THE DEVELOPMENT OF A QUALITATIVE RATING SCALE FOR SCHOOL FACILITIES

APPROVED:
Graduate Committee:

E. L. Huggett
Major Professor

Harold C. Anderson
Committee Member

J. E. Halstead
Committee Member

Duane Kingery
Dean of the School of Education

Robert B. Toles
Dean of the Graduate School
THE DEVELOPMENT OF A QUALITATIVE RATING SCALE FOR SCHOOL FACILITIES

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By

Dwayne C. Bliss, B.S., M.A.
Denton, Texas
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CHAPTER I

INTRODUCTION

In a period of time when school enrollments are increasing in many areas, it has become a frequent task of school officials to evaluate existing school facilities. Meeting future school building needs requires a careful analysis of the present facilities in terms of capacity, condition, and adequacy for the desired educational program.

Formulas are available for estimating the capacity of a school building (10). There are also a number of existing rating scales that may be used to evaluate the general physical condition, site adequacy, and appearance of a school plant (4, 7, 8). A survey of the literature does not indicate that there is an instrument that can be used in evaluating the effectiveness of a school plant in facilitating the educational program which is operating to meet the goals, purposes, and objectives of the school.

Statement of the Problem

The problem of this study was to develop a scale for rating a school facility in terms of a proposed set of educational objectives.
Purposes of the Study

To further clarify and define the problem of the study, the following purposes were developed:

1. To identify a set of educational objectives which may be accomplished in school plants.

2. To identify the quantitative aspects of school plants whose purpose it is to facilitate the accomplishment of educational objectives.

3. To attach a numerical degree of importance to each of these quantitative aspects in accomplishing the objective it is designed to meet.

4. To translate the numerical rating of the separate aspects into a scale to be used for evaluating a school plant.

Background and Significance of the Study

As was expressed by Caudill, "... the most complex building problem can be broken down into separate and relatively simple and soluble problems (2, preface)." The reduction of the problem of accomplishing educational objectives to its separate, simple components is a problem for educators. Heffernan and Bursch purport that "... developments of the past have brought about a new awareness of the school plant and of the relationships that exist between program and plant (5, p. 7)."
The design of a school plant can no longer be considered as solely the responsibility of the architect. The development of educational specifications by the appropriate school officials will influence the type plan that is ultimately adopted. Roe states that "educational specifications are usually represented by a drawing which sets up the general requirements of the educational program accompanied by a list of written specifics for each space (9, p. 186)." The effectiveness of a school plant and the functional criteria of a school plant design "revolve about the teaching process and the utilization of the plant as an educational and community institution (10, p. 288)." The planning of a school plant is done to facilitate people and their needs. Or, as Caudill states, "to plan a school that will actually help to meet the needs of the pupil, it is necessary first to bring to mind what these needs are (2, p. 8)."

Meeting the needs of youth has been a concern of educators since the emergence of the concept of free, public schools. Attempts have been made to describe these needs by stating the goals and objectives of education. These efforts have been done on a nation-wide basis as well as by local school districts. One such example was the set of educational objectives for public schools posed by the Educational Policies Commission of the National Education Association (3). Other national efforts (1) have been made and local education
agencies are in a continuous process of adapting these to fit their situations.

Perhaps one of the most logical places to achieve these objectives is within the confines of the school plant. If "we should never in any phase of planning compromise in meeting these needs (2, p. 17)," there is a need to evaluate the effectiveness to which school plants are facilitating these objectives.

This concern prompted the Association for Supervision and Curriculum Development to commission Heffernan and Bursch to develop a link between the objectives of schools and the school plant (5). This has been one of the few, if not the only, such efforts. The participants in this study concluded that the set of objectives developed by the Policies Commission was the most appropriate to use in their study. Other available lists, it was believed, could be classified within the categories proposed by the Commission (5, pp. 14-18). A number of aspects were cited as being included in school plants to assist in the accomplishment of the stated objectives (5, pp. 20-38). However, no attempt was made in this study to quantify these aspects or to determine the degree of importance of each in accomplishing any objective.

The rating scales that are now available do quantify the separate aspects of the school plant, but they are categorized by areas of the plant. The Linn-McCormick Rating
Form (7) had twenty-nine categories for evaluating a school plant. These include such areas as site, building structure, lockers, classrooms, auditorium, library, and offices. Each of the categories is rated against an optimum or ideal score. For example, the building structure has a value of 125 points, classrooms have an ideal score of 160, and offices are valued at 30 points. Within each of the categories are enumerated a number of quantitative aspects of a school plant to which a numerical value is to be attached to derive the total evaluative score for the school plant being judged. The total optimum score for a plant is 1,000 points on the Linn-McCormick Scale (7).

School plant planning and construction is becoming a more time-consuming task within the school administrative process and will continue to be so as school enrollments increase and new facilities are planned and constructed. An instrument for evaluating old and new facilities in terms of the plant's effectiveness in accomplishing educational objectives could be an asset to the administrative process.

Definition of Terms

For the purposes of this study the following definitions were formulated:

1. **School Plant**—A building being used for educational purposes, the site on which the building is located and its surroundings, the equipment normally considered "built-in," and the general furnishings contained within the building.
2. **Quantitative Aspect of a School Plant**—Any aspect or item that is included as a part of a school plant.

3. **Qualitative Aspect of a School Plant**—Any of the quantitative aspects of a school plant that is classified according to the educational objective it facilitates.

**Limitations**

The study was limited to the development of a rating scale for judging the qualitative aspects of a school plant in terms of one set of educational objectives. It was further limited in that no attempt was made to standardize or test the scale after its development.

**Basic Assumptions**

For the purpose of this study the following assumptions were made:

1. The set of objectives that was chosen for the development of the scale was an impartial list that represented a common frame of reference for most public educational agencies.

2. It is important that a school facilitate any objective it adopts and the degree of importance for any and all objectives is a matter of priority to be established by the local school district.

3. Many of the quantitative aspects of a school plant could be categorized within the objectives that each is designed to facilitate.
4. The responses to the questionnaire by the selected panelists in the study were representatives of the opinions necessary to weigh the degree of importance of the qualitative aspects of a school plant.

**Instrument**

An instrument was constructed to gather the information for this study. A set of objectives was selected from the review of the literature which was believed to be representatives of the existing lists of educational objectives for public educational agencies. From the literature and existing rating scales for school plants the quantitative aspects of school plants were identified and categorized within the educational objective each is designed to facilitate. A panel of nine members was chosen to validate the instrument. The final instrument was constructed after the reaction to the initial instrument was obtained from the validating panel.

**Procedure for Selecting a Panel of Respondents**

A panel of twenty-one members was selected to serve as respondents to the questionnaire. Of those chosen, seven were architects, seven were practicing school administrators, and seven were college and university faculty members who were involved in the instruction of school plant administration. (List of panelists is to be found in Appendix D.)
The architects that were selected were from firms that are actively involved in the construction of school facilities. To obtain a nation-wide representation, firms from New York, California, Louisiana, Missouri, Illinois, and Texas were chosen.

The school administrators selected for the panel were superintendents in several regions of the United States. In addition, the sample was taken from small, medium size, and large school districts.

The participating panelists from the college and university ranks were people considered to be specialists in the field of school plant administration. They were chosen from colleges and universities throughout the nation.

All of the panelists were contacted by letter and asked to consent to participate in the study. Of those originally selected, four indicated that they would not be able to participate or did not return their consent forms. Replacements for these persons were contacted and those who consented were placed on the panel.

Construction of the Questionnaire

Eight educational objectives were chosen for the basis of the questionnaire. Aspects of the school plant that facilitate each of the objectives were classified according to the objective it was believed it facilitated. The task for the respondents was to determine the degree of importance
that each aspect had in accomplishing the objective for which it was posed. No attempt was made to weigh the relative importance of each objective. A structured Q-Sort technique was the method used to accomplish the weighing of the aspects. The panelists were required to determine which of the aspects were "most essential," "less essential," or "least essential." In order to avoid the statistical tendency toward the mean, the panelists were forced to choose only a set number for each category. The number of items to be identified in any one category was determined by approximating a normal distribution between extremes.

Since a true Q-Sort requires that an individual physically arrange a set of items, cards, or materials, in a quantitative manner, a mechanical technique was devised to avoid this. A chart was placed at the bottom of the page of each list of aspects. The respondents were asked to record the number of items they believed should belong to each of the categories in the boxes that were provided (Appendix C).

Method of Treating the Data

Numerical quantities were given to each aspect of an objective by assigning a point value of four to items identified as "most essential," three to those that were "essential," two if categorized "less essential," and one if "least essential." The mean point value for each aspect was calculated as well as the sum of the means for each objective.
To convert the mean values for each objective to an ideal scale point value, the following formula was used:

\[ S_a = \frac{100M_a}{\Sigma M} \]

where,

- \( S_a \) = Ideal scale point value for a given aspect.
- \( M_a \) = Mean point value assigned to that aspect.
- \( \Sigma M \) = Sum of the means for that objective.
- 100 = Total optimum score for each objective.

After applying the formula, the Ideal Scale Scores were rounded to the nearest whole number.
CHAPTER BIBLIOGRAPHY


CHAPTER II

REVIEW OF THE LITERATURE AND CONSTRUCTION OF THE QUESTIONNAIRE

To assist in accomplishing the purpose of this study, a review of the literature was made. Included in this review were samples of the existing rating scales for school facilities. A number of the published lists of educational objectives were also examined. One study was found that directly related to the concept of rating school facilities in terms of educational objectives and curriculum. This chapter contains a discussion of the findings from these sources.

A set of objectives for the questionnaire was chosen from the survey of the literature. The validating instrument for the questionnaire was constructed by classifying the aspects of the school plant according to this set of objectives. The process of constructing the questionnaire is presented in this chapter.

Existing Rating Scales for School Facilities

Landes and Sumption state "... there are ten functional characteristics by which a school may be judged (8, p. 2):"
1. Adequacy of the School Plant--This refers to the relationship between the size of the site and the overall housing space on the other.

2. Suitability of the School Plant--Those features which enable the plant to satisfactorily house the educational program to be carried on.

3. Safety of the School Plant--Those features of the building which make the building structurally sound and protect the students from hazards, fire, and accidents.

4. Healthfulness of the School Plant--This term refers to facilities for heating, ventilating, sanitation, and water.

5. Accessibility of the School Plant--The proximity of the school plant to the pupil population and the character of the roads and streets affecting access to the building.

6. Flexibility of the School Plant--The possibilities for change to meet curriculum alterations.

7. Efficiency of the School Plant--The securing of maximum effect with a minimum of effort.

8. Economy of the School Plant--The achievement of proper plant management at minimum cost.

9. Expansibility of the School Plant--The possibility for enlargement of the building and site for educational purposes.

10. Appearance of the School Plant--How the school looks--landscaping, color harmony, and appropriateness of furnishings and use of decoration (8, pp. 2-3).

The authors of this rating scale have devised a quantitative method of judging a school plant according to the characteristics listed above. Each characteristic is judged by observing the nature of the site, pupil rooms, and general areas of the plant as they relate to each of the characteristics. A list of items is given with an optimum score for each. The total for each category is 100 points.
The ten characteristics may be weighted according to the following proportions:

1. Adequacy—13 points
2. Suitability—13 points
3. Safety—12 points
4. Healthfulness—12 points
5. Accessibility—9 points
6. Flexibility—9 points
7. Efficiency—9 points
8. Economy—9 points
9. Expansibility—7 points
10. Appearance—7 points

Total—100 points

The Linn-McCormick Rating Form for Secondary Schools (9) lists nineteen general areas of the building for the rater to score. The categories for the scale and the ideal score for each category are listed below:

Site—General (65); Site—Development (35); Building Structure (125); Heating and Ventilating (50); Fire Protection (40); Artificial Lighting (50); Electrical Services (20); Water Supply (25); Toilet Rooms (35); Lockers and Storage (40); Classrooms (160); Special Rooms (130); Auditorium (50); Gymnasium (50); Library (30); Cafeteria (30); Offices (30); Teachers Rooms (20); and Custodial Facilities (15).

The total ideal score for the plant being judged is 1,000 points. The derivation of the point values assigned to a school plant for each category is determined by rating
a number of aspects which constitute that item. As an example, the "Building Structure" of a school plant is judged according to the following aspects (ideal scores for each aspect are in parentheses):

1. Type of construction (20)
2. Number of stories (15)
3. Position on site (10)
4. Plan type (10)
5. Type roof (10)
6. Type of fenestration (10)
7. Condition of building (15)
8. Corridors (10)
9. Location of stairways (5)
10. Construction of stairways and stairwells (5)
11. Basement spaces (5)
12. Attic spaces (5)
13. Esthetics (5). (9, p. 2)

A different type of rating method is used when applying the "Evaluative Criteria--School Plants" developed by National Study of Secondary School Evaluation (11). The categories for consideration are similar to those for the previous two scales. The rater is asked to judge the Site, Building, Building Services, Classrooms, Special Rooms, School Buses, Special Characteristics, and General Evaluation of the School Plant (11, pp. 303-316).

The "Evaluative Criteria" form is not designed, so a total score is assessed for any category of the school plant. Each aspect is judged on its own by assigning to it a number from one to five. The numbers and their meaning are described below:

5—Excellent: The provision or conditions are extensive and are functioning excellently.
4—Very Good: (a) the provision or conditions are extensive and are functioning well, or (b) the conditions are moderately extensive but are functioning excellently.

3—Good: The provisions or conditions are moderately extensive and are functioning well.

2—Fair: (a) the provisions or conditions are moderately extensive but are functioning poorly, or (b) the provisions or conditions are limited in extent and are functioning well.

1—Poor: The provisions or conditions are limited in extent and functioning poorly, or they are entirely missing but needed (11, p. 302).

The evaluator may substitute an "M" for a number if the aspect is missing and their need is questionable. The rater would record an item as "N" if the aspect does not apply. This method of evaluation permits each aspect to be judged and considered independently of any other aspect of the school plant.

A fourth type rating scale is one with format similar to the University of Houston School Survey Record Form (12). The four categories, sub-categories, and optimum scores used in this scale are listed below:

1. Structural: 180 points
   Building Structure
   Safety and Circulation

2. Mechanical: 140 points
   Heating and Ventilation
   Plumbing Facilities
   Electrical Services
   Illumination

3. Educational: 550 points
   Classrooms
   Special Rooms
   General Areas
   Administration Rooms

4. Site Adequacy: 130 points
   Total Optimum Score 1,000 points
The point values that are assigned to the areas of the school plant for the "Educational" category are to be given by considering Size and Shape (30 per cent), Location (10 per cent), Walls and Floors (15 per cent), Furniture and Equipment (15 per cent), and General Features (30 per cent) (12, p. 3).

All of the rating scales that have been discussed contain summary sheets, profile charts, and spaces for comments and general information.

Educational Objectives for Schools

Since one of the purposes of this study was to identify a set of objectives which might be accomplished in school plants, a review of several of the published lists of objectives was made. It was discovered that many of these lists are similar in nature. A discussion of the lists that were reviewed follows.

Thoughtful consideration for the purpose of schools in American Society has been undertaken by many educators. One of the more widely accepted formulations of the general purposes of education in this country was prepared by the Educational Policies Commission (4). This list was used as a basis for the set of objectives chosen for the questionnaire to collect data for this study. The list is presented in its entirety. Four major groups of objectives were identified
by the Commission. These four groups, with the essential elements of each, are as follows:

I. The Objectives of Self-Realization

The Inquiring Mind: The educated person has an appetite for learning.

Speech: The educated person can speak the mother tongue clearly.

Reading: The educated person reads the mother tongue efficiently.

Writing: The educated person writes the mother tongue effectively.

Number: The educated person solves his problems of counting and calculating.

Sight and Hearing: The educated person is skilled in listening and observing.

Health Knowledge: The educated person understands the basic facts concerning health and disease.

Health Habits: The educated person protects his own health and that of his dependents.

Public Health: The educated person works to improve the health of the community.

Recreation: The educated person is participant and spectator in many sports and other pastimes.

Intellectual Interests: The educated person has mental resources for the use of leisure.

Esthetic Interests: The educated person appreciates beauty.

Character: The educated person gives responsible direction to his own life.

II. The Objectives of Human Relationship

Respect for Humanity: The educated person puts human relationships first.

Friendships: The educated person enjoys a rich, sincere, and varied social life.

Cooperation: The educated person can work and play with others.

Courtesy: The educated person observes the amenities of social behavior.

Appreciation of the Home: The educated person appreciates the family as a social institution.

Conservation of the Home: The educated person conserves family ideals.
Homemaking: The educated person is skilled in homemaking.

Democracy in the Home: The educated person maintains democratic family relationships.

III. The Objectives of Economic Efficiency

Work: The educated producer knows the satisfaction of good workmanship.

Occupational Information: The educated producer understands the requirement and opportunities for various jobs.

Occupational Choice: The educated producer has selected his occupation.

Occupational Efficiency: The educated producer succeeds in his chosen vocation.

Occupational Adjustment: The educated producer maintains and improves his efficiency.

Occupational Appreciation: The educated producer appreciates the social value of his work.

Personal Economics: The educated consumer plans the economics of his own life.

Consumer Judgment: The educated consumer develops standards for guiding his expenditures.

Efficiency in Buying: The educated consumer is an informed and skillful buyer.

Consumer Protection: The educated consumer takes appropriate measures to safeguard his interests.

IV. The Objectives of Civic Responsibility

Social Justice: The educated citizen is sensitive to the disparities of human circumstance.

Social Activity: The educated citizen acts to correct unsatisfactory conditions.

Social Understanding: The educated citizen seeks to understand social structures and social processes.

Critical Judgment: The educated citizen has defenses against propaganda.

Tolerance: The educated citizen respects honest differences of opinion.

Conservation: The educated citizen has a regard for the nation's resources.

Social Applications of Science: The educated citizen measures scientific advance by its contribution to the general welfare.
World Citizenship: The educated citizen is a cooperating member of the world community.

Law Observance: The educated citizen respects the law.

Economic Literacy: The educated citizen is economically literate.

Political Citizenship: The educated citizen acts upon an unswerving loyalty to democratic ideals (4, pp. 50, 72, 90, 108).

In 1918 the Commission for the Reorganization of Secondary Education, appointed by the National Education Association, issued a list of objectives which has come to be known as "The Seven Cardinal Principles of Education (13)." The principles were Health, Command of the Fundamental Processes, Worthy Home Membership, Vocation, Citizenship, Worthy Use of Leisure Time, and Ethical Character. This set of objectives has perhaps been quoted more often by educators than any other list. A survey of American teachers in 1966 revealed that they favored this list over all other lists as a descriptor of the goals and purposes of American Education (10).

Connolly and others (2) proposed that educational objectives could be classified as either "Individual," "Cultural," or "Societal (2, p. 117)." Individual objectives for the student were to achieve control over his environment, to determine his own objectives, and to express himself objectively. The Cultural objectives were to conserve the living tradition, and to enrich and refine the culture. The Societal objectives for the student were to understand the
basis of societal life, to become committed to society's welfare, and to contribute to the reconstruction of society (2, pp. 117-133).

Diedericle, in 1951, presented the following set of objectives for school as "an ethical basis for educational objectives":

1. **Life Maintenance**—Sheer physical survival on almost any terms, but preferably on a level at which the organism functions efficiently and comfortably. This value includes the necessities (food, clothing, shelter, etc.) and mental and physical health.

2. **A Sense of Worth or Achievement**—Of amounting to something, of living up to one's picture of one's self, of being recognized and accepted, and of having accomplished something of importance.

3. **Friendly Relations with Others**—Relations of mutual respect, affection, courtesy, tolerance, etc.

4. **A Free Society**—A self-governing society with the maximum of individual liberty that is compatible with effective cooperation.

5. **Aesthetic Experience**—A sensitive response to beauty in many forms.

6. **Meaning**—Knowledge and intellectual discipline, integrated in a view of life which gives orientation, direction, and security (3, pp. 78-86).

In the spring of 1964, the American Association of School Administrators appointed a special commission and charged it with the responsibility for identifying the major educational imperatives of American school systems (1). The members of the commission had had many years experience as teachers, administrators, and university faculty members. They met regularly with school boards, committees of lay
citizens, and faculty members in developing the plans and procedures for dealing with crucial educational problems. After two years of study, the commission identified the following nine "imperatives in education":

- To make urban life rewarding and satisfying.
- To prepare people for the world of work.
- To discover and nurture creative talent.
- To strengthen the moral fabric of society.
- To deal constructively with psychological tensions.
- To keep democracy working.
- To make intelligent use of natural resources.
- To make the best use of leisure time.
- To work with other peoples of the world for human betterment (1, preface).

The concluding chapter of the report by the commission deals with the problems school administrators have in achieving these imperatives. The consensus was that schools must become better organized in their administrative process.

Sometimes administrators become annoyed with these insistent and sometimes conflicting demands that converge on the superintendent's office. Yet when they view them in perspective and assess their value, they cannot but see that herein lies the dynamics of educational improvement. These expressions of interest and concern are but the efforts of a nation of free people during a period of stress and strain to redefine their educational goals (1, p. 163).

Although the nine imperatives derived by the commission were not intended to be considered as objectives of education, the meeting of these needs through the organization and administration of the educational program might be termed as a general objective of public schools in American Society.
A Related Study

The previous sections of this chapter have identified the aspects that constitute the make-up of school facilities and several of the lists of accepted objectives for public schools. A survey of the literature revealed an attempt to merge these two areas of educational concern. The study was initiated by the fact that "school plants can encourage comprehensive learning which contributes to individual development and social adjustment (6, p. 2)."

Heffernan and Bursch focused their attention on the elementary plant and facilitating its curriculum. Their approach to the problem was to determine the curriculum considerations of the elementary school.

The first approach to any educational problem should be a careful delineation of what the professional staff . . . and community members hope each child will derive from his experience in the school. Conferences of educators and interested community citizens and study of the published statements of the purposes of education . . . may be used as a point of departure in describing objectives in terms of the needs of the community (6, p. 15).

The study committee chose the set of objectives developed by the U.S. Policies Commission as the framework of reference for evaluating a school plant.

After reaching several conclusions regarding the aims and purposes of elementary education, a series of questions were posed. These questions are listed below:
1. What provisions in the school plant will facilitate health services, health education, and sound habits of self-care?

2. What provisions in the school plant will facilitate learning about the physical and natural environment?

3. What provisions in the school plant will facilitate learning about people and their activities in the local community, state, nation and world?

4. What provisions in the school plant will facilitate aesthetic expression and creative activity?

5. What provisions in the school plant will facilitate understanding of quantitative relationships, mathematical skills, and skills of communication commensurate with each child's ability?

6. What provisions in the school plant will facilitate effective guidance services?

7. What provisions in the school plant will facilitate effective physical education and recreation?

8. What provisions in the school plant will facilitate home-community-school cooperation?

9. What facilities in the school plant will contribute to the effective administration of the school?

10. What facilities in the school plant will assure the surest and most effective use of instructional materials and equipment?

11. What provisions may be made in the architecture so that children will enjoy their place to live and work (6, pp. 15-17)?

The study committee believed that every aspect of the school site and school building would be involved in answering these questions. They identified these aspects and classified them according to their necessity and importance in accomplishing the several objectives mentioned in the questions that were posed.

As an example of the aspects that were considered as essential elements of a school plant, the following is a
list of those which the committee believed facilitated the accomplishment of "Aesthetic Expression and Creative Activity":

Provision of an environment in which the handling of light, color, the design and materials make the building glow.

Provision for classroom use, care, and storage of a variety of art materials such as paper, paint, brushes, tools, and clay.

Provision for classroom use, care, and storage of music books, appropriate musical instruments and space in classroom, gymnasium or multi-purpose room for rhythmic activities.

Provision of a classroom collection of books containing appropriate literature for children of the age and interest served; access to a larger selection of literary material in a well organized, equipped and staffed school library.

Provision of outdoor areas, close or adjacent to the classroom, in which a variety of creative activities requiring space, such as a dramatic play, rhythms, and large scale art production can take place.

Provision of a school environment landscaped with appropriate shrubbery, trees, lawns, paved areas, and gardens as well as natural woods or water courses.

Provision of adequate display areas in each classroom and three dimensional exhibit cases in foyer and corridors, library and other places where children congregate (6, p. 26).

While no attempt was made by the participants of this study to attach a quantitative value to any of the separate aspects of a school plant, it was recommended that schools be judged according to their effectiveness in providing for educational objectives.

Construction of the Questionnaire

The questionnaire used for collecting data was constructed after obtaining solutions to three separate but
related problems. The first step was to identify a set of objectives for the scale. Secondly, the separate aspects of school plants were identified and classified according to the objective to be accomplished. The third problem was to determine the most useful method for the respondents to quantify the separate aspects that had been identified. This would enable an ideal score to be derived.

The manner in which these problems were resolved is discussed in the following sections.

The Selection of a Set of Objectives

It was concluded that the set of objectives developed by the U.S. Policies Commission (4) was the most complete of those reviewed. It was further concluded that the other lists reviewed were sets of objectives that could be found within the four general categories given by the Commission (7).

The Policies Commission list was believed to be too extensive and detailed to be of effective use for the scale to be developed. It was noted that several of the objectives within each category were expansions of the same general objectives. These, together with the specific objectives contained in the Policies Commission list (4), are as follows:

<table>
<thead>
<tr>
<th>General Objective</th>
<th>Specific Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Inquiring Mind</td>
<td>The Inquiring Mind Character Intellectual Interests</td>
</tr>
<tr>
<td>Objective</td>
<td>Reading</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>2. Communication Skills</td>
<td></td>
</tr>
<tr>
<td>3. Healthful Living, Physical</td>
<td></td>
</tr>
<tr>
<td>4. Scientific Applications and Quantitative Relationships</td>
<td></td>
</tr>
<tr>
<td>5. Recreation Habits and Use of Leisure Time</td>
<td></td>
</tr>
<tr>
<td>6. Esthetic Interest and Appreciation</td>
<td></td>
</tr>
<tr>
<td>7. Societal and Cultural Processes</td>
<td></td>
</tr>
</tbody>
</table>

Based on the report by the American Association of School Administrators (1), an eighth objective was added to emphasize the implementation of the other objectives. This objective was **The Organization and Administration of the School Program**.

**The Identification and Classification of School Plant Aspects**

From the existing rating scales (5, 8, 9, 11) for school facilities and the literature reviewed, the aspects of a school plant were identified and classified according to the objective each assists in accomplishing. Many of the aspects were believed to facilitate the accomplishment of more than
one of the objectives chosen for the scale. These were repeated in the classification process as facilitating aspects of each objective to which it applied. This was in keeping with the intended nature of the scale to be developed, so as to allow for rating each objective separately.

These objectives and lists of facilitating aspects were presented to a validating panel of nine persons associated with education. The panelists were asked to indicate on the validating instrument if the statements were "Clear" or "Unclear." They were also to respond "Yes," the aspect does facilitate the objective under which it was listed; or "No," it does not. They were requested to add other aspects that were not listed which they believed should be included.

As a result of the replies from the validating panel, the lists of aspects found in Appendix C were used for the questionnaire.

Summary

The existing rating scales for school facilities that were reviewed are designed to evaluate school facilities by judging the quality of the separate aspects of the plant. Two of the scales, the Linn-McCormick Rating Form for Secondary School Plants (9) and The University of Houston School Survey Record Form (12), have a total optimum or ideal score of 1,000 points. The total score for a school is derived by attaching points to several categories of school plant aspects.
The Landes-Sumption Workbook (8) is organized so that each category of aspects is judged separate and apart from any other. The optimum score for each section is 100 points. The Evaluative Criteria (10) allows the evaluator to rate each aspect on a one to five scale with no total ideal score being calculated.

A review of the published lists of accepted objectives for schools in America was made. The Educational Policies Commission list (4) was the most extensive among those reviewed. The Commission categorized objectives in four general areas: the objectives of Self-Realization; Human Relationships; Economic Efficiency; and Civic Responsibility. The sets of objectives by Connel (2) and Diedercle (3) and the "Seven Cardinal Principles (13)" were concluded to be abbreviations or generalizations of the Commission list.

The "imperatives" cited by the American Association of School Administrators (1) were said to be attainable only if the objective of The Organization and Administration of the School Program was considered a major goal of education. This objective and eight general objectives were chosen as the base for the rating scale to be developed. The additional objectives were An Inquiring Mind; Communication Skills; Quantitative Relationships; Scientific Applications; Healthful Living, Physical Care, and Safety; Esthetic Appreciation and Interest; Recreation Habits and Use of Leisure Time; and Societal and Cultural Processes.
Aspects of the school plant were identified from the existing rating scales and the literature reviewed. These aspects were then classified according to the objective each assists in accomplishing.

A panel of nine area educators was chosen to assist in validating the material for the questionnaire. A validating instrument (Appendix A) was constructed and taken to each of the selected panel members. Changes were made according to the suggestions of the panelists. The major alteration was that one of the objectives, Quantitative Relationships, was combined with another of the objectives, Scientific Applications, to form a single objective. Those aspects that had been listed under the single objectives were rephrased and categorized under the combined objective. Some aspects were deleted and others were added as a result of the suggestions from the validating panel. These revisions resulted in the construction of the questionnaire used for collecting data.
CHAPTER BIBLIOGRAPHY


12. The University of Houston, Department of School Administration, "School Survey Record Form," unpublished form, Houston, Texas, n.d.

CHAPTER III

PRESENTATION OF DATA

The purpose of this chapter is to present the data from the questionnaire. An analysis of the data was made according to the statistical method given in Chapter I. The facilitating aspects for the school plant, the mean point values, and the converted ideal scale scores are to be found in the tables of this chapter. A discussion of the quantity values assigned to each aspect follows. The order used for the tables and the discussion of each is the same as the order on the questionnaire.

Facilitating Aspects for An Inquiring Mind

The mean scores of the ten facilitating aspects for An Inquiring Mind ranged from 1.75 to 3.75. "Display Areas in the Materials Center" was rated lowest by the respondents, while the "Library and/or Instructional Materials Center ..." was rated highest. The highest Ideal Scale Score was 14 and the lowest was 7 points. The second highest mean point value, 3.42, was achieved by "Equipment, Supplies, and Furnishings in the Instructional Materials Center." Its Ideal Scale Score was 13. Refer to Table I for data related to the mean point values and Ideal Scale Scores.
TABLE I

MEAN POINT VALUES AND IDEAL SCALE SCORES OF THE FACILITATING ASPECTS FOR THE OBJECTIVE, AN INQUIRING MIND

<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library and/or Instructional Material Center—Size, Location, and Accessibility</td>
<td>3.75*</td>
<td>14**</td>
</tr>
<tr>
<td>Equipment, Supplies, and Furnishings in the Instructional Materials Center</td>
<td>3.42</td>
<td>13</td>
</tr>
<tr>
<td>Display Areas in the Materials Center</td>
<td>1.75</td>
<td>7</td>
</tr>
<tr>
<td>Size, Shape, and Location of the Instructional Areas</td>
<td>2.50</td>
<td>10</td>
</tr>
<tr>
<td>Display Areas within the Instructional Areas, Corridors, and Reception Areas</td>
<td>1.83</td>
<td>7</td>
</tr>
<tr>
<td>Type Condition of the Furniture in the Instructional Areas</td>
<td>1.92</td>
<td>7</td>
</tr>
<tr>
<td>General Flexibility of the Plant</td>
<td>3.01</td>
<td>12</td>
</tr>
<tr>
<td>Special Areas for Student Exploration and Diversification—Crafts Rooms, Project Rooms, etc.</td>
<td>3.00</td>
<td>12</td>
</tr>
<tr>
<td>Individual Student Study Areas—Rooms, Study Carrels, etc.</td>
<td>2.92</td>
<td>11</td>
</tr>
<tr>
<td>Audio-Visual Materials Areas for Storage, Previewing, Cataloging, etc.</td>
<td>1.83</td>
<td>7</td>
</tr>
</tbody>
</table>

*σM = 26.03.
**Total = 100.
Two aspects, "General Flexibility of the Plant" and "Special Areas for Student Exploration and Diversification," were assigned Ideal Scale Scores of 12. The mean point values for these aspects were 3.00 and 3.01, respectively.

"Individual Student Study Areas" and "Size, Shape, and Location of the Instructional Areas" had mean values between 2.50 and 3.00. These values converted to Ideal Scale Scores of 10 and 11.

Four aspects were assigned Ideal Scale Scores of 7. These aspects were "... Furniture in the Instructional Areas, Corridors and Reception Areas"; "Audio-Visual Materials Areas for Storage, Previewing, Cataloging, etc."; and "Display Areas in the Materials Center."

Facilitating Aspects for Communication Skills

The only mean point value for any facilitating aspect for the objective, Communication Skills, greater than 3.00 was 3.16 for "Student Audio Stations ...." This mean converted to an Ideal Scale Score of 12. Those aspects with mean values ranging from 2.75 to 2.92 were assigned an Ideal Scale Score of 11. The aspects in this category were "Provisions for Audio-Visual Equipment ...." and "Illumination Quality and Quantity of the Building." The mean point values and Ideal Scale Scores are presented in Table II.
### TABLE II

**MEAN POINT VALUES AND IDEAL SCALE SCORES OF THE FACILITATING ASPECTS FOR THE OBJECTIVE, COMMUNICATION SKILLS**

<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inter-Communications System—Loud Speaker Installation for Instructional Purposes and Information</td>
<td>2.08*</td>
<td>8 **</td>
</tr>
<tr>
<td>Student Audio Stations—Reading Labs, Language Labs, etc.</td>
<td>3.16</td>
<td>12</td>
</tr>
<tr>
<td>Instructional Area Chalkboards</td>
<td>2.25</td>
<td>9</td>
</tr>
<tr>
<td>Instructional Area Bulletin Boards</td>
<td>2.08</td>
<td>8</td>
</tr>
<tr>
<td>Illumination Quality and Quantity of the Building</td>
<td>2.92</td>
<td>11</td>
</tr>
<tr>
<td>Acoustics of the Building—Wall and Ceiling Material, Ceiling Height, etc.</td>
<td>2.33</td>
<td>9</td>
</tr>
<tr>
<td>Provisions for Audio-Visual Equipment—Screens, Electrical Outlets, and Darkening Quality of the Instructional Areas</td>
<td>2.75</td>
<td>11</td>
</tr>
<tr>
<td>Performing Arts Area—Stage, Dressing Rooms, Speaker's Stand, etc.</td>
<td>2.42</td>
<td>9</td>
</tr>
<tr>
<td>Tables and Other Appropriate Furniture for Reading Instruction</td>
<td>1.67</td>
<td>6</td>
</tr>
<tr>
<td>Publications and/or Duplication Room for Students</td>
<td>2.25</td>
<td>9</td>
</tr>
<tr>
<td>Provisions for Television Outlets, and Space for Receivers</td>
<td>2.17</td>
<td>8</td>
</tr>
</tbody>
</table>

*\(M = 27.08\).*

**Total = 100.*
Three aspects had converted scores of 9, and three more had scores of 8. Those with 9 were "Instructional Areas Chalkboards"; "Acoustics of the Building . . . "; and "Performing Arts Area." Those that achieved 8 were "Instructional Areas Bulletin Boards"; "Inter-Communications System"; and "Provisions for Television Outlets and Space for Receivers."

The one facilitating aspect of Communication Skills that had a mean score less than 2.00 was "Tables and Other Appropriate Furniture for Reading Instruction." The mean of 1.67 for this aspect was an Ideal Scale Score of 6.

Facilitating Aspects for Scientific Applications and Quantitative Relationships

"Science and Mathematics Instruction Rooms, Areas and/or Laboratories . . . " had a mean point value of 3.82, which was an Ideal Scale Score of 13. One other aspect had a mean value greater than 3.00. This was "Individual Experiment and Project Rooms or Areas within the Building." The mean value for this aspect was 3.36. Its Ideal Scale Score was 11. (See Table III.)

Two aspects, "Installations and Equipment for Nature Observations . . . " and "Utility Installations in Science Areas," had Ideal Scale Scores of 10 points. The means for these two aspects were 2.90 and 3.00.

Six of the remaining aspects had derived Ideal Scale Scores of 7, 8, and 9. "Science Equipment and Materials
### TABLE III

**MEAN POINT VALUES AND IDEAL SCALE SCORES OF THE FACILITATING ASPECTS FOR THE OBJECTIVE, SCIENTIFIC APPLICATIONS AND QUANTITATIVE RELATIONSHIPS**

<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
</table>
| Science and Math Instruc-
  tion Rooms, Areas and/or
  Laboratories—Number, Size, and
  Location | 3.82* | 13** |
| Utility Installations in Science
  Areas—Plumbing, Electrical
  Outlets, and Gas Outlets | 2.90 | 10 |
| "Outside" Protected Experiment and
  Project Areas | 2.18 | 7 |
| Individual Experiment and Project
  Rooms or Areas within the
  Building | 3.36 | 11 |
| Science Equipment and Materials
  Storage Rooms—Size, Location, and
  Accessibility | 2.63 | 9 |
| Storage Areas for Individual and
  Group Projects | 2.45 | 8 |
| Preservation of the Natural
  Features of the Site | 2.09 | 7 |
| Installations and Equipment for
  Nature Observations—Aquarium,
  Terrarium, Observatory, etc. | 3.00 | 10 |
| Chalkboard Space for Mathematics
  and Science Instruction | 2.36 | 8 |
| Special Furniture for Mathematics
  and Science Instruction—Math
  Labs, Lined Chalkboards,
  Science Lab Tables, etc. | 2.09 | 7 |

*\[ M = 29.97.\]

**Total = 100.**
Facilitating Aspects for Healthful Living, Physical Care, and Safety

The facilitating aspects for Healthful Living, Physical Care, and Safety had a mean score range of 1.45 to 3.36.
The Ideal Scale Scores derived were from 3 to 6. Refer to Table IV for the mean point values and Ideal Scale Scores. Four aspects were assigned Ideal Scale Scores of 3. These were "Location and Condition of Sidewalks"; "Exterior and Interior Rest Areas for Students"; "Loading Zones for Service Vehicles"; and "... Student Lockers."

Those aspects which received scores of 4 were "Parking Facilities"; "Kitchen Area"; "Dining Area ... "; "General and Emergency Health Quarters, Equipment, and Supplies"; and "Corridor Condition and Width."

An Ideal Scale Score of 5 was given to the aspects "Accessibility of the Site"; "Number, Location, and Identification of Exits"; "Condition of Exits and Existence of Panic Hardware on all Doors"; "Emergency Installations ... "; "Number, Location, Condition, and adequacy of Toilet Rooms"; "Safety of Exterior Playgrounds and Equipment"; "Safety and Adequacy of Electrical System"; "Loading Zones for Student Transportation Vehicles"; "Refuse and Sanitation Facilities"; and "Location and Condition of Stairwells and Stairs."

Three aspects achieved an Ideal Scale Score of 6, which was the maximum given to any aspect for this objective. These aspects were "Building Structure and its Condition"; "Adequacy of Heating, Cooling, and Ventilating Systems"; and "Quantity and Quality of Natural and Artificial Lighting."
<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility of the Site</td>
<td>2.82</td>
<td>5**</td>
</tr>
<tr>
<td>Parking Facilities</td>
<td>2.00</td>
<td>4</td>
</tr>
<tr>
<td>Location and Condition of Sidewalks</td>
<td>1.73</td>
<td>3</td>
</tr>
<tr>
<td>Building Structure and its Condition</td>
<td>3.27</td>
<td>6</td>
</tr>
<tr>
<td>Adequacy of Heating, Cooling, and Ventilating Systems</td>
<td>3.36</td>
<td>6</td>
</tr>
<tr>
<td>Number, Location, and Identification of Exits</td>
<td>2.64</td>
<td>5</td>
</tr>
<tr>
<td>Condition of Exits and Existence of Panic Hardware on All Doors</td>
<td>2.82</td>
<td>5</td>
</tr>
<tr>
<td>Quantity and Quality of Natural and Artificial Lighting</td>
<td>3.18</td>
<td>6</td>
</tr>
<tr>
<td>Emergency Installations—Alarm System, Fire Extinguishers, Protection Areas, etc.</td>
<td>2.91</td>
<td>5</td>
</tr>
<tr>
<td>Number, Location, Condition, and Adequacy of Toilet Rooms</td>
<td>3.00</td>
<td>5</td>
</tr>
<tr>
<td>Safety and Adequacy of Electrical System</td>
<td>2.73</td>
<td>5</td>
</tr>
<tr>
<td>Kitchen Area—Size, Location, and Adequacy of Equipment</td>
<td>2.00</td>
<td>4</td>
</tr>
<tr>
<td>Dining Area—Size, Location, and Adequacy</td>
<td>2.18</td>
<td>4</td>
</tr>
</tbody>
</table>

*MN = 54.99.

**Total = 100.
Facilitating Aspects for Recreation Habits and Use of Leisure Time

Two of the facilitating aspects of Recreation Habits and Use of Leisure Time had mean point values of approximately 3.5. The "General Development of the Site . . . ." attained an Ideal Scale Score of 16. An Ideal Scale Score of 15 was assigned to "Gymnasium . . . ." Refer to Table V for data related to the mean point values and Ideal Scale Scores.
<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Development of the Site—Playgrounds, Playfields, Courts etc.</td>
<td>3.54*</td>
<td>16**</td>
</tr>
<tr>
<td>Indoor Activity or Game Rooms</td>
<td>2.54</td>
<td>11</td>
</tr>
<tr>
<td>Gymnasium—Size, Location, Versatility and Adaptability for Recreation Instruction</td>
<td>3.45</td>
<td>15</td>
</tr>
<tr>
<td>Gymnasium and/or Activity Room Equipment</td>
<td>2.27</td>
<td>10</td>
</tr>
<tr>
<td>Student Assembly Room or Auditorium—Size, Location, and Provision for Audio-Visual Equipment Use</td>
<td>2.54</td>
<td>11</td>
</tr>
<tr>
<td>Individual Project Rooms and/or Areas</td>
<td>1.73</td>
<td>8</td>
</tr>
<tr>
<td>Snack Bar and/or Relaxation Areas for Students</td>
<td>2.18</td>
<td>9</td>
</tr>
<tr>
<td>Stage and Dressing Room Adequacy for Speech and Drama Activities</td>
<td>2.18</td>
<td>9</td>
</tr>
<tr>
<td>Areas for Leisure Reading, Music Listening, and Film Viewing</td>
<td>2.54</td>
<td>11</td>
</tr>
</tbody>
</table>

* $\bar{x} M = 22.99.$
** Total = .100.
The next higher mean point value was 2.54. Three aspects had this mean and an Ideal Scale Score of 11. They were "Indoor Activity or Game Room"; "Student Assembly Room . . . "; and "Areas for Leisure Reading, Music Listening, and Film Viewing."

"Gymnasium and/or Activity Room Equipment" received a mean of 2.27 and an Ideal Scale Score of 10. The two aspects which had mean values of 2.18 and Ideal Scale Scores of 9 were "Snack Bar and/or Relaxation Areas for Students" and "Stage and Dressing Room Adequacy for Speech and Drama Activities." The lowest mean score was 1.73 for the aspect, "Individual Project Rooms and/or Areas." Its Ideal Scale Score was 8.

Facilitating Aspects for Esthetic Interest and Appreciation

The mean point value of the aspect, "Landscaping and Improvement of the Site," converted to an Ideal Scale Score of 11. However, since the total Ideal Scale Scores for Esthetic Interest and Appreciation added to only 99 points, the score for this aspect was raised to 12. Although "Architectural Design of the Building" also had an Ideal Scale Score of 11, and an identical mean value of 3.18, it was not recorded as "most essential" as frequently by the respondents on the questionnaire. "Color Scheme of Building Interior and Exterior," with a mean point value of 3.00, also had an Ideal Scale Score of 11. (See Table VI.)
TABLE VI
MEAN POINT VALUES AND IDEAL SCALE SCORES OF THE
FACILITATING ASPECTS FOR THE OBJECTIVE,
ESTHETIC INTEREST AND APPRECIATION

<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscaping and Improvement of the Site</td>
<td>3.18</td>
<td>12**</td>
</tr>
<tr>
<td>Color Scheme of the Building</td>
<td>3.00</td>
<td>11</td>
</tr>
<tr>
<td>Interior and Exterior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type and Condition of the Flooring</td>
<td>2.45</td>
<td>9</td>
</tr>
<tr>
<td>Type, Condition, and General Appearance of the Furniture</td>
<td>2.45</td>
<td>9</td>
</tr>
<tr>
<td>Architectual Design of the Building</td>
<td>3.18</td>
<td>11</td>
</tr>
<tr>
<td>Special Rooms or Areas and Equipment for Art Instruction</td>
<td>2.00</td>
<td>7</td>
</tr>
<tr>
<td>Special Rooms and Equipment for Music Instruction</td>
<td>1.73</td>
<td>6</td>
</tr>
<tr>
<td>General Exterior Appearance of the Plant</td>
<td>2.64</td>
<td>9</td>
</tr>
<tr>
<td>General Interior Appearance of the Plant</td>
<td>2.82</td>
<td>10</td>
</tr>
<tr>
<td>Location of the Site and its General Surroundings</td>
<td>2.27</td>
<td>8</td>
</tr>
<tr>
<td>Interior Decorations of the Building--Pictures, Displays, etc.</td>
<td>2.27</td>
<td>8</td>
</tr>
</tbody>
</table>

* $M = 27.99$.

**One point added to make total 100 points.
"General Interior Appearance" had a mean point value slightly above three other aspects, and an Ideal Scale Score of 10. With means of 2.64, 2.45, and 2.45, the aspects, "General Exterior Appearance of the Plant," "Type and Condition of the Flooring," and "Type, Condition, and General Appearance of the Furniture," achieved Ideal Scale Scores of 9.

"Location of the Site and its General Surroundings" and "Interior Decorations of the Building..." each had a mean of 2.27 and Ideal Scale Scores of 8.

Ideal Scale Scores of 6 and 7 were assigned to "Special Rooms and Equipment for Music Instruction" and "Special Rooms or Areas and Equipment for Art Instruction." Their mean point values were 1.73 and 2.00, respectively.

Facilitating Aspects for Societal and Cultural Processes

The largest mean score by any facilitating aspect for any objective was attained by the aspect "Adaptability of the Plant for Grouping Practices..." The mean point value for this aspect was 3.82, of a possible 4.00, and an Ideal Scale Score of 17. (See Table VII.)

Mean point values in excess of 3.00 were achieved by "Flexibility of the Instructional Furniture for Grouping Purposes" and "Adaptability of the Plant for Community Use." These means of 3.45 and 3.18 converted to Ideal Scale Scores of 15 and 14.
## TABLE VII

MEAN POINT VALUES AND IDEAL SCALE SCORES OF THE
FACILITATING ASPECTS FOR THE OBJECTIVE,
SOCIAL AND CULTURAL PROCESSES

<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptability of the Plant for Grouping Practices—Movable Partitions, Small Group Study Areas, Large Group Study Areas, etc.</td>
<td>3.82*</td>
<td>17**</td>
</tr>
<tr>
<td>Adequacy of Auditorium or Assembly Area</td>
<td>2.64</td>
<td>11</td>
</tr>
<tr>
<td>Flexibility of the Instruction Furniture for Grouping Purposes</td>
<td>3.45</td>
<td>15</td>
</tr>
<tr>
<td>Facilities for Homemaking and Other Family Arts Instruction</td>
<td>2.00</td>
<td>9</td>
</tr>
<tr>
<td>Maps, Globes, Charts, and Other Social Studies Equipment in Appropriate Instructional Areas</td>
<td>2.18</td>
<td>10</td>
</tr>
<tr>
<td>Locker or Storage Areas for Student Belongings</td>
<td>1.45</td>
<td>6</td>
</tr>
<tr>
<td>Adaptability of the Plant for Community Use</td>
<td>3.18</td>
<td>14</td>
</tr>
<tr>
<td>Conference Rooms for Students, Parents, and Teachers</td>
<td>2.64</td>
<td>11</td>
</tr>
<tr>
<td>Reception and Waiting Areas—Size, Location, and Adequacy</td>
<td>1.64</td>
<td>7</td>
</tr>
</tbody>
</table>

*\( M = 23.00. \)

**Total = 100.**
The aspects which had Ideal Scale Scores of 11 were "Adequacy of Auditorium or Assembly Area" and "Conference Rooms for Students, Parents, and Teachers." The mean point value for each of these aspects was 2.64.

Two other aspects had means of 2.00 or greater. These aspects, and the Ideal Scale Scores assigned to each, were "Maps, Globes, Charts, and Other Social Studies Equipment in Appropriate Instructional Areas," 10; and "Facilities for Homemaking and Other Family Arts Instruction," 9.

Those aspects with mean values under 2.00 were "Locker or Storage Areas for Student Belongings" and "Reception and Waiting Areas . . . . " The Ideal Scale Scores for these aspects were 6 and 7.

Facilitating Aspects for The Organization and Administration of the Educational Program

The "Size, Location, and Adequacy of the Administrative Offices" also had a mean point value of 3.82, the highest for any aspect. When considered in relation to the other aspects for the objective, the Ideal Scale Score was 13. Refer to Table VIII for data related to the mean point value and Ideal Scale Score for each aspect.

The second highest mean point value for this objective was 3.18 for "Secretarial and Clerical Space and Equipment." Its Ideal Scale Score was 11. "Teacher Preparation and Work Rooms" also had a mean higher than 3.00 and an Ideal Scale Score of 10.
TABLE VIII
MEAN POINT VALUES AND IDEAL SCALE SCORES OF THE
FACILITATING ASPECTS FOR THE OBJECTIVE,
THE ORGANIZATION AND ADMINISTRATION
OF THE EDUCATIONAL PROGRAM

<table>
<thead>
<tr>
<th>Facilitating Aspect</th>
<th>Mean</th>
<th>Ideal Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size, Shape, and Location of the Site</td>
<td>2.73</td>
<td>9**</td>
</tr>
<tr>
<td>Size, Location, and Adequacy of the Administrative Offices</td>
<td>3.82</td>
<td>13</td>
</tr>
<tr>
<td>Size and Location of Conference Rooms</td>
<td>2.64</td>
<td>9</td>
</tr>
<tr>
<td>Size, Accessibility, and Appearance of Reception Areas</td>
<td>2.54</td>
<td>8</td>
</tr>
<tr>
<td>Location of Inter-Communications, Alarm, and Bell System</td>
<td>2.13</td>
<td>7</td>
</tr>
<tr>
<td>Boiler Room and Heating--Cooling Plant Condition, Location, and Accessibility</td>
<td>1.45</td>
<td>5</td>
</tr>
<tr>
<td>Size and Location of Guidance Offices</td>
<td>2.82</td>
<td>9</td>
</tr>
<tr>
<td>Adequacy of Group Testing Areas</td>
<td>1.82</td>
<td>6</td>
</tr>
<tr>
<td>Record Storage and File Rooms</td>
<td>2.27</td>
<td>7</td>
</tr>
<tr>
<td>Teacher Preparation and Work Rooms</td>
<td>3.09</td>
<td>10</td>
</tr>
<tr>
<td>Custodial Rooms and Closets</td>
<td>1.73</td>
<td>6</td>
</tr>
<tr>
<td>Secretarial and Clerical Space and Equipment</td>
<td>3.18</td>
<td>11</td>
</tr>
</tbody>
</table>

* M = 30.27.

** Total = 100.
The other ten facilitating aspects had mean point values ranging from 1.82 to 2.82. These aspects and the Ideal Scale Scores derived for each are as follows:

Size and Location of Guidance Offices—9
Size, Shape, and Location of the Site—9
Size and Location of Conference Rooms—9
Size, Accessibility, and Appearance of Preparation Areas—8
Location of Inter-Communications, Alarm, and Bell System—7
Record Storage and File Rooms—7
Adequacy of Group Testing Areas—6
Custodial Rooms and Closets—6

Boiler Rooms and Heating-Cooling Plant Condition, Location, and Accessibility—5
CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem of this study was to develop a scale for rating a school facility in terms of a proposed set of educational objectives. The purposes are listed below:

1. To identify a set of educational objectives which may be facilitated in school plants.

2. To identify the aspects of a school plant which assist in accomplishing the objectives.

3. To attach a numerical degree of importance to each of these aspects.

4. To translate the numerical rating of the separate aspects into a scale "ideal" or optimum score which could be used in evaluating the effectiveness of a school plant.

To assist in accomplishing the purposes of this study, a review of the literature was made. The findings from the lists of national objectives for schools led to choosing the following set for use in developing the scale.

1. The student should develop an Inquiring Mind.

2. The student should develop Communication Skills.

3. The student should develop Scientific Applications and Quantitative Relationships.
4. The student should develop Healthful Living, Physical Care, and Safety.

5. The student should develop Recreation Habits and Use of Leisure Time.

6. The student should develop Esthetic Interest and Appreciation.

7. The student should develop Societal and Cultural Processes.

8. School Officials should take care in planning for the Organization and Administration of the Educational Program.

The preceding objectives and the facilitating aspects for each were presented to a panel of nine educators for validation. A questionnaire was subsequently constructed to gather data for the study.

A panel of twenty-one persons was selected to respond to the questionnaire. Seven of the panelists were architects, seven were school plant administrators, and seven were university professors of school plant administration. The questionnaire was designed to allow the respondents to classify the aspects as "most essential," "essential," "less essential," or "least essential" in accomplishing the posed objectives. A structured Q-sort or "forced choice" method was used to determine the number of items to be placed in each category.
To treat the data obtained from the responses to the questionnaire, point values were assigned to aspects according to the categories in which they were designated by the panelists. An aspect judged "most essential" was given four points; an aspect rated "essential," three points; those rated "less essential," two points; and if a respondent placed an aspect in the "least essential" category, it was given a point value of one. A formula was derived to convert the mean point values of the separate aspects for all the respondents to an "ideal" score for the scale being developed. The total Ideal Scale Score for each objective was 100 points.

The aspects of the school posed to the panelists for the objective, An Inquiring Mind, had converted ideal scale scores ranging from seven to fourteen. For Communication Skills, the range was from six to twelve. The lowest ideal score achieved by any aspect for facilitating Scientific Applications and Quantitative Relationships was four points, while the highest was thirteen. The aspects for Healthful Living, Physical Care, and Safety had scale scores from three to five. Of the nine aspects for Recreation Habits and Use of Leisure Time, sixteen was the maximum scale score for any aspect, and eight was the minimum. The objective, Esthetic Interest and Appreciation, had aspects which obtained scale scores from six to twelve. Three aspects for Societal and Cultural Processes had ideal scores from fourteen to
seventeen. The lowest score for this objective was six.
The last objective posed to the panel, The Organization and Administration of the Educational Program, had ideal scale scores ranging from five to thirteen for the twelve facilitating aspects.

Conclusions

Based on the review of the literature and the data obtained from the questionnaire, the following conclusions have been reached:

1. Of rating scales reviewed, none are designed to evaluate the effectiveness of a school plant in facilitating educational objectives.

2. Of the educational objectives reviewed, the list prepared by the U.S. Policies Commission in 1938 was the most extensive. The other lists examined were variations or generalizations of the Commission list.

3. Of those aspects of the school plant which facilitate accomplishing the objective, An Inquiring Mind, those considered the most essential were "Library and/or Instructional Materials Center"; "General Flexibility of the Plant"; and "Special Areas for Student Exploration and Diversification."

4. The most essential facilitating aspects for the objective, Communication Skills, were "Student Audio Stations";
"Provisions for Audio-Visual Equipment"; and Illumination Quality and Quantity of the Building."

5. The facilitating aspects that were considered the most essential for assisting in the accomplishment of the objective, Scientific Applications and Quantitative Relationships, were "Science and Mathematics Instruction Rooms, Areas, and/or Laboratories"; "Installations and Equipment for Nature Observations"; and "Utility Installations in the Science Areas."

6. The four most essential elements in facilitating the accomplishment of Healthful Living, Physical Care, and Safety were determined by the panelists to be "Building Structure and its Condition"; "Adequacy of Heating, Cooling, and Ventilating Systems"; "Quantity and Quality of Natural and Artificial Lighting"; and "Number, Location, and Adequacy of Toilet Rooms."

7. The accomplishment of Recreation Habits and Use of Leisure Time requires that "General Development of the Site" and "Gymnasium" be considered the most essential aspects among those presented to the respondents.

8. To accomplish Esthetic Interest and Appreciation, the panelists considered the most essential aspects of the school plant were "Landscaping and Improvement of the Site"; "Color Scheme of the Building Interior and Exterior"; and "Architectural Design of the Building."
9. Among those facilitating aspects presented to the panelists for the objective, Societal and Cultural Processes, the respondents believed the most essential were "Adaptability of the Plant for Grouping Practices"; "Flexibility of the Instructional Furniture for Grouping Practices"; and "Adaptability of the Plant for Community Use."

10. The panelists considered the most essential facilitating aspects of the school plant for the objective, The Organization and Administration of the School Program, were "Size, Location, and Adequacy of the Administrative Offices"; "Secretaryial and Clerical Space and Equipment"; and "Teacher Preparation and Work Rooms."

Recommendations

As a result of the findings of this study, the following recommendations are made:

1. School administrators, boards of trustees, lay citizens, and other school officials should judge the value of a school plant in terms of its effectiveness in facilitating the educational objectives of the school.

2. To assist in this evaluation process, an instrument should be used which involves objective measures for rating a facility. The ideal scale score values derived in this study for the facilitating aspects of a school plant should be used as a reference for making judgments about a school facility.
3. To make the rating scale more practical, specific standards should be formulated for achieving the ideal scores for each aspect of the school plant.

4. The resulting scale, with its standards, should be extensively tested for validity and reliability.

5. The rating scale should be organized so that its format is similar to the existing "quantitative" rating scales. It should contain a general information sheet, a profile chart, and blank spaces for the rater to record the point values assigned to each of the facilitating aspects of the plant.

6. Research should be conducted to find methods of planning, designing, and constructing school plants which facilitate the educational program with maximum efficiency.
VALIDATING INSTRUMENT

DIRECTIONS: NINE BASIC EDUCATIONAL OBJECTIVES ARE STATED ON THE FOLLOWING PAGES. FOLLOWING EACH OBJECTIVE IS A LIST OF PROPOSED ASPECTS OF THE SCHOOL PLANT THAT FACILITATE THAT OBJECTIVE. PLEASE RESPOND TO THIS INSTRUMENT IN THE FOLLOWING WAYS: 1) CIRCLE C IF THE STATEMENT IS CLEAR OR U IF THE STATEMENT IS NOT CLEAR, 2) CIRCLE Y IF YOU BELIEVE THAT THE STATED ASPECT DOES FACILITATE THE OBJECTIVE UNDER WHICH IT IS LISTED OR N IF YOU BELIEVE IT DOES NOT, AND 3) ADD ANY ADDITIONAL ASPECTS OF THE SCHOOL PLANT WHICH YOU BELIEVE SHOULD BE INCLUDED THAT FACILITATE AN OBJECTIVE. YOUR COMMENTS CONCERNING THE INSTRUMENT WILL BE GREATLY APPRECIATED.

OBJECTIVE: AN INQUIRING MIND

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Materials Center--Library Size and Location. C U Y N
2. Equipment and Supplies in the Instructional Materials Center. C U Y N
3. Display Areas of the Materials Center. C U Y N
4. Size, Shape, and Location of the Instructional Areas. C U Y N
5. Flexibility of the Plant. C U Y N
6. Special Facilities for Exploration and Diversification. C U Y N
7. Audio-Visual Equipment Areas for Storage, Previewing, Cataloging, etc. C U Y N
8. Individual Student Study Areas--Rooms, Study Carrels, etc. C U Y N
Additional Aspects for Facilitating An Inquiring Mind:

1. 
2. 
3. 
4. 
5. 

OBJECTIVE: COMMUNICATION SKILLS

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Inter-Communications System--Loud Speaker Installation. C U Y N
2. Student Listening Stations--Reading Labs, Language Labs, etc. C U Y N
3. Instructional Area Chalkboards. C U Y N
4. Instructional Area Bulletin Boards. C U Y N
5. Illumination Quality and Quantity. C U Y N
6. Acoustics of the Building--Wall and Ceiling Material, Ceiling Height, etc. C U Y N
7. Provisions for Audio-Visual Equipment--Screens, Electrical Outlets, and Darkening Ability of Instructional Areas. C U Y N
8. Emergency Alarm System. C U Y N
9. Performing Arts Area--Stage, Dressing Room Speakers Stand, etc. C U Y N
10. Tables and Other Appropriate Furniture for Reading Instruction. C U Y N
Additional Aspects for Facilitating Communication Skills:

1. 
2. 
3. 
4. 
5. 

OBJECTIVE: QUANTITATIVE RELATIONSHIPS

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Design of the Building. C U Y N
2. Shelf and Storage Space for Books, Supplies, Materials, and Equipment. C U Y N
3. Chalkboard Space for Mathematics Instruction and Practice. C U Y N
4. Expandability of the Plant. C U Y N
5. Size of the Site. C U Y N
6. Special Mathematics Facilities and Equipment—Math Labs, Lined Chalkboards, Special Furniture, etc. C U Y N

Additional Aspects for Facilitating Quantitative Relationships:

1. 
2. 
3. 
4. 
5. 
OBJECTIVE: SCIENTIFIC APPLICATIONS

FACILITATING ASPECTS OF THE SCHOOL PLANT:

<p>| | | |</p>
<table>
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<tr>
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<tbody>
<tr>
<td>1</td>
<td>Science Rooms and Laboratories—Number, Size, and Location.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>2</td>
<td>Utility Installations in Science Areas—Plumbing, Electrical Outlets, and Gas.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>3</td>
<td>Outside, Protected Experiment and Project Areas.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>4</td>
<td>Individual Experiment and Project Rooms or Areas.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>5</td>
<td>Storage Areas for Individual and Group Projects.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>6</td>
<td>Equipment Storage Rooms—Size, Location, and Accessibility.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>7</td>
<td>Preservation of the Natural Features of the Site.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>8</td>
<td>Installations and Equipment for Nature Observations—Aquarium, Terrarium, Observatory, etc.</td>
<td>C U Y N</td>
</tr>
<tr>
<td>9</td>
<td>Internal View of the Outside Environment or the Duplication of Natural Settings within the Building.</td>
<td>C U Y N</td>
</tr>
</tbody>
</table>

Additional Aspects for Facilitating Scientific Applications:

1. 

2. 

3. 

4. 

5. 
OBJECTIVE: HEALTHFUL LIVING, PHYSICAL CARE, AND SAFETY

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Accessibility of the Site. C U Y N
2. Parking Facilities. C U Y N
3. Location of Sidewalks. C U Y N
4. Building Structure. C U Y N
5. Adequacy of Heating, Cooling, and Ventilating System. C U Y N
6. Number and Location of Exits. C U Y N
7. Condition of Exits—Existence of Panic Hardware, Exit Lights, etc. C U Y N
8. Quantity and Quality of Natural and Artificial Lighting. C U Y N
9. Emergency Installations—Alarm System, Fire Extinguishers, Protection Areas, etc. C U Y N
10. Number, Location, Condition, and Adequacy of Toilet Rooms. C U Y N
11. Safety and Adequacy of Electrical System. C U Y N
12. Dining Area—Size, Location, and Adequacy. C U Y N
14. General and Emergency Health Quarters. C U Y N
15. Safety of Exterior Playgrounds and Equipment. C U Y N
16. Exterior and Interior Rest Areas for Students. C U Y N
17. Rest and Relaxation Areas for Teachers. C U Y N

18. Loading Zones for Transportation Vehicles. C U Y N

19. Corridor Condition and Width. C U Y N

20. Refuse and Sanitation Facilities. C U Y N

21. Location and Condition of Stairwell and Steps. C U Y N

Additional Aspects for Facilitating Healthful Living, Physical Care, and Safety:

1. 
2. 
3. 
4. 
5. 

OBJECTIVE: RECREATION HABITS AND USE OF LEISURE TIME

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. General Development of the Site—Playgrounds, Playfields, Courts, etc. C U Y N

2. Indoor Activity or Game Rooms. C U Y N

3. Gymnasium. C U Y N

4. Gymnasium and Activity Equipment. C U Y N

5. Student Assembly Room or Auditorium. C U Y N
6. Individual Project Rooms or Areas.  
   C  U  Y  N

7. Snack Bar or Relaxation Areas for Students.  
   C  U  Y  N

Additional Aspects for Facilitating Recreation Habits and Use of Leisure Time:

1. 
2. 
3. 
4. 
5. 

OBJECTIVE: ESTHETIC INTEREST AND APPRECIATION

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Landscaping and Improvement of the Site.  
   C  U  Y  N

2. Color Scheme of the Building Interior and Exterior.  
   C  U  Y  N

3. Type and Condition of Flooring.  
   C  U  Y  N

4. Type, Condition, and General Appearance of Furniture.  
   C  U  Y  N

5. Architectural Design of the Building.  
   C  U  Y  N

6. Special Rooms and Areas for Art Instruction.  
   C  U  Y  N

7. Special Rooms for Music Instruction.  
   C  U  Y  N

8. General Exterior Appearance of the Plant.  
   C  U  Y  N
9. General Interior Appearance of the Plant. C U Y N

10. Location of the Site and its General Surroundings. C U Y N

Additional Aspects for Facilitating Esthetic Interest and Appreciation:

1. 

2. 

3. 

4. 

5. 

OBJECTIVE: SOCIETAL AND CULTURAL PROCESSES

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Adaptability of the Plant for Grouping Practices—Movable Partitions, Small Group Study Areas, Large Group Study Areas, etc. C U Y N

2. Auditorium or Assembly Area. C U Y N

3. Flexibility of the Instructional Furniture. C U Y N

4. Facilities for Homemaking and Other Family Arts Instruction. C U Y N

5. Maps, Globes, Charts, and Other Social Studies Equipment in Appropriate Instructional Areas. C U Y N

6. Locker or Storage Areas for Student Belongings. C U Y N

7. Adaptability of the Plant for Community Use. C U Y N
8. Conference Rooms for Students, Parents, and Teachers. C U Y N
9. Reception and Waiting Areas. C U Y N

Additional Aspects for Facilitating Societal and Cultural Processes:

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________

OBJECTIVE: THE ORGANIZATION AND ADMINISTRATION OF THE EDUCATIONAL PROGRAM

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Size, Shape, and Location of the Site. C U Y N
2. Size, Location, and Adequacy of Administrative Offices. C U Y N
3. Size, Accessibility, and Appearance of Reception Areas. C U Y N
4. Size and Location of Conference Rooms. C U Y N
5. Location of Inter-Communication, Alarm, and Bell Systems. C U Y N
6. Boiler Room and Heating-Cooling Plant Condition, Location, and Accessibility. C U Y N
7. Size and Location of Guidance Offices. C U Y N
8. Adequacy of Group Testing Areas. C U Y N
9. Record Storage and File Rooms. C U Y N
10. Teacher Preparation and Work Rooms. C U Y N
11. Custodial Rooms and Closets. C U Y N
12. Secretarial and Clerical Space and Equipment. C U Y N

Additional Aspects for Facilitating the Organization and Administration of the Educational Program:

1. 
2. 
3. 
4. 
5. 

Comments Regarding the Instrument:

Signature of Respondent
APPENDIX B

INITIAL LETTER TO PANELISTS

AND CONSENT FORM

I am writing to obtain your consent to participate in a study regarding school facilities. Through the Division of Educational Leadership at North Texas State University, Denton, Texas, I am attempting to develop a rating scale to be used in judging the effectiveness of a school plant in facilitating educational objectives.

A panel of twenty-one people of national prominence has been chosen to assist in the study. Seven of the panelists are architects, seven are school administrators, and seven are college and university professors. Each panelist will be asked to respond to a questionnaire by Q-Sorting several lists of aspects of a school plant that are purported to facilitate educational objectives.

To complete the study, the responses of all the selected panelists will be needed. Your consent to be a participant as one of the panelists will be appreciated and will add to the quality of the study. Please complete the enclosed form and return it as soon as possible. It is planned that the study will be completed during the month of May.

Sincerely,

Dwayne C. Bliss
CONSENT FORM

NAME ____________________________________________

POSITION ____________________________________________

SCHOOL OR FIRM ____________________________________________

MAILING ADDRESS ____________________________________________

CHECK ONE:

____ I will be able to participate in the study

____ I will not be able to participate in the study

____ I cannot consent to participate in the study without further information

COMMENTS:
APPENDIX C

QUESTIONNAIRE

DIRECTIONS: EIGHT BASIC OBJECTIVES OF EDUCATION ARE LISTED ON THE SUCCEEDING PAGES. THE FIRST SEVEN OF THESE OBJECTIVES ARE AIMED TOWARD STUDENTS WHILE THE EIGHTH IS A GENERAL OBJECTIVE. FOLLOWING EACH OBJECTIVE IS A LIST OF ASPECTS OF A SCHOOL PLANT. IT IS PROPOSED THAT THESE ASPECTS FACILITATE THE OBJECTIVE UNDER WHICH THEY ARE LISTED. Q-SORT THE ASPECTS LISTED FOR EACH OBJECTIVE BY WRITING THE NUMBER OF THE ASPECT IN THE APPROPRIATE CATEGORY. ITEMS JUDGED TO BE "MOST ESSENTIAL" SHOULD BE THOSE WHICH BEST FACILITATE THE OBJECTIVE. ITEMS JUDGED "LEAST ESSENTIAL" SHOULD BE THOSE WHICH LEAST FACILITATE THE OBJECTIVE.
OBJECTIVE: AN INQUIRING MIND

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Library and/or Instructional Materials Center--Size, Location, and Accessibility.

2. Equipment, Supplies, and Furnishings in the Instructional Materials Center.

3. Display Areas in the Materials Center.

4. Size, Shape, and Location of the Instructional Areas.

5. Display Areas within the Instructional Areas, Corridors, and Reception Areas.

6. Type and Condition of the Furniture in the Instructional Areas.

7. General Flexibility of the Plant.

8. Special Areas for Student Exploration and Diversification--Crafts Rooms, Project Rooms, etc.

9. Individual Student Study Areas--Rooms, Study Carrels, etc.

10. Audio-Visual Materials Areas for Storage, Previewing, Cataloging, etc.

<table>
<thead>
<tr>
<th>Most Essential</th>
<th>Essential</th>
<th>Less Essential</th>
<th>Least Essential</th>
</tr>
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[Table content continues as per the document's table structure]
OBJECTIVE: COMMUNICATION SKILLS

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Inter-Communications System—Loud Speaker Installation for Instructional Purposes and Information.
2. Student Audio Stations—Reading Labs, Language Labs, etc.
3. Instructional Area Chalkboards.
5. Illumination Quality and Quantity of the Building.
6. Acoustics of the Building—Wall and Ceiling Material, Ceiling Height, etc.
8. Performing Arts Area—Stage, Dressing Rooms, Speaker's Stand, etc.
9. Tables and Other Appropriate Furniture for Reading Instruction.
10. Publications and/or Duplication Room for Students.

<table>
<thead>
<tr>
<th>Most Essential</th>
<th>Essential</th>
<th>Less Essential</th>
<th>Least Essential</th>
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<td>Four (4) Items</td>
<td>Three (3) Items</td>
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_________  _________  _________  _________
OBJECTIVE: SCIENTIFIC APPLICATIONS AND QUANTITATIVE RELATIONSHIPS

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Science and Mathematics Instruction Rooms, Areas, and/or Laboratories—Number, Size, and Location.
3. "Outside" Protected Experiment and Project Areas.
4. Individual Experiment and Project Rooms or Areas within the Building.
5. Science Equipment and Materials Storage Rooms—Size, Location, and Accessibility.
7. Preservation of the Natural Features of the Site.
8. Installations and Equipment for Nature Observations—Aquarium, Terrarium, Observatory, etc.
10. Special Furniture for Mathematics and Science Instruction—Math Labs, Lined Chalkboards, Science Lab Tables, etc.
12. View of the "Outside" Environment or the Duplication of Natural Settings within the Building.

Q-SORT CHART FOR SCIENTIFIC APPLICATIONS AND QUANTITATIVE RELATIONSHIPS ON NEXT PAGE
Q-SORT FOR SCIENTIFIC APPLICATIONS
AND QUANTITATIVE RELATIONSHIPS

<table>
<thead>
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OBJECTIVE: HEALTHFUL LIVING, PHYSICAL CARE, AND SAFETY

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Accessibility of the Site.
2. Parking Facilities.
3. Location and Condition of Sidewalks.
6. Number, Location, and Identification of Exits.
7. Condition of Exits and Existence of Panic Hardware on all Doors.
8. Quantity and Quality of Natural and Artificial Lighting.
9. Emergency Installations—Alarm System, Fire Extinguishers, Protection Areas, etc.
10. Number, Location, Condition, and Adequacy of Toilet Rooms.
11. Safety and Adequacy of Electrical System.
13. Dining Area—Size, Location, and Adequacy.
17. Loading Zones for Student Transportation Vehicles.
18. Loading Zones for Service Vehicles.
19. Corridor Condition and Width.
20. Refuse and Sanitation Facilities.
21. Location and Condition of Stairwells and Steps.

22. Number, Location, and Condition of Student Lockers.

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**OBJECTIVE: RECREATION HABITS AND USE OF LEISURE TIME**

**FACILITATING ASPECTS OF THE SCHOOL PLANT:**

1. General Development of the Site--Playgrounds, Playfields, Courts, etc.
2. Indoor Activity or Game Rooms.
4. Gymnasium and/or Activity Room Equipment.
5. Student Assembly Room or Auditorium--Size, Location, and Provision for Audio-Visual Equipment Use.
6. Individual Project Rooms and/or Areas.
7. Snack Bar and/or Relaxation Areas for Students.
8. Stage and Dressing Room Adequacy for Speech and Drama Activities.
9. Areas for Leisure Reading, Music Listening, and Film Viewing.

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OBJECTIVE: ESTHETIC INTEREST AND APPRECIATION

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Landscaping and Improvement of the Site.
2. Color Scheme of the Building Interior and Exterior.
3. Type and Condition of the Flooring.
4. Type, Condition, and General Appearance of the Furniture.
5. Architectural Design of the Building.
6. Special Rooms or Areas and Equipment for Art Instruction.
7. Special Rooms and Equipment for Music Instruction.
8. General Exterior Appearance of the Plant.
9. General Interior Appearance of the Plant.
10. Location of the Site and its General Surroundings.
11. Interior Decorations of the Building—Pictures, Displays, etc.

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OBJECTIVE: SOCIETAL AND CULTURAL PROCESSES

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Adaptability of the Plant for Grouping Practices—Movable Partitions, Small Group Study Areas, Large Group Study Areas, etc.

2. Adequacy of Auditorium or Assembly Area.

3. Flexibility of the Instruction Furniture for Grouping Purposes.

4. Facilities for Homemaking and Other Family Arts Instruction.

5. Maps, Globes, Charts, and Other Social Studies Equipment in Appropriate Instructional Areas.

6. Locker or Storage Areas for Student Belongings.

7. Adaptability of the Plant for Community Use.

8. Conference Rooms for Students, Parents, and Teachers.

9. Reception and Waiting Areas—Size, Location, and Adequacy.

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OBJECTIVE: THE ORGANIZATION AND ADMINISTRATION OF THE EDUCATIONAL PROGRAM

FACILITATING ASPECTS OF THE SCHOOL PLANT:

1. Size, Shape, and Location of the Site.
2. Size, Location, and Adequacy of the Administrative Offices.
3. Size and Location of Conference Rooms.
4. Size, Accessibility, and Appearance of Reception Areas.
5. Location of Inter-Communications, Alarm, and Bell System.
6. Boiler Room and Heating-Cooling Plant Condition, Location, and Accessibility.
7. Size and Location of Guidance Offices.
9. Record Storage and File Rooms.
10. Teacher Preparation and Work Rooms.
11. Custodial Rooms and Closets.
12. Secretarial and Clerical Space and Equipment.

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APPENDIX D

LIST OF RESPONDENTS TO
THE QUESTIONNAIRE

Architects

Charles William Brubaker
Perkins and Will, Architects
309 W. Jackson Blvd.
Chicago, Illinois

Gordon Bunshaft
Skidmore, Owens, and Merrill
400 Park Avenue
New York, New York

Merv Croston
Parker, Croston, and Associates
Fort Worth, Texas

Arthur Q. Davis
Curtis and Davis
2475 Canal Street
New Orleans, Louisiana

Don Jarvis
Jarvis, Putty, and Jarvis
One Main Place
Dallas, Texas

Ernest J. Kump
Ernest J. Kump and Associates
Palo Alto, California

William M. Pena
Caudill Rowlett Scott
1111 West Loop South
Houston, Texas
School Administrators

Dr. Paul Brooks, Superintendent
Cedar Hill Independent School District
Cedar Hill, Texas

Dr. Lester L. Dicker, Superintendent
Hamilton Public Schools
Hamilton, Ohio

Dr. Wayne Hendrick, Superintendent
Plano Independent School District
Plano, Texas

Dr. John Letson, Superintendent
Atlanta Public Schools
Atlanta, Georgia

Mr. Floyd Parsons, Superintendent
Little Rock Public Schools
Little Rock, Arkansas

Mr. Glenn D. Reeves, Superintendent
Eagle Mountain-Saginaw Independent School District
Saginaw, Texas

Mr. O. C. Taylor, Superintendent
Grapevine Independent School District
Grapevine, Texas

University Professors

Dr. Bill Barron
College of Education
The University of Texas
Austin, Texas

Dr. M.J. Conrad, Head
Educational Administration and Facilities Unit
College of Education
The Ohio State University

Dr. John Gilliland, Director
School Planning Laboratory
The University of Tennessee
Knoxville, Tennessee

Dr. James D. MacConnel, Director
School Planning Laboratory
Stanford University
Stanford, California
Dr. Paul Seagers
College of Education
Indiana University
Bloomington, Indiana

Dr. Merle Strom
Ball State University
Muncie, Indiana

Dr. Edmond R. Young
Oklahoma State University
Stillwater, Oklahoma
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Books


Belok, Michael and others, Approaches to Values in Education, Dubuque, Iowa, William C. Brown, 1956.


Articles


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Clinchy, Evans, Schools for Team Teaching, New York, Education Facilities Laboratory, 1961.


Reports

Special Material

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The University of Houston, Department of School Administration, "School Survey Record Form," unpublished form, Houston, Texas, n.d.