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AN ANALYSIS OF PURCHASING PRACTICES AND COSTS
OF INSTRUCTIONAL SUPPLIES WITHIN SELECTED
MICHIGAN PUBLIC SCHOOLS

By

Wilfred Carl Holbrook

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ABSTRACT

AN ANALYSIS OF PURCHASING PRACTICES AND COSTS OF INSTRUCTIONAL SUPPLIES WITHIN SELECTED MICHIGAN PUBLIC SCHOOLS

By

Wilfred Carl Holbrook

Purpose of the Study

The purpose of this study was to investigate and analyze the relationship between the cost of instructional supplies/materials and the purchasing practices used in selected schools in Michigan. Specifically the study attempted to answer the following questions:

1. Will there be a difference in purchasing practices of the selected schools when classified by school district enrollment?

2. Will there be a difference in purchasing practices of the selected schools when classified by State Equalized Valuation per Pupil?

3. Will there be a difference in purchasing practices of the selected schools when classified by geographic location?

4. Will there be a difference in cost of instructional supplies in the selected schools when classified by school district enrollment?

5. Will there be a difference in cost of instructional supplies in the selected schools when classified by State Equalized Valuation per Pupil?

6. Will there be a difference in cost of instructional supplies in the selected schools when classified by geographic location?

Procedure

In order to determine and measure relationships among the variables of this study, the Cost Analysis Questionnaire was developed by the writer.

Part A, Purchasing Practices Survey, of the instrument was developed to provide a measure of purchasing practices of the selected schools in the sample. Part B, Unit Cost Survey, of the instrument was specifically designed for this study to render the cost of ten instructional supply items by the selected school districts.

The instrument, Cost Analysis Questionnaire, was administered to twenty-eight respondents having the responsibility of instructional supply purchasing within the sample schools. Each respondent was asked to complete the instrument while in the presence of the writer. A personal interview was conducted by the writer with each of the respondents following the completion of the Cost Analysis Questionnaire. The data gathered were analyzed by analysis of significance between means.

Major Findings

1. There is no significant difference in purchasing practices of the selected schools in this study when the school districts are classified by school district enrollment.

2. The data failed to reveal any difference in purchasing practices of the selected schools in this study when the school districts are classified by State Equalized Valuation per Pupil.

3. There is no significant difference in purchasing practices of the selected schools in this study when the school districts are classified by geographic location. Geographic location of the school district does not discriminate between good and poor purchasing practices.

4. When school districts are classified on the basis of school district enrollments there is a difference in the cost of educational supply/material items.

5. There is no significant difference in the cost of instructional supply/material items when school districts are classified by State Equalized Valuation per Pupil.

6. The geographic location of the school district is a significant factor in determining instructional supply/material costs.

7. There is no significant difference between the schools in this study when comparing purchasing practices with the cost of instructional supplies/materials.

Questions for Further Study

1. Would the replication of this study within a larger sample size produce significantly different results?

2. If additional variables--e.g., pupil-teacher ratio, curricula innovations, community expectations, and negotiable master contracts--were included in the study, would their presence significantly change the findings?

3. To what extent would a unifying purchasing theory or model be successful in economizing public school purchases?

4. In what ways can instructional supply/material sales representatives assist school purchasing personnel in economizing purchases of instructional supplies?

5. If the enrollment of a school district has a significant effect upon the cost of instructional supply/material items, at what specific enrollment figure does this become a contributing factor?

6. The participants in this study were selected by random sample. It is suggested that to provide a more descriptive comparison of school purchasing costs the State of Michigan be divided into smaller geographic regions. Would the evidence supplied by this technique significantly show a difference, by region, in the cost of similar items?

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CHAPTER I

THE PROBLEM

Introduction

The effectiveness of any public organization in a democratic society, especially the public school, is dependent upon the degree to which it maintains public confidence and support. This confidence and support can be maintained when people understand and appreciate the purpose of the organization, and also that prudent practices prevail in their operation. Due to the importance and pervasiveness of the school organization in communities, the judicious expenditure of money is essential to promoting this confidence. The purchasing of supplies and equipment for the educational program represents a significant portion of appropriated funds in the total school budget. Whatever can be done to conserve funds and/or to insure sound purchasing practices should be done if public confidence and support is to be maintained and strengthened.

This present study deals with purchasing practices and with the costs of instructional supplies within selected public schools in Michigan. It inquires into the

financial and organizational arrangement of school districts in relation to their purchasing practices within the public schools of Michigan.

This study is undertaken at a time when school districts in Michigan are faced with specific limitations on revenues. As Jordan and Brock have stated:

Increasing pressures on the tax dollar and mounting demands for additional quality features in the educational program coupled with expanding school enrollments emphasize the necessity for public school administrators to take a critical look at their entire operation and to devote their efforts toward raising the level of the educational program with a minimum increase in school revenues. School purchasing practices are among the first of the schools business activities which are questioned when pressures are applied to economize school operations. As the number of items utilized in the schools has increased over the past several years, it has become increasingly necessary for the purchasing function to become more efficient in terms of using funds properly and assuring quality equipment and supplies for the teachers in the classroom.¹

School supplies and instructional equipment are of greater importance in today's educational operation than they had been previously. The success or failure of many of today's educational programs depends largely upon the quantity and quality of school supplies and equipment.

Since the largest portion of revenues received by a school district is expended for wages and salaries, lesser attention has been given by the public to the comparatively smaller percentage of the budget dealing directly with purchases.

¹Forbis K. Jordan and Dale E. Brock, "Principles of Public School Purchasing," The American School Board Journal (August, 1964), p. 13.

With the increased interest of the taxpayer toward total school cost, purchasing practices are certain to be tested by public scrutiny. Ritterskamp and other representatives of the National Association of Educational Buyers stated:

A smoothly functioning purchasing operation handled in a businesslike manner can assist in freeing academic and research personnel from burdensome administrative responsibilities, permitting the devotion of more time to their primary functions. Requirements can be consolidated and needs anticipated--effecting material savings and reduction of clerical work.²

Additionally, Mr. Richard Lowe, Consultant in Finance for the Department of Education, State of Michigan, stated in an interview:

With costs for instructional supplies last year (1968-69) amounting to approximately \$39,000,000, a one-per cent cut-back in these expenses would total nearly \$390,000, a significant savings to the people of Michigan. You can imagine the savings that would result from improved purchasing practices in the schools.³

Purpose of the Study

The primary purpose of this study is to investigate and analyze the relationship between the cost of instructional supplies and the purchasing procedures used in selected schools in Michigan. Additionally, in the process

²James Ritterskamp, Forrest L. Abbott, and Bert C. Ahren, Purchasing for Educational Institutions (New York: Teachers College, Columbia University, 1961), p. 15.

³Michigan, Department of Education, Annual Financial Report (Lansing, Michigan: Department of Education). Reference to Form B-5-69-4000.

of defining and limiting the problem, several questions arise which will be investigated. These questions are as follows:

1. Is there a relationship between cost of educational supplies and purchasing practices?
2. Is there a relationship between the size of the school district and the cost of educational supplies?
3. Is there a relationship between the cost of instructional supplies and the geographic location of the school district?
4. Will there be a difference in purchase practices of selected school districts when districts are classified by school district enrollment?
5. Will there be a difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil?
6. Will there be a difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location?
7. Will there be a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by school district enrollment?
8. Will there be a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil?
9. Will there be a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location?

Need for the Study

There can be no doubt that good education is necessary and desirable. Demands of society indicate that each child has the opportunity to receive a quality education. It is also desirable to offer quality education at a reasonable cost to the benefactor.

Rising educational costs present a challenge to public school officials. They must find better ways of providing quality educational programs while securing maximum returns from tax dollars. In all districts, large and small, purchasing is big business. School officials, therefore, must see that this phase of education is properly conducted.

The present study is concerned with purchasing practices and their relationship to costs of instructional supplies/materials. It will satisfy the need for a comprehensive appraisal of purchasing practices and will generate alternative and optional practices.

Importance of Education

Administration of schools fifty years ago was not necessarily a complex operation. Little mobility of population and thousands of one-room school houses serving few students greatly lessened the problems of the business operation. Today these conditions have altered. Not only has the total operation of public schools expanded but a greater degree of sophistication is necessary to administer

the schools. Consequently, a study of procurement practices and cost comparisons may be of value in improving our purchasing effectiveness and efficiency.

Definition of Terms

Public Schools.--The term public schools refers to Michigan public elementary and secondary districts which maintain grades kindergarten through twelve or one through twelve inclusive. Any school which receives full support of its programs from State or Federal sources is excluded.

Instructional Supplies/Materials.--Any article or material which is consumed in use, loses its original shape or appearance, is expendable and inexpensive, and loses its identity. Those items used directly in classroom instruction. For the purpose of this study instructional supplies/materials are: mimeograph paper, duplicator paper, drawing paper, construction paper, spirit masters, spirit fluid, masking tape, cellophane tape, file folders, and newsprint.

Purchasing Agent.--Any person, whether holding the title of Purchasing Agent or not, who is officially designated by the board of education to contract for necessary supplies, equipment, and services.

State Equalized Valuation per Pupil.--The final appraisal of the Michigan Tax Commission of the worth of

real and personal property in the school district divided by the official membership of the school district.

Limitations of the Study

1. As is true of any study, the validity of this study is affected by the degree of frankness and sincerity of response to the instruments administered.

2. The study uses selected costs of instructional supplies/materials and is not comprehensive of all possible cost analyses.

3. The study was limited to the 1969-70 fiscal year period.

Every effort has been made to minimize the weaknesses and maximize the inherent strengths possessed by the research tools used in this study.

The hypotheses were formulated in this study for the purposes of implementing statistical analysis of the data.

Hypotheses

Hypothesis I: There is a difference in purchase practices of selected public school districts as measured by the Cost Analysis Questionnaire when school districts are classified by school district enrollment.

Hypothesis II: There is a difference in purchase practices of selected public school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil.

Hypothesis III: There is a difference in purchase practices of selected public school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location.

Hypothesis IV: There is a difference in the purchase price of instructional supply items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by school district enrollment.

Hypothesis V: There is a difference in the purchase price of instructional supply items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by the State Equalized Valuation per Pupil.

Hypothesis VI: There is a difference in the purchase price of instructional supply items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location.

Overview

It has been the intent of Chapter I to describe the purpose of the study and to explain why there is a need for a comprehensive appraisal of purchasing practices in selected Michigan schools. Concepts vital to an understanding of and appreciation for the objectives of the study were explained, followed by a statement of six hypotheses to be investigated.

In Chapter II, a review of the research which is related to this study will be given. Specifically, it will deal with the background authority for purchasing and the significance of developing board of education policies. Characteristics, qualifications,

duties, and responsibilities of the public school purchasing agent will be described and discussed.

The significant features of these studies will be summarized in the final section of the chapter.

The design of the study will be described in Chapter III, including a description of the sample used in the study. The chapter will include a description of the instruments used in the study. A discussion of methods of administration of the instruments and their scoring will be followed by a statement of the statistical methodology to be used.

Chapter IV will be devoted to an analysis of the data gathered in this study. Findings will be given in the same order as were the hypotheses presented in Chapter I.

The last chapter will contain a summary of the study and the conclusions reached. Concluding this chapter will be implications and a list of recommendations for further study.

Having presented the purpose of this study, its need, and its hypotheses, it is now essential that a review of the literature be undertaken.

CHAPTER II

REVIEW OF THE LITERATURE

As stated in Chapter I, it would be impossible to undertake an examination of all factors influencing the efficiency and effectiveness of the purchasing function in a single study. However, by reviewing the related literature and previous studies pertinent to school purchasing, it was possible to extend the scope of this study.

This chapter is divided into three sections. The first section is devoted to a review of literature dealing with the background authority for purchasing and the significance of developing board of education policies. The second section is devoted to a review of literature related to the purchasing agent, his qualifications, duties and responsibilities. The third section consists of a summary of the findings from the related literature and research.

A review of the literature in this manner will provide an informational background against which the subsequent analysis of data pertaining to the relationship between purchasing practices and cost of instructional supplies can be viewed with greater clarity.

Background/Authority to Purchase

According to Rhodes¹ one of the most important aspects of public school purchasing concerns the legal authority that a board of education must have if it is to make purchases legally. It has been well established that boards of education do not have inherent power or authority to purchase. This not only is true of purchasing, but also in other aspects of educational administration. For every purchase a board of education makes, it must look either to statutes or the State Constitution for authority.

This requirement makes a knowledge of the laws imperative if one is to purchase legally. Boards of education and their employees should not attempt any purchase without firsthand knowledge of existing laws and their bearing on the purchasing process. It is not only imperative to have a knowledge of the existing laws, but it is also necessary to understand the meaning or intent of the law if purchases are to be made legally. The power and authority to contract is the responsibility of the governing board and may not be delegated. The mechanics of the purchasing function are usually delegated by the governing board, with the governing board having the sole authority to contract or to expend funds.

¹Charles William Rhodes, "Practices and Trends in Purchasing Instructional Supplies in Michigan Public School Districts" (unpublished Ph.D. dissertation, Michigan State University, 1964).

Purchasing the many items necessary for the total operation of a school district is a demanding and time-consuming task. Historically this function was carried out by the school board members themselves. Minutes of past board of education meetings are sufficient evidence of this fact. Because of the part-time services of school board members, because of the influences of business and industry, and in the interest of efficiency, boards of education have frequently delegated the purchasing function to a board agent such as the superintendent, business manager, or in some cases, the secretary of the board of education.

Authorities are in general agreement that a board may delegate responsibilities which are purely administrative in nature.² However, boards cannot by law delegate discretionary power. If purchasing requires the exercise of judgment and discretion, it must therefore be recognized as a discretionary power not subject to delegation.³ Many courts have emphasized the principle that school boards may delegate their discretionary powers including purchasing by statute.⁴ Such is the case in Michigan.

² Revised General School Laws of Michigan, 1966, Section: 340.574.

³ H. Halleck Singer, "Authority of Boards of Education to Delegate their Discretion in Matters of Purchasing," 1963 Yearbook of School Law, edited by Lee Garber (Dansville, Illinois: Interstate Printers and Publishers, Inc., 1963), p. 15.

⁴ School Laws of Michigan, op. cit., Sections: 340.66, 340.119.

Michigan school law specifically defines that certain discretionary power, including purchasing, may be delegated by the board of education to an agent.⁵

Summarily, the board of education purchases by implied power with the purchasing responsibility delegated to the board's agent by statute.

Development of Board of Education Policies

It is clear that a board of education may establish policies and procedures appropriate for accomplishing objectives set forth in the Michigan Constitution of 1964, without conflict with provisions in existing statutes.

Under law the board of education has sole responsibility for purchasing. Since one of the board's major business responsibilities is purchasing products and services, defined policies are absolute and necessary. Legislation which carries with it implied power to purchase also provides considerable latitude within the law for boards to function. In developing board policy Roe⁶ suggests that boards adopt policies that provide for the most intelligent application of the laws to local school district circumstances.

Richards has given the following reasons for written board of education policies:

⁵Ibid., Sections: 340.161, 340.201.

⁶William H. Roe, School Business Management (New York: McGraw-Hill Book Company, Inc., 1961), p. 130.

1. Policies are the best means of eliminating such common practices as board member interference in actual school management.
2. Policies communicate to the public how their schools are being administered.
3. Policies focus the administration's attention upon educational objectives and upon sound principles of administration.
4. Policies provide a system of continuity, uniformity of procedure, and consistency.
5. Policies will facilitate the orderly review of board practices.⁷

It is the function of the board of education to indicate clearly a policy which should be followed in purchasing procedure. The guiding policy should be one that all buying will be done through the executive branch of the school district and not by individual board members.

Raub,⁸ in his findings in New York State, found that none of the schools he sampled had developed and adopted written purchasing policies.

A study completed in 1969 by the National School Boards Association⁹ presented data that indicates board members have a greater degree of involvement in purchasing decisions than had been anticipated. In interviewing 1,999 board members from across the United States, 91 per cent of those interviewed said they had been

⁷George H. Richards, "Written Policies for Boards of Education," Michigan School Board Journal (June, 1970), pp. 20-22.

⁸Stanley L. Raub, "Reasons for Purchasing Policy and Procedures," American School Board Journal (March, 1966), p. 19.

⁹"Who Makes the Buying Decisions for Schools? Boardmen, That's Who," American School Board Journal (October, 1969), p. 19.

instrumental in the final decision for all purchasing. One may assume from these data that the board members interviewed were representing schools that lacked defined purchasing policies or violated purchasing policies of their respective school districts.

Written school board policies provide the school board member with a point of reference concerning his role, and the policy assists the staff member in determining his role and the role of other staff members in the schools. Written board policies will give direction by providing rules for present action and a basis for future planning. Written board policies facilitate control by establishing guidelines and by fixing responsibility.

Jordan and Brock¹⁰ state that the context of any purchasing policy should provide for the centralization of the purchasing function under the superintendent or his designated representative. This keeps the business management aspect of the school operation subordinate to instruction. They continue by stating board policies should reflect the structure of the purchasing department.

Linn¹¹ recommends that a clearly defined policy establishes the purchasing officials responsibility and outlines the extent to which he makes decisions and

¹⁰Jordan and Brock, op. cit., p. 14.

¹¹Henry H. Linn, School Business Administration (New York: Ronald Press Co., 1956), pp. 251-252.

delegates authority along with his status as a member of the educational team.

To supplement board of education policies the superintendent of schools should establish rules and regulations which are to serve as purchasing guidelines. To further extend the policies adopted by the board of education, the purchasing department should establish procedures of operation. As Ritterskamp stated:

If the purchasing policies are to bring the desired results of purchasing efficiency they must be flexible to permit economy of operation and full use of the purchasing personnel.¹²

The purchasing function is affected by the size of the school district, type and geographic location of the school district, scope of the curriculum and state and local statutes. Numerous studies have shown how inherent are the foregoing factors. A state-wide study of Michigan schools by Rhodes¹³ found that over half of all responding school districts had no written purchasing policies and of those having written policies the greater number provide only guidelines.

In a study of 138 school districts in Washington, Leaden¹⁴ found failure by school boards to develop and

¹²Ritterskamp, Abbott and Ahrens, op. cit., pp. 256-257.

¹³Rhodes, op. cit.

¹⁴John Warren Leaden, "A Study of School District Purchasing Practices in the State of Washington with Special Reference to Cooperative Purchasing Through the King County School Directors Association" (unpublished Ph. D. dissertation, University of Washington, 1952).

adopt written statements of purchasing policy and inadequate use of specifications and competitive bidding among most small school districts.

Bluhm¹⁵ recommends that both the administrator and teachers be involved in policy formulation. His study of 22 school districts in Pennsylvania recognized the need for training teachers in the ordering and use of supplies, instruction of administrators in proper business practices, and greater utilization of staff members.

Melton¹⁶ points out that those especially trained for and experienced in teaching are best qualified to select instructional supplies or what to buy, while those qualified in purchasing should decide how to buy. Buying decisions, he adds, and authority to implement them, must be centralized in the purchasing department.

Greater participation by the State Department of Education is a frequent suggestion but whether this aid be advisory or regulatory is not clearly stated. There is concern regarding the inability of school districts, especially smaller ones, to purchase effectively. Fullmer recommends that the State Departments of Education should:

¹⁵Bluhm, "Suggestions for Improvement of Practices of Purchasing, Storing, and Distribution of Teaching Supplies Based on a Study of Some Small and Medium Sized Schools in Pennsylvania" (unpublished Ph.D. dissertation, Pennsylvania State University, 1954).

¹⁶Monroe Melton, "Practices in Awarding Tie Bids on Supplies and Equipment," School Business Affairs (June, 1963), p. 16.

1. Designate the types of material and equipment items which might be purchased with the aid of the state purchasing office.
2. Supply school districts with standardized bid invitation forms.
3. Evaluate each school as to the adequacy of supplies and equipment and the efficiency with which these supplies and equipment are procured and maintained.
4. Make information available concerning unit costs in local school districts for various items of supply and equipment.¹⁷

Rhodes¹⁸ has noted that larger school districts follow desirable purchasing practices more than do the smaller school districts. Bunten¹⁹ also observed this in his study of purchasing industrial arts supplies in Missouri, although there was common agreement by both large and small districts in the procedures followed in purchasing. Donovan²⁰ endorses the larger school system for economy of operation. His research indicates a range of enrollment from 10,000 to 50,000 for best economy. Below this point and above this point economy starts to diminish.

¹⁷Ethan Yale Fullmer, "An Evaluation of Procedures for Purchasing School Supplies and Equipment in Oregon Public Schools, Including a Survey of Cooperative Purchasing in the United States" (unpublished Ph.D. dissertation, University of Oregon, 1960).

¹⁸Rhodes, op. cit.

¹⁹Charles A. Bunten, "Selective Purchasing, Issuing, Financing, and Accounting for Industrial Arts Supplies in the Secondary Schools of Missouri" (unpublished Ph.D. dissertation, University of Missouri, 1955).

²⁰David Donovan, "Why School District Reorganization? Research Provides the Reasons," Michigan Association of School Boards (November, 1969).

The literature reveals that larger district size offers inherent advantages in the purchasing function. There is greater purchasing power which in turn promotes more competition. There is a greater source of supply in the number of vendors. Specialized purchasing personnel who devote their talents and time to promoting efficient buying are employed in the larger districts.

Shinneman recommends that much board of education purchasing policy is restrictive and time consuming to the administration. He suggests that boards of education make purchasing policy less restrictive by assigning more authority to administrators as shown by the following:

<u>Method or Procedure</u>	<u>Old Policy</u>	<u>New Policy</u>
Restriction on purchases	Up to \$50	No comparative limit
Administrative judgment as to procedure used	None recognized	Up to \$500
Telephone quotations	Range \$50 to \$1000	More than \$2000
Board Approval	More than \$1000	More than \$2000
Bid Rejection	Only by board	By the administration ²¹

The Purchasing Agent

The problem of how to develop a quality purchasing program may be approached in several ways. One approach is to start with the person who is in the best position to

²¹Dean Shinneman, "How to Streamline Purchasing," The Nation's Schools (July, 1961), pp. 7-58.

positively influence the program--the person charged with the responsibility of operating or directing the purchasing program.

The role of the purchasing agent and the expectations of his functions are often a function of the conception of the individual superintendents. The National Association of School Business Officials is attempting to promote a program of training school business officials, but generally superintendents and principals have developed a fixed concept of the role of business administrators which is opposite to that proposed by the NASB.

The success or failure of the purchasing office will depend in large measure on the ability and qualifications of the personnel selected to administer the program. The Department of Education and the Association of School Business Officials of Ohio have described the qualifications for the purchasing agent in this manner:

1. Educational qualifications--The most successful and efficient purchasing agent should be a college or university graduate who ideally has both educational and purchasing or business management training.
2. He should have thorough knowledge of purchasing, warehousing, distributing, and accounting for materials and supplies.
3. He should have knowledge of market conditions, current prices, quality of materials, business and school law.
4. The ability to maintain a cooperative relationship with people.
5. The ability to handle complaints tactfully.

6. The ability to lay out work for others and to get them to work together effectively.²²

Burns suggests the following qualifications for the purchasing agent:

1. Understanding of purposes and goals of the educational enterprise.
2. Knowledge of educational methods and procedures.
3. Acquaintance with the materials and products involved in the school program.
4. Technical knowledge of materials and experience in their use.
5. Knowledge of: sources of supply and their reliability; commercial standards and marketing practices; production processes; economical manufacturing quantities.
6. Understanding of: accounting procedures; costs; economics; effective management; fair trade and labor standards; business law.
7. Ability as effective personnel administrator.
8. Command of tact, diplomacy and fairness in dealing with vendors.²³

Schools have traditionally used on-the-job training for purchasing officials. There has been a slight trend toward specific training programs to acquaint purchasing personnel with the function of the purchasing department. Burns suggests work experience in business and industry would be valuable training for all business officials including purchasing personnel. Schools involved with on-the-job training should initiate in-service training programs with emphasis on (1) Procedures and methods of

²²Ohio, Department of Education and Ohio Association of School Business Offices, The Administration of School Purchasing in Ohio (Ohio: Department of Education and Ohio Association of School Business Offices, 1969).

²³Spilman H. Burns, Chairman, Association of School Business Officials, Purchasing and Supply Management, Manual for School Business Officials (Association of School Business Officials, 1961), p. 132.

purchasing, (2) Purposes and policies of educational enterprise, (3) Need, use and range of materials and equipment, (4) Relationship of purchasing to other departments, and (5) Purposes and policies of the purchasing department.

A study by Sharp in Indiana investigated the preparation of school business officials. Sixty Indiana school business officials were represented in the study to ascertain what areas of formal training were needed to improve or strengthen competency in the business management departments of public schools. Of 27 courses in business management, three dealing directly with the purchasing function ranked the highest in demand. Product evaluation and warehouse administration were requested by approximately one-fourth of the respondents. In reply to a question asking if the business official should have experience in education before assuming his role in school business management, 52 out of 55 respondents answered "yes."²⁴

In Wisconsin, school business official certification was passed in 1964. Basically the requirements for this certification are: (1) B.A. degree and (2) 18 semester hours of business subjects. Of the 18 semester hours in business subjects necessary for certification,

²⁴Ross Sharp, "A Proposed Program for the Preparation of School Business Managers in the State of Indiana" (unpublished Ph.D. dissertation, Ball State University, 1968).

courses in School Business Management, Legal Aspects of Education, School Fund Accounting and School Business Seminar are required. Teaching experience was considered the first requisite for successful school business management.²⁵

In describing what they consider necessary qualifications of the purchasing agent, Ritterskamp, Abbott and Ahrens state:

The most successful and efficient purchasing agent will probably be a college or university graduate who has had both educational and purchasing or business management training and experience. He should have a thorough knowledge of the basic principles and techniques of purchasing; of the methods and procedures of purchasing, storing, distributing and accounting for the materials and supplies ordinarily required within an institution. He should have knowledge of market conditions, current prices, quality of materials, traffic procedures, business law, sources of specification and supply, or must at least know how to locate these sources. He should learn the reputation of the suppliers and their ability to serve the needs of the institution, and be aware of the sharp practices sometimes used by vendors. He should have the ability to maintain a cooperative relationship with vendors and to deal with the public in a courteous and pleasing manner. He should be able to handle complaints tactfully and without causing unnecessary criticism; to keep records, make investigations, and prepare reports, and assist in the preparation of specifications. He must be honest, resourceful, of good intelligence and possess a keen purchasing and business judgment, skill, and discrimination. Expertness in these and other duties will come only through training and experience.²⁶

²⁵Wisconsin State University, Department of Business Education, Business Official Requirements (Wisconsin State University, Whitewater; Department of Business Education).

²⁶Ritterskamp, Abbott and Ahrens, op. cit., pp. 36-37.

Some contradiction has been made regarding the necessity of having educational experience before assuming the role as a school business official. Dr. Robert Lamp made reference to a study he conducted in California in 1964 that shows superintendents of California did not believe it makes any significant difference if school business officials hold educational certification.²⁷

In a research study conducted by Rhodes of public school districts in Michigan the author summarized that:

Personnel charged with purchasing responsibility need more background and guidance. This can be provided by the use of regular meetings with others in like capacity to exchange ideas and information; communication with the intermediate and state levels; professional courses toward certification; and pre-service and in-service education.²⁸

Rhodes quotes one of the respondents in his study as saying: "I think that too little training is obtained by the average superintendent for buying critically."²⁹

In the summary of a speech given by Zastrow to the Association of School Business Officials of the United States and Canada, he said:

²⁷Robert Lamp, "An Emerging Program for Training School Business Officials: A Summary Statement," Proceedings of the Fiftieth Convention, The Association of School Business Officials of the United States and Canada (Evanston, Illinois: The Association, 1964), pp. 130-132.

²⁸Rhodes, op. cit., p. 114.

²⁹Ibid., p. 108.

It goes without question that a School Business Manager has to have some orientation to the business of running and operating schools and the understanding of the problems of the teacher. My observation indicates a sharp lacking of this orientation to the candidate that comes strictly through the Business Administration program. This man generally has little appreciation of the problems of the teacher in coping with teaching as a profession and too frequently he cares less. He is perhaps too conscious of the dollar and cent expenditure as the sole purpose of his position. The educator on the other hand may understand the problems of the teacher but he definitely needs training in purchasing, the handling of funds, accounting, research procedures, and a variety of other business functions that a School Business Manager needs in order to operate.³⁰

Review of Cost Analysis Literature

Purchasing agents are concerned primarily with obtaining the most acceptable quantity product at the lowest cost to the school district. Since the cost of supplies and materials for public schools constitutes 15 to 25 percent of the public school budget, it is imperative to find ways or solutions to economize purchases. Burns³¹ has indicated a consolidation of orders permits more competitive bids thus affording a savings of up to 25 per cent to the school district. He further states that it is more economical to have general supply items in volume lots delivered to a central location and then distributed to the ultimate consumer. His research has also found that most school systems find it more economical to operate a central warehouse.

³¹H. Spilman Burns, "How to Buy with Both Economy and Quality in Mind," Nations Schools (October, 1961), p. 68.

A group of school purchasing agents³² disclosed that well-organized procedures in the preparation of bid lists resulted in lower purchasing costs. Further, by putting all supplies and materials out for bids, 20 to 25 per cent savings in purchasing costs was netted.

While many school purchasing personnel have developed ways of cutting costs of school supplies, industrial purchasing agents have put into operation specific methods of economizing the costs of supplies and materials. Mills Products³³ of Farmington, Michigan instituted a technique of stockless purchasing. Under this plan the purchasing agent established long-term vendor-stocking agreements for nearly every product the company needs. The vendor-stocking program provides for lower prices through quantity discounts, assures availability of purchased items, and simplifies ordering procedures. In conjunction with the idea expressed by Mills Products, Addressograph Multi-graph³⁴ has innovated a vendor cost-cutting idea program. Under this plan each vendor is responsible to submit cost-cutting ideas to the buyer. These ideas are evaluated and analyzed for possible action. Those that are accepted

³²"Round Table Tells How to Buy Wisely, Economically," Nations Schools (February, 1962), p. 95.

³³Somerby Dowst, "Stockless Purchasing Saves Space and Money," Purchasing, March 6, 1969, pp. 58-60.

³⁴Haney J. Berman, "Get Your Suppliers to Cut Your Costs," Purchasing, April 3, 1969, pp. 56-58.

by the buyer are put into action while those that are rejected are returned to the vendor with the reasons for rejection.

A concept that should be of interest to most school purchasing personnel is contract purchasing.³⁵ Under the terms of contract purchasing the buyer eliminates repetitive preparation of requisitions, quote requests, and purchase orders, thus reducing small order paperwork and cutting purchasing costs.

By using fewer suppliers and giving them larger orders the buyer saves through volume discounts. The primary advantage of this program is that it places the purchasing agent in a better position to negotiate for price reductions. The vendor will be faced with either a large order or no order at all.

While industrial purchasing agents are involved in the manufacture of commercial products and not education, they recognize that effective purchasing procedures have a positive effect upon purchase costs. Evidence has clearly shown industrial purchasing agents that costs of supplies and materials can be lessened by constant improvement and evaluation of purchasing practices.

³⁵Don Laughlin, "Small Order Problems--Goodbye!" Purchasing, April 17, 1969, pp. 51, 52.

Summary

Two generalizations emerged during the review of research, namely: (1) there has been a noticeable amount of research and published reports dealing with the aspects of school purchasing, but (2) there has been little written about the practical application of school purchasing. It is quite apparent that most research available in the area of school purchasing is philosophical generalization and not specific research data on "What to do" to cut purchasing costs, or to purchase efficiently. The research indicates there is evolving a broad philosophy relating to purchasing rather than blanket rules and regulations conforming to all school districts.

The research implies that a democratic approach must be taken to school purchasing. Ultimate users must be considered in the purchasing function which at one time was strictly controlled and managed by administrative personnel.

Some writers are concerned with the qualitative aspects of purchasing, those involving different administrative techniques and standards of operation; others contribute to knowledge of the quantitative aspects, for example, the differences due to district size, and what can be done about them.

CHAPTER III

DESIGN OF THE STUDY

In order to investigate the relationship between the cost of instructional supplies and purchasing practices used in selected school districts it was determined that measurements of these two variables would be made.

To measure and assess costs of instructional supplies and the purchasing practices of selected school districts, an instrument specifically for these purposes was developed, the Cost Analysis Questionnaire. This instrument is described in greater detail later in this chapter.

An analysis of the data obtained from the administration of the instrument used in this study was expected to provide information needed to test the proposed hypotheses.

The Sample and Its Selection

The sample used in this study consisted of 28 public school districts in the State of Michigan. These school districts ranged in pupil population from a low of 639 to a high of 9,355 for the 1969-70 school year.

The State Equalized Valuation per Pupil ranged from a low of \$7,155 to a high of \$24,724. All the school districts in the sample operated a kindergarten through grade twelve organizational program.

Appendix D contains the summarized data pertaining to the selected school districts. The school districts which participated in this study were selected randomly. They were selected from the public school districts listed in the State of Michigan Printout, Ranking of Michigan High School Districts by Selected Financial Data 1969-70, published by the Department of Education. The State of Michigan code numbers for each public school district were individually placed in a container. Code numbers of the prospective participants were drawn. Each code number was then translated into the name of the school district and the superintendent of the district was contacted by the writer via telephone to determine his willingness to participate in the study. Twenty-nine contacts were made before the desired sample number of 28 was reached.

The Cost Analysis Questionnaire

Based on interviews with three consultants on school purchasing the following statements illustrate the criteria which were developed for the Cost Analysis Questionnaire:

1. Maintaining an up-to-date library of brochures and catalogs provides a basis for cost and quality comparisons.
2. It is imperative that the delegation of purchasing authority be delegated to one person.
3. Quantity discounts usually are the result of cooperative purchasing.
4. Purchasing by bulk normally provides for the best price.
5. Competition is considered to be imperative to provide economy of purchase and quality control.
6. The school district must have adequate storage areas if large quantity purchases can be made.
7. An informed staff lessens the potential conflict resulting from final product selection.
8. Bidding necessitates development of specifications or standardization of products. Bids will encourage competitive prices.
9. Purchasing is facilitated when the supply appropriation balance is known at all times.
10. Planning on a long-range basis provides control over less discriminatory purchasing.
11. Purchasing department should have control over the material delivery and distribution to complete and finalize the business transaction.
12. Standardization of supplies permits greater purchasing economy.
13. It is important that there be sufficient vendor sources to promote competition.
14. It is important to purchasing economy that a school purchase instructional supplies when seasonal discounts are available.
15. Item selection can be best made when it is a cooperative affair, one which includes users.
16. Samples clarify items quoted and prevent problems that might develop later.

17. It is important to the purchasing department that an evaluation be made periodically of all items purchased.

Having developed the criteria for the construction of the instrumentation used in the study, a detailed description of the Cost Analysis Questionnaire is in order.

Part A--Purchasing Practices Survey

In order to determine present purchasing practices, a 17-item questionnaire was prepared and presented to all respondents of the 28 participating school districts (see Appendix A). Three purchasing manuals were selected as the field authorities for developing standards or criteria, namely, Purchasing and Stores,¹ Purchasing Manual,² and Purchasing and Supply Management.³ In addition, three knowledgeable consultants on school purchasing were selected by the author to further validate the criteria. These consultants were: Mr. Robert McKerr, Chief, Administrative Service, Department of Education, State of Michigan; Mr. Robert Lathrop, Director of Purchasing, Lansing Public Schools; and Mr. Alexander Kloster, past Deputy Superintendent of Education, State of Michigan. Mr. Kloster is

¹New York, State Education Department, Purchases and Stores, School Business Management Handbook #5 (The University of the State of New York and New York State Education Department, 1964.)

²Kentucky, Department of Education, Purchasing Manual (January, 1968).

³Burns, op. cit.

presently a specialist for Management and Policy Development, Institute for Community Development, Michigan State University.

Upon completion of the criteria, a pretest of the instruments was made by submitting them to six school districts in Eaton, Ingham, Ionia and Clinton Counties. Using the three purchasing manuals and the consultants as the source of authority, the criteria for evaluating current purchasing practices of the selected school districts was developed. Part A of the Questionnaire covered aspects of the purchasing function that would provide a clear profile of the school's purchasing procedures. It was designed to measure the current purchasing practices of the selected schools using those criteria developed in related literature and by the consultants on school purchasing. Each respondent was asked to estimate the degree to which his school district followed the prescribed content of the question. To measure the responses on Part A of the Questionnaire numerically the purchasing consultants assigned a numerical value from one to three (see Appendix A). Each question having a numerical value of one was considered a desirable purchasing practice. Each question having a numerical value of two was considered a necessary purchasing practice and those having a numerical value of three were considered of the greatest importance.

Each respondent was provided three alternative choices to indicate the degree to which his school practices the content of the question: "Yes," "No," and "Partially/Somewhat." The desirable answer to all questions was "Yes." Those respondents answering "Yes" received the full value of the question. Those respondents answering "Partially/Somewhat" received one-half the value assigned to the question. Those respondents answering "No" to a question received no value. To eliminate fractions raw scores of the responding schools were multiplied by two. The highest possible score is 72.

Part B--Unit Cost Survey

This section of the instrument listed ten specific instructional supply items universally purchased by school districts in the State of Michigan. Each instructional supply item was listed in the most commonly packaged unit. The respondent was asked to quote the most recent price paid for the item during the fiscal year 1969-70.

The purpose of Part B was to obtain the cost to the school district of those instructional supply items in order to provide a basis for cost comparison and analysis between the selected schools.

It should be noted that the Office of Research Consultation, Michigan State University, provided assistance in developing and evaluating the instrumentation used in this study.

Mechanics of Survey
Administration

A personal telephone call was placed to each prospective participant explaining the proposed project and assuring that his identity and that of his school district would not be divulged. Each prospective participant was given the opportunity to indicate his willingness to participate in the project. Upon indicating his willingness to participate in the study an appointment was made with the respondent. Normally, one hour was the length established for the completion time. The instrument was explained in detail and several minutes were spent instructing the participants in the proper methods to be used in completing the Questionnaire.

A follow-up conversation was held to ascertain and solve any difficulties experienced by each respondent. The basic technique used in obtaining the data for this study was the Questionnaire.

Certain factors were considered in generating the hypotheses in this study. State Equalized Valuation (SEV) per Pupil is defined for this study as the total assessed valuation as equalized of the school district divided by the official enrollment, kindergarten through twelfth grade. The size of the school district is the total membership, grades kindergarten through twelfth,

as determined by the fourth Friday count. Consultancy with three sales representatives of school supplies/materials indicated that Highway M46 constituted the boundary line of their sales territory. Since geographic location is being related to purchasing practices in this study, it was essential to identify school districts geographically. Those school districts lying north of Highway M46 were identified as being code one. Those districts lying on the line or south of Highway 46 were assigned code two. The sample in this study achieves a balance of districts representing both locations.

Treatment of Data

The independent variables in this study will be classification by State Equalized Valuation (SEV), size of the school district and geographic location of the school district. The dependent variables in this study will be a measure of the purchasing practices of the randomly sampled schools

A description of the independent variables follows.

State Equalized Valuation per Pupil

The school districts included in this study were categorized into 14 separate divisions based upon their State Equalized Valuation per Pupil. Division 01 included

those districts having a SEV per pupil of \$7,000 to \$7,999. Each succeeding division, 02 through 13, was increased one thousand dollars, i.e., code 02 SEV per pupil \$8,000 to \$8,999. Division 14 included those school districts having a SEV per pupil of \$20,000 or more.

Table 3.1 illustrates the frequency of each SEV classification as used in this study.

TABLE 3.1--SEV Classification Frequency*

Range	Code	Frequency
\$ 7,000- 7,999	01	2
\$ 8,000- 8,999	02	1
\$ 9,000- 9,999	03	2
\$10,000-10,999	04	1
\$11,000-11,999	05	2
\$12,000-12,999	06	4
\$13,000-13,999	07	1
\$14,000-14,999	08	4
\$15,000-15,999	09	2
\$16,000-16,999	10	2
\$17,000-17,999	11	2
\$18,000-18,999	12	1
\$19,000-19,999	13	0
\$20,000-	14	4

*Ranking of Michigan Public High School Districts by Selected Financial Data, 1969-70, Bulletin 1012, Michigan Department of Education, December, 1970.

Size--Enrollment

The school districts in this study were assigned a code number based on total enrollments. Those school districts having an enrollment up to 999 were assigned code

number one. Those districts having an enrollment from 1,000 to 1,999 were assigned code number two. Districts having 2,000 to 2,999 pupils were assigned code number three. Those districts having 3,000 to 3,999 were assigned code number four, and those exceeding 4,000 pupils were assigned code number five. Table 3.2 illustrates the frequency of each size classification as used in this study.

TABLE 3.2--Size Classification Frequency*

Range	Code	Frequency
0-999	1	6
1,000-1,999	2	9
2,000-2,999	3	4
3,000-3,999	4	3
4,000-	5	6

*Ranking of Michigan Public High School Districts by Selected Financial Data, 1969-70, Bulletin 1012, Michigan Department of Education, December, 1970.

Geographic Location

For the purpose of this study school districts were assigned one of two geographic code numbers. Those districts geographically located above Michigan Highway 46 were assigned code number one. The districts lying on the line or south of Highway M46 were assigned geographic code number two. Table 3.3 illustrates the frequency of each geographic location classification as used in this study.

The dependent variables in this study are measured by Parts A and B of the Cost Analysis Questionnaire.

TABLE 3.3--Geographic Location Classification Frequency*

Range	Code	Frequency
Above Highway M46	1	13
On or below Highway M46	2	15

*Michigan Highway Map, Standard Oil Division, American Oil Company, April, 1970.

Since both of these measures essentially define segments of the same dimension, namely purchase practices of the school district, the initial question that has to be answered for data analysis is whether these two scores are significantly correlated. The resolution of this question will determine which of the two data analysis techniques will be used: Two univariate analyses of variance on the groups as separated by the independent variables will be performed if the correlation is low, or one multivariate analysis of variance on the groups as previously categorized will be performed if the correlation is high. The implications are as follows: If the scores are significantly correlated, then to make separate statements about each score would tend to mislead the reader for it would be unknown as to what percentage of the overall purchase behavior is reflected in Part A of the Questionnaire and which is reflected in Part B. If it were found that the correlation between the scores is low, based on the sample size of 28, then this problem would be eliminated. That is to say,

these can be discussed as separate measures--as separate segments--of purchasing behavior. If the correlation were high, i.e., significantly different from zero, then a combination of these scores into one analysis is necessary.

Summary

The purpose of this chapter has been to explain the procedures and instrumentation used to fulfill the objectives of this study.

A detailed description of the Cost Analysis Questionnaire, which was used to measure purchasing practices and costs of selected instructional supply/material items, was given, as was information concerning the instrument's validity and reliability. The manner in which it was developed and pre-tested was explained.

The twenty-eight public school districts which constituted the sample used in this study were described. Unique characteristics of the school districts which make up the sample were listed and discussed.

An explanation of the mechanics of survey administration used in this study was given, stressing the need to maintain anonymity among the school districts in order to attain the highest possible level of honest expressions from the respondents. An explanation of how the data would be treated was also given.

The following chapter will be devoted to the analysis of the data gathered in this study.

CHAPTER IV

PRESENTATION OF DATA

It has been the purpose of this study to analyze the relationship between the cost of instructional supplies and materials and the purchasing procedures used in selected Michigan schools. The data presented in this chapter were compiled from the responses to the Cost Analysis Questionnaire by the twenty-eight respondents who participated in this study.

The statistical analyses of all data for this study was done at the Computer Center at Michigan State University. The data were processed through the use of Control Data Corporation (CDC) 3600 Computer. The program for the analysis of variance was prepared by the Office of Research Consultation, College of Education, Michigan State University.

Based on a sample size of twenty-eight the correlation between Part A--Purchasing Practices Survey and Part B--Unit Cost Survey of the Cost Analysis Questionnaire is $-.252$, which is not significantly¹ different from 0.0 at the $.05$ alpha level. As was mentioned in Chapter

¹Helen M. Walker and Joseph Lev, Elementary Statistical Methods (New York: Holt, Rinehart and Winston, 1943), p. 272.

III, if this were the case two univariate analyses would be performed to test the hypotheses. The correlations between the variables are shown in Table 4.1.

TABLE 4.1--Simple Correlation

	Part A	Part B
Part A	1.000	
Part B	- .252	1.000

However, one should note that this statistic implies that there is a tendency to have the measures indirectly related. That is to say, as the score on Part A of the Cost Analysis Questionnaire increases the score on Part B of the Cost Analysis Questionnaire decreases.

The statistics related to each hypothesis in this study and the subsequent analysis will be presented in this section. The research hypotheses stated in Chapter I will now be rephrased in statistical form and in the null sense.

Null Hypothesis I

I. H_0 : There will be no difference in purchase practices of selected school districts as measured by the Cost Analysis Questionnaire when districts are classified by school district enrollment.

Or

$$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$$

TABLE 4.2--Analysis of Variance Table: Dependent Variable is Part A of Cost Analysis Questionnaire; Independent Variable is School District Enrollment

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Statistic	Significant Level	Significant
Between Categories	538.909	4	134.727	2.337	0.086	N.S.
Within Categories	1325.806	23	57.644			
Total	1864.715	27				

Table 4.2 indicates that the groups do not differ significantly from each other since the computed F statistic is equal to 2.337 which is not significant at the .05 level, established by the writer as his criteria for significance. Null Hypothesis I could not, therefore, be rejected.

Null Hypothesis II

II. H_0 : There will be no difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil.

Or

$$H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_{14}^*$$

*Category 13 is eliminated since the frequency was 0 as indicated in Chapter III, Table 3.1.

TABLE 4.3--Analysis of Variance Table: Dependent Variable is Part A of Cost Analysis Questionnaire; Independent Variable is State Equalized Valuation per Pupil

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Statistic	Significant Level	Significant
Between Categories	613.714	12	51.143	0.613	0.801	N.S.
Within Categories	1251.000	15	83.400			
Total	1864.714	27				

Table 4.3 indicates that the groups do not differ significantly from each other since the computed F statistic is equal to 0.801 which is not significant at the .05 level. Null Hypothesis II could not, therefore, be rejected.

Null Hypothesis III

III. H_0 : There will be no difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location.

Or

$$H_0: \mu_1 = \mu_2$$

TABLE 4.4--Analysis of Variance Table: Dependent Variable is Part A of Cost Analysis Questionnaire; Independent Variable is Geographic Location of School District

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Statistic	Significant Level	Significant
Between Categories	37.750	1	37.750	0.537	0.470	N.S.
Within Categories	1826.964	26	70.268			
Total	1864.714	27				

Table 4.4 indicates that the groups do not differ significantly from each other since the computed F statistic is equal to 0.537 which is not significant at the .05 level. Null Hypothesis III could not, therefore, be rejected.

Null Hypothesis IV

IV. H_0 : There will be no difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by school district enrollment.

Or

$$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$$

TABLE 4.5--Analysis of Variance Table: Dependent Variable is Part B of Cost Analysis Questionnaire; Independent Variable is School District Enrollment

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Statistic	Significant Level	Significant
Between Categories	37.342	4	9.336	2.849	0.047	N.S.
Within Categories	75.355	23	3.276			
Total	112.697	27				

The results of this analysis (Table 4.5) show that one can reject the statistical hypothesis since the computed F statistic is significant at the .05 level. One therefore can accept the logical alternative to this hypothesis:

There is a difference in the purchase price of instructional supply items in selected school districts as measured by the Cost Analysis Questionnaire when districts are classified by school district enrollments.

Since the null hypothesis is rejected, the question as to which of the districts differ from each other in a statistically significant way should be answered. The Scheffé Technique of post hoc investigations was performed to answer this question. Table 4.6 shows that school districts with enrollments below 999 pupils when compared with the total of the other districts

TABLE 4.6--Scheffé Post Hoc Results

Title	Contrast	S	Variance of Contrast	Lower Limit	Upper Limit	Signi- ficant
Category 1 = 999 pupils versus cate- gories 2, 3, 4 and 5	1.498	3.346	.4195	.094	2.902	Yes
Category 1 = 999 pupils versus cate- gories 4 and 5	2.556	3.346	.9535	-.711	5.823	No
Category 1 versus category 5	2.629	3.346	1.093	-.871	5.129	No

shows higher unit cost than the larger districts. But one must be cautioned upon interpreting this statistic since the other two comparisons which do not take into account the "middle" sized districts variability show no significant differences. One should observe that these middle sized districts show greater variability in unit cost than the other districts and, consequently, partially mask differences between the largest and smallest districts.

Null Hypothesis V

V. H_0 : There will be no difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil.

Or

$$H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_{14}^*$$

TABLE 4.7--Analysis of Variance Table: Dependent Variable is Part B of Cost Analysis Questionnaire; Independent Variable is State Equalized Valuation per Pupil

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Statistic	Significant Level	Significant
Between Categories	63.259	12	5.272	1.599	0.193	N.S.
Within Categories	49.439	15	3.296			
Total	112.698	27				

Table 4.7 indicates that the groups do not differ significantly from each other since the computed $\bar{F}$ statistic is equal to 1.599 which is not significant at the .05 level. Null Hypothesis V could not, therefore, be rejected.

Null Hypothesis VI

VI. H_0 : There will be no difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location.

Or

$$H_0: \mu_1 = \mu_2$$

*Category 13 is eliminated since the frequency was 0.

TABLE 4.8--Analysis of Variance Table: Dependent Variable is Part B of Cost Analysis Questionnaire; Independent Variable is Geographic Location of School District

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F Statistic	Significant Level	Significant
Between Categories	57.817	1	57.817	27.391	0.005	Yes
Within Categories	54.880	26	2.111			
Total	112.697	27				

The results of this analysis (Table 4.8) show that one can reject the statistical hypothesis since the computed F statistic is significant at the .05 level which the writer has established as his criteria for significance. Again, a post-hoc analysis was performed. However, since there are only two groups, an inspection of the simple means of the groups is sufficient. Table E.6 in Appendix E shows the group which lies below Michigan Highway 46 to be significantly better in obtaining lower unit prices on the selected instructional supply/material items than the group which lies above Michigan Highway 46.

In an attempt to determine the reasons for this statistic the writer interviewed three instructional supply/material salesmen who have experienced selling in both geographic locations used in this study.

Several general reasons were presented by each salesman with two basic assumptions foremost in the conversations. They were: first, small quantity purchases and, second, distance from the distributor.

During the interview the salesmen disclosed that the majority of schools lying above Michigan Highway 46 are of smaller enrollment than those below Michigan Highway 46, necessitating smaller quantity purchases. Since prices for instructional supplies/materials are influenced by quantity, the larger the quantity purchased per item the lower the unit cost; consequently, many school districts in geographic location above Michigan Highway 46 cannot take advantage of quantity discounts. This rationale is reinforced by the statistical findings stated in this chapter under Null Hypothesis IV. The salesmen who were interviewed further stated that the majority of schools located above Michigan Highway 46 are located farther from the distribution center than those schools lying below Michigan Highway 46. Therefore, packaging and distribution costs are higher to the consumer in region 1 and are passed on to the consumer through the cost of the instructional supply/material items. Consequently, higher instructional supply/material unit costs are evidenced above Michigan Highway 46.

Summary

The study summarizes what the hypotheses have shown with any disclaimers to the interpretation. The study finds that the correlation between the two parts of the Questionnaire--Part A, Purchasing Practices Survey and Part B, Unit Cost Survey--is a $-.252$. This was not deemed significant although it should be cautioned that this is probably a function of the small sample size and that if the sample size of the study or if the sample size of a study which simulates this current research project were increased, then correlations would have to be looked at a little more carefully. Moreover, the negative sign which indicates that the two parts are negatively correlated would in this case still be important for it cautions the reader that the two have a tendency to operate in opposite directions from one another. That is to say, as the score of Part A, Purchasing Practices Survey, increases Part B, Unit Cost Survey, decreases in score.

For purposes of summarization the six hypotheses will now be stated in question form and answered on the basis of the data gathered.

Question 1: Will there be a difference in purchase practices of selected school districts when districts are classified by school district enrollment?

When the schools were categorized according to enrollment and were examined on Part A, Purchasing Practices

Survey, of the Questionnaire, it was found that there was no statistically significant difference in the sample. This was shown since the F statistic was not significant at the .05 level. However, the F statistic did show significance at the .086 level. The reader should now be cautioned that this figure is very close to the rejection region and as such one should hold the null hypothesis in abeyance. That is to say, he should make no decisions about its truth or falsity but merely note that there is evidence to the fact that it may be true. As a consequence the writer suggests one take no action either positively or negatively when considering a school district by its size on the district's score on Part A, Purchasing Practices Survey, of the Cost Analysis Questionnaire.

Question 2: Will there be a difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil?

When looking at the State Equalized Valuation per Pupil classification and Part A, Purchasing Practices Survey, of the Questionnaire, we find there to be no significant differences. Instead, the significance of the F statistic is far above the .05 cut-off point. It in fact is .081. The writer therefore concludes there is no danger in accepting the truth of the null hypothesis which states that there is no difference between school districts when classified by State Equalized Valuation per Pupil

when examined by Part A, Purchasing Practices Survey, of the Questionnaire.

Question 3: Will there be a difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location?

Looking at the school districts classified by geographic location on Part A, Purchasing Practices Survey, of the Questionnaire the F statistic was again far above the .05 level; it was in fact significant at the .470 level and leaves the writer to conclude with certainty that geographic location does not affect Part A, Purchasing Practices Survey, of the Questionnaire.

Question 4: Will there be a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by school district enrollment?

Examining the school district by enrollment on Part B, Unit Cost Survey, of the Questionnaire we find the significance level of the F statistic to be .047 which, according to the a priori significance level of .05, is deemed significant. The decision is to reject the null hypothesis and conclude that according to school district enrollment--when looking at Part B, Unit Cost Survey, of the Questionnaire--that there is a significant difference. Upon further investigation it was shown that the smaller school districts have higher unit costs of selected instructional supply/material items than larger school

districts. However, two cautions must be exercised when interpreting this test statistic: First, the overall significance level of .047 is very close to the non-rejection region--being greater than .05. Second, upon post-hoc analysis one finds that the middle size school districts covered in this sample have a high variability which when combined with the large districts' variability shows significant differences. As a consequence, making the statement that school districts having an enrollment below 1,000 pupils are definitely poorer in their ability to obtain low unit cost on instruction supply/material items when compared to school districts with greater enrollment has a tendency to be misleading since it is the extreme variability of the middle size school districts which might be causing the difference. The decision, however, should still be that school district enrollment does make a difference in obtaining low unit costs on instructional supplies/materials.

Question 5: Will there be a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil?

State Equalized Valuation per Pupil classification of schools on Part B, Unit Cost Survey, of the Questionnaire leads to the conclusion that there is no difference between schools. The writer would say this with certainty since the F statistic is significant at the .193 level--far

above the limit of .05 established by the writer for this study.

Question 6: Will there be a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location?

Part B, Unit Cost Survey, of the Questionnaire, when considering the independent variable geographic location of the school district, does indeed show a difference and does show this difference well below the .05 level, which leads the writer to reject the null hypothesis and therefore conclude that when school districts are classified by geographic location as delimited by this study, the unit cost of instructional supply/material items differs significantly. Upon further examination the writer can say with certainty that school districts which lie below a line established in this study as Michigan Highway 46 have definitely lower unit cost for selected instructional supply/material items than those school districts geographically located above Michigan Highway 46.

The final chapter will be devoted to a concise summary of the research, conclusions, implications, and suggestions for further study.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This chapter will be devoted to a summary of the study, followed by a discussion of the conclusions generated from the analysis of the data, and concluded with recommendations for further research.

Summary

Purpose of the Study

1. This study was undertaken to investigate the business practices of selected public school districts in the purchasing of instructional supplies and materials.

2. Allied with this purpose was the desire to ascertain the relationship between purchasing practices and the costs of instructional supplies and materials.

3. An additional purpose of this study was to determine whether any one characteristic (State Equalized Valuation per Pupil, enrollment, geographic location) affects purchasing practices or costs of instructional supplies and materials.

In order to explore these three related yet different purposes, six hypotheses were developed.

They will be discussed later in this chapter under Conclusions.

Limitations of the Study

1. As is true of any study, the validity of this study is affected by the degree of frankness and sincerity of response to the instruments administered.

2. The study uses selected costs of instructional materials/supplies and is not comprehensive of all possible cost analysis.

3. The study was limited to the 1969-70 fiscal year period.

Review of the Literature

The general areas of interest in this study were the development of purchasing policies, the role of purchasing personnel and criteria for lessening purchasing costs.

A review of the literature for this study consisted of a description and analysis of purchasing practices of several school districts, studies related to purchasing costs and the implications of personnel on the purchasing function.

Some of the more interesting and more relevant points developed in the review are as follows:

1. There has been a noticeable amount of research and published reports dealing with the theoretical aspects

of school purchasing, but little is written about the practical application of school purchasing theory.

2. The research indicates there is evolving a broad philosophy relating to purchasing rather than blanket rules conforming to all school districts.

3. The research implies that a democratic approach must be taken toward school purchasing.

4. Ultimate users must be considered in the purchasing function.

Design of the Study

The primary purpose of this study, as stated earlier, has been to investigate and analyze the relationship between the cost of instructional supplies/materials and the purchasing procedures employed by the various individual school districts.

The sample used in this study consisted of 28 public school systems in the State of Michigan. The schools participating in this study were selected by random sample. The sample in this study was selected from the public school districts listed in the Department of Education, State of Michigan, Bulletin 1012, December, 1970.

Three knowledgeable consultants in the field of public school purchasing were asked to develop criteria essential to good purchasing principles. In addition to the consultants three purchasing manuals were selected as

the field authorities for developing these standards or criteria. Once the standards or criteria were developed the consultants and the writer expressed these criteria in question form. The Office of Research Consultation, Michigan State University, provided assistance in developing and evaluating the instrumentation used in this study. In order to determine present purchasing practices, a 17-item (Part A, Cost Analysis Questionnaire) questionnaire was prepared and presented to all respondents of the 28 participating school districts.

Each respondent was asked to estimate the degree to which his school district followed the prescribed content of the question. To measure the responses on Part A of the Cost Analysis Questionnaire numerically, the school purchasing consultants assigned number values to each question. The respondent was given three possible choices for answering, "Yes," "No," or "Partially/Somewhat." Respondents answering "Yes" received the full assigned value of the question. Those respondents answering "Partially/Somewhat" received one-half the value assigned to the question and those respondents answering "No" received no value for answering the question. To eliminate fractions, raw scores were multiplied by two. The highest possible score is 72.

Part B of the Cost Analysis Questionnaire listed ten specific instructional supply/material items

universally purchased by school districts in the State of Michigan. The purpose of Part B of the Cost Analysis Questionnaire was to obtain the cost to the school district of those instructional supply/material items to provide a basis for cost comparison and analysis between the selected schools.

Each respondent was asked to complete both Part A and Part B of the Cost Analysis Questionnaire in the presence of the writer. It was deemed essential that the writer be present to provide assistance to the respondent when requested. This method also provided for a 100 per cent return of the Cost Analysis Questionnaire and an opportunity to discuss the topic under study.

Certain factors were considered in generating the hypotheses in the study. Three factors--State Equalized Valuation per Pupil, school district enrollment, and geographic location of the school district--were recognized as being relevant to the development of purchasing practices.

Consultation with three sales representatives of school supplies/materials companies determined that Michigan Highway 46 was the boundary line of their sales territories. Those schools lying north of this line were assigned to the northern region and those schools lying on the line or below were assigned to the southern region.

The sample in this study achieved a balance of districts representing both locations or regions.

Data from the administration of the study's instruments were punched on computer data cards and submitted to the Michigan State University CDC 3600 computer for computational purposes.

Conclusions

Hypothesis I: There is a difference in purchasing practices of selected public school districts as measured by the Cost Analysis Questionnaire when districts are classified by school district enrollment.

An analysis of significance of difference between Part A of the Cost Analysis Questionnaire and school district enrollment failed to reveal any significant difference. Although the null form of this hypothesis could not be rejected, it should be noted that one should guard against drawing the conclusion that school district enrollment has no effect upon purchasing practices. All one can know is that there is not a statistical difference when based upon a sample of this size.

Hypothesis II: There is a difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil.

Analyzing the data to determine whether a significant difference existed between the groups, the F statistic of 0.613 was found to be not significant at the 0.05 level.

Therefore, for the purposes of establishing purchasing practices, the consideration of State Equalized Valuation per Pupil will add little information to the decision-making role. That is to say, State Equalized Valuation per Pupil should not be used when investigating purchasing practices.

Hypothesis III: There is a difference in purchasing practices of selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location.

An analysis of the data for this hypothesis indicated that the groups did not differ significantly from each other since the computed F statistic of 0.537 is not significant at the 0.05 level which the writer has established as his criteria for significance. This implies that geographic location does not discriminate between good and poor purchasing practices and as such should not be considered a relevant variable when one is trying to determine its relationship to purchasing practices and costs of instructional supplies/materials.

Hypothesis IV: There is a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by school district enrollment.

The results of this analysis show that one can reject the null hypothesis since the computed F statistic of 2.849 is significant at the 0.047 level, which exceeds the 0.05 alpha level that the writer has established as

his criteria for significance. It is fair to conclude, therefore, that the purchase price of instructional supply/material items differs in selected school districts when classified on the basis of school district enrollment.

Hypothesis V: There is a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by State Equalized Valuation per Pupil.

The analysis of data for this hypothesis, when tested for differences between groups, was not found to be significant. An F statistic of 1.599, which is not significant at the 0.05 level, was revealed. Consequently, the writer recommends that this variable not be considered when trying to determine whether differences between school districts exist in their respective costs of instructional supply/material items.

Hypothesis VI: There is a difference in the purchase price of instructional supply/material items in selected school districts as measured by the Cost Analysis Questionnaire when school districts are classified by geographic location.

The results of this analysis show that one can reject the null hypothesis since the computed F statistic of 27.39 is significant at the 0.05 level. The significance level in this analysis is 0.005, which for the purposes of this study is considered highly significant. Therefore, it can be concluded from the data that the geographic location of the school district is a significant factor in determining the cost of instructional supply/material items.

Implications

A major finding of this study was that the data revealed no significant relationship in purchasing practices between school districts when measured by the three factors--State Equalized Valuation per Pupil, school district enrollment, and geographic location.

In the discussions with respondents following the completion of the Cost Analysis Questionnaire seventeen of the participating respondents indicated opinions that schools having a State Equalized Valuation per Pupil approaching the State average (approximately \$16,000) would have more detailed and sophisticated purchasing practices than those with lesser State Equalized Valuation per Pupil. In discussing the school district enrollment factor, twenty-three of the respondents strongly felt that the greater the enrollment of the school district the more comprehensive the purchasing practices. Nearly one-half of the respondents expressed the opinion that geographic location would be an instrumental factor in the development of purchasing practices. (These statements do not represent the findings of the survey instrument.)

It was because of these anticipated responses that the discussion segment was used. The beliefs of school administrators and school purchasing personnel

have generally held that these factors--State Equalized Valuation per Pupil, school district enrollment, and geographic location of school district--more so than other factors, affect the purchasing function.

Possibly the most impressive finding in this study was the lack of significance that was found between school purchasing practices and costs of instructional supply/material items. A significant portion of the literature on the topic of school purchasing impresses the reader that well-developed purchasing practices will result in lowered purchasing costs. The data collected from this sample clearly indicate that school purchasing practices and costs for instructional supply/material items are not significantly related. The reader should be cautioned against finalizing a conclusion based on this data that school purchasing practices have no effect upon costs of instructional supply/material items. All one can conclude is that there is no statistical difference when based upon a sample of this size. This finding provides fertile ground for further study.

This study has pointed out the high correlation between the geographic location, school district enrollment and the costs of instructional supply/material items. This condition clearly implies that school districts are limited in their purchasing function under the present system of

school organization. It further implies that if individual school districts continue under this organizational system, other governmental agencies, i.e., county intermediate districts, might be assigned the responsibility of organizing the several school districts into a more effective purchasing unit.

Questions for Further Study

This study focused on a test sample of school districts in Michigan having differences in enrollment, geographic location, and State Equalized Valuation per Pupil. It sought to determine the relationship between school purchasing practices and the cost of instructional supply/material items. Some questions remain unanswered:

1. Would the replication of this study within a larger sample size produce significantly different results?
2. If additional variables--e.g., pupil-teacher ratio; curricula innovations; community expectations; and negotiable master contracts--were included in the study, would their presence significantly change the findings?
3. To what extent would a unifying purchasing theory or model be successful in economizing public school purchases?
4. In what ways can instructional supply/material sales representatives assist school purchasing personnel in economizing purchases?

5. If the enrollment of a school district has a significant effect upon the cost of instructional supply/material items, at what specific enrollment figure does this become a contributing factor?

6. The participants in this study were selected by random sample. It is suggested that to provide a more descriptive comparison of school purchasing costs the State of Michigan be divided into smaller geographic regions. Would the evidence supplied by this technique significantly show a difference, by region, in the cost of similar items?

Reflections

The experience of conducting this study has increased my perceptions of the problem facing public schools in the purchasing function. It is apparent to me that the time for change is now.

The findings of this study have raised some serious doubts in my mind. It is doubtful if any positive changes can be made in the foreseeable future. Interviews with a number of school administrators regarding their purchasing procedures did not seem to "turn them on" to the seriousness of the problem. Some believed because purchases constitute such a small portion of the total budget that the extra effort required to lower costs would be excessive over that which would be saved. However, a

few administrators displayed real concern over their purchasing costs, indicating some hope for change.

The results of this study implied that purchasing procedures are not imperative to economical purchasing of instructional supply/material items although the review of literature in this field implies that well-developed purchasing procedures are essential to lower purchasing costs.

It is incumbent upon boards of education, school administrators and the public they represent, that they make the changes that are necessary to provide for more efficient purchasing procedures. It is the writer's opinion that the time has come to centralize the majority of the purchasing functions at the Intermediate School District level, so that all school districts within the State of Michigan have equal opportunity to lower purchasing costs.

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APPENDICES

APPENDIX A
COST ANALYSIS QUESTIONNAIRE
PART A

APPENDIX A

Introduction

This study is concerned with present procurement practices and procedures as they relate to the purchasing of instructional supplies in the public schools of Michigan.

This particular phase of the study is designed to acquire significant information about existing conditions to the area under study. Twenty-eight public school districts, including yours, were randomly selected as listed by the Michigan Department of Education in Ranking of Michigan Public High School Districts by Selected Financial Data 1969-70 for study analysis.

You can be sure that the information given in this interview will be held in strict confidence.

If you should like to have a summary of the findings, I shall be happy to send it to you at the end of the investigation.

Cost Analysis Questionnaire
Part A

The following questions are intended to determine public school procurement practices and procedures.

Please consider each of the following questions as you perceive your school system in regards to its purchasing function.

Please show the extent to which you agree or disagree with each of the questions by placing an X in one of the blanks which follow each item.

PART A

1. Does your school district maintain up-to-date purchasing catalogs of instructional materials? (Numerical value = 2)
NO PARTIALLY YES
2. Has your school district assigned responsibility to one person for the purchasing of instructional materials? (Numerical value = 3)
NO PARTIALLY YES
3. Does your district do any purchasing of instructional materials under a cooperative purchasing agreement? (Numerical value = 2)
NO PARTIALLY YES
4. Does your school district issue purchase orders seasonally for instructional materials? (Numerical value = 1)
NO PARTIALLY YES
5. Does your school district permit all instructional material salesmen an opportunity to interview? (Numerical value = 2)
NO PARTIALLY YES
6. Does your school district provide storage areas for instructional supplies or materials large enough to accomodate at least a 6 month inventory? (Numerical value = 2)
NO PARTIALLY YES
7. Does your school district make its instructional material purchasing procedures known to the staff? (Numerical value = 1)
NO PARTIALLY YES
8. Are your instructional supplies and materials purchased through bidding? (Numerical value = 2)
NO PARTIALLY YES
9. Does your school district allocate funds for instructional materials on a predetermined formula? (Numerical value = 3)
NO PARTIALLY YES

10. Does your school district plan instructional supply purchasing on a long range (1 year or more) program? (Numerical value = 3)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
11. Does your purchasing department supervise instructional material delivery and distribution? (Numerical value = 2)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
12. Does your school district establish quality standards for instructional materials? (Numerical value = 3)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
13. Does your school district ask for price quotations from two or more vendors before placing an order for instructional supplies? (Numerical value = 2)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
14. Is your school district influenced by seasonal market trends when purchasing instructional materials? (Numerical value = 2)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
15. Does your school district's instructional staff originate requests for instructional supplies? (Numerical value = 1)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
16. Does your school district request samples of instructional supplies for evaluation before a product is selected for purchase? (Numerical value = 2)
- | | | |
|-----------|------------------|------------|
| <u>NO</u> | <u>PARTIALLY</u> | <u>YES</u> |
|-----------|------------------|------------|
17. Does your school district periodically inspect classroom and storage rooms to see that supplies are being properly and economically used? (Numerical value = 3)
- | | | |
|-----------|-----------------|------------|
| <u>NO</u> | <u>SOMEWHAT</u> | <u>YES</u> |
|-----------|-----------------|------------|

APPENDIX B

COST ANALYSIS QUESTIONNAIRE

PART B

APPENDIX B

Cost Analysis Questionnaire Part B

Please quote the cost to your school district on each instructional supply/material item listed. The cost should be the most recent price paid for that specific item per unit described. If you do not purchase an item please leave blank and go on to the next answerable question.

PART B

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$. per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$. per ream
3. Manila drawing paper (50#, 9 x 12")	\$. per ream
4. Construction paper (12 x 18", standard colors)	\$. per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$. per 100
6. Ditto (spirit) fluid	\$. per gallon
7. Masking tape (3/4", 60 yards)	\$. per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$. per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$. per 100
10. Newsprint (unruled, 12 x 18")	\$. per ream

APPENDIX C

RESULTS OF THE UNIT COST SURVEY
FOR EACH OF THE TWENTY-EIGHT
PARTICIPATING SCHOOL
DISTRICTS

01 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.725 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.725 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.97 per ream
4. Construction paper (12 x 18", standard colors)	\$.445 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.00 per 100
6. Ditto (spirit) fluid	\$ 1.48 per gallon
7. Masking tape (3/4", 60 yards)	\$.38 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.28 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.46 per 100
10. Newsprint (unruled, 12 x 18")	\$.92 per ream
Total	\$ 9.385

02 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.80 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.83 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.10 per ream
4. Construction paper (12 x 18", standard colors)	\$.52 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 3.90 per 100
6. Ditto (spirit) fluid	\$ 2.10 per gallon
7. Masking tape (3/4", 60 yards)	\$.70 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.58 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.80 per 100
10. Newsprint (unruled, 12 x 18")	\$ 1.10 per ream
Total	\$13.43

03 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$ 1.50 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.75 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.96 per ream
4. Construction paper (12 x 18", standard colors)	\$.455 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.65 per 100
6. Ditto (spirit) fluid	\$ 1.30 per gallon
7. Masking tape (3/4", 60 yards)	\$.50 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.45 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.10 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$.40</u> per ream
Total	\$11.065

04 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.62 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.68 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.17 per ream
4. Construction paper (12 x 18", standard colors)	\$.42 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.08 per 100
6. Ditto (spirit) fluid	\$ 1.06 per gallon
7. Masking tape (3/4", 60 yards)	\$.39 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.35 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.29 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.08</u> per ream
Total	\$ 9.14

05 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.62 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.66 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.795 per ream
4. Construction paper (12 x 18", standard colors)	\$.38 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 1.86 per 100
6. Ditto (spirit) fluid	\$ 1.13 per gallon
7. Masking tape (3/4", 60 yards)	\$.37 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.27 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.41 per 100
10. Newsprint (unruled, 12 x 18")	\$.87 per ream
Total	\$ 8.365

06 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.64 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.64 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.50 per ream
4. Construction paper (12 x 18", standard colors)	\$.52 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 3.95 per 100
6. Ditto (spirit) fluid	\$ 1.35 per gallon
7. Masking tape (3/4", 60 yards)	\$.37 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.40 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.49 per 100
10. Newsprint (unruled, 12 x 18")	\$.50 per ream
Total	\$10.36

07 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.595 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.62 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.70 per ream
4. Construction paper (12 x 18", standard colors)	\$.38 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.08 per 100
6. Ditto (spirit) fluid	\$ 1.05 per gallon
7. Masking tape (3/4", 60 yards)	\$.36 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.145 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.43 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.00</u> per ream
Total	\$ 9.36

08 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.82 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.82 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.10 per ream
4. Construction paper (12 x 18", standard colors)	\$.49 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.25 per 100
6. Ditto (spirit) fluid	\$ 1.10 per gallon
7. Masking tape (3/4", 60 yards)	\$.64 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.51 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.00 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.08</u> per ream
Total	\$10.81

09 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.68	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.68	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.09	per ream
4. Construction paper (12 x 18", standard colors)	\$.60	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.40	per 100
6. Ditto (spirit) fluid	\$ 1.30	per gallon
7. Masking tape (3/4", 60 yards)	\$.43	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.37	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.10	per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.67</u>	per ream
Total	\$10.32	

10 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.63	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.65	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.28	per ream
4. Construction paper (12 x 18", standard colors)	\$.24	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.27	per 100
6. Ditto (spirit) fluid	\$ 1.10	per gallon
7. Masking tape (3/4", 60 yards)	\$.37	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.55	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.40	per 100
10. Newsprint (unruled, 12 x 18")	<u>\$.96</u>	per ream
Total	\$ 9.45	

11 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.79	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.79	per ream
3. Manila drawing paper (50#, 9 x 12")	\$.80	per ream
4. Construction paper (12 x 18", standard colors)	\$.45	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.08	per 100
6. Ditto (spirit) fluid	\$ 1.11	per gallon
7. Masking tape (3/4", 60 yards)	\$.34	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.31	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.40	per 100
10. Newsprint (unruled, 12 x 18")	\$.30	per ream
Total	\$ 8.37	

12 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.81	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.79	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.10	per ream
4. Construction paper (12 x 18", standard colors)	\$.52	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 3.10	per 100
6. Ditto (spirit) fluid	\$ 2.10	per gallon
7. Masking tape (3/4", 60 yards)	\$.63	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.72	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.20	per 100
10. Newsprint (unruled, 12 x 18")	\$ 1.08	per ream
Total	\$13.05	

14 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.66	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.66	per ream
3. Manila drawing paper (50#, 9 x 12")	\$.86	per ream
4. Construction paper (12 x 18", standard colors)	\$.43	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.45	per 100
6. Ditto (spirit) fluid	\$ 1.15	per gallon
7. Masking tape (3/4", 60 yards)	\$.31	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.28	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.64	per 100
10. Newsprint (unruled, 12 x 18")	\$.96	per ream
Total	\$ 9.40	

15 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.66	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.66	per ream
3. Manila drawing paper (50#, 9 x 12")	\$.86	per ream
4. Construction paper (12 x 18", standard colors)	\$.43	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.45	per 100
6. Ditto (spirit) fluid	\$ 1.03	per gallon
7. Masking tape (3/4", 60 yards)	\$.31	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.28	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.64	per 100
10. Newsprint (unruled, 12 x 18")	\$.96	per ream
Total	\$ 9.28	

16 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.86	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.86	per ream
3. Manila drawing paper (50#, 9 x 12")	\$.90	per ream
4. Construction paper (12 x 18", standard colors)	\$.37	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 3.33	per 100
6. Ditto (spirit) fluid	\$ 1.10	per gallon
7. Masking tape (3/4", 60 yards)	\$.54	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.25	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.18	per 100
10. Newsprint (unruled, 12 x 18")	\$ 1.47	per ream
Total	\$10.86	

17 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.84	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.84	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.27	per ream
4. Construction paper (12 x 18", standard colors)	\$.72	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.40	per 100
6. Ditto (spirit) fluid	\$ 1.50	per gallon
7. Masking tape (3/4", 60 yards)	\$.38	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.15	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.47	per 100
10. Newsprint (unruled, 12 x 18")	\$ 1.37	per ream
Total	\$11.94	

18 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.63	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.63	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.25	per ream
4. Construction paper (12 x 18", standard colors)	\$.70	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.10	per 100
6. Ditto (spirit) fluid	\$ 1.25	per gallon
7. Masking tape (3/4", 60 yards)	\$.70	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.74	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.26	per 100
10. Newsprint (unruled, 12 x 18")	\$.96	per ream
Total	\$11.22	

19 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.59	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.59	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.05	per ream
4. Construction paper (12 x 18", standard colors)	\$.52	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.00	per 100
6. Ditto (spirit) fluid	\$.98	per gallon
7. Masking tape (3/4", 60 yards)	\$.625	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.17	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.90	per 100
10. Newsprint (unruled, 12 x 18")	\$.50	per ream
Total	\$ 8.925	

20 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.92	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.76	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.10	per ream
4. Construction paper (12 x 18", standard colors)	\$.52	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 3.95	per 100
6. Ditto (spirit) fluid	\$ 1.49	per gallon
7. Masking tape (3/4", 60 yards)	\$.65	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.55	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.95	per 100
10. Newsprint (unruled, 12 x 18")	\$ 1.00	per ream
Total	\$12.89	

21 School District

<u>Description</u>	<u>Most Recent Price</u>	
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.61	per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.61	per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.10	per ream
4. Construction paper (12 x 18", standard colors)	\$.55	per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 4.85	per 100
6. Ditto (spirit) fluid	\$ 1.60	per gallon
7. Masking tape (3/4", 60 yards)	\$.74	per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.59	per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.00	per 100
10. Newsprint (unruled, 12 x 18")	\$ 1.17	per ream
Total	\$13.82	

22 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.73 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.73 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.52 per ream
4. Construction paper (12 x 18", standard colors)	\$.49 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.50 per 100
6. Ditto (spirit) fluid	\$ 1.50 per gallon
7. Masking tape (3/4", 60 yards)	\$.63 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.59 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.80 per 100
10. Newsprint (unruled, 12 x 18")	\$.96 per ream
Total	\$12.45

23 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.925 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.925 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.17 per ream
4. Construction paper (12 x 18", standard colors)	\$.70 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.40 per 100
6. Ditto (spirit) fluid	\$ 1.75 per gallon
7. Masking tape (3/4", 60 yards)	\$.38 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.59 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 3.75 per 100
10. Newsprint (unruled, 12 x 18")	\$.68 per ream
Total	\$13.27

24 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$ 1.00 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.90 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.33 per ream
4. Construction paper (12 x 18", standard colors)	\$.66 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 3.55 per 100
6. Ditto (spirit) fluid	\$ 2.55 per gallon
7. Masking tape (3/4", 60 yards)	\$.55 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.49 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.22 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.15 per ream</u>
Total	\$14.20

25 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.92 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.87 per ream
3. Manila drawing paper (50#, 9 x 12")	\$ 1.28 per ream
4. Construction paper (12 x 18", standard colors)	\$.62 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 4.70 per 100
6. Ditto (spirit) fluid	\$ 2.50 per gallon
7. Masking tape (3/4", 60 yards)	\$.80 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.65 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.40 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.30 per ream</u>
Total	\$16.04

26 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.655 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.655 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.85 per ream
4. Construction paper (12 x 18", standard colors)	\$.47 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.50 per 100
6. Ditto (spirit) fluid	\$ 1.56 per gallon
7. Masking tape (3/4", 60 yards)	\$.44 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.58 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.50 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$.98</u> per ream
Total	\$10.19

27 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.78 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.78 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.96 per ream
4. Construction paper (12 x 18", standard colors)	\$.59 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.60 per 100
6. Ditto (spirit) fluid	\$ 2.10 per gallon
7. Masking tape (3/4", 60 yards)	\$.59 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.61 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 2.90 per 100
10. Newsprint (unruled, 12 x 18")	<u>\$ 1.16</u> per ream
Total	\$13.07

28 School District

<u>Description</u>	<u>Most Recent Price</u>
1. Mimeograph paper (16#, 8-1/2 x 11", white, sulfite)	\$.62 per ream
2. Ditto (spirit) duplicator paper (16#, 8-1/2 x 11", white, sulfite)	\$.62 per ream
3. Manila drawing paper (50#, 9 x 12")	\$.96 per ream
4. Construction paper (12 x 18", standard colors)	\$.44 per 50 sheets
5. Ditto (spirit) masters (8-1/2 x 11", long run)	\$ 2.00 per 100
6. Ditto (spirit) fluid	\$ 1.02 per gallon
7. Masking tape (3/4", 60 yards)	\$.365 per roll
8. Scotch (cellophane) tape (1/2", 1296"/109') tape only	\$.32 per roll
9. File folders (one-third cut, medium wgt., manila, letter size)	\$ 1.30 per 100
10. Newsprint (unruled, 12 x 18")	\$.90 per ream
Total	\$ 8.54

APPENDIX D

SELECTED CHARACTERISTICS OF SCHOOL
DISTRICTS INCLUDED IN
THIS STUDY

APPENDIX D

TABLE D.1--Selected Characteristics of School Districts
Included in This Study

System	Enroll- ment	SEV per Pupil	Instruct. Salaries per Pupil	Total Instruct. Expenses per Pupil	Current Operating Expenses per Pupil	Total General Expenses per Pupil
01	2663	\$14,130	\$412.71	\$440.13	\$603.49	\$650.24
02	2512	12,365	389.25	407.09	562.03	656.34
03	1918	7,155	402.35	420.12	559.75	571.64
04	3392	17,426	502.20	522.62	653.09	688.08
05	4786	9,386	416.09	440.06	533.47	575.98
06	1061	16,268	530.21	551.91	675.53	721.85
07	834	14,152	404.37	431.55	626.80	683.95
08	700	11,165	390.02	416.90	628.83	684.27
09	6014	24,724	613.59	639.72	828.11	902.16
10	1318	9,539	428.31	441.14	596.12	617.02
11	4046	10,935	398.31	411.90	568.52	644.95
12	749	15,139	386.80	414.00	636.99	688.84
13	2109	13,205	561.74	596.23	779.30	896.10
14	5504	16,001	449.68	480.26	637.60	693.86
15	2623	14,540	447.24	477.28	632.66	679.22
16	1438	7,421	449.45	476.94	657.79	702.60
17	2516	15,801	464.43	488.04	654.20	703.50
18	4040	12,225	449.17	474.31	650.45	713.60
19	1250	11,679	381.60	404.28	564.94	615.01
20	639	21,921	453.62	476.73	665.50	742.10
21	1500	21,221	423.14	449.44	653.23	692.19
22	1933	12,406	348.34	368.41	524.22	575.51
23	935	17,206	374.99	405.95	575.69	633.23
24	1900	14,886	388.22	404.56	544.11	597.73
25	1868	18,040	376.07	395.75	554.85	641.16
26	3398	8,873	403.33	436.26	575.29	627.38
27	698	21,685	384.46	407.33	611.01	671.46
28	9335	12,453	489.27	506.70	655.58	706.81

Source: Ranking of Michigan High School Districts by Selected Financial Data, 1969-70, Bulletin 1012, Michigan Department of Education, December 1970.

APPENDIX E

**SUMMARY OF THE DEMOGRAPHIC AND
STATISTICAL DATA USED IN
THE STUDY**

APPENDIX E

TABLE E.1--Part A, Purchasing Practices Survey--Enrollment

<u>Overall</u>			
Minimum Value	Maximum Value	Standard Deviation	
35.0000	62.0000	8.3104	
<u>Individual Categories</u>			
Category	Frequency	Mean	Standard Deviation
1. 0-999 pupils	6	44.1666	9.4534
2. 1,000-1,999 pupils	9	48.5555	7.6011
3. 2,000-2,999 pupils	4	43.7500	2.6299
4. 3,000-3,999 pupils	3	57.0000	8.6602
5. 4,000 and over pupils	6	53.0000	7.0142

TABLE E.2--Part B, Unit Cost Survey--Enrollment

<u>Overall</u>			
Minimum Value	Maximum Value	Standard Deviation	
8.3650	16.0400	2.0430	
<u>Individual Categories</u>			
Category	Frequency	Mean	Standard Deviation
1. 0-999 pupils	6	12.0991	1.5643
2. 1,000-1,999 pupils	9	11.9266	2.3567
3. 2,000-2,999 pupils	4	11.1150	1.9166
4. 3,000-3,999 pupils	3	9.5366	0.5701
5. 4,000 and over pupils	6	9.3700	1.1846

TABLE E.3--Part A, Purchasing Practices Survey--State Equalized Valuation per Pupil

<u>Overall</u>			
Minimum Value	Maximum Value	Standard Deviation	
35.0000	62.0000	8.3104	
<u>Individual Categories</u>			
Category	Frequency	Mean	Standard Deviation
1. \$ 7,000- 7,999/pupil	2	46.5000	12.0208
2. \$ 8,000- 8,999/pupil	1	47.0000	0.0000
3. \$ 9,000- 9,999/pupil	2	50.5000	6.3640
4. \$10,000-10,999/pupil	1	44.0000	0.0000
5. \$11,000-11,999/pupil	2	50.5000	12.0208
6. \$12,000-12,999/pupil	4	52.7500	9.2871
7. \$13,000-13,999/pupil	1	44.0000	0.0000
8. \$14,000-14,999/pupil	4	46.5000	11.3284
9. \$15,000-15,999/pupil	2	40.5000	6.3640
10. \$16,000-16,999/pupil	2	57.5000	0.7071
11. \$17,000-17,999/pupil	2	55.0000	9.8995
12. \$18,000-18,999/pupil	1	54.0000	0.0000
13. \$19,000-19,999/pupil	0	---	---
14. \$20,000 or more/pupil	4	44.7500	6.8007

TABLE E.4--Part B, Unit Cost Survey--State Equalized Valuation per Pupil

<u>Overall</u>			
Minimum Value	Maximum Value	Standard Deviation	
8.3650	16.0400	2.0430	
<u>Individual Categories</u>			
Category	Frequency	Mean	Standard Deviation
1. \$ 7,000- 7,999/pupil	2	10.9625	0.1450
2. \$ 8,000- 8,999/pupil	1	10.1900	0.0000
3. \$ 9,000- 9,999/pupil	2	8.9075	0.7672
4. \$10,000-10,999/pupil	1	8.3700	0.0000
5. \$11,000-11,999/pupil	2	9.9525	1.2127
6. \$12,000-12,999/pupil	4	11.4113	2.1140
7. \$13,000-13,999/pupil	1	9.7050	0.0000
8. \$14,000-14,999/pupil	4	10.5925	2.4068
9. \$15,000-15,999/pupil	2	12.4950	0.7849
10. \$16,000-16,999/pupil	2	9.8800	0.6789
11. \$17,000-17,999/pupil	2	11.2050	2.9204
12. \$18,000-18,999/pupil	1	16.0400	0.0000
13. \$19,000-19,999/pupil	0	---	---
14. \$20,000 or more/pupil	4	12.5250	1.5242

TABLE E.5--Part A, Purchasing Practices Survey--Geographic Location

Minimum Value	<u>Overall</u>		Standard Deviation
	Maximum Value		
35.0000	62.0000		8.3104
<u>Individual Categories</u>			
Category	Frequency	Mean	Standard Deviation
1. Above Michigan Highway 46	13	47.5385	7.6987
2. On or below Michigan Highway 46	15	49.8667	8.9272

TABLE E.6--Part B, Unit Cost Survey--Geographic Location

Minimum Value	<u>Overall</u>		Standard Deviation
	Maximum Value		
8.3650	16.0400		2.0430
<u>Individual Categories</u>			
Category	Frequency	Mean	Standard Deviation
1. Above Michigan Highway 46	13	12.5873	1.8059
2. On or below Michigan Highway 46	15	9.7060	1.0606