost patterns. Usually a program which would be expected to be very high in cost was accompanied by large enrollment per class and the net result was a very average per pupil cost. This was especially true in physical education and vocal music.

The large number of calculations and the variety of ways that can be used to implement the system were surprising. Approximately 20,000 calculations were made although some of

them were results of simple errors which forced recalculations. The failure of the per pupil or number served method of prorating costs to discriminate between programs was, at first, disappointing. However, the fact that many costs should be rather uniformly distributed on a per pupil basis makes this method valuable. It is also very easy to implement and can be used both for costing and estimating costs such as required in budget making.

A list of the distribution ratios and total amounts to be distributed for a school or program is as valuable in many respects as the completed cost distribution for the individual subprograms which result from it. It comprises much of the relevant data needed for comparisons and budgeting without demanding the labor, time and expense required to complete the cost center data sheets. The cost center data sheets were excellent forms for summarizing the distribution ratios and other information which was used in the actual distribution.

The last expectation to be noted herein was that the availability of this type of data which was generated in the process of field testing the model would tend to place some of the problems and concerns of the district during the last five years in a different and better perspective. The different perspective was attained in detail. However, as to whether or not the perspective was better a word of caution should be observed. Costs alone are not enough. Objectives alone are not enough nor are evaluations alone sufficient.

It is the combination that represents the strong base for decision-making. The model provides a way to distribute the costs thus providing a missing link in the combination.

All things considered, the model passed the test. A summary of the problem which gave impetus to the study of program accounting and the development of the model, some conclusions, and some recommendations are reviewed in the next and final chapter of the study.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The competition for resources among governmental units within our society is such that it is very unlikely that most public school system will be able to fulfill their objectives without careful attention to planning. Good planning necessitates the availability of relevant data. The breakdown of costs (cost analysis) for each program or subprogram constitutes one important area of relevant data. This data in combination with the objectives and evaluation of each program provides a logical and useful information "package."

The model which was developed and reported herein represents one way of providing one part of such a package--the cost analysis. It also provides a method of reporting the basic characteristics of the program which can be used as dimensions along which the cost centers can be ordered.

The cost analysis can be expressed in three different modes each having its own set of advantages and disadvantages. All three have the same format and use the same form. This form can also be used to summarize several cost centers.

The identification of the cost centers for which costs are accumulated and reported is determined by the authorities of the district. Once identified it is important that those costs which relate to the cost center and the program it represents and no others be charged directly to the cost center or prorated to it in some manner if this is not possible. For cost centers which continue from year to year a "cost history" can be developed in the form of accumulated cost center data sheets for the years involved.

The ultimate aim is to obtain an indication of the cost-effectiveness of each program. The model is an attempt to provide a way to bring together the appropriate cost information which will help to make possible such an evaluation, and to suggest that the districts make a concerted effort to define the objectives and methods of evaluation of their programs so that a meaningful cost-effectiveness evaluation is possible.

The value of the system of cost analysis is increased by sharing the results with other districts. Many school districts in the state do this sort of thing presently on a voluntary basis, and other comparisons are being made possible by the reports of the Michigan Association of School Boards, the Michigan Department of Education, and other agencies. Cost center data sheet summaries would add a new and important dimension to this process of exchange.

Conclusions and Recommendations:

A. The model worked and worked very well. It supplied the cost analysis data required of it for each cost center whether large or small with approximately 35 cost items and has the potential for providing many more

B. The prorata methods of the model can be used individually or in combination providing they are of the same type without difficulty and represent several potentially good ways to distribute costs when it is not possible to assign costs directly. The mileage and quantity-consumed methods were not tested due to the unusual circumstances in which the test was conducted.

C. Most of the information needed to conduct the test was available from regularly prepared reports or other routine printed information such as that contained in class schedules, directories, contracts, insurance policies, or blueprints. This information made it possible to distribute over 95% of the costs related to the cost centers although almost all of the costs had to be prorated.

D. The problem of translating the information noted in (C) into the formulaes of the model was time-consuming and at times confusing. The task was not

especially difficult, however, and most of the difficulties could be easily overcome by the implementation of a program of cost analysis.

E. Due to some of the problems noted in Chapter IV the discriminating power of the test was reduced. In several instances prorating was used as a substitute for the more desirable direct distribution of the costs. Whenever there is high variability in costs for a given appropriation number prorating is not recommended except as a last resort.

F. The original format of the cost center data sheets was not adequate in several respects and needed revisions. The new suggested format appears in Chapter V. The major changes included:

1. Deletion of reference to teacher or social security number. If the teacher's social security is recorded on each cost center data sheet it creates a problem when several sheets are summarized into one. There is reason to doubt the need for listing the identification of the teacher(s) unless the information was to be used in an automated system which would perform the prorating. Seemingly, a more logical method would be to cite the number of complete assignments or fractions thereof which were involved in the program. If one teacher taught

the class two periods out of five the entry 0.40 could be made indicating 2/5 of one teachers total effort. If several teachers were involved the grand total could be listed such as 3.50 or 9.33. The actual identification of the teachers could be obtained from a class schedule if desired. Further, it would not be obvious who taught the course if each teacher were represented by his social security number.

2. The floor area assigned to the program and the number of periods it is occupied are valuable items of information for prorating. The original format called for listing the room number. This not only failed to indicate the desired information, but created problems whenever two or more rooms were involved or whenever several cost center data sheets were summarized. The expression square foot-periods overcomes the objections noted above and provides the required information in capsule form. The following example illustrates the use of the expression. If a given program was assigned 1,000 ft.^{2} for each of three periods the total square foot-periods would be 3,000. This factor multiplied by the amount per square foot per period for a

given appropriation number would produce the cost.[1]

3. The course descriptors did not apply to the elementary programs and there was no way to designate the type of program (graded or ungraded), the grouping, whether it is experimental, or other relevant information. This will require further development of the code.

4. Other changes appeared necessary/desirable in the cost report section of the format. Most of these were minor except for the deletion of the capital outlay section. This was done to encourage the practice of depreciating capital assets to determine costs.

G. The process of analysis of the costs of the programs representing the cost centers would be improved if the breakdown could be expressed in more than one way. Once the cost breakdown is available it is a simple task to convert it to a cost per pupil or percentage representation. This can be done by dividing all of the costs by full-time equivalent enrollment to produce the cost per pupil representation, and by

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[1]The items mentioned in (1) and (2) would require approximately 15 digits. Nine are available from the teacher's social security block, four from the room number block and two more can be taken from the building block reducing the number of digits available in that block to two.

dividing the costs by the grand total cost to produce the percentage of total representation. The three ways of representing the data may be referred to as modes. The cost center data sheet has been redesigned to be used for any one of the three modes, that is, the "cost" mode, the "per pupil cost" mode, and the "percentage of total cost" mode.

H. The use of too many cost centers tends to create more work and generate more reports than necessary or desirable. Too few makes analysis difficult and reduces the usefulness of the data for planning and budgeting. A balance between these two extremes is recommended. One set of cost center data sheets per subject or grade level per building should be a reasonable point of beginning. These may be grouped and summarized into larger centers and reports as required.

I. The completed cost center data sheets should be very useful in program planning and budgeting systems. The accumulation of data sheets over a period of years will provide a cost history which can be extended and modified for budgeting and planning purposes. Experience with the preparation of the data sheets, with their interpretation and distribution along various dimensions should provide valuable background for budgeting. It should also provide

relevant data as to the probable costs of new programs which the district may wish to consider.

J. The completed cost center data sheets with accompanying statements of program objectives and reports of evaluation represent a very compact summary of the class or activity reported.

K. The value of the information represented on the cost center data sheets would be increased if it were shared with other districts especially those offering similar programs. The compactness of the report would make it easy to transmit to other districts and the use of a uniform format and code would make it easy to interpret the information contained in the report.

L. It is recommended that the Michigan Department of Education initiate a pilot program whereby selected districts of the state implement the cost analysis program suggested herein modified as appropriate for data processing purposes and provide an amount per pupil to offset the costs of the program. The amount would not have to be large, perhaps $0.80 per pupil for those submitting the data on the cost analysis sheets and $1.20 per pupil for those districts submitting the data on punched cards. The information could be used by the Department as a base for reports,

summaries, further analyses, research, and understanding the many variations in need among school districts resulting from different curricular and instructional programs, local conditions, and other factors. It could well serve as one important source of data for studies of state support of programs intended to equalize educational opportunity in the state.

M. The model should be easily adaptable to both large and small districts. The basic difference between its implementation in a large versus small district is the volume of the work involved and not its nature. Larger systems will have a greater variety of programs and will have larger cost centers, but the techniques used to determine the costs and translate them to the cost per pupil and percentage modes will be the same.

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