EDUCATIONAL FACILITY DESIGN FEATURES IN GEORGIA'S SCHOOLS

by

JENNIFER LANDRUM HADDEN

(Under the Direction of C. KENNETH TANNER)

ABSTRACT

School facility design features influence the learning process and are central concerns of educational planners. This study identified the features existing in Georgia's schools to determine the trends in school design. Two main areas were selected inclusive of the schools' physical environment and the schools' functional environment. The following categories were analyzed: Energy Efficient, Flexible, and Sustained Designs; Aesthetics; Safety; Collaboration; Classroom Space and Furnishings; Technology; Organization of Classroom and Administrative Offices; Student Communal Spaces and School Grounds; Teacher Facilities; Instructional/Social Program Services and Opportunities; Classroom Instructional Opportunities; Instructional Opportunities and Educational Programs; Organization of Instruction; and Community or Social Use. Seventy-one participants completed the electronic survey providing responses indicating trends occurring in Georgia's schools. At least 50% of the trends found for Georgia's schools through voluntary responses to the survey were also found in a comparison study in Virginia. Descriptive data of the open-ended responses were categorized as the most unique features, the features liked least, and the features liked most. Although consideration is given since responses only represent approximately 3% of Georgia's schools, recommendations include that the study results be used as a benchmark for individual districts and schools in regard to facility planning.

Representing over 50% of features to occur for each category surveyed, four prominent recommendations were suggested as benchmarks: Collaboration (Planning, Funding, and Technology); Safety and Security; Aesthetic Considerations; and Technology. Further design features recommended for consideration in the future include the following:

- Design communal spaces to enhance learning while encouraging student social skills
- Continue to utilize classroom space as a resource for flexibility and to facilitate instruction
- Disperse administrative offices for safety and functional purposes
- Enhance grounds for complimentary, aesthetic purposes
- Construct teacher facilities to accommodate professional and personable work spaces with consideration to teacher work stations
- Assess instructional and social services or opportunities in relation to student success and community needs
- Continue to design specialized classroom spaces and furnishings for broadening classroom instructional experiences
- Assess student and academic programs in relation to educational programs
- Adapt organization of instruction to maximize learning
- Assess community and social use in relation to community needs
- Employ more efficient and sustainable designs

INDEX WORDS: Educational Facilities Planning, School Design, School Facilities, Design Features, Functional Environment, Physical Environment

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DEDICATION

This study is dedicated to all doctoral students having completed dissertations and students with the intentions to complete doctoral studies. God bless you and give you strength and the discipline to complete whatever you desire. This study is also dedicated to the beautiful America and all desiring to advance and improve education. Finally, this study is dedicated to Georgia and all its “Georgia Peaches.”

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CHAPTER 1

INTRODUCTION

Studies have proven significant correlations to school facilities and student outcomes, including student achievement and student behavior, as facilities assist with shaping the educational environment and in many instances its process or function: Lighting (Mahone 2002; Kuller and Lindsten 1992); Indoor Air Quality (Wargo and Wargo 2002; Daisey and Angell 1998); Acoustics (Maxwell and Evans 1999; Mills 1975); Color (Sinofsky and Knirck 1981); Ergonomics (Marschall at al. 1995); and State of Repair (Berner 1993; Bowers and Burkett 1989). The most effective design features used and the extent school facilities influence student outcomes are educational interests continually sought by educators and facility builders. Interests in design features occur at various levels and sects. Those interested in physical characteristics aim to understand the effectiveness of maintenance and operations, while those directly involved with curricula are likely to be concerned with the function of the building and its use for the learning processes. The popularity of both continues to increase, while seeking to understand the connection of facilities to student learning. As a result of inevitable influences on educational change, trends begin to emerge in educational design and further shape the learning environment and experiences.

The influences of school design contributing to such trends in school features are significant in number and are attributed to universal and local interests, change, and advancements. Furthermore, technology has initiated change in which communication has drastically changed the entire world, creating trends for schools to react to society's interests

(Beaudlin, Merritt, Oja, & Sells, 2004; McCain, 1996; Sanoff, 1994). When communication and technology have made it possible to have a business meeting on one continent and dinner that same night on another, change is inevitable in education. Not only has it impacted the physical design of schools through the installation of features such as computers and technical equipment, but the access and resources offered have a direct influence on the functional uses, resulting in curriculum and knowledge prioritization (Beaudlin, Merritt, Oja, & Sells, 2004; McCain, 1996; Sanoff, 1994). Technological advancements alter learning methods as learning styles can be more easily adapted than before in classrooms. Given the variability and individuality technology offers, demand is created for flexibility. Making the school design flexible and adaptable is a compelling issue for facility builders, given the on-going influences.

Although not significantly affecting functional features, another universal influence on facility building directly impacting the physical design features is energy:

> Energy should be considered the architect.... Aside from the pressing social responsibilities to conserve fuels, educational planners need to consider the financial stress aggravated by energy scarcities. In 1970, school districts across the country spent $26.70 per pupil for energy. Projections indicate tripling of energy costs by 1885 and quadrupling by 1992. (Wilson, 1981, p. 93)

Recent emphasis has been placed on “green building” to make efforts to conserve resources.

While technology and energy globally influence school design, other factors influence the design of schools at a micro-society, community level and are specific to educational facilities. “Among the most important issues and trends relevant to school design are the following: enrollment trends, program requirements, conditions of existing facilities, schools as community centers and changes in school utilization” (Kliment, 2001, p. 92). Society and government make efforts to reform education often simultaneously with leader and community beliefs contributing their own educational objectives and goals. Schools and educational progress are central

concerns, especially in an era of federal policies such as No Child Left Behind (U.S. Department of Education, 2001), increased accountability, and expectancy for standardized scores to increase for all students. The definition of student achievement is often referred to as student outcome, since definitions of student achievement and student success have begun to differ. “At the same time that there’s this push toward standardized curricula and standardized testing...there’s a movement in what seems to be the opposite direction: toward highly exploratory, individualized (and individually directed) learning” (Beaudlin, Merritt, Oja, & Sells, 2004, p. xvii).

Regarding the physical environment, how renovations and growth populations are viewed may or may not be referred to as an influence on school design features, but they are definitely considerations, since they influence the demand to build or re-design. Knowing that school facilities have a profound effect on the learning process, health and curricula are serious concerns regarding school facilities. Students cannot learn in areas with poor ventilation and health hazards. Building-related illnesses, resulting from ineffective indoor environmental quality management is conducive to student absences and results in students not performing well. Such results could be attributed to respiratory problems or allergies caused from poor building conditions (EPA, 2000, para 6). Aside from health, outdated equipment and dilapidation hinders learning for the desired student outcome. The average age of school buildings is approximately 42 years old (National Center for Educational Statistics, 1999). Given these facts and trends it is expected that schools already in existence will have to be maintained by upgrading and replacing equipment as well as renovated to meet current educational practices.

In the first part of the 19th century the industrial expansion “made it necessary to take new, comprehensive measures and build an increasing number of schools” (Roth, 1950, p. 24).

Today, “A 60 million enrollment is expected by 2030” (U.S. Department of Education, Office of Public Affairs, 2000), efforts are going to have to be made to accommodate growing student populations with additional schools. Enrollments for public and private schools peaked in 2001, and although not projected to grow at the same rate, enrollment will continue to grow in both public and private schools. Factors influencing enrollment include migration, birth rate levels in the 1990's, and changing state and local policies leading to higher enrollments through additional programs (National Center for Education Statistics, 2005).

As with the industrial expansion, additional social influences affect school design from social, family constructs. Whether by necessity or choice, families’ status (both parents working, single parent homes), youth pregnancies, work ethics, educational experiences, and socio-economic status are constructs contributing to changes in school design. School features are designed to compliment or compensate for changes in families and society. In many instances, school facilities are designed and prepared to accommodate traditional needs of the home and offer opportunities for students and their families not otherwise accessible. These needs also bring about additional costs and are increasing in number and variability. Whether the increases are attributed to actual changes in society or recent awareness thus creating an interest to react, they have become a part of many schools’ functions.

As a result of the many influences on school design ranging from global to local interests, efforts to create sustainable, efficient, and flexible schools are becoming emerging aspects of school facilities. European studies on infrastructure design, resulting from in depth qualitative studies of quantitative findings suggest “student academic achievement improves with improved building conditions. Individual factors, such as lighting levels, air quality, temperature, and acoustics, have an effect on student behavior and outcomes” (Fisher, 2002, p.5). Given that

studies have linked school facilities, student achievement, and student outcomes, knowing and understanding the recent designs existing and available is important for improving design features to maximize educational opportunities. What kinds of school designs are being created to support these reforms? Are buildings representative of minimal standards and specifications as outlined by legislation, or do they go beyond expected minimums? Are they prototypes or expanded structures reflecting the desires of individual systems and communities from which they are initiated? Are schools being designed as traditional structures for teacher lead-instruction with limited mobility or flexibility? Are philosophies taking a more practical or Deweyan approach than ever before to accommodate aesthetics and a learner -centered approach; or are they designed progressively, reflective of the work ethic and economic influence on education? These questions are already a part of the philosophies shaping school planning as additional trends are emerging in school design as part of the 21st Century. Most importantly, do the answers to these questions regarding school design exemplify the research for helping students learn and reflect the desires of all those who contribute to the educational environment and use it?

Awareness of design options are a very important part of improving and evaluating educational settings; therefore, as efforts are made to build or renovate schools and educational facilities, urgency is created regarding understanding designs that represent the most effective learning environment (Schneider, 2002). Educators and students ideally benefit from an educational design that is functional and serves the goals and desires for educational outcomes. Designs not planned carefully in schools cannot only be costly and wasteful, but in certain instances bring about continual frustration for the classroom environment when teacher, administrative, and community pedagogical preferences and practical functionalities are not

considered. Buildings and classrooms where teachers cannot use appropriate equipment and where students are not comfortable and safe are not conducive to increasing student achievement. When educational facilities are planned to support learning, instruction can be facilitated more effectively through the physical and functional environment. According to Lackney, "The schools we build now will be with us for the next 50 years" (Rivero, 2004, p. 24); however, "the challenge is to create schools that will serve students well into the coming decades, yet remain within budget" (Tucker & Zahn, 1997, p. 1). Research of existing features in schools, revealing whether design features are no longer applicable to the environment and to determine emergent features resulting from educational influences, contributes valuable knowledge to facility design planning.

Purpose of Study

Since educational studies have proven facilities have an effect on educational environments and student achievement, educational design should be further studied to continue to meet societal and educational goals as they currently exist and emerge. Bradley and Protheroe cite several studies of facilities affecting students' attitudes, achievement, health, and behavior: Lighting (Mahone 2002; Kuller and Lindsten 1992); Indoor Air Quality (Wargo and Wargo 2002; Daisey and Angell 1998); Acoustics (Maxwell and Evans 1999; Mills 1975); Color (Sinofsky and Knirck 1981); Ergonomics (Marschall at al. 1995); and State of Repair (Berner 1993; Bowers and Burkett 1989). Further studies on types and variations of design trends are valuable for continuing to make educational progress. Such research assists for determining how educational spaces are designed most effectively for providing optimum learning experiences, while maintaining healthy, safe learning environments.

The purpose of this study was to describe the design features found in Georgia's schools and to determine the features existing, since they become outdated with educational change and new educational influences. Another focus of this study was to establish a benchmark for further studies regarding facilities and their connection to student achievement, student outcomes, and the educational environment. Specifically, this study reviewed schools built in Georgia to determine existing design features. The physical and functional environment of school design was studied to determine the features used most frequently in school designs. Once these characteristics were found, they were compared to findings from a similar study completed in Virginia (*New Design Features*, 1998-99). The Virginia study was used as a bench mark for comparison of findings.

Research Questions

1. What are the existing educational facility design features in Georgia's schools?
2. How do these features and trends compare with those found in the Virginia study?

Setting

The setting consisted of over 2,000 schools in Georgia, both public and private. Both urban and rural districts were included. Local school administrators were asked to participate in surveys.

Significance of the Study

Georgia's capital outlay for school facilities was approximately two million dollars as represented in the 2004 Governor's recommended budget (Georgia Department of Education, 2004). Population growth is presenting facility builders with projections they must take care of immediately. From fall of 2001 through fall of 2013 Georgia is expected to be one of the fifteen states with the largest projected enrollment increase in public elementary and secondary schools

(U.S. Department of Education, National Center for Education Statistics, 2005). As constructions and renovations continue to increase, facility planning, the earliest phase in facility building is becoming a more valuable component to the planners and their stakeholders for proactive efforts in school facilities. It is vital for these groups to be aware of various designs and features available and to gain as much understanding as possible of the influence of features used in schools. In order to inform school planners and all persons with the intent to improve schools, it is important to identify the features of existing schools and trends.

Teacher and student classroom instruction directly impact learning, and school facilities directly contribute and influence learning in the educational environment through their physical and functional features. School design can facilitate or restrict educational philosophies representative of traditional, progressive, or pragmatic approaches (Beaudlin, Merritt, Oja, & Sells, 2004; McCain, 1996; Sanoff, 1994; Ledford, 1981). The extent to which the environment is flexible, the extent to which spaces are designed for cooperative learning, how many student centers are established, and further areas for exploration directly influencing student achievement can all be reflected in school design. Designs can also be reflective of potential relationships and connections to community and parents. School design is ever changing with society and its progress. "Forward-thinking communities are taking a hard look at learning environments and applying the results to school design. Architects are beginning to use these new ideas in buildings they design" (Cunningham, 2002, p. 1). Since research has already directly linked facilities and student achievement, further studies on types, variations, and age of design trends are valuable for continuing to make educational progress.

Assumptions

1. The sample of participants who volunteered to respond was representative of Georgia.
2. Survey questionnaire and responses provide a valid measure of the building facilities.

Limitations of the Study

1. The schools were provided with e-mail invitations and not all requests to participate reached individuals due to server filters and incorrect or outdated e-mail addresses.
2. The administrators participating were volunteers.

Definitions

1. Physical Environment: Any physical feature of the building design such as safety mechanisms, classroom space, furnishings, technology, and similar physical features of design.
2. Functional Environment: The special programs or types of instruction that "function" or take place in the physical environment. Examples include preschool or high school programs, instructional scheduling, and instructional styles, such as team teaching.
3. Trend: a) As discussed in literature review, a general tendency or movement; a current style or liking; emphasis in design. b) As discussed in results, a feature occurring in at least 50% of schools surveyed.
4. Feature: Any physical or functional component of educational design.

Organization of Study

Chapter 1: This chapter consists of an introduction, which discusses examples of influences on school design and provides reference to the importance of further studying existing and emerging design features. Also included are the following research topics:

problem, purpose, research questions, setting, and significance of study, assumptions, limitations, and definitions of terms.

Chapter 2: This chapter includes the review of literature as it relates to the physical and functional environment and discusses universal trends to consider regarding design features and considerations: sustainability, efficiency, aesthetics, safety and security, technology, and collaboration. The review of literature then follows these considerations by discussing the remaining individual or categorical features aligned to the survey while supporting the premise that features are emerging global interests. Examples are provided from various countries of schools built for the 21st Century in addition to the United States. The literature review consists of the following outline: Energy Efficient, Flexible, and Sustained Designs; Aesthetics; Safety and Security; Collaboration; Classroom Space and Furnishings; Technology; Organization of Classroom and Administrative Offices; Student Communal Spaces and School Grounds; Teacher Facilities; Instructional Strategies and Instructional Opportunities; and Social and Community Use.

Chapter 3: Methodology, research questions, population and sample, methods, data collection and analysis

Chapter 4: Findings

Chapter 5: Summary of findings, recommendations, and implications for further research

CHAPTER 2

REVIEW OF LITERATURE

As existing schools wear out and are renovated, or replaced, certain changes occur in school designs that might impact student outcomes. These changes and perhaps trends include features having never been a part of school design, or features included in school designs previously, but currently having a significant emphasis. For example, communities have always been a part of education and schools, but recently they have emerged as an intricate part of school design and the planning process. These emergent and emphasized designs exemplify, and in many instances, redefine educational environments.

In an era in search for redefining student outcomes and success, evidence already supports the premise that school design features influence student outcomes. Rethinking school design may be imperative for educational reform. In a report by the United States General Accounting Office results of a 1995 study revealed schools were unprepared for the 21st Century. Only one decade ago these schools were found to have significant shortages in critical areas:

> Most schools do not fully use modern technology. Although at least three-quarters of schools report having sufficient computers ... they do not have the system or building infrastructure to support them.... often not networked or connected to... the outside world.... Over 14 million students attend about 40 percent of schools that reported that their facilities cannot meet functional requirements of laboratory....Over half the schools reported unsatisfactory flexibility of instructional space necessary to implement many effective teaching strategies.... Although education reform requires facilities meet the functional requirements of key support services-such as private areas for counseling and testing, parent support activities, social/health care, day care and before-and after school care- about two-thirds of schools reported that they cannot meet the functional requirements of before-or after-school care or day care. (United States General Accounting Office, 1995, p.2)

A group of individuals including educators, facilities planners, architects, government leaders, and citizens met in 1998 and discussed ways of planning and designing schools for better learning environments. As a result of the meeting initiated by the U.S. Department of Education, six national design principals were identified to meet the nation's needs for the 21st century. According to this group, school designs should (1) enhance teaching and learning for all learners; (2) serve as the center of their community; (3) include all community interests in planning process; (4) provide health, safety and security; (5) make effective use of available resources; and (6) be flexible and adaptable (Bingler, Quinn & Sullivan, 2003).

This literature review further discusses recent design trends of considerations and trends of design features as they emerge in the 21st Century by citing global examples in addition to examples in the United States. Examples serve to illustrate design features not as comparisons, but for supporting the premise that universal trends are emerging in school design. The term trend is usually meant to mean a general tendency or movement, a current style or liking (Webster). Certain trends are discussed in the literature review without reference to defining frequency, since the trends are recurrent in the literature and exemplify an emphasis. Current trends of consideration include sustainability, flexibility, efficiency, collaboration, safety, and aesthetic values as part of educational design for school facilities. These considerations as trends emerge through the features of the school's physical and functional environments. "All previous decision- making and data gathering can now be brought to bear on these two taxons. Together they allow for the creative use of resources, under control, in a context, within a structure that has certain functions" (Rowe, 1981, p. 9), forming the school environment.

In design, the physical setting is referred to as the structural component, which represents "the natural and built environments" (Tanner, 2005, p. 1) of school facilities. The physical

setting includes the following features of school design: safety and security; the classroom inclusive of space and furnishings; technology; school grounds; administrative and teacher facilities; and communal areas; and energy efficiency, inclusive of sustainable design features.

The functional aspect of school facilities is defined as "what is happening in the environment" (Tanner, 2005, p. 1) and how the school uses its physical constructs.

> Formal structures provide only the skeleton of a productive school. How people behave, interact, learn, and work together is what breathes life into a school. Schools that are improving are characterized by co-operative work relations among all adults. (Sebring & Bryk, 2000, p. 3)

Functional aspects have been categorized by the organization of instruction and the school programs occurring in the physical structure. These programs can include instructional orientations at any level, including elementary Head Start programs or high school vocational and career programs. Other functional aspects can include full service schools and special programs, including summer and after school programs, as well as additional youth or alternative programs. The functional settings of facilities represent how the building is used or how the facility functions as a whole, inclusive of programs and instructional organization. Organization of instruction is represented by whether various instructional styles such as team-teaching, block scheduling, or further varied instructional approaches are used. Through it pedagogical styles, such the extent of hands on learning and the emphasis of skills practiced, are reflected in facility planning and can affect structural design through classroom features by its size, arrangements of rooms, equipment, and additional implementation of features.

Energy Efficient, Flexible and Sustained Designs

With the onset of new schools and renovations taking place and given the societal accommodations schools are beginning to make to meet traditional needs, facility building has

presented itself in the 21st Century as a market giving imperative regard to efficiency and sustainability. With consideration of fast growing areas, “the school construction boom in the last decade forced some school districts to build faster and more cheaply. Speed of construction combined with costs savings, however, did not always equal success for long-term needs”(Construction Guide, 2002, p15). As a result, those involved with facility building are seeking efficient and sustainable designs to last, not necessarily short term fixes as ends.

Sustainable designs are found in regard to placement, energy, materials, and preventive measures to avoid any future or unexpected expenses. How important is sustainability? “Sustainable, educational design can generate capital, [along with] operational and maintenance savings ... to produce a high-quality facility that has a minimal impact on natural resources and costs less than a conventionally designed facility” (Construction Guide, 2002, p 1). Sustainability is not just about efficient systems but how the building or design can be used or created to sustain efficiency. Examples of utilizing such approaches are found in consideration of building placement and the ways in which the building will be used. Not only in the United States, but these considerations are used for producing minimal operation and maintenance costs all over the world: documented facilities include Belgium, Finland, United Kingdom, Japan, France, Australia, Ireland, Portugal, Spain, Italy, Germany and Canada (Organization for Economic Co-Operation and Development, 2001). Where buildings are placed in relation to the sun can limit solar gain resulting in savings of equipment needed for cooling; furthermore, day lighting used can save on the costs of light fixtures needed and energy consumption (Construction Guide, 2002). As a universal interest sustainability applications are evident in utilizing local resources to save on costs. In Finland recycled paper was used for installation as a sustainable material along with accessing local resources, pine and spruce. An example of a 21st

Century School built in Italy used stone as a local resource available for purposes of efficiency and to sustain costs (Organization for Economic Co-Operation and Development, 2001, p. 40).

While efficiency ensures a more cost effective and maximized approach, sustainability concentrates on long term efficiency and maintaining desired results. Therefore, using design strategies to make schools efficient can dually be designed for sustaining efficiency. For instance, lighting, "indirect lighting using pendant fixtures that reflects the light from compact fluorescent bulbs off the ceiling provides higher efficiency with fewer fixtures" (Construction Guide, 2002, p. 2). This example exemplifies a technique used for efficiency by utilizing reflected light and reducing costs, while also exemplifying sustainability since the use of reflective light has been designed for the duration of the building to sustain efficiency. Florescent lights are not as popular; therefore, to obtain efficient and aesthetic results they are being replaced by natural light from the surroundings. In Switzerland, skylights were used for lighting in the ceilings and to help maintain a constant temperature. Additional examples utilizing the effects of lighting are found in Canada, Japan, Austria, France, Iceland, Italy and Portugal (Organization for Economic Co-Operation and Development, 2001).

Sustained efficiency can be achieved by selecting high-performance material that can increase healthy environments by preventing mold and other contributors to poor air quality, resulting in expensive costs to make corrections. Recommended are products not as porous, such as concrete and masonry to prevent damage usually occurring due to moisture (Construction Guide, 2002). Energy is a source that all buildings and facilities use. Design can control for energy efficiency and sustained use by using "power generated from renewable or 'green'energy sources -such as wind turbines and photo-voltaic arrays (Construction Guide, 2002, p.1). Further applications for sustaining efficiency in design are found in roofing and water consumption.

Roofing costs can be saved by using light colored roofing to reduce heat, and irrigation can be designed to collect and reuse rain water for buildings with large consumption (Construction Guide, 2002).

> Traditionally, air is supplied and exhausted by way of ceiling vents, which requires greater air volume and larger equipment...a sustainable-design approach might use a raised floor as the plenum for air supply. This means heated and cooled air needs to be moved only three feet from the source.... Exhaust vents can be placed in the ceiling, with the added advantage of a fresher, one- way flow of air and the potential for improved indoor air quality. (Construction Guide, 2002, p.1)

Given the growth of school population and the impact technology has made in the recent decade, curriculum and facilities have to be designed for flexibility, and it is always wise to use a sustainable approach. Sustainable schools are designed flexibly for expansion and efficiency. Documented by Shelly (2002, p.1), "the Council for Educational Facility Planners International (CEFPI) proclaimed...'teaching and learning requirements must be the driving force in planning, designing and constructing educational facilities'(CEFPI, 2001)." The onset of learning centers for cooperative learning from research revealing best practices for education suggests for flexible school designs in the physical realm. "The impact of a wide range of instructional technologies (not simply computers) has implications for a different kind of learning space" (Shelly, 2002, p. 1). As a response to improving education, facilities and designs are being reviewed and viewed as a means to facilitate and support current expectations making schools flexible and adaptable spaces. With such a non-stagnate curriculum and with consideration of costs to implement or provide equipment, sometimes costing more than the facility space, flexibility cannot be omitted from design, and technology is a primary example.

> According to Dingeldein, vice-president of the American Institute of Architects (AIA), 'Flexibility is important for today's career technical programs ....The turnover rate in programs is higher....They need to be plug and play'...noting that the rapid turnover of programs means facilities must be easily converted as needed. (Cutshall, 2003, p. 1)

Structurally related, technology in design is beginning to be thought of in terms of immediate needs and future needs. Examples of flexible and sustained planning in technology suggest that "districts should consider putting conduit for future technology into classrooms and administrative areas that might not receive cabling for a few years....Installation during initial construction makes system changes easier and more cost effective in the future" (Tucker & Zahn, 1997, p.1). Another alternative for planning flexible and sustainable designs regarding technology is for schools to be equipped using modular wiring. "It offers potential for substantial savings, enhances safety and greater flexibility....Modular wiring, or cable, is prefabricated wiring used for electrical, telecommunications and building-automation commands...components are delivered as they are required for a specific portion of the building" (Construction Guide, 2002, p. 3). The advantages lie within the concept of flexible, efficient, and sustained use as it is needed; "the overall cost of the project can be reduced by 25 to 40 percent by using modular wiring instead of the normal pipe and wire" (Construction Guide, 2002, p. 3).

Making the design flexible and sustainable can also include considerations for physical growth of the campus. An example is found in the design of the utilities. Ideally school design planning would create schools flexible enough to allow "engineers to place utilities in paths that will minimize disruption to services and relocation costs later on" (Tucker & Zahn, 1997, p.1) when other buildings are added.

Energy efficient investments are smart business investments.

> Since traditional fiscal resources are presently very limited, schools may, in some cases, need to look beyond traditional funding sources to solve problems. Since a lack of funds is the greatest barrier to school energy efficiency effort, private sector financing can help overcome this barrier. (America Association of School Administrators, 1992)

Additional alternatives can include special local options sales tax, (SPLOST), local collaborations, bonds, grants, and private contracting for additional funding sources. "Although different approaches...have emerged, the voter-approved local bond issue is still the backbone of funding school infrastructure needs" (Sielke, 2003, p. 28). Depending on state statutes, districts can even lease or rent property as a funding source. Previous case studies include the Illinois School Building Commission; The Quincy Elementary School, Boston; Butte County, California; Inner Harbor Campus, Baltimore; Bowling Green, Kentucky; State of Florida; and Pontiac, Michigan: Human Resource Center (Educational Facilities Laboratories, 1971).

Aesthetics

Aesthetics is a part of all humans and their social world. It differentiates decisions of daily life reflecting human desires and pleasures of where they dine, play, and enjoy life. Such aesthetic values often determine why people choose one restaurant over the other, shopping areas, clothing, and name-brand products. How these interests or places appeal and reflect to the sensual side of individual natures is an intricate part of daily living. Similar concepts are also true of school facilities and the atmospheres they create. Recent studies reveal students achieve better in environments where they are comfortable. "A 1997 study by R.W. Phillips indicated greater student achievement in school buildings of higher aesthetic standards....A sense of aesthetics humanizes spaces and simulates learning, studying, and socializing experiences" (Focusing on Human Factors, 2003, p.2).

> Given the considerable amount of time that students and teachers spend in classrooms, it is not unreasonable to expect these places to be hospitable.... The classroom environment can affect many attitudes and behaviors. High levels of density have resulted in dissatisfaction, decreased social interaction, and increased aggression. (Sanoff, 1994, p. 1)

Aesthetic environments are not only representative of classrooms. Cafeterias, school grounds, and other social areas have provided opportunities for students to relax, enjoy, and interact in environments. Music played in mornings, lunch, or at transitional moments during the day can have a calming effect on students as they prepare for their next tasks.

> A sense of ownership results from respect for surroundings. Spaces designed with aesthetic pleasantness, complementary colors in proper furnishings, and galleries or a wall that display student artwork and trophies contribute to a sense of self-worth and ownership. (Focusing on Human Factors, 2003, p.1)

Plants placed throughout the halls and rooms contribute to a relaxed and attractive atmosphere. Design elements using color can make tremendous impressions when used as a factor of design. Dramatic, bright, bold, or softened colors are chosen to create feelings of calmness, warmth, excitement, or inspiration and give appearances of beauty and characteristics reflective of the environment (Stanton, 1995). In Austria color was applied to the concrete of the outer building for strong visual appearances and to identify it separately from the residential buildings (Organization for Economic Co-Operation and Development, 2001).

For schools community oriented, creating spaces for adults and children to safely be together while learning is an aesthetic feature represented through the establishment of “family” centers for students and families to share and interact. Family centers can be designed with furnishings offering comfortable places for parents to interact with their child, sometimes offering equipment for use they may not have access to otherwise. These inviting areas create a sense of family and community while connecting students and parents to the learning environment. Creating welcoming and comforting places could also initiate parental involvement and parental support often sought by educators.

Safety and Security

As outlined in Maslow's Hierarchy of Needs safety is a basic necessity and priority for all mankind (Maslow, 1954). Given the comfort safety brings to human lives, appropriate safety features are included in aesthetic qualities for school design. Without making students feel as though they are imprisoned, ensuring parents, teachers, students, and community members' schools are a safe place to learn is detrimental given the recent tragedies and accessible dangers to students. Every effort to ensure school safety is imperative, while not creating an institutionalized environment.

Safety comprehensively represents two main categories: employee or student security and property protection (Dermody, 1995). Fencing or walled areas provide security and restrict children from lurking in unsafe places (Beaudin et al., 2004, p. 95). Classroom designs using high visibility arrangements and administrative offices being visible and dispersed throughout buildings are only a few of the emerging characteristics in school design in regard to safety. More common is glass or transparent walls for ease in monitoring students. "Elimination of spaces that are not subject to random or constant visual supervision, and functional locks and other devices to discourage opportunistic crime and vandalism" assist in providing security (Kliment, 2001, p. 100).

The addition of security cameras outside and inside school buildings are becoming standard equipment for monitoring school safety. Outdoor lighting and surveillance use of closed-circuit television (CCTV) are used among school sites (Beaudin et al., 2004, p. 95) Telephones are being added to classrooms to facilitate communication in emergencies, and in certain instances, security officers are used as a deterrent for unwanted behaviors. Although

such features are becoming necessary considerations, school design can influence whether students and educators feel they are in a learning environment or a corrective facility.

Collaboration

According to Rachel Tompkins, executive director, Rural School and Community Trust:

> The best schools are designed when architects, planners and engineers spend a lot of time talking to people in the community about how they view their school, and what they think about the school as an institution in the community-not just as a place where children go, but where adults are involved. (Rivero, 2004, p. 26).

Planning for school facilities has often been concentrated at the district level, including a committee that may or may not consist of members outside the school or even outside the central office administration; however, arguments are made for the recent advantages cooperative planning can give. Aside from the physical attributes, aesthetic attributes also result from cooperative planning in school designs.

When school systems begin to renovate or build, the process usually begins with a need. Systems may not perceive the renovations, the re-building, or the building as opportunities for shaping the environment, but rather repairing or maintaining the environment. Usually expressed by administrators, “We took care of our critical needs first - prioritized.” This common response is usually representative of ideologies not only of administrators, but of a typical committee approach to renovations, commonly consisting of the system level administration, facilities administration, and principals of the buildings being renovated, in consultation with the architects (Jones, 1981). Plans are made to renovate and add based on immediate needs. Certainly no fault is found in taking care of such needs. They are crucial to keeping the environment functional and safe. However, could such projects be perceived as opportunities for reshaping the environment or revamping rather than just renovating?

Unfortunately funding may be perceived as a barrier for altering the environment, especially when the building repairs are extensive. The irony in such perceptions is that school designs can be planned to assist with revamping and reshaping the environment, while taking care of necessitated repairs and not always costing additional monies. In fact, research examples suggest that when building projects are designed with the community, principals, teachers, and parents, funds can be saved. Although administrators planning facility designs usually feel compelled to fix whatever problems exist, and sometimes with the constraints of a tax driven budget, they could gain support by expanding their input and viewing it as an opportunity to begin shaping and changing the facility in a way that could continue when additional funds and opportunities come along. This seeks a support group for not only immediate ownership but also a possible commitment to longer and sustained planning.

Research making facility planning a "people's process" is cited by suggesting the important connection between parents and their community with schools. Schools involving extensive community planning are being referred to as neighborhoods of education. Planning steps for creating new or remodeled schools cannot be avoided in facility design to meet the ever changing learner needs and desired educational outcomes, while including or transforming them into educational neighborhoods (Hill, 1997). As a result of parental help and community involvement the largest capital campaign in Missouri's history resulted in a successful community addition of a performing arts and athletic center. The success was attributed to the participation rate that came from early planning and involvement of parents and the community. Parents and students were actively involved in the beginning with the design process and the needs assessment, so all had ownership and a shared mission (Chivetta, 1998). Reiterating again

the advantages of ownership, one district reported that as a result of being included students have taken ownership in the building, and no acts of vandalism have occurred (Shorr, 2004).

In *Becoming a Voice in School Facilities: Taking the Lead*, Hubler acknowledges that principals and teachers are often omitted from school facilities planning (1997). He supports the concept of school level personnel contributing their wealth of experience and knowledge and playing an active role when it comes to designing facilities. The results of shared planning present no surprises for teachers, administrators, parents, and community.

> Contractors and architects tend to fall in love with the exciting features they can design into a school building....But when teachers and administrators finally come in, those whiz bang features don't always work. The staff never quite gets what they thought they'd get,"according to Granto, Superintendent of Niagra Falls. (Shorr, 2004, p. 19)

Mason, an architect, expresses agreement for such proactive shared planning for eliminating problems in the beginning by stating, " The strategy of building community through small-school programming and design is minimizing-and in some cases erasing-many problems schools face" (Rivero, 2004, p. 20).

Strategy building can also be used in larger scale planning to ensure adequate features. A shared decision making effort on the part of Granto saved his district a million dollars when it was undergoing a major facility and construction project. As a strategy for planning appropriate features through collaborative efforts, he had a mock classroom built before the initial project. It was remarkable at the buy-in from those involved (Shorr, 2004). "As students, teachers, janitors, fire safety reps, IT staff, and others filed through the fake classroom, the complaints and suggestions started to roll in....Teachers found that the TV monitors were placed at the wrong angle" along with other similar and significant problems identified and eliminated early (Shorr, 2004, p. 19). The most impressive aspect discovered was an incorrect sizing and space of a wall

in relation to a ceiling conduit, which saved the district "hundreds of thousands of dollars due to the recognition that it was in the wrong spot" (Shorr, 2004, p. 19). Granto states, "We planned our work and worked our plan" (Shorr, 2004, p. 19). Benefits of shared planning, aside from a sense of ownership, include a significant reduction in complaints once the building is completed. Collaborative benefits define its purpose as "a result of forces placed upon a building's proposal and design, but it also is the result of people's desires" (Ensuring Adaptability, 2002, p. 150). Having a sense of ownership in the process brings satisfaction to all participating

Although, "there is still a need to show the effects of more community and client involvement in the learning process as well as in the design of the learning environments which house them" (Taylor, 2000, p. 39) collaboration is a recognized asset to facility design economically. Economic benefits are found when costly problems are omitted in the beginning and resources are collaborated. "Most traditional schools are used ...for about 16 percent of the total time.... All factors taken together indicate ... an enormous wastage of public funds in the traditional use of school facilities" (Kennedy, 1979, p. 15). When school designs are planned collaboratively they can contribute to "flexible spaces that serve multiple functions [and] can reduce square footage and save construction costs" (Ensuring Adaptability, 2003, p. 150).

Discussion

Trends outlined include economic considerations for facility designs and emphases on aesthetics, technology, collaboration and safety. These considerations have been identified as trends of consideration because they are recurrent in literature and suggest a tendency for continuation in further designs. Additional trends can be identified by categorizing specific features of design areas. Design features are not only physical features but functional features identified by school programs and additional uses of the building. The following content of the

literature review includes additional design features as they relate to the physical setting and the functional setting of design features. Additional benefits of collaborative efforts are discussed as functional features, represented through social and instructional opportunities.

Classroom Space & Furnishings

Sometimes utilizing technology as a source, the demand for flexibility in the classroom is evolving through student labs and learning centers. Labs are usually larger classrooms with multimedia, tables, and centers to offer flexibility in instruction and work spaces. Students can have opportunities to work together or alone. Almost all reform efforts, "best practices" research, and grant funding opportunities have components of individual instruction, or at least small group instruction through listening, visual, or reading centers as well as participatory and skills - concentrated learning. To accommodate small group instruction, design features must be flexible and mobile if not already permanent designs of the classroom.

Especially in situations of progressive, individualized, or pragmatic learning, classroom spaces are representing a different kind of workspace. "It is our expectation that future elementary school classrooms will contain child-size carrels that accommodate a range of different self-directed activities (writing, computer work)" (Beaudin et al., 2004, p. xxviii). For visual and acoustical benefits and to allow for small and large group activities, classroom shapes can be varied from traditional square to the L-shape or trapezoid and partitions can be utilized (Beaudin et al., 2004, p. xxviii). Given the research by Gardner and the multiple intelligence theory, a renewed emphasis on art and music education has emerged for contained and specialized rooms instead of regular classrooms (Beaudin et al., 2004, p. xxix). Additionally specialized classrooms for reading and literacy programs, time-out rooms and special education classes have been implemented features.

Similar to classroom space, furniture should also support the instructional and developmental needs of each classroom. These needs can vary from grade-level to grade-level. For instance, in elementary classrooms cubbies are a furniture necessity for personal items if students do not have lockers and ideally designed on a child's scale. Likewise, these needs will also vary for instruction. Tables instead of desks are options for many labs, with consideration to size and storage.

Technology

Technology impacts educational design in virtually every aspect from curriculum to safety and from organizational to managerial purposes.

> No longer will experimentation be confined to the science lab. Instead, a school building's learning spaces will become all- purpose laboratories in which hands-on and virtual experimentation of many different, interdisciplinary sorts can be carried on. Students-employing personal digital assistants (PDAs) that combine MP3, DVD, cellphone, and laptop computer functions in a single device- will communicate with electronic resources containing vast amounts of information. (Beaudin et al., 2004, p. xxiv)

The emphasis of technology results in designs no longer implemented only in the media center but saturated with additional computers and labs large enough to accommodate regular classroom sizes and with Internet access. "Saturation means ... a computer on every desk, and each linked to a network within the school that connects to networks beyond the school. When schools contemplate new buildings or major renovations, they should anticipate this saturation" (McCain, 1996, p. 15).

The impact of technology directly affects the physical environment. Saturation brings about various demands for the school environment. They take up space, emit electromagnetic radiation, create ergonomic stress, have to connect to networks, use electricity, and generate heat (McCain, 1996, p. 15-16). Positive effects of saturation include the contemporary instructional

benefits. Many countries have facilitated students' direct involvement with technology very early. In France teachers and administration are not the only typical users of communication via e-mail. Classes are encouraged to communicate via email and student written activities include word processing at the primary grade level. Satellite television is also used for online lessons and school news (Organization for Economic Co-Operation and Development, 2001, p. 42).

After thousands and millions of dollars are put into infrastructure, support is a critical factor for effective results. Without qualified technicians computers and their function will be limited. Administration, technicians, and staff are valuable mixtures for technology planning and its implementation and support. According to McCain the support mechanism for effective technology features has four main aspects:

1. Support for those using technology: initial training, encouragement, and problem solving.

2. Support to the hardware and software: routine maintenance, recovery from equipment or software

3. Administration: inventory control, password and other security administration, software license management, and maintenance of technical documentation.

4. Maintaining technical staff proficiency: Formal and informal training...to maintain proficiency with current products and acquire proficiency with new products. (1996, p. 87)

Organization of Classroom and Administrative Offices

Classrooms can be organized by grade-level, academic discipline, or in clusters. Certain districts are designing clustered spaces for multiple groups of students to share resources and gather to work on projects, offering a communal advantage for students. The concept allows

students from different classes to work on joint projects and students are not always confined to the traditional classroom or peer group (Beaudin et al., 2004, p. xxviii). Classroom designs could be designed around communal spaces and organized by student preferences, including various student workshops. Placing grade-levels next to each other for ease of transition is another alternative. A particular example found in a case study of a Sweden school illustrates classrooms organized for independent study in which no standard rows exist of classrooms. Instead instructional facilities link to the library. The school is structurally built by a beam system to allow change for different purposes as they occur (Organization for Economic Co-Operation and Development, 2001, p. 66).

Organizations for principals' offices include spaces close and easily accessible to the public, while remaining offices vary according to their function. Administrative offices are not uncommonly designed so the principal has a private toilet, carpeting, windows, and is placed in close proximity to the conference room (Beaudin et al., 2004, p. 7). Volunteers and specialists spaces, such as social workers, school psychologists, guidance, and nurses, are also considerations for individual designs and offices according to their role. Guidance offices are sometimes placed closer to students to facilitate on-going relationships with students. They might include a private conference area for students, parents, and counselor. Assistant principals' offices vary in location, either closer to departments or closer to the principal. If the school has a family resource center, office space can be designed as part of the center for the family resource coordinator.

Student Communal Spaces and School Grounds

Communal spaces are becoming an important aspect in design in order to develop students' social abilities. Spaces can be established simply to allow children places to interact or

designed more instructionally oriented to incorporate learning. Outdoor and indoor connections to spaces to promote gathering and interaction assist with social developmental skills.

A design represented through case studies of schools from various countries included many types of communal spaces for students having both social and instructional purposes. A Turkish example given described a communal area in which students are able to care for pets and a garden while they learn and enjoy the environment. Another case study in Japan exemplifies a communal space incorporating instructional purposes designed as an outdoor learning environment:

> Designed to encourage respect for, and interest in, the environment ... allowing children to experience nature from an early age, attractive Gardens are set in the court outside the science and art and craft classrooms. In the playground, there is a stream, landscaped hillocks and a sand play area. (Organization for Economic Co-Operation and Development, 2001, p. 14)

The same school developed a garden for learning on a roof with flowers, grass, and rice to attract many types of insects and species for studying (Organization for Economic Co-Operation and Development, 2001, p. 14). Although a majority of schools have communal areas, the degree of aesthetic development and the connection to instruction varies in extremities. Having a standard cafeteria to represent a communal area contrasts quite differently with a school cafeteria located within a mall setting where students have various options to dine. Likewise, having a flower bed designed around the school entrance is quite different from the establishment of an outdoor garden and landscape used for instructional purposes, or an indoor garden with trees and fountains as part of communal areas. In addition to aesthetic features, communal features can have dual practical functions. Cafeterias have been designed to serve many purposes in the past (Bogner, Clapp, Herrick, & McLeary, 1956), commonly a part of the gymnasium. As

community and partnerships emerge the cafeteria's use is primarily for school functions as they relate to dinners and parent or community events (Beaudin et al., 2004, p. 7).

School grounds can be a play area or instructional area depending on its use, with various designs and purposes. Gardens and outdoor environments are not limited to organizational maintenance but can be maintained by students, teachers, and community. Many schools use students' artwork to create murals and attractive landscaping features. Playgrounds landscaped with openness and utilizing plants serve as imaginary boundaries and educational experiences. In Italy a school has provided educational experiences using four outdoor classrooms, one of which was a botanical garden (Organization for Economic Co-Operation and Development, 2001, p. 75).

Teacher Facilities

Teacher spaces do not have to be thought of only as a teacher desk. Workstations are the emergent descriptor, providing teachers places to work with students and conference with both students and parents (Beaudin et al., 2004, p. xxviii). Designing teacher workplaces accessible and comfortable are among the strategies used for designing classrooms representative of typical, behavioral, teacher-student relationships. Using designs for high visibility of students facilitates ease for monitoring the learning environment, including placement of furnishings and design factors contributing to easy instructional facilitation. A consideration of a teacher-lecture auditorium is found in the various designs that either "positions all students forward to view the teacher standing in front [; utilizes a] lecture room, with rows of students around a lecture stage [;or utilizes a] ...lecture room that provides student seating in a horseshoe-shaped pattern with the teacher in the center" (Focusing on Human Factors, 2003, p.1). Teacher workplaces designed to be shared or private can influence aesthetic comforts, depending on individual preferences of

each school's environment. Designs reflective of professional work areas contribute to professional environments and give implied respect for teachers and their profession.

Functional Use: Instructional Strategies and Instructional Opportunities

The extent to which the environment is flexible, innovative, and designed for cooperative, exploratory learning represents an instructional strategy resulting from functional design features. Although features have been discussed previously as they relate to the physical environment, not all features are physical. Functional features of school design include the many functions and use of the environment to represent what is taking place in the environment. Functional features include instructional strategies. Scheduling, teaching methods, or any feature identifying the use of the environment for organizing instruction to shape and broaden learning opportunities, are considered features of the functional environment.

Philosophy and the roles of educators, parents, and community members are shaping 21st Century schools in ways Dewey , and other democratic, progressive and pragmatists would have found pleasing in the functional setting (Dewey, 1916). Unique learning experiences represent a functional feature found in school designs and are recently increasing in popularity. Collaboration between a public charter school and a museum made for a unique opportunity. "The Henry Ford Academy is a 400-student public charter school located at the Henry Ford Museum in Dearborn, Michigan. The school was designed to be integrated with the museum and was built for 20% the cost of a comparable stand-alone high school. This collaborative effort has created an ideal connection of school and museum environments" (Rivero, 2004, p. 22). As an alternative setting for struggling students "one Minnesota District has four small high schools and four alternative schools in shopping malls (Focusing on Human Factors, 2003, p.1)." Another example quite different from the usual traditional facilities:

> Classrooms connected by halls ...and architecture based on the factory model and evolved to serve a teacher-desk-subject-textbook-graded-lecture curriculum, is the Mini City. Mini City has been a development for the past seventeen years in a nontraditional context and "represents extensions to the community at large." (*An Instructional Neighborhood*, 2004)

Mini City is a "constructivist view" model for learning created for third and fourth graders. The city simulates real life with spaces created large enough for two to five students, two adults, and models of places and buildings found in towns. In it students design the curriculum and construct their own form of government and communication, newspapers, television broadcast, and other real life simulations (*An Instructional Neighborhood,* 2004). Such infrastructures facilitate the constructive approach to student-centered learning.

Collaborative partnerships are functions of the environment offering learning opportunities for students. Demonstrated by a business partnership, educators relied on industry advancements to train students and establish "'Schoolhouse of Quality,' meant to engage business community to help in the planning of new career and technical schools" (Cutshall, 2003, p.19). As a result, students are given real world experience in their functional environment and schools do not have to spend extensive funds in physical features to create a learning environment or lab simulating the process. Another partnership of the functional environment using the same concept gives students access to "current equipment while building relationships with young people who could one day choose to join a company's workforce" (Cutshall, 2003, p. 19). Equipment that may not be possible for students to experience as a physical feature in the school, due to its nature or costs, is provided for a functional use by the business collaboration. Therefore, students experience curriculum and learning in various ways, while making valuable, networking, and relational connections with prospective employers they may not have otherwise.

Scheduling is a functional feature used in the instructional setting for organizing the educational environment. Through collaborative efforts a school sought to revamp its curriculum and use facility design to support the preferred way students were to be taught. The school adopted a modified block schedule as a feature to allow for small group instruction in particular subjects using half the students during different subject periods. With the understanding that a typical design would not be appropriate and the design had to accommodate for frequent transitions, the school staff planned with the architect in the initial design to make this approach possible. As a result, the final program was a success (Bradley and Protheroe, 2003).

Other similar approaches to the functional environment include the use of team-teaching, multi-age classrooms, and departmentalization. Innovative designs function as instructional features used strategically to teach by using the buildings as instruments of learning. The design elements "windmills, eco-ponds and fire sprinkler controls, for example, become teaching tools, as well as architectural elements" (Cunningham, 2002, p.1). For schools using solar systems in design for efficiency, "the technology can be incorporated into a school's 'eco-education'.... Everything within the environment is a potentially interactive learning tool....Rather than teach third graders from a science book about eco-ponds...let the students learn by spending an afternoon exploring the schoolyard pond" (Cunningham, 2002, p.1-2). In preserving a schools rural heritage, a wine press was restored in Portugal and vines were planted so students can observe the cycle of wine production (Organization for Economic Co-Operation and Development, 2001, p. 62).

The practical applications of functional features can offer students opportunities to gain experience and knowledge of how to use the content they are taught. Labs, outdoor learning

environments, and alternative learning sites applied as functional features of design make learning interactive and meaningful.

Functional Use: Community and Social Opportunities

The function of educational design features creates many social opportunities for students, community, and parents in recent designs. “Educational research calls for removing some of the traditional barriers between school and nonschool life and between school and community. Students achieve better in an environment where lifelong learning is a community value, where everyone is a learner, and where school is central to the life and learning of the community, accessible beyond traditional school hours” (Bingler, Quinn, and Sullivan, 2003, p.8).

The innovative community features for schools in the 21st Century are both instructional and social opportunities primarily offered through partnerships. Partnerships in the functional environment are evident as a result of cooperative planning for community and businesses. Many school designs and arrangements done collaboratively have become integrated to make schools the center of their communities. “Schools as centers of their communities achieve this status in either of two ways: They more effectively integrate with the community, or they extend the learning environment to use the community’s full range of resources” (Bingler, Quinn, and Sullivan, 2003, p.11).

Beginning to emerge from school community integration through cooperative planning is a full service community school. Examples include full service schools in which the facilities are used to offer total or full community services. It is defined as a school “ open to students , families, and the community before, during, and after school, seven days a week, all year long...and jointly operated and financed through a partnership between the school system and

one or more community agencies" (Dryfoos, 2002, p.1). Full service schools usually do not plan the school as an extension to or for the community, but bring community services to the needs of students and parents. "A family support center helps families with child rearing, employment, housing, and other services. Medical, dental, and mental health services are also available on site" (Dryfoos, 2002, p.1). Such schools are usually located in disadvantaged communities and in addition to on-site health and dental care, parenting classes, adult education classes, child care, and similar services typically sought from the community are also provided.

Although full service schools are usually to address socio-economic needs of the area, collaborations are occurring across every economic level to address community interest and provide additional opportunities through the functional environment for students, community, and business contributors. " By pooling funding sources or passing a bond issue for joint -use facilities, schools and communities can obtain needed buildings that neither could afford on its own" (Tucker and Zahn, 1997, p.2). Schools can extend their hours and "permit senior citizens to use the gym and health facilities during non-school hours" (Bingler, Quinn and Sullivan, 2003, p.12). "Business leaders who contribute to a building fund may want to rent or borrow the facility subsequently for a corporate conference. A space where students study computer science in the morning may host a CEO presentation that evening" (Ensuring Adaptability, 2003, p.150). Such collaborations offer students and community members opportunities and experiences they would not possibly have otherwise. Additional examples include day care facilities and libraries designed for public use. These designs serve both education and community efforts and usually allow extended opportunities.

Dryfoos describes an interesting example of using facility features for integrating and meeting the needs of the community when a particular school was having problems getting

parents involved and decided to ask parents what they needed the most. The parents replied with an answer stating they wanted a Laundromat. They did not have a Laundromat in the community, so washing machines and dryers were added to an area in the school. Parents are then reported to have come "in droves." another response to community interests occurred in response to a recreational interest. Using the outdoor learning environment, a school added a miniature golf course since one did not exist in the community to make it a part of the learning and recreational experiences for students (Dryfoos, 2002).

Discussion

The main two areas discussed in the literature review of the functional environment are surveyed in and reported in the findings for the following: Collaboration; Instructional/Social Program Services and Opportunities; Classroom Instructional Opportunities; Instructional Opportunities and Educational Programs; Organization of Instruction; and Community or Social Use.

CHAPTER 3

METHODOLOGY

Meanings are constructed by human beings as they interact with the world they are learning to understand (Crotty, 1998). Therefore, humans are constantly constructing their educational environment through design features and program functions. The constructs occurring in school design and the various features occurring as a result of social constructs were identified for Georgia schools in a survey. Questions used in the survey provided information about design features. The information gained will be a basis for helping educational planners to know the percentages of schools in Georgia utilizing certain features. Using this study as a benchmark, further studies may be completed to understand how these designs form educational settings and might possibly improve student outcomes and achievement. The data reported in the survey was used to study the topic: What are the school facility features in Georgia?

Research Questions

1. What are the existing educational facility design features in Georgia's schools?
2. How do these features and trends compare with those found in the Virginia study?

Population and Sample

The population for the study included local administrators or principals of public and private schools in Georgia. Stratifiers such as race, age, SES, and gender were not used for sample selection since the purpose was to identify the most common and emerging features of all educational facilities. The population included individuals in approximately 2,200 schools in 180 school districts. Participants' requests were sent to leaders in public schools as identified by

Georgia Department of Education and private schools identified by the Georgia Independent School Association, (GISA).

Methods

A survey used by the University of Virginia to identify design features was modified as an on-line survey and used to identify features for Georgia's schools. The on-line survey, designed using QuestionPro.com (see Appendix A), was used to determine the types of features and trends occurring in the physical and functional school environments in Georgia, as outlined in the survey by the University of Virginia and literature review for the University of Georgia study. The survey includes contents from the literature review. Considerations for categorizing features of the survey were sensitive to similarity, relativity to topic of categorical features, and features already outlined categorically by the Virginia study. Consideration was also given in regard to technical modifications necessary for designing the survey for completion electronically.

Data Collection and Analysis

Letters were mailed to all Georgia school districts requesting and encouraging participation in survey. An electronic reminder followed mailed letters to superintendents. Each participant received an electronic invitation giving an Internet address for accessing and completing the confidential survey. Administrative participants consisting of local, school administrators were contacted individually and requested to complete survey using services provided by Question Pro.com, a software provider. Surveys were designed to be completed and returned to researcher during a two to four week interval. School systems in Georgia were surveyed to gain information and understanding about trends of school design features existing. Information from the surveys was gathered and calculated using percentages and reported in the

aggregate. The data were analyzed to determine any possible relationships and to interpret current trends and features of design occurring in the physical and functional aspects of school facilities. Since no other comparisons were currently available aside from Virginia's study, comparisons of matching features identified were made between Georgia and Virginia. Summaries report on the emergent trends and on the design features currently utilized in Georgia's schools, with a comparison of Virginia's utilization of the same features. The comparison is presented in two-way tables for organizing and summarizing the data using two categorical variables, represented as features used most frequently by Georgia and Virginia.

CHAPTER 4

FINDINGS

Introduction

One week prior to sending participant requests, letters were mailed to district superintendents informing them of the study and purpose. Principals, headmasters, and headmistresses in Georgia were then electronically mailed requests to participate in the study. Over 2,000 requests were sent. Of those sent 385 possible responders viewed by accessing the survey link, 230 began the survey, and 71 respondents completed the survey (18% of surveys viewed). A total of 42 school districts across the state responded. Of the districts responding 50% were eligible for free or reduced lunch, 61.9% were reported as being majority Caucasian, 28.5 % majority African-American, as indicated in state reported data (Georgia Department of Education, 2005). Data from all participants were recorded and analyzed for each question individually using the electronic on-line software provider QuestionPro.com. Not all questions have the same number of responses, depending on whether all questions were answered by each participant. The accuracy and validity are assumed correct for calculations since QuestionPro.com is a professional and research academic entity specializing in surveys and data reporting.

Other than demographic information, aesthetic questions regarding personal opinion of satisfaction, and open-ended questions for recommendations of survey improvements or comments, all questions were check boxes and consistent in format for each category. The mean and standard deviation were calculated for each question; the percentages and frequencies were

used to determine the relationship of features analyzed, since almost 300 question choices and responses were possible. Features were analyzed in categorical groups for the following categories: Demographics; Energy Efficient, Flexible, and Sustained Designs; Aesthetics; Safety; Collaboration; Classroom Space and Furnishings; Technology; Organization of Classrooms and Offices; Student Communal Space; School Grounds; Teacher Facilities; Instructional/Social Program Services and Opportunities; Classroom Instructional Opportunities; Instructional Opportunities and Educational Programs; Organization of Instruction; and Community and Social Use. Quartiles were used for the numerical description of distributions, measuring the center and measuring spread when reporting data. The first quartile represents one-quarter, the third quartile represents more than three quarters (75%), and the second quartile is the median, which is larger than 50% of the observations, but less than 75%.

The data were analyzed using the following criteria for determining and reporting consistent results: report existing features that occur in at least 50% of schools; report school features utilized in at least 50% of new schools (schools built in the last 5 years); report features surveyed but not occurring or existing in at least 50% of schools; report features occurring in at least 50% of schools identified as more than 5 years old; report features occurring in over 50% of schools previously, but not occurring in 50% of the schools built in the last 5 years.

When reporting two main considerations were given for excluding the not applicable and not enough information answer choices, when calculating frequency and percentages: 1) In any category with over 50% of schools exceeding 15% of responses for not applicable or not enough information, only yes and no responses were used to report percentages of existing features. 2) If features were not applicable to all grade levels (elementary and secondary) answer choices for not applicable and not enough information were omitted from reported percentages of existing

features. Given these two considerations, only yes and no responses, giving implied applicability, were used for reporting. Elimination of answer choices were specified in reporting of each category.

Demographics

The participants represented mainly public school principals located primarily in rural and suburban areas. As noted in Table 1, responses indicate the age of schools almost evenly distributed among schools built within the last 5 years, schools built from 1985-1999, and schools built between 1950-1969, representing the population by totaling over 75% of the responses given. Schools represented in the data set are approximately 58% elementary, 23.6% middle school, 12.5% high school, and .055% Pre-kindergarten through grade 12.

Table1.

Frequency and Percentage for Demographics

Survey Items	N	%
Public Schools	81	92.05
Independent Schools	5	5.68
Other	2	2.27
Urban	9	10.34
Rural	35	40.23
Suburban	43	49.43
Opened in last 5 years (00-04)	23	24.21
Built between 1985-1999	28	29.47
Built between 1970-1984	11	11.58
Built between 1950-1969	27	28.42
Built prior to 1950	6	6.32

Energy Efficient, Flexible and Sustained Designs

Responses totaled 74; however, answers including not enough information and not applicable were excluded in data analysis due to increased frequency with a median of 14. The

following features were indicated in at least 50% of schools: central air conditioning (81%), air conditioning in most classrooms (78%), exhaust vents placed in ceiling for one way air flow (73%), day lighting (61%), and less porous materials such as masonry and concrete for moisture prevention (54%).

Using cross tabulations, further analysis was done to determine features occurring in over 50 % of the 17 new schools built within the last 5 years. Features indicated in the second and third quartile include using less porous materials such as masonry and concrete for moisture prevention, day lighting, air-conditioning in most classrooms, and central air conditioning. Central air conditioning was reported in 100% of schools built in the last 5 years.

Areas surveyed but occurring in less than 50% of the total 74 schools include air conditioning in office only, raised floor used as the plenum for air supply, solar panels, building placement, roofing considerations, geothermal heating, recycling programs, utilities placed in paths for minimal disruption of services and costs when additions are added, CO2 monitors, and humidity sensors (see Table 2).

Table 2.

Frequency and Percentage for Energy Use, Flexible and Sustainable Design

Feature		Yes	No	Not Enough Information	Not Applicable
Central Air Conditioning	N	60	14	0	0
	%	81.08	18.92	0	0
Air conditioning units in most classrooms	N	52	15	1	6
	%	70.27	20.27	1.35	8.11
Air conditioning in offices only	N	9	58	1	6
	%	12.16	78.38	1.35	8.1
Exhaust vents placed in ceiling for one way air flow.	N	43	16	14	2
	%	57.33	21.33	18.67	2.67

(table continues)

Table 2. Energy Use, Flexible and Sustained Designs (continued)

Raised floor used as the plenum for air supply	N	4	56	10	4
	%	5.41	75.68	13.51	5.41
Day lighting	N	41	26	5	2
	%	55.41	35.14	6.76	2.7
Solar panels	N	2	66	3	3
	%	2.7	89.19	4.05	4.05
Building placement	N	14	26	26	8
	%	18.92	35.14	35.14	10.81
Less porous materials for moisture prevention	N	38	16	15	5
	%	51.35	21.62	20.27	6.76
Roofing considerations (materials for reducing heat)	N	28	33	10	3
	%	37.84	44.59	13.54	4.05
Geothermal heating	N	2	57	12	3
	%	2.7	77.03	16.22	4.05
Recycling programs (ex. water)	N	13	50	9	3
	%	17.33	66.67	12	4
Utilities placed for minimal disruption	N	27	23	22	2
	%	36.49	31.08	29.73	2.7
CO2 monitors	N	8	50	12	4
	%	10.81	67.57	16.22	5.41
Humidity sensors	N	12	47	11	4
	%	16.22	63.51	14.86	5.41

Aesthetics

The following questions found in Table 3 were optional questions of opinion regarding overall interest in the school environment. Seventy-two percent reported having input in design choices and 70% reported being satisfied with interiors and furnishings. Ninety percent reported facilities adequate for learning and supporting the school philosophy and mission. Eighty-four

percent reported the safety features adequate and 64% reported being satisfied with outdoor spaces. Sixty-nine percent reported the school as not overcrowded. Cross tabulation for schools built in the last 5 years indicated 100% affirmation for all areas, except for having input in design choices (81%), satisfaction with interior colors and furnishings (94%), and schools reported as not overcrowded (81%).

Table 3.

Frequency and Percentage for Aesthetics

Questions		Yes	No
Do you have input and choices for school designs?			
		50	19
	%	72.46	27.54
Are you satisfied with your school's interiors (colors, furnishings, etc.)?			
	N	48	21
	%	69.57	30.43
Is the facility adequate for learning?			
	N	62	7
	%	89.86	10.14
Is the school environment reflective of school philosophies and mission?			
	N	62	7
	%	89.86	10.14
Are safety features currently used by the school adequate?			
	N	58	11
	%	84.06	15.94
Is your school overcrowded?			
	N	22	48
	%	31.43	68.57
Are you satisfied with your school's appearance outdoors?			
	N	42	24
	%	63.64	36.36

Safety and Security

For the safety and security section answer choices reveal whether the features were recently installed or built in the last 5 years, more than 5 years old or not installed at all. At least

74 responses were recorded for each question. Responses represent the most frequent safety features in schools as defined by the second and third quartiles and were calculated by using the affirmed percentages reported for features installed in the last 5 years and features more than 5 years old. Of the 74 schools surveyed the barcode system for libraries (92%), walkie talkies (89%), alarm systems (84%), and school bus security cameras (76%) are the features occurring in the third quartile (over 75% of schools). Features occurring at the second quartile include controlled access to building (70%), strategic positioning of offices (67%), one-way door locks (67%), modified restrooms (59%), and extra wide corridors (58%).

Over 50% of schools surveyed reported the following security features as not implemented: perimeter fencing, metal detectors, photo badges, police or uniformed officers, school security cameras, telephones, glass or transparent walls, and modified lockers. The only feature reported older than 5 years old in 50% of all schools responding is alarm systems.

Using cross tabulations, further analysis was done to determine features of the 17 schools built in the last 5 years. Results indicated the features occurring in over 50 % of the new schools built within the last 5 years are telephones, school bus security cameras, and modified restrooms for ease in monitoring. Glass windows and transparent walls were utilized in 47% of schools built in the last 5 years. Features implemented in schools built in the last five years occurring in the third quartile (occurring in over 75% of schools recently built) include alarm systems, walkie-talkies, computerized barcodes, strategic positioning of offices, extra-wide corridors, controlled access to buildings, and one-way door locks (see Table 4).

Table 4.

Frequency and Percentage for Safety and Security

Feature		Not in Building	Last 5 Years	More than 5 years old	Not Enough Information
Perimeter Fencing	N	38	13	21	2
	%	51.35	17.57	28.38	2.7
Metal detectors	N	70	3	1	0
	%	94.59	4.05	1.35	0
Alarm systems	N	11	25	37	1
	%	14.86	33.78	50	1.35
Photo ID for students	N	58	12	4	0
	%	78.38	16.22	5.41	0
Uniformed officers or resource officer	N	49	19	6	0
	%	66.22	25.68	8.11	0
One-way door locks	N	23	21	29	1
	%	31.08	28.38	39.19	1.35
Security cameras	N	46	19	11	0
	%	60.53	25	14.47	0
Computerized barcode system	N	5	38	31	1
	%	6.67	50.67	41.33	1.33
Strategic positioning of Offices	N	23	24	26	1
	%	31.08	32.43	35.14	1.35
Extra-wide corridors	N	27	22	21	4
	%	36.49	29.73	28.38	5.41
Walkie-talkies	N	8	40	26	0
	%	10.81	54.05	35.14	0
Telephones in classrooms	N	40	23	10	1
	%	54.05	31.08	13.51	1.35
School bus security cameras	N	15	36	22	3
	%	19.74	47.37	28.95	3.95
Modified lockers	N	57	6	6	5
	%	77.03	8.11	8.11	6.7

(table continues)

Table 4. Safety and Security (continued)

Modified restrooms	N	29	24	20	1
	%	39.19	32.43	27.03	1.35
Controlled access to building	N	19	25	27	3
	%	25.68	33.78	36.49	4.05
Use of glass and transparent walls	N	45	16	13	1
	%	60	21.33	17.33	1.33

Collaboration

At least 88 responses were recorded for collaborative related questions. Occurring in the third quartile, responses indicate the main sources of funding for facilities are state capital outlay and local funds, with local being the greatest contributor. In the second quartile fund raisers and federal resources were reported as sources for funds (see Table 5).

For community use the main function of the facilities is for regular instructional purposes in which the extended use of facilities to the community beyond school hours is made available to the public on a scheduled basis, either free of charge or for a minimal fee (85%). For initial planning of school design participants indicated the majority of planning is done by the board of education, superintendent, facility administrator, principal, and architect, all occurring in the third quartile with the board members, superintendents, principals, and architects in the 90th percentiles. Occurring in the second quartile are contracted consultants, teachers, parents, and community. Results are illustrated in Table 5.

With 74 responses recorded, planning interior furnishings did not indicate the same person making decisions in at least 50% of schools, but interior decisions were reported to be more frequently made by principals (42%) as illustrated in Table 6. Results report technology decisions are primarily made by principal or local administrator (85%), instructional

technologists on campus (77%), instructional technologist off campus (77%), superintendent (69%), board members (57%), and teachers (53%) as illustrated in Table 7.

Using cross tabulations, further analysis was done to determine if features of community planning varied with schools built in the last 5 years. In schools built prior to 2000, 100% of board members had been reported to participate in design planning with superintendents and principals in the 90th percentile; in schools built in the last 5 years percentages decreased while facility administrators and contracted consultants participation increased.

Table 5.

Frequency and Percentage for Funding Collaboration

Feature		Yes	No	Not Enough Information	Not Applicable
State Capital Outlay	N	69	10	6	3
	%	78.41	11.36	6.82	3.41
Federal	N	47	32	7	3
	%	52.81	35.96	7.87	3.37
Local	N	75	9	3	1
	%	85.23	10.23	3.41	1.14
Grants	N	42	32	8	6
	%	47.73	36.36	9.09	6.82
Donations	N	41	35	8	4
	%	46.59	39.77	9.09	4.55
Fund Raisers	N	46	32	6	4
	%	52.27	36.36	6.82	4.55
Business/Community Partnerships	N	43	32	8	5
	%	48.86	36.36	9.09	5.68
Building open beyond traditional hours and jointly funded	N	34	40	9	5
	%	38.64	45.45	10.23	5.68

(table continues)

Table 5. Collaboration (continued)

Building available on a scheduled basis, free or for nominal fee	N	75	13	0	0
	%	85.23	14.77	0	0
Community involved in planning	N	39	34	13	3
	%	43.82	38.2	14.61	3.37
Planning only with school personnel	N	35	41	9	3
	%	39.77	46.59	10.23	3.41
Full-time community school coordinator	N	13	60	6	9
	%	14.77	68.18	6.82	10.23
Planning includes board members	N	82	4	2	0
	%	93.18	4.55	2.27	0
Planning includes superintendent	N	80	4	1	3
	%	90.91	4.55	1.14	3.41
Planning includes facility administrator	N	75	8	1	5
	%	84.27	8.99	1.12	5.62
Planning includes principal	N	79	8	1	0
	%	89.77	9.09	1.14	0
Planning includes teachers	N	62	18	6	2
	%	70.45	20.45	6.82	2.27
Planning includes students	N	19	57	8	4
	%	21.59	64.77	9.09	4.55
Planning includes parents	N	48	30	7	3
	%	54.55	34.09	7.95	3.41
Planning includes community members	N	45	32	9	2
	%	51.14	36.36	10.23	2.27
Planning includes contracted consultants	N	65	14	6	3
	%	73.86	15.91	6.82	3.41
Planning includes architect	N	84	2	2	0
	%	95.45	2.27	2.27	0
Planning includes other	N	6	41	23	18
	%	6.82	46.59	26.14	20.45

Table 6.

Frequency and Percentage for Classroom Space and Furnishings Collaboration

Participant	N	%
Superintendent	8	10.81
Students	0	0.00
District Administrator	17	22.97
Teachers	6	8.11
School Board	2	2.70
Principals	31	41.89
Architect	3	4.05
Other	7	9.46

Table 7.

Frequency and Percentage for Technology-Collaboration

Feature		Yes	No	Not Applicable
Superintendent	N	51	20	3
	%	68.92	27.03	4.05
Technology specialist Off Campus	N	57	13	4
	%	77.03	17.57	5.41
Instructional Technologists at School	N	57	15	2
	%	77.03	20.27	2.7
Principal or Local Administrator	N	63	11	0
	%	85.14	14.86	0
Lead Teachers	N	36	32	6
	%	48.65	43.24	8.11
Teachers	N	39	31	4
	%	52.7	41.89	5.41
Other	N	14	41	19
		18.62	55.61	25.68

Classroom Space and Furnishings

Approximately 68% of schools indicated square footage between 600-799 square feet and class size ranging from 20-25 students was indicated for 57% of schools responding. Totals for classroom space and furnishings included at least 74 responses. Survey questions for classroom space and furnishings, like security questions, differentiated between features recently installed or built in the last 5 years, older than 5 years of age, or not installed at all. Features representing the most frequent classroom features existing in schools as defined by the second and third quartiles were calculated by using the affirmed percentages reported for features installed in the last 5 years and features more than 5 years old. Only two features occurred in the third quartile indicating separate labs for art (80%) and music (86%). Omitting not enough information answer choices the following features are indicated at the second quartile (at least 50 percent): learning centers in classrooms, special rooms to accommodate tutorials and small groups of students, special surfaces on classroom and corridor walls for display of student work, and student work stations.

Using cross tabulations, further analysis was done to determine features of the 17 new schools built in the last 5 years. The features implemented in classrooms of at least 50% of new schools built in the last 5 years are portable desks for teachers (53%), learning centers in classrooms (53%), and special surfaces on classroom and corridor walls for display of student work (58%). Features occurring in new schools at the third quartile (in at least 75%) include separate labs for art (88%), special rooms to accommodate tutorials and small groups of students (76%), and separate labs for music (88%) (noted in Table 8).

Over 50% of all 74 schools surveyed reported the following classroom features as nonexistent: tables used in lieu of desks, movable walls between classrooms, instructional floor

designs, special storage for student projects, uniquely designed rooms, classrooms with ergonomically tested furniture, portable desk for teachers, portable instructional centers, and informal seating.

No features in the classroom space and furnishings category are reported as more than 5 years old by at least 50% of schools. Cross tabulating building age and classroom features indicated any increase or decrease in features implemented in the last 5 years. Schools built prior to 2000 reported utilizing portable desks in over 50% of schools; less than 50% were reported to have been implemented in the schools built in the last 5 years.

Table 8.

Frequency and Percentage for Classroom Space and Furnishings

Feature		Not in Building	Last 5 Years	More than 5 Years	Not Enough Information
Tables instead of desks	N	52	12	4	7
	%	69.33	16	5.33	9.33
Student Work Stations	N	31	19	15	9
	%	41.89	25.68	20.27	12.16
Learning Centers in Classrooms	N	19	25	24	7
	%	25.33	33.33	32	9.33
Movable walls between some classrooms	N	58	7	9	0
	%	78.38	9.46	12.16	0
Special rooms to accommodate tutorials and small groups of students	N	28	23	22	1
	%	37.84	31.08	29.73	1.35
Special surfaces for display of student work	N	28	22	24	0
	%	37.84	29.73	32.43	0
Instructional floor design (alphabets, maps)	N	59	6	8	1
	%	79.73	8.11	10.81	1.35

(table continues)

Table 8. Classroom Space and Furnishings (continued)

Special storage for student projects	N	59	9	6	0
	%	79.73	12.16	8.11	0
Uniquely designed rooms	N	47	14	13	0
	%	63.51	18.92	17.57	0
Classroom(s) has ergonomically tested furniture	N	48	11	3	12
	%	64.86	14.86	4.05	16.22
Portable desks for teachers	N	47	11	13	3
	%	63.51	14.86	17.57	4.05
Portable instructional centers	N	43	18	9	4
	%	58.11	24.32	12.16	5.41
Informal seating (couches, chairs)	N	41	20	10	3
	%	55.41	27.03	13.51	4.05
Separate labs for art	N	14	27	32	1
	%	18.92	36.49	43.24	1.35
Separate labs for music	N	9	29	35	1
	%	12.16	39.19	47.3	1.35

Regular classroom square footage:	N	%
Less than 600 sq. ft.	12	16.22
600-699 sq. ft.	25	33.78
700-799 sq. ft.	25	33.78
More than 800 sq.ft.	12	16.22

Students in regular classroom for main subjects.	N	%
10-15	2	2.70
15-20	18	24.32
20-25	42	56.76
25-30	12	16.22

Technology

At least 74 responses were recorded for technology. Survey questions for technology differentiated between features recently installed or built in the last 5 years, more than 5 years of age, or not installed at all. Features representing the most frequent technology features existing in

schools as defined by the second and third quartiles were calculated by using the affirmed percentages reported for features installed in the last 5 years and features more than 5 years old. Responses indicated existing features of schools in the third quartile as school wide Internet access (97%), computers in media center (97%), computers in most classrooms (95%), school web site (93%), televisions in most classrooms (93%), computer labs (84%), network is school based (77%), and closed circuit televisions in school (75%). Features occurring in the second quartile include television up link capacity (68%) and television down link capacity (67%).

The features surveyed but reported as not existing in schools by at least 50% of respondents included laptop access, laptop loan program for home use, foreign language labs, graphing calculators, network for office only, television monitors in corridors, and wireless technology. No features in the technology category were reported more than 5 years old by at least 50% of schools (see Table 9).

Using cross tabulations, further analysis was done to determine features of the 17 schools built in the last 5 years. The following features were implemented in the new schools responding: computers in media center (100%), school website (100%), school wide internet access (94%), computers in most classrooms (94%), computer labs (84%), closed circuit television (82%), televisions in most classrooms (82%), network is school based (76%), television up link capacity (76%), and television down link capacity (71%).

Table 9.

Frequency and Percentage for Technology

Feature		Not in Building	Last 5 Years	More than 5 Years	Not Enough Information
Computer labs	N	12	39	25	0
	%	15.79	51.32	32.89	0
Computers in most classrooms	N	4	45	28	0
	%	5.19	58.44	36.36	0
Computers in media center	N	2	46	28	0
	%	2.63	60.53	36.84	0
Laptop access in most classrooms	N	45	25	4	0
	%	60.81	33.78	5.41	0
Laptop loan program for home use	N	63	9	1	1
	%	85.14	12.16	1.35	1.35
Foreign language labs	N	62	8	5	0
	%	82.67	10.67	6.67	0
Television up link capacity	N	20	32	19	4
	%	26.67	42.67	25.33	5.33
Television down link capacity	N	20	31	20	5
	%	26.32	40.79	26.32	6.58
Closed circuit television in schools	N	18	30	26	0
	%	24.32	40.54	35.14	0
Televisions in most classrooms	N	5	38	32	0
	%	6.67	50.67	42.67	0
School web-site	N	5	46	23	0
	%	6.76	62.16	31.08	0
Graphing calculators	N	39	23	10	2
	%	52.7	31.08	13.51	2.7
School-wide internet access	N	2	46	27	0
	%	2.67	61.33	36	0

(table continues)

Table 9. Technology (continued)

Network is school based	N	10	37	20	7
	%	13.51	50	27.03	9.46
Network in central office only	N	44	10	8	12
	%	59.46	13.51	10.81	16.22
TV monitors in corridors	N	62	11	1	0
	%	83.78	14.86	1.35	0
Other technology	N	36	24	5	9
	%	48.65	32.43	6.76	12.16
Modular wiring instead of pipe and wire	N	31	14	10	19
	%	41.89	18.92	13.51	25.68
Wireless	N	38	25	6	6
	%	50.67	33.33	8	8

Organization of Classroom and Offices

Classroom organization totaled 74 responses. Excluding not enough information and not applicable answer choices, results answering yes or no indicate schools are primarily organized by grade level for entire school (84%) and part of school (16%) organization. Additional areas surveyed of organization included theme, academic discipline, interdisciplinary basis, and family clusters. Administrative offices were primarily located together (62%) and not dispersed throughout buildings. Guidance offices were also located in central office areas together (72%) and not dispersed throughout buildings. For the schools responding, 51% of schools reported not having separate community or volunteer rooms (see Table 10).

Table 10.

Frequency and Percentage for Organization of Classrooms and Offices

Feature		Entire School	Part of School	Not Enough Information	Not Applicable
Organized by grade level	N	57	11	0	6
	%	77.03	14.86	0	8.11
Organized by theme	N	3	5	5	61
	%	4.05	6.76	6.76	82.43
Organized by academic discipline	N	10	14	4	46
	%	13.51	18.92	5.41	62.16
Organized by Interdisciplinary basis	N	6	8	5	55
	%	8.11	10.81	6.76	74.32
Organized by family clusters	N	6	5	3	60
	%	8.11	6.76	4.05	81.08
Administrative offices dispersed	N	28	46	NA	0
	%	37.84	62.16	NA	0
Guidance offices dispersed	N	20	53	NA	1
	%	27.03	71.62		1.35
Rooms for community volunteers	N	34	38	NA	2
	%	45.95	51.35	NA	2.7

Student Communal Spaces

As noted in Table 11, the total responses for schools used to analyze communal features were 74. Features occurring in over 50% of schools included courtyard (57%), cafetorium (77%), and multipurpose areas (62%). Cross tabulation indicate multipurpose areas have always been implemented in at least 50% of schools. The following areas were surveyed for communal spaces but reported as not existing in at least 50% of schools: atrium, food court, student lounge, and community, commons area.

A total of 17 responses were used for analyzing features through cross tabulation to determine features of new schools built in the last 5 years for communal features. Student communal spaces occurring in 50% of the new schools built in the last 5 years included cafetorium (82%), community, commons area (59%), courtyard (59%), and atrium (53%) and multipurpose areas (71%).

Table 11.

Frequency and Percentage for Student Communal Space

Feature		Yes	No	Not Enough Information	Not Applicable
Courtyard	N	42	32	0	0
	%	56.76	43.24	0	0
Atrium	N	25	48	0	1
	%	33.78	64.86	0	1.35
Food Court	N	7	66	0	1
	%	9.46	89.19	0	1.35
Student Lounge	N	3	70	0	1
	%	4.05	94.59	0	1.35
Cafetorium	N	57	17	0	0
	%	77.03	22.97	0	0
Community Area/Commons	N	31	42	0	1
	%	41.89	56.76	0	1.35
Multipurpose areas	N	46	28	0	0
	%	62.16	37.84	0	0
Other	N	18	44	4	8
	%	24.32	59.46	5.41	10.81

School Grounds

The total responses for schools used to analyze school ground features were 74, as noted in Table 12. For school grounds no feature occurred in at least 50% of schools participating in survey. Additional features surveyed included student maintained gardens, gardens staff maintained, gardens for community projects, outdoor labs, and unique playground spaces.

Cross tabulating building age and school ground features also indicated an increase or decrease in features implemented in the last 5 years. For a 20 year spread from 1970 to 1999 schools implemented outdoor labs and gardens staff maintained in over 50% of schools; less than 50% were reported to have been implemented in the schools built in the last 5 years.

Table 12.

Frequency and Percentage for School Grounds

Feature		Yes	No	Not Enough Information	Not Applicable
Gardens student maintained	N	32	42	0	0
	%	43.24	56.76	0	0
Gardens staff maintained	N	36	38	0	0
	%	48.65	51.35	0	0
Gardens as community project	N	25	48	1	0
	%	33.78	64.86	1.35	0
Outdoor labs	N	27	47	0	0
	%	36.49	63.51	0	0
Nature trails	N	22	52	0	0
	%	29.73	70.27	9	0
Uniquely designed playground space	N	32	42	0	0
	%	43.24	56.76	0	0
Other	N	11	50	5	8
	%	14.86	67.57	6.76	10.81

Teacher Facilities

Responses indicate teachers do not have private or shared offices in over 50% of schools. However, 94% reported having a teachers' workroom or resource center. Responses did not indicate at least 50% of schools with a teacher's cafeteria, but 72% reported having a teacher's lounge. Teachers were reported to utilize spaces by planning both cooperatively (89%) and individually (86%), as noted in Table 13.

Table 13.

Frequency and Percentage for Teacher Facilities

Feature		Yes	No	Not Enough Information	Not Applicable
Private offices for all teachers	N	0	73	0	1
	%	0	98.65	0	1.35
Private offices for some teachers	N	27	46	0	2
	%	36	61.33	0	2.67
Shared offices by department	N	8	64	0	2
	%	10.81	86.49	0	2.7
Shared offices by grade level	N	3	70	0	1
	%	4.05	94.59	0	1.35
Shared offices by team	N	6	67	0	1
	%	8.11	90.54	0	1.35
Other shared office	N	10	59	1	4
	%	13.51	79.73	1.35	5.41
Teacher's workroom/resource center	N	70	4	0	0
	%	94.59	5.41	0	0
Teacher's cafeteria	N	11	63	0	0
	%	14.86	85.14	0	0
Teacher's lounge	N	53	20	0	1
	%	71.62	27.03	0	1.35

(table continues)

Table 13. Teacher Facilities (continued)

Teachers plan cooperatively	N	66	6	2	0
	%	89.19	8.11	2.7	0
Teachers plan individually	N	64	10	0	0
	%	86.49	13.51	0	0

Instructional/Social Program Services and Opportunities

For school program opportunities at least 72 responses were recorded. With implied applicability, only yes and no responses were used for reporting. Occurring in the third quartile were special summer programs, values and character education, student clubs and organizations, and volunteer programs. Occurring in the second quartile were conflict resolution training, peer mediation training, in-school suspension, and drug prevention. Categories surveyed but reported as occurring in less than 50% of schools responding were Head Start, preschool education, probation offices located in school, onsite resource officer, social services on-site, homework assistance center, medical offices, ninth grade transition programs, drop-out prevention, alternative education within school, Focus School, Magnet School, special academic centers, and teen pregnancy program (see Table 14).

Cross tabulation to determine features implemented in the 16 schools built in the last five years indicate the following features in the second quartile: conflict resolution, drug prevention, in-school suspension, and teen pregnancy. Student clubs and organizations occurred in the third quartile. All of these features were reported to have been implemented in over 50% of schools built in the last five years. For schools built prior to 2000 at least 50% reported peer mediation as a feature, however less than 50% of schools built in the last 5 years reported peer mediation as a feature.

Table 14.

Frequency and Percentage for Instructional/Social Program Services and Opportunities

Feature		Yes	No	Not Enough Information	Not Applicable
Head Start	N	10	48		13
	%	13.89	68.06		18.06
Preschool Special Education Program	N	17	44		11
	%	23.61	61.11		15.28
4 Year Old Preschool Program	N	28	33		11
	%	38.89	45.83		15.28
Other preschool programs	N	9	48		66.67
	%	12.5	15		20.83
Conflict resolution training	N	47	23	2	1
	%	64.38	31.51	2.74	1.37
Peer mediation training	N	43	26	1	2
	%	59.72	36.11	1.39	2.78
In school suspension	N	50	19	2	1
	%	69.44	26.39	2.78	1.39
Probation office in school	N	2	67	0	3
	%	2.78	93.06	0	4.17
Social services office in schools	N	18	52	0	2
	%	25	72.22	0	2.78
Homework assistance center	N	11	59	2	0
	%	15.28	81.94	2.78	0
Special summer programs	N	55	15	1	1
	%	76.39	20.83	1.39	1.39
Medical offices	N	7	63	1	1
	%	9.72	87.5	1.39	1.39
On-site office for resource officer	N	19	51	0	2
	%	26.39	70.83	0	2.78

(table continues)

Table 14. Instructional/Social Program Services and Opportunities (continued)

Ninth grade transition program	N	15	40	0	17
	%	20.83	55.56	0	23.61
Dropout prevention	N	12	41	2	17
	%	16.67	56.94	2.78	23.61
Values or character education program	N	68	2	0	2
	%	94.44	2.78	0	2.78
Alternative education program in school	N	9	55	1	7
	%	12.5	76.39	1.39	9.72
Focus schools	N	5	53	5	9
	%	6.94	73.61	6.94	12.5
Magnet program	N	6	59	1	6
	%	8.33	81.94	1.39	8.33
Special academic or enrichment centers	N	12	53	2	5
	%	16.67	73.61	2.78	6.94
Drug prevention	N	48	21	0	3
	%	66.67	29.17	0	4.17
Teen pregnancy prevention	N	17	44	1	10
	%	23.61	61.11	1.39	13.89
Student clubs and organization	N	55	15	0	2
	%	76.39	20.83	0	2.78
Volunteer programs	N	59	12	1	1
	%	80.82	16.44	1.37	1.37

Classroom Instructional Opportunities

For classroom instructional opportunities a minimum of 72 responses were recorded. Ninety-five percent of students reported being able to use technology weekly in the classroom and 85% reported being able to use technology in a lab weekly. Illustrated in Table 15, 97% of adults were reported to communicate using e-mail and 16% of students were reported to use e-

mail for communication. Instructional opportunities implemented using communal areas were also indicated to be used by 68% of schools as indicated in Table 15.

For analyzing data in Table 15, responses indicating not applicable were excluded, totaling a maximum of 44 responses omitted with a median of 38. Responses used to indicate the type of classroom used for instructional classroom programs ranged from 4 to 69 responses with a median of 14.5, only including schools implementing subject in a standard or specifically designed room. Instructional opportunities occurring in the third quartile using standard classroom space include early childhood education, advance placement courses, and standard test preparation. Features occurring in the second quartile using standard classroom space include physical education, drama, and music. Instructional opportunities occurring in the second quartile only implemented using specially designed labs and classrooms include information technology and art.

Responses used to indicate if the instructional classroom programs were implemented at all ranged from 28 to 71 responses with a median of 35, only including schools responding as implementing subject in a standard room, specifically designed room, or not implemented at all. The following subjects were surveyed but results indicate features as not implemented in at least 50% of schools: agriscience, business, marketing, family and consumer sciences, horticulture, automotive service technology, communications technology, manufacturing, construction technology, drafting and design, electronics, graphic arts, professional foods, and health occupations. Consideration of data reporting should be given since the majority of participants were representing elementary and middle school levels (see Table 16).

Using cross tabulations schools built in the last 5 years indicate equal distribution (50%) of standard classroom space and classrooms designed specifically for subject when

implementing music and advanced placement opportunities. Physical education and art both occurred in the second quartile as implemented in specifically designed classrooms for subject areas.

Table 15.

Frequency and Percentage for Technology and Communal Use

Feature		Yes	No	Not Enough Information	Not Applicable
Students use technology in classroom Weekly	N	70	4	NA	0
	%	94.59	5.41	NA	0
Students are able to use technology in lab weekly	N	63	9	NA	2
	%	85.14	12.16	NA	2.7
E-mail used by adults for communication	N	72	2	NA	0
	%	97.3	2.7	NA	0
E-mail used by students for communication	N	12	61	NA	1
	%	16.22	82.43	NA	1.35
Use of communal space	N	50	22	1	1
	%	67.57	29.73	1.35	1.35

Table 16.

Frequency and Percentage for Instructional Classroom Program Opportunities

Feature		Standard Room	Special Designed Room	Subject Not Implemented	Not Applicable
Agriscience	N	2	5	25	41
	%	2.74	6.85	34.25	56.16
Business	N	4	14	19	37
	%	5.41	18.92	25.68	50

(table continues)

Table 16. Instructional Classroom Program and Opportunities (continued)

Marketing	N	4	9	21	38
	%	5.56	12.5	29.17	52.78
Family/Consumer Sciences	N	5	11	20	36
	%	6.94	15.28	27.78	50
Horticulture	N	1	5	25	41
	%	1.39	6.94	34.72	56.94
Information Technology	N	9	22	13	29
	%	12.33	30.14	17.81	39.73
Early Childhood Education	N	24	6	14	29
	%	32.88	8.22	19.18	39.73
Automotive Service Technology	N	1	3	24	44
	%	1.39	4.17	33.33	61.11
Communications Technology	N	5	9	21	38
	%	6.85	12.33	28.77	52.05
Manufacturing Technology	N	2	6	23	42
	%	2.74	8.22	31.51	57.53
Construction Technology	N	5	8	20	41
	%	6.76	10.81	27.03	55.41
Drafting and Design Technology	N	4	11	19	39
	%	5.48	15.07	26.03	53.42
Electronics Technology	N	2	8	22	40
	%	2.78	11.11	30.56	55.56
Graphic Arts Technology	N	2	9	23	38
	%	2.78	12.5	31.94	52.78
Professional Foods	N	2	6	24	41
	%	2.74	8.22	32.88	56.16

(table continues)

Table 16. Instructional Classroom Program and Opportunities (continued)

Physical Education Courses	N	33	32	1	8
	%	44.59	43.24	1.35	10.81
Health Occupations	N	3	7	22	40
	%	4.17	9.72	30.56	55.56
Art	N	28	36	3	6
	%	38.36	49.32	4.11	8.22
Drama/Theatre	N	14	10	14	34
	%	19.44	13.89	19.44	47.22
Music	N	37	32	2	3
	%	50	43.24	2.7	4.05
Advanced Placement Courses	N	13	4	16	39
	%	18.06	5.56	22.22	54.17
Standardized Assessment Prep.	N	22	6	10	34
	%	30.56	8.33	13.89	47.22

Instructional Opportunities and Educational Programs

For instructional programs 72 responses were recorded. To analyze data, responses indicating not applicable and not enough information were excluded, totaling a maximum of 22 responses omitted. Responses used for instructional opportunities and educational programs ranged from 39 to 64 responses with a median of 51. The following responses indicate features occurring in over 50% of schools with assumed applicability since responses were answered yes or no: school business partnerships (64%) was the only feature recorded as implemented in at least 50% of schools. Features surveyed but not occurring in at least 50% of schools include Apprenticeship Program, School to Work, pairing of vocational classes, unique learning environments, and college partnerships (noted in Table 17).

Table 17.

Frequency and Percentage for Instructional Opportunities and Educational Programs

Feature		Yes	No	Not Enough Information	Not Applicable
Apprenticeship Programs	N	15	37	0	20
	%	20.83	51.39	0	27.78
School to work programs	N	12	39	0	21
	%	16.67	54.17	0	29.17
Work/placements	N	12	39	0	21
	%	16.67	54.17	0	29.17
School business partnerships	N	41	23	1	7
	%	56.94	31.94	1.39	9.72
Pairing of vocational classes	N	7	43	1	21
	%	9.72	59.72	1.39	29.17
Unique learning environments (museums, malls, alternative settings)	N	5	50	2	15
	%	6.94	69.44	2.78	20.83
College partnerships (dual enrollment, class exemptions)	N	12	38	1	21
	%	16.67	52.78	1.39	29.17

Organization of Instruction

For instructional programs 72 responses were recorded. To analyze data, responses indicating not applicable and not enough information, totaling a maximum of 38 answers excluded. Responses used to indicate the organization of instruction ranged from 35 to 69 responses with a median of 43. The following responses indicate features occurring in over 50% of schools with assumed applicability since responses were answered yes or no: self contained classrooms (98%), elementary students study different subjects with different teachers (73%), team-teaching within grade levels (78%). The responses indicated the following features to be

the most prevalent among scheduling occurring in 25% to 50% of schools applicable: extended day program (41%), six period schedules (38%), team-teaching across grade levels (28%), teacher looping (26%), and seven period schedules (25%). As noted in Table 18, the remaining features surveyed were indicated to occur in less than 50% of schools: 4x4 blocks, AB schedule, modified AB schedule, modified block, eight period, modified block, multi-age classroom, teacher looping between schools, and community service requirements.

Cross tabulation to determine features implemented in at least 16 schools built in the last five years indicate the following features in the second and third quartiles: team-teaching within school, elementary students study different subjects with different teachers, extended day programs, and self-contained classrooms.

Table 18.

Frequency and Percentage for Organization of Instruction

Feature		Yes	No	Not Enough Information	Not Applicable
4x4 Block	N	5	32	0	36
	%	6.85	43.84	0	49.32
AB Schedule	N	3	32	2	36
	%	4.11	43.84	2.74	49.32
Modified AB Schedule	N	5	30	2	36
	%	6.85	41.1	2.74	49.32
Modified Block	N	7	31	0	35
	%	9.59	42.47	0	47.95
6 Period	N	14	23	1	34
	%	19.44	31.94	1.39	47.22
7 Period	N	9	27	1	35
	%	12.5	37.5	1.39	48.61

(table continues)

Table 18. Organization of Instruction (continued)

8 Period	N	5	31	1	35
	%	6.94	43.06	1.39	48.61
Extended day program	N	16	23	0	33
	%	22.22	31.94	0	45.83
Self contained classroom (Elementary)	N	51	1	0	21
	%	69.86	1.37	0	28.77
Modified block (Elementary)	N	11	35	4	22
	%	15.28	48.61	5.56	30.56
Extended day program (Elementary)	N	32	15	3	22
	%	44.44	20.83	4.17	30.56
Multi-age classrooms (Elementary)	N	5	43	2	22
	%	6.94	59.72	2.78	30.56
Students learn different subjects with different teachers (Elementary)	N	36	13	2	21
	%	50	18.06	2.78	29.17
Team teaching across (K-12)	N	19	50	1	3
	%	26.03	68.49	1.37	4.11
Team teaching within grade levels (K-12)	N	54	15	1	2
	%	75	20.83	1.39	2.78
Teacher looping within school (K-12)	N	18	51	1	2
	%	25	70.83	1.39	2.78
Teacher looping between schools (K-12)	N	2	67	2	1
	%	2.78	93.06	2.78	1.39
Community service requirements	N	11	56	4	1
	%	15.28	77.78	5.56	1.39

Social and Community Use

For the social and community function category 72 responses were recorded. Only responses indicated by yes and no were used to analyze data totaling a range of 63 to71 with a median of 69. Features occurring in the second quartile include public access to school library,

public access to other school facilities, and gymnasium or athletic facilities accessible to public. Features surveyed and reported to occur in less than 50% of schools include public library located in school, day care center in school, adult education classes, computer lab open to community, public performances in auditorium, and family learning centers or spaces for parents (noted in Table 19).

Cross tabulation to determine features implemented in at least 16 schools built in the last five years indicate the following features in the second quartile for new schools: public access to school library and gymnasium or athletic facilities accessible to public. For schools built prior to 2000 at least 50% reported public access to other school facilities as a feature, however, less than 50% of schools built in the last 5 years reported public access to other school facilities as a feature.

Table 19.

Frequency and Percentage for Social and Community Use

Feature		Yes	No	Not Enough Information	Not Applicable
Public Library located in school	N	7	63	2	0
	%	9.72	87.5	2.78	0
Public access to school library	N	35	34	2	1
	%	48.61	47.22	2.78	1.39
Day care center in school	N	7	64	1	0
	%	9.72	88.89	1.39	0
Public access to other school facilities	N	39	29	3	1
	%	54.17	40.28	4.17	1.39
Adult education classes	N	10	59	2	1
	%	13.89	81.94	2.78	1.39

(table continues)

Table 19. Social and Community Use (continued)

Computer lab open to community	N	7	62	2	1
	%	9.72	86.11	2.78	1.39
Gymnasium or athletic facilities accessible to public	N	50	21	1	0
	%	69.44	29.17	1.39	0
Public performances in auditorium	N	26	37	2	7
	%	36.11	51.39	2.78	9.72
Family learning centers or spaces for parents	N	12	53	1	6
	%	16.67	73.61	1.39	8.33

Open-Ended Questions

The survey included open-ended questions at the end of categories and at the end of the survey. All response items are in Appendix C in original text. The sample population is not representative of the exact population completing check box questions since not all participants beginning the survey finished. However, data are considered valuable for its descriptive attributes and was coded to include results in report. Due to the number of possible responses comments were not coded according to content but as they occurred in categories surveyed.

Respondents were prompted to list other or unique features not surveyed for the following: communal space; classroom space and furnishings; safety; school grounds; sustainable energy designs; secondary schedules; special programs; pre-school; and teacher facilities. At the end of the survey respondents were asked to comment on satisfaction of features by reporting on the features liked most, the most effective features, and the features they would like to change. The survey concluded with questions regarding participants' interests for learning about school design. Frequencies related to design categories were excluded in data analysis.

However, any features relating to design questions but not surveyed were included in descriptive data, as noted in Appendix D.

Previously surveyed as physical education spaces, gymnasiums and athletic fields were reported most frequently for unique communal spaces in the descriptive data. Outdoor areas and playgrounds were also indicated as unique features in more than one response. For classroom space and furnishings labs, classroom space, and enrichment spaces were most frequently indicated as unique or other designed spaces. Media centers, special classrooms, administrative offices, and restrooms did not occur as frequently but did occur more than once. The most frequent features occurring for uniquely designed school grounds were outdoor classrooms. Computerized energy management was the only feature reported most frequently for sustainable designs. For the category prompting the listing of other features or other programs Pre-Kindergarten programs were the only programs reported more than once. In the safety and security category, alarm systems, visitor badges, and identification badges for staff were the features indicated more than once for other features used.

Regarding satisfaction of features, descriptive data indicates dissatisfaction of features when prompted, by asking participants to explain questions answered in the previous section as not satisfied. Outdoor areas, adequate space, furnishings, and aesthetics, including interiors or colors, were most frequently commented, with outdoor areas having twice as many occurrences for dissatisfaction. Maintenance, repairs, or outdated equipment, safety, and not having input in design process were features further reported to be unsatisfactory. Features occurring not as frequently but more than once were parking and finance.

For the category of features most liked interiors, open space in facilities, rooms designed for special classes such as art, music and laboratory subjects were the most frequently reported.

Features occurring more than once were centralization of cafeteria or media center areas and grade levels on separate hallways. The most effective features reported were functional floor plans and space, specifically in hall and areas to facilitate ease of movement. Also, occurring more than once was having grade levels with separate halls or wings.

Interests to change features were reported most frequently for increasing building or classroom space size and for building additional wings, areas, or an entire school. Additional features reported as interests to change were offices, outdoor spaces, older sections, cafeterias, and restrooms. Not occurring as frequently but more than once were teacher work areas, storage, and parking with drop-off areas. For open-ended questions, no features occurred more than once for categories of teacher facilities and interests for learning about school design.

CHAPTER 5

SUMMARY, RECOMMENDATIONS, AND IMPLICATIONS

Summary of Findings

A study done one decade ago by the General Accounting Office found schools were unprepared for the 21st Century.

> Most schools do not fully use modern technology. Although at least three-quarters of schools report having sufficient computers ... they do not have the system or building infrastructure to support them.... often not networked or connected to... the outside world.... Over 14 million students attend about 40 percent of schools that reported that their facilities cannot meet functional requirements of laboratory....Over half the schools reported unsatisfactory flexibility of instructional space necessary to implement many effective teaching strategies.... Although education reform requires facilities meet the functional requirements of key support services-such as private areas for counseling and testing, parent support activities, social/health care, day care and before-and after school care- about two-thirds of schools reported that they cannot meet the functional requirements of before-or after-school care or day care. (United States General Accounting Office, 1995, p.2)

At least 90% of Georgia's schools that were represented by voluntary responses indicated having necessary infrastructure, having internet access connecting to the outside world, and utilizing technology weekly. Percentages reached 100% for schools built in the last 5 years. For classroom space, flexibility, and laboratories for implementation of effective teaching strategies, less than 50% were reported for movable walls, tables in lieu of desks, and portable centers. However, schools did report to have learning centers for students to transition and work stations implying flexibility for student centered areas (See Table 20).

As noted in Table 20, Georgia schools also were indicated to have special areas for instructional space of particular subject functions, including non-core subjects such as music, art,

and information technology. Consideration of special areas should be given since the majority of the responses were from elementary and middle schools. For functional and support services voluntary responses indicated a balance of programs and services. Although less than 50% of schools had adult education classes, homework programs, and social services on-site, over 50% of schools were reported as having summer programs, volunteer programs, values and character education, student clubs and organizations, along with additional student programs provided through instruction. The majority of features implemented in Georgia schools are current. Of the features reported as implemented, alarm systems were the only features reported by more than fifty percent of schools to be more than five years old.

As noted in Appendix D, features reported as most effective in descriptive open-ended data included the functional design of the floor plan in regard to space, movement, and arrangement. The most unsatisfactory feature reported by voluntary open-ended question responses was the outdoor space areas. The feature reported by open-ended responses as being the most desired to change was size, including expanding or building.

Table 20.

Trends of Georgia's Schools

CATEGORY	GEORGIA
Energy Use and Sustainable Designs	• Day lighting • Central air conditioning • Air conditioning in most classrooms • Exhaust vents placed in ceiling for one way flow of air • Masonry and concrete

Table 20. Trends of Georgia's Schools (continued)

Safety and Security	• Extra wide corridors • Controlled access to building • Walkie talkies • Bus security systems • Modified restrooms • Alarm systems • One-way door locks • Bar-coded library books • Strategic positioning of administrative offices
Collaboration	• Building-Extended use of facility to community, free or for minimal fee: Board of Education, superintendent, facility administrator, principal, architect, contracted consultants, teachers, parents, community • Technology: Principal, instructional technologists (on and off campus), superintendent, board members, and teachers • Funds: State capital outlay, local funds, fund raisers, and federal sources
Classroom Space and Furnishings	• Footage between 600-799 square feet. • Class size ranging from 20-25 students • Separate labs for art • Separate labs for Music • Learning centers in classrooms • Special rooms to accommodate tutorials • Student work stations • Special surfaces on classroom and corridor walls for display of student work
Technology	• Computer labs • Computer in most classrooms • Computers in media center • School-based network • School-wide internet access • School/teacher websites • E-mail • Closed circuit television • Televisions in most classrooms • Television up link capacity • Television down link capacity

Table 20. Trends of Georgia's Schools (continued)

Organization of Classrooms and Offices	• Administrative offices together • Classrooms organized by grade level
Communal Space	• Courtyard • Cafetoriums • Multipurpose areas

Table 20 (Continued)

School Grounds	• None
Teacher Facilities	• Teacher workrooms resource centers • Teacher lounges
Instructional/Social Services and Opportunities	• Conflict resolution training • Peer mediation training • Special summer programs, values and character education • Student clubs and organizations • Volunteer programs • In-school suspension • Drug prevention
Classroom Instructional Opportunities (non-core)	• Utilizing technology weekly • Standard Classrooms: Early childhood education, advance placement courses, standardized test preparation, physical education, drama, and music • Special Designed Classrooms: Information technology and art
Instructional Opportunities and Educational Programs	• School business partnerships
Organization of Instruction	• Self contained classrooms • Elementary students study different subjects with different teachers • Team teaching within grade level
Community/Social Use	• Gymnasiums or athletic facilities • School library • Other facilities

Comparison of Findings from This Study and the Virginia Study

A study was done in 1998-99 by the University of Virginia to determine new design features of Virginia's schools using a stratified sample of public schools. Seventy-two surveys were mailed to principals and fifty-two were returned (*New Design Features*, 1998-99). Using the findings of the Virginia study as a benchmark for a comparison of findings, identical features are reported as trends for schools in Georgia and Virginia. Of the 14 categories, 53 identical features were surveyed and 29 features (55%) were indicated to occur as trends in schools for both states. Table 21 illustrates the comparison of features surveyed for both states that occurred as a trend (more than fifty percent of schools) for both.

A total of 19 features were identified to differ for each state due to variations of survey questions and findings. Table 22 distinguishes between features not surveyed by both studies but occurring as a trend in at least one study. As noted in Table 23, a total of 24 additional features that were surveyed by both Georgia and Virginia but were not indicated as a trend for schools in both states.

Table 21.

Comparison of Similar Trends Surveyed for Georgia and Virginia

CATEGORY	GEORGIA AND VIRGINIA
Energy Use and Sustainable Designs	• Day lighting • Central air conditioning
Safety and Security	• Extra wide corridors • Controlled access to building • Walkie talkies • Bus security systems • Modified restrooms • Alarm systems • One-way door locks • Barcoded library books • Strategic positioning of administrative offices

Table 21. Similar Trends Surveyed for Georgia and Virginia (continued)

Collaboration	
Classroom Space and Furnishings	• Special rooms to accommodate tutorials • Student work stations
Technology	• Computer labs • Computer in most classrooms • Computers in media center • School-based network • School-wide internet access • School/teacher websites • E-mail • Closed circuit television
Organization of Classrooms and Offices	
Communal Space	• Cafetoriums
School Grounds	
Teacher Facilities	• Teacher workrooms resource centers • Teacher lounges
Instructional/Social Services and Opportunities	• Conflict resolution training • Peer mediation training
Classroom Instructional Opportunities (non-core)	
Instructional Opportunities and Educational Programs	• School business partnerships
Organization of Instruction	• Team teaching within grade level
Community/Social Use	• Gymnasiums or athletic facilities

Table 22.

Non-comparable Trends

CATEGORY	GEORGIA	VIRGINIA
Energy Use and Sustainable Designs	• Exhaust vents placed in ceiling for one way flow of air • Masonry and concrete	• Energy saving lighting
Safety and Security		• Special landscaping

Table 22. Non-Comparable Trends (continued)

Collaboration	• Building-Extended use of facility to community, free or for minimal fee: Board of Education, superintendent, facility administrator, principal, architect, contracted consultants, teachers, parents, community • Technology: Principal, instructional technologists (on and off campus), superintendent, board members, and teachers • Funds: State capital outlay, local funds, fund raisers, and federal sources	
Classroom Space and Furnishings	• Footage between 600-799 square feet. • Class size ranging from 20-25 students • Separate labs for art • Separate labs for Music	
Technology		• Access to homework hotlines
Organization of Classrooms and Offices		
Communal Space		
School Grounds		
Teacher Facilities		
Instructional/Social Services and Opportunities	• Student clubs and organizations • Volunteer programs	
Classroom Instructional Opportunities (non-core)	• Utilizing technology weekly • Standard Classrooms: Early childhood education, advance placement courses, standardized test preparation, physical education, drama, and music • Special Designed Classrooms: Information technology and art	

Table 22. Non-Comparable Trends (continued)

Instructional Opportunities and Educational Programs		
Organization of Instruction		
Community/Social Use	• Other facilities	• Outdoor athletic facilities

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Table 23.

Comparable Trends Not Occurring for Both Georgia and Virginia

CATEGORY	GEORGIA	VIRGINIA
Energy Use and Sustainable Designs	• Air conditioning in most classrooms	• Recycling programs
Safety and Security		• School resource officers
Collaboration		
Classroom Space and Furnishings	• Learning centers in classrooms • Special surfaces on classroom and corridor walls for display of student work	
Technology	• Televisions in most classrooms • Television up link capacity • Television down link capacity	• Graphing calculators
Organization of Classrooms and Offices	• Administrative offices together • Classrooms organized by grade level	• Administrative offices dispersed
Communal Space	• Courtyard • Multipurpose areas	• Community areas/commons
School Grounds		• Gardens
Teacher Facilities		

Table 23. Comparable Trends Not Occurring for Both Georgia and Virginia (continued)

Instructional/Social Services and Opportunities	• Special summer programs, values and character education • In-school suspension • Drug prevention	
Classroom Instructional Opportunities (non-core)		
Instructional Opportunities and Educational Programs		
Organization of Instruction	• Self contained classrooms • Elementary students study different subjects with different teachers	
Community/Social Use	• School library	• Computer labs • Auditoriums

Considerations as Trends

Considerations of the 21st Century outlined in the literature review included safety; aesthetics; technology; energy efficient, flexible and sustained designs; and collaboration. Based on the results of Table 3, occurring features reported in Table 20, and open-ended responses in Appendix D, features for Georgia's schools reflect 4 of the 5 trends identified as considerations. By implementation of categorical features, the following categories are considered trends for Georgia schools that participated, since over 50% of possible categorical features surveyed were indicated by respondents as implemented:

- Collaboration (Planning, Funding, and Technology)
- Safety and security
- Aesthetic considerations
- Technology

Although 50% of categorical features for classroom space and furnishings were not implemented, results did indicate at least 50% of classroom space and furnishings designed for learning centers and special subjects when appropriate. Additionally, collaboration was indicated as a trend in planning, but collaborations were not evident to be a trend in the functional environment as the use of school was primarily reported to be made available to the public on a scheduled basis, free of charge or for a nominal fee. Less than 50% of respondents reported schools open to families and community before, during, and after school.

Discussion

Consideration of findings, recommendations, and implications is given since Georgia has approximately 2,200 schools and less than 100 responses were completed, as reported in Chapter 4. Recommendations and implications for further research are made with the assumption that the voluntary responses are representative of Georgia. However, as described in Chapter 3, methods did not include a stratified random sample, as attempts were made to invite all school districts and schools to participate. Responses totaled approximately 3% of the schools in Georgia.

Recommendations

Research supports the premise facilities impact student learning by shaping the environment. Recommendations include for findings of this study to be considered in establishing guidelines in the state of Georgia with special consideration to efficient and sustained designs, since it has been identified as a consideration for 21st Century schools and less than 50% of features surveyed were indicated to occur in schools. Efforts made to design energy efficient schools can increase health status, conserve resources, and reduce costs when sustainable. Although a minimum of fifty percent of schools have reported implementation of features as existing and current, any remaining percentages are significant regardless of how

small the percentage, as each school or district in the remaining percentages represents hundreds or thousands of students lacking adequate or improved facilities. This study should be used as a bench mark and guide for all schools to assist educational planners with evaluating features for implementation and features for improvement in collaboration, safety and security, aesthetic considerations, and technology. Further design features recommended for consideration in the future include the following:

- Design communal spaces to enhance learning while encouraging student social skills
- Continue to utilize classroom space as a resource for flexibility and to facilitate instruction
- Disperse administrative offices for safety and functional purposes
- Enhance grounds for complimentary, aesthetic purposes
- Construct teacher facilities to accommodate professional and personable work spaces with consideration to teacher work stations
- Assess instructional and social services or opportunities in relation to student success and community needs
- Continue to design specialized classroom spaces and furnishings for broadening classroom instructional experiences
- Assess student and academic programs in relation to educational programs
- Adapt organization of instruction to maximize learning
- Assess community and social use in relation to community needs
- Employ more efficient and sustainable designs

Implications for Further Research

Giving consideration to current influences on education, including population projections, the research study is not only valuable for Georgia, but all populated areas and states in regard to facility construction and renovation. Therefore, recommendations are made to continue research of design features in Georgia, since only 3% of schools are represented, and to research design features of additional states and populations.

Additional recommendations, since the study was comprehensive of all grade-levels, include further research studies of specific grade levels implementing a subject using standard classroom designs, compared to specifically designed classrooms to determine if a relationship exists between classroom designs and student achievement or desired student outcomes. In addition, since collaboration was not indicated extensively in the functional environment, further research to determine variables such as socio-economic status, industry, or location that possibly influence the functional environment is suggested in regard to schools with differing functional features.

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APPENDIX A

SURVEY FOR GEORGIA

Thank you very much for your support. Please start with the survey now by clicking on the **Continue** button below.

Demographic and General Data:

Title: *

School Name: *

School Division/District *

School Address *

City: *

State: *

Zip Code: *

School E-mail (Optional,but include if requesting copy of report):

School Website Address(Optional):

Date School Opened (Optional):

Date of Last Major Renovation(Optional):

Grades included in School: *

Total Number of Students (FTE) *

Name of Architect(Optional):

Total Square Footage (Floor area including outside walls) *

Please check response.

Which describes your school? * ********Public ********Independent ********Other

Please check response.

	********Urban	********Rural	********Suburban
Which of the following categorizes your school?	☐	☐	☐

Which statement describes your school?

	Opened in the last 5 years (2000-2004)	Built between 1985-1999	Built between 1970-1984	Built between 1950-1969	Built prior to 1950
*	☐	☐	☐	☐	☐

Please check all funding sources used for facility building, maintenance and instructional programs.

	Yes	No	Not Enough Information	Not Applicable
State Capital Outlay *	☐	☐	☐	☐
Federal *	☐	☐	☐	☐
Local *	☐	☐	☐	☐
Grants *	☐	☐	☐	☐
Donations *	☐	☐	☐	☐
Fund Raisers *	☐	☐	☐	☐
Business/Community Partnerships *	☐	☐	☐	☐

Which of the following is true of your school relative to its community?

	Yes	No	Not enough Information	Not Applicable
Building open to students, families and community before, during and after school; jointly funded through partnership between school and community agencies *	☐	☐	☐	☐
"Community Use of School"-facility made available to public on a scheduled basis, free of charge or for a nominal fee *	☐	☐	☐	☐
"Community Planning"- community involved in planning *	☐	☐	☐	☐
Planning done only with school administration and personnel *	☐	☐	☐	☐
Full-time community school coordinator oversees and manages support, opportunities, and services; and depending on partnerships and funding a charge to use the facilities varies in applicability *	☐	☐	☐	☐

Please indicate which persons are involved in school design and facility planning.

	Yes	No	Not Enough Information	Not Applicable
Board Members *	☐	☐	☐	☐
Superintendent *	☐	☐	☐	☐
Facility Administrator *	☐	☐	☐	☐
Principal *	☐	☐	☐	☐
Teachers *	☐	☐	☐	☐
Students *	☐	☐	☐	☐
Parents *	☐	☐	☐	☐
Community Members *	☐	☐	☐	☐
Contracted Consultants *	☐	☐	☐	☐
Architect *	☐	☐	☐	☐
Other *	☐	☐	☐	☐

Safety and Security Features- Please check one answer beside each of the following items:

	Feature not currently in	Feature acquired, or installed in facilities built, in	Feature older than 5 years	Not enough information

	building	last 5 years		
Perimeter fencing *	☐	☐	☐	☐
Metal detectors *	☐	☐	☐	☐
Alarm systems *	☐	☐	☐	☐
Photo identification badges for students *	☐	☐	☐	☐
Uniformed police officer(s) on permanent assignment or resource officer *	☐	☐	☐	☐
One-way door locks *	☐	☐	☐	☐
Security cameras *	☐	☐	☐	☐
Computerized barcode system for library books *	☐	☐	☐	☐
Strategic positioning of offices (near restrooms and/or entrances) *	☐	☐	☐	☐
Extra-wide corridors *	☐	☐	☐	☐
Walkie-talkies (used by school administration) *	☐	☐	☐	☐
Telephones in classrooms *	☐	☐	☐	☐
School bus security cameras *	☐	☐	☐	☐
Modified lockers (ex. shorter for ease of supervision) *	☐	☐	☐	☐
Modified restrooms (ex. doorless entry for ease in supervision) *	☐	☐	☐	☐
Controlled access to building *	☐	☐	☐	☐
Using glass windows or transparent interior walls for ease in monitoring classrooms and hallways *	☐	☐	☐	☐

Other safety features used:

Classroom Space and Furnishings- Please check one answer beside each of the following items:

	Feature not currently in building	Feature acquired, or installed in facilities built, in last 5 years	Feature more than 5 years old	Not enough information
Instead of desks students sit at tables in most classrooms *	☐	☐	☐	☐
Student work stations *	☐	☐	☐	☐
Learning centers in classrooms *	☐	☐	☐	☐
Movable walls between some classrooms *	☐	☐	☐	☐
Special rooms to accommodate tutorials and small groups of students *	☐	☐	☐	☐
Special surfaces on classroom and/or corridor walls for display of student work *	☐	☐	☐	☐
Instructional floor design (for example alphabets, maps, numbers) *	☐	☐	☐	☐
Special storage for student projects *	☐	☐	☐	☐
Uniquely designed rooms *	☐	☐	☐	☐

Classroom(s) has/have ergonomically tested furniture *				
Portable desks for teachers *				
Portable instructional centers *				
Informal seating (such as couches, arm chairs, etc.) *				
Separate labs for art *				
Separate labs for music *				

Please check response.

	Less than 600 sq. ft.	600-699 sq. ft.	700-799 sq. ft.	More than 800 sq.ft.
Please indicate closest average of regular classroom square footage: *				

	10-15	15-20	20-25	25-30
Please indicate average number of students in regular classroom for main subjects. *				

Classroom Space and Furnishings:Please describe any uniquely designed rooms.

Classroom Space and Furnishings: Please check all that apply.

	Superintendent	Students	District Administrator	Teachers	School Board	Principals	Architect	Other
Which people most frequently make interior furnishing choices in your school?								

Technology:

	Technology not currently in building.	Technology implemented or included in school built within last 5 years	Technology older than 5 years old	Not enough information.
Computer labs *				
Computers in most classrooms *				
Computers in media center *				
Laptop access in most classrooms *				
Laptop loan program for home use *				
Foreign language labs *				
Television up link capacity *				
Television down link capacity *				
Closed circuit television in schools *				
Televisions in most classrooms *				
School web-site *				
Graphing calculators *				

School-wide internet access *	☐	☐	☐	☐
Network is school based *	☐	☐	☐	☐
Network in central office only *	☐	☐	☐	☐
TV monitors in corridors *	☐	☐	☐	☐
Other technology features *	☐	☐	☐	☐
Modular Wiring Instead of Normal Pipe and Wire *	☐	☐	☐	☐
Wireless *	☐	☐	☐	☐
Other technology features *	☐	☐	☐	☐

Technology Use:

	Yes	No	Not Applicable
Students are able to use technology in classroom weekly. *	☐	☐	☐
Students are able to use technology in lab weekly. *	☐	☐	☐
E-mail used on-going by adults for communication. *	☐	☐	☐
E-mail within school used by students for communication. *	☐	☐	☐

Technology: Please indicate main persons making technology decisions for your school.

	Yes	No	Not Applicable
Board Members *	☐	☐	☐
Superintendent *	☐	☐	☐
Technology Specialist Off Campus *	☐	☐	☐
Instructional Technologists At School *	☐	☐	☐
Principal or Local Administrator *	☐	☐	☐
Lead Teachers *	☐	☐	☐
Teachers *	☐	☐	☐
Other *	☐	☐	☐

Organization of Classroom: Please check response for organization of classroom sections.

	Entire School	Part of School	Not Enough Info.	Not Applicable
Organized by Grade level *	☐	☐	☐	☐
Organized by Theme *	☐	☐	☐	☐
Organized by Academic Discipline *	☐	☐	☐	☐
Organized by Interdisciplinary Basis *	☐	☐	☐	☐
Organized by Family Clusters *	☐	☐	☐	☐

Administrative Offices:

	Yes	No	Not Applicable
Are administrative offices dispersed throughout building? *	☐	☐	☐
Are guidance offices dispersed throughout building? *	☐	☐	☐
Does the building have rooms for community volunteers? *	☐	☐	☐

Student Communal Space:

	Yes	No	Not Enough Information	Not Applicable
Courtyard *	☐	☐	☐	☐
Atrium (s) *	☐	☐	☐	☐
Food Court *	☐	☐	☐	☐
Student Lounge *	☐	☐	☐	☐
Cafetorium *	☐	☐	☐	☐
Community Area/Commons *	☐	☐	☐	☐
Multipurpose areas *	☐	☐	☐	☐
Other *	☐	☐	☐	☐

Please describe other communal space:

School Grounds:

	Yes	No	Not Enough Information	Not Applicable.
Gardens (Student maintained) *	☐	☐	☐	☐
Gardens (Staff maintained) *	☐	☐	☐	☐
Gardens (Community project) *	☐	☐	☐	☐
Outdoor labs *	☐	☐	☐	☐
Nature trails *	☐	☐	☐	☐
Uniquely designed playground space *	☐	☐	☐	☐
Other features not listed *	☐	☐	☐	☐
Are any of the above used for instruction? *	☐	☐	☐	☐

Please describe any unique grounds and outdoor features of your school.

Facilities for Teachers:

	Yes	No	Not Enough Information	Not Applicable
Private Offices for All Teachers *	☐	☐	☐	☐
Private Offices for Some Teachers *	☐	☐	☐	☐
Shared Offices by Department *	☐	☐	☐	☐
Shared Offices by Grade Level *	☐	☐	☐	☐
Shared Offices by Team *	☐	☐	☐	☐
Other Shared Office *	☐	☐	☐	☐
Teachers' workroom/resource center *				

Teachers' cafeteria *				
Teachers' Lounge *				
Do teacher's plan cooperatively? *				
Do teachers plan individually? *				

Please describe unique teacher areas.

Energy Use and Sustainable Design:

	Yes	No	Not Enough Information	Not Applicable
Central air conditioning *				
Air conditioning units in most classrooms *				
Air conditioning units in offices only *				
Exhaust vents placed in ceiling for one way flow of air. *				
Raised floor used as the plenum for air supply *				
Day lighting *				
Solar panels *				
Building placement *				
Less porous materials such as masonry and concrete for moisture prevention *				
Roofing considerations (Using light colors and materials for reducing heat) *				
Geothermal heating *				
Recycling programs (ex. water) *				
Utilities placed in paths for minimal disruption of services and costs when additions are added. *				
CO2 monitors *				
Humidity sensors *				

Please describe other sustainable energy designs:

Instructional Opportunities: Early Childhood Education Programs

	Yes	No	Not Applicable
Head Start *	☐	☐	☐
Preschool Special Education Program *	☐	☐	☐
4 Year Old Preschool Program *	☐	☐	☐
Other Preschool Programs *	☐	☐	☐

Please list additional preschool programs:

Social Programs and Offices:

	Yes	No	Not Enough Information	Not Applicable
Conflict Resolution Training *	☐	☐	☐	☐
Peer Mediation Training *	☐	☐	☐	☐
In School Suspension *	☐	☐	☐	☐
Probation Office in School *	☐	☐	☐	☐
Social Services Office in School *	☐	☐	☐	☐
Homework Assistance Center *	☐	☐	☐	☐
Special Summer Programs *	☐	☐	☐	☐
Medical Offices (other than school clinic and nurse) *	☐	☐	☐	☐
On-site office for resource officer *	☐	☐	☐	☐
Ninth grade transition program *	☐	☐	☐	☐
Dropout prevention *	☐	☐	☐	☐
Values or character education program *	☐	☐	☐	☐
Alternative education program within school *	☐	☐	☐	☐
Focus schools *	☐	☐	☐	☐
Magnet program(s) *	☐	☐	☐	☐
Special academic (or enrichment) centers *	☐	☐	☐	☐
Drug prevention *	☐	☐	☐	☐
Teen pregnancy prevention *	☐	☐	☐	☐
Student Clubs and Organizations *	☐	☐	☐	☐
Volunteer programs. *	☐	☐	☐	☐

Instructional Classroom Programs- Please check only one response beside each of the following items:

	"Standard" or Regular Classroom	Specially Designed Classroom for Subject (Ex. Special equipment and materials,	Subject Not Currently	Not Applicable

	Used for Subject	enlarged classroom spaces, and/or laboratory settings)	Implemented.	
Agriscience *				
Business *				
Marketing *				
Family and Consumer Sciences *				
Horticulture *				
Information Technology *				
Early Childhood Education *				
Automotive Service Technology *				
Communications Technology *				
Manufacturing Technology *				
Construction Technology *				
Drafting and Design Technology *				
Electronics Technology *				
Graphic Arts Technology *				
Professional Foods *				
Physical Education Courses *				
Health Occupations *				
Art *				
Drama/Theatre *				
Music *				
Advanced Placement Courses *				
Standardized Assessment Preparation *				

Please list other special programs:

Social and Communal Use of Facilities:

	Yes	No	Not Enough Information	Not Applicable
Public library located in school *				
Public access to school library *				
Day care center in school *				
Public access to other school facilities *				
Adult education classes *				

Computer lab open to community *	☐	☐	☐	☐
Gymnasium or athletic facilities accessible to public *	☐	☐	☐	☐
Public performances in auditorium *	☐	☐	☐	☐
Family learning centers or spaces for parents *	☐	☐	☐	☐

Instructional Opportunities and Educational Programs:

	Yes	No	Not Enough Information	Not Applicable
Apprenticeship Programs *	☐	☐	☐	☐
School to Work Programs *	☐	☐	☐	☐
Work/Placements *	☐	☐	☐	☐
School Business Partnerships *	☐	☐	☐	☐
Pairing of Academic and Vocational Classes *	☐	☐	☐	☐
Unique learning environments (classes in museums, malls, alternative settings) *	☐	☐	☐	☐
College Partnerships (ex.Dual Enrollment, Class Exemptions) *	☐	☐	☐	☐

Other vocational or career programs:

Organization of Instruction: Secondary Education

	Yes	No	Not Enough Information	Not Applicable
4x4 Block *	☐	☐	☐	☐
AB Schedule *	☐	☐	☐	☐
Modified AB Schedule *	☐	☐	☐	☐
Modified Block *	☐	☐	☐	☐
6 Period *	☐	☐	☐	☐
7 Period *	☐	☐	☐	☐
8 Period *	☐	☐	☐	☐
Extended Day Program *	☐	☐	☐	☐

Please specify other for secondary schedule:

Organization of Instruction: Elementary Education

	Yes	No	Not Enough	Not

			Information	Applicable
Self-contained classrooms *				
Modified Block Schedule *				
Extended Day Program *				
Multi-age Classrooms *				
Elementary students study different subjects with different teachers (full or partial departmentalization) *				

Organization of Instruction: Secondary and Elementary Instruction

	Yes	No	Not Enough Information	Not Applicable
Team Teaching Across Grade Levels *				
Team Teaching Within Grade Levels *				
Teacher Looping (within school) *				
Teacher Looping (Between Schools) *				
Community Service Requirements *				

Satisfaction:

	Yes	No
Do you have input and choices for school designs?		
Are you satisfied with your school's interiors such as colors, furnishings, etc.?		
Is the facilities adequate for learning?		
Is the school environment reflective of school philosophies and mission?		
Are safety features currently used by the school adequate?		
Is your school overcrowded?		
Are you satisfied with your school's appearance outdoors?		

Please explain any question answered "no" for satisfaction in section above.

What do you like most about your school's design or its features?

What do believe is most effective about your school's design or its features?

What features would you like to change or improve in your school?

Suggestions: This survey was previously used to study designs in Virginia's schools by the University of Virginia, then modified and revised as an on-line study for Georgia schools through the University of Georgia. Please make suggestions for improvement or additional features should it be used nationally or internationally.

What would you like to learn about school designs and features?

Comments and recommendations.

Please contact jlhadden@uga.edu or click here if you have any questions regarding this survey.

APPENDIX B

VIRGINIA FINDINGS

Trends

The New Design Features Survey revealed several significant trends. A trend represents the implementation of a design feature in at least half of the schools in the survey.

1) Safety and Security Features
- extra-wide corridors
- controlled access to building
- walkie talkies
- bus security cameras
- modified restrooms
- special landscaping
- alarm systems
- school resource officers (SROs)
- one-way door locks
- barcoded library books
- strategic positioning of administrative offices

2) Classroom Space
- special rooms to accommodate tutorials
- work stations in some classrooms

3) Technology
- computer labs
- computers in most classrooms
- computers in media center
- school-based network
- school-wide internet access
- school/teacher websites
- e-mail for teachers and/or staff
- access to homework hotlines
- closed circuit television
- graphing calculators

4) Organization of Administrative Offices
- administrative offices dispersed throughout schools

5) Communal Space
- cafetoriums
- community areas/commons

6) School Grounds
- gardens (maintained by staff)

7) Facilities for Teachers
- teacher workrooms/resource centers
- teacher lounges

8) Community Use of School Facilities
- computer labs
- gymnasiums
- auditoriums
- outdoor athletic facilities

9) Energy Use and Sustainable Design
- energy saving lighting
- day lighting
- central air conditioning
- recycling programs

10) Organization of Instruction
- team teaching within grades (elementary and middle school)

11) Special Programs
- school/business partnerships
- conflict resolution training
- peer mediation training (middle and high schools)

APPENDIX C

OPEN-ENDED QUESTION RESPONSES IN ORIGINAL TEXT

Other safety features used:

No.	Response ID	Data
		Other safety features used:
49	715472	we lock all exterior doors except for the main entrance
75	716166	Security guard at school entrance.
		Emergency Alert alarms within each classroom.
		Strong, practice safety/security/emergency lockdown procedures in place
		Evacuation to off-campus sites for all students and staff in place.
93	718519	Random lock-down security checks for weapons and drugs using local sheriff and police/drug -explosive dogs .
126	721254	door bell on front door with a camara
		Traffic patterns well laid out and painted on the parking and driveway areas. Parent dropoff and pickup are well cared for with in the AM and
161	723229	PM staff monitoring. Buses and cars are directed to separate areas. Playground areas cared for and inspected by certified personnel.
162	723271	Photo badge id for staff;required visitor sign-in

163	723336	Drop down chain fence seperating the instructional wings from the exploratory wing (cafeteria and gym)
193	728611	All visitors sign in and must wear ID badges in the building.
199	731807	Fire alarm system; security ID badges for all staff; transportation info. collected on every student

Classroom Space and Furnishings: Please describe any uniquely designed rooms.

No.	Response ID	Data
		Diversified Tech lab 2 Computer labs
35	714761	Media Center
75	716166	Special ed. contained classrooms
93	718519	Marketing lab; childcare lab; pre-kindergarten classroom and playground; business labs (5); art labs (2); music labs (2); technology-construction room.
		school has only one science lab; all rooms are small by today's standards.
100	719942	computer lab in makeshift classroom.
161	723229	The media center has a tiered story telling area. There is a two room nurses station containing cabinets and storage areas as well as two beds. There are classrooms designed for gifted classes. There are two art rooms both designed with special storage areas. The same is true for art. Counseling areas are specially design so that small groups can be called. We have a nicely designed administrative suite. One of the best features is a large conference room containing a table that will seat 14 people...it is used daily for various types of meetings.

163	723336	media center is hexagon-- with skylight--we got to design all furniture including book shelves and check out station---music lab has sound absorbing acoustical panels---cafeteria has dining tables that convert to benches for parent meeting and assemblies---each instructional wing has a teacher workroom/staff bathroom
166	723719	some rooms include two bathrooms in that amount of space
167	723727	all Kindergarten rooms have private bathrooms (2--1 male, 1 female)
193	728611	N/A

Please describe other communal space:

No.	Response ID	Data Please describe other communal space:
22	714445	athletic fields, bleachers, stands Two Ampitheaters Several gardens/memorial areas
44	715416	Outdoor classroom area
63	715725	Physical education facility
93	718519	none
95	718628	Gymnasium
100	719942	large gymnasium area; outside athletic fields
102	720003	Auditorium
108	720636	Outdoor classrooms
122	721206	Coffee shop
161	723229	There are two ball diamonds both maintained by the County Parks District.

162	723271	Playground;gym
166	723719	Playground
189	727493	gym
218	746567	Gym

Please describe any unique grounds and outdoor features of your school.

No.	Response ID	Data Please describe any unique grounds and outdoor features of your school.
44	715416	Outdoor classroom
49	715472	we have a coverd shelter considered an outdoor classroom
63	715725	Greenhouse--student lab area
99	719264	Wetlands area
109	720673	Large Patio design provides outdoor classroom opportunities.
122	721206	Fountain with wall seating
161	723229	The PTA has paid for a 35000.00 pavillion located on the playground. We also have a very large U.S. map painted on a large slab of concrete also on the playground.
162	723271	Three-level playground area so ages and activities can be separated.
163	723336	Weather station installed on roof--accessible via Internet at School and home----all purpose field and baseball field insatlled 2 years ago

193	728611	We have an outdoor classroom build by a parent that is used for instruction as well as used by the community for family birthday parties and other gatherings.
		Challenge Course
		Picnic shelter
222	750888	Indian teepees

Please describe unique teacher areas.

No.	Response ID	Data
		Please describe unique teacher areas.
93	718519	Teachers plan together in many academic areas (math, science, limited English, limited social studies, foreign language, JROTC) Many plan independently under the supervision of the dept. chair and an assigned administrator.
100	719942	interior rooms have adequate storage space
162	723271	Teacher's lounges are in teacher workrooms on each hallway.
193	728611	We have separate teacher workroom and teacher lounge where teachers may choose to eat lunch.

Please describe other sustainable energy designs:

No.	Response ID	Data
		Please describe other sustainable energy designs:
44	715416	Computerized energy management
100	719942	there are no sustainable energy designs. We are fortunate to have heat in winter and AC in summer.
161	723229	There are a minimal number of windows

162	723271	Rooftop energy recovery units. Centralized computer controlled temperatures; constant monitoring of humidity and temp.
166	723719	A/c settings maintained off site with a reasonable range set, weekend override for 2 hours at a button push

Please list additional preschool programs:

No.	Response ID	Data
		Please list additional preschool programs:
19	714422	NA
26	714479	Headstart and PreK are available but are not housed in the same building.
122	721206	Pre-K 2 and 3
167	723727	State Pre-K
174	724096	Speech
196	729434	Local Church and DayCare Preschool Programs

Please list other special programs:

No.	Response ID	Data
		Please list other special programs:
161	723229	Special centers for special education classes and small group instruction.

Please specify other for secondary schedule:

No.	Response ID	Data
		Please specify other for secondary schedule:
100	719942	middle school 300 minute academic time daily

No.	Response ID	Data
		Please explain any question answered "no" for satisfaction in section above.
8	691688	Thanks

18	714411	The building capacity is 770. Presently we have 720. We do not have as much space as we'd like, but, we could not be described as 'overcrowded.'
19	714422	Furnishings need to be replaced in sizes adequate for large students. The schoool has so many repair needs, respective to plumbing, lavatory delapadation, worn furniture, wiring infrastructure, multiple entrances and exits...the school is not safe. We were only offered limited chioces for clors, furnishings, etc. They are very Institutional.
		Our school is a very good size for our enrollment
28	714532	We do not have the manpower to keep the outside looking the way I would like for it to look.
		school is not overcrowded
49	715472	system does not maintain grouds adequately
57	715628	We only have 1.013 students and fit very nicely in our building. 1. I'd very much like to have the space available for special projects like a parent education center, adult ed, etc., though we are at capacity with space. 2. We are not overcrowded, though rooms are used to their capacity to serve students and the current curriculum.
63	715725	3. We are working with our horticulture program to make an effort to beautify the school grounds.
82	716482	This building is so 'old' that retrofitting has been a nightmare. There have been several additions through construction, but there has been no attempt to make the old building look better. We still have boiler heat units on the wall that are no longer used, but they are still there. We lack safety features other than call-back buttons.
		Teacher students ration is better now than ever.
84	716507	Our school is old and needs a facelift
85	716629	The safety features would be better with a few cameras in the front to ensure older kids do not come and vandalize. We do not want cameras everywhere but some for safety yes. Further, the fire alarm system needs to be updated. It is an old system.

87	716905	I would have liked to have been allowed input into the design; however, those decisions were made 5 years before I was named principal.
95	718628	Our student population is not at capacity as of 2005
99	719264	Currently in the process of updating the interior walls and colors. The exterior needs to be graded and replanted to provide a more professional/welcoming appearance.
100	719942	there is no input from school level leaders for design adjustments as new buildings go up. Furnishings in my school are quite old; district does not replace furniture; school must do own painting, too. Camera monitoring system in school dates to late 1980's and is inoperable thus of no help. School is not crowded.
103	720228	The plans for this school were designed well in advance of me being named principal.
106	720523	Can only have input if I am going to pay for change.
108	720636	Updated desks/tables needed; currently we have portable classrooms to serve our students; would like to do more grounds enhancement
111	720773	Budgetary concerns have restricted the changes and improvements needed at this school. The school needs to be updated and improved to reflect the mission and vision of the school for its students.
115	720904	We need more structured playground areas and more space for public parking and pickup of children.
126	721254	Our school could be landscaped better and painted
134	721512	We have several empty classrooms. Capacity is approximately 750. We are not crowded at this time.

		Parking areas need improvement.
139	721575	Need exterior painting.
163	723336	We currently use all available space as well as 3 mobile units. We are near capacity.
167	723727	just came on board this year. Colors are outdated and need changing
175	724335	New buildings and parking lots need to be landscaped.
189	727493	The facility is adequate for our students.
193	728611	School design decisions are made by central administration.
196	729434	School is full adn to the point of overcrowding.
199	731807	Color pattern needs to be enhanced/updated. Some furnishings need to be updated. Large, flat outdoor surrounding with little eye appeal.
218	746567	We could have a prettier campus with some flowering plants and well maintained lawns.
223	750897	We are a financially pressed start up charter school. We do not get any help from the county, state or federal governments as regards facilities. At present, we are renting several buildings from a local church and using supplemental modular buildings (i.e. trailers).

No.	Response ID	What do you like most about your school s design or its features?
18	714411	Sence of openness
19	714422	Cafeteria and media center are centrally located.
26	714479	I especially like the open media center. It is located just inside the foyer and is sunken.

28	714532	I think our multipurpose building housing our gym, music and art rooms is an excellent facility. THese speciality teachers were allowed to help design this particular facility
44	715416	Designed with a lot of stakeholder input and the design meets the needs of students
49	715472	modern design grades are color coordinated
57	715628	Excellent design and ability to add new buildings onto the old.
63	715725	We have added a wing in 1999 that is more modern and learner-friendly. Modern science labs and 'warmer' classroom space is available in this wing. This is where we house our freshman academy teams.
82	716482	The school is a neighborhood school. Parents feel free to visit at any time. We ask them to sign in, but sometimes they don't.
85	716629	We have spent much time painting and cleaning the school (our own people and administrator.) It is beginning to look very good.
87	716905	Media Center is the center of the building. Also, it is large and has a story corner with a leveled platform.
95	718628	separate wings for different grade levels with access to computer labs and designed for special needs children
97	719137	large classrooms
99	719264	Open,spacious building.
100	719942	outside of school is beautiful; inside, it was built as a junior high thus is not suitable for middle school.
103	720228	Grade levels on separate hallways

111	720773	As an older school, some of our spaces are quite large. Our grounds are very generous. Many classrooms, however, have been carved out of these larger spaces and defeat the purpose of the space.
115	720904	The colors!
126	721254	All rooms are inside
134	721512	THe layout is simple and easy to understand. The media center is very attractive.
166	723719	comfortable, spacious
167	723727	one grade per wing with 2 wings per grade (8-10 homerooms on each wing)
175	724335	Not many things-maybe the three story annex which can and will be used for the 9th grade academy.
182	726731	Easy access to all rooms; adjoining door to cafeteria from office suite; being under one roof (previously in trailers)
189	727493	It is a new facility with large hallways and bright colors.
193	728611	Attractive, large lobby area
196	729434	It is easy to monitor all the hallways at one time.
199	731807	Flat, one-story layout. Lots of land for growth and outdoor activities.
205	736287	Central atruim that enables one person to see the entire school from one point.
218	746567	K-2 hall and 3-5 hall
226	756310	The building is a reconfigured high school building and has many features that would not be in a middle school, e.g., auditorium, college size gymnasium, football stadium, home ec lab, etc. These allow for great flexibility in use.

No.	**Response ID**

		What do believe is most effective about your school's design or its features?
18	714411	functional floor plan
19	714422	Cafeteria and media center are centrally located
26	714479	Accessibility to all areas.
49	715472	control can be maintained at main entrance
57	715628	Flow of traffic is excellent
63	715725	For a school of our current size, we have adequate hall space and commons space. This is key in a high school...
82	716482	The Media Center is in the center of the school design. Decorative signs in the hallways point the way to the office, cafeteria, media center and grade level classrooms. Extensive use of wall murals are used in hallways throughout the building and in the cafeteria, gym, and media center.
85	716629	We have spent many dollars replacing old and broken furniture with new items.
87	716905	Easy access to all areas of the building
95	718628	see question above
99	719264	Large hallways for easy movement of students.
100	719942	thankfully, small enrollment does not make us overcrowded. Commons area and gymnasium are quite large and attractive.
103	720228	Seperate hallways for each grade level
115	720904	Our school is very open and allows for everyone to be seen and heard. We don't feel closed off from one another.
126	721254	All rooms are inside

166	723719	layout makes sense
167	723727	layout and 2 complete sides allows the school to function as 2 halves.
182	726731	Two story maximizes used of limited land area.
189	727493	Our former school was built with the open-classroom design. This new facility has walls, windows and doors for every classroom.
193	728611	Easy movement of groups
199	731807	One story, plenty of land space.
205	736287	the organization of each wing consisting of a specific area (one wing houses one grade, etc.)
226	756310	The flexibility and the specialized areas

No.	Response ID	What features would you like to change or improve in your school?
19	714422	The school needs to be razed and built a new.
26	714479	Would like some offices/work areas available for teachers on class wings.
28	714532	We are actually housed in 5 different buildings of varing styles and ages. It would be nice to be in one facility.
44	715416	none
		nicer grounds
49	715472	fence around school
57	715628	Would like to update the older sections of the building.

63	715725	Our classroom square footage is far too small to create a comfortable learning environment in most cases.
82	716482	Access to the building is a problem. There are 10 entryways into the building, which is located between a main highway and a city street. There is often confusion as to which way to get into the building, especially from those not familiar with the building layout. Signs are posted, but don't help. I would like to redesign the front of the building to show it is indeed the entrance.
85	716629	Build another wing and get rid of the trailers.
87	716905	It is too large; optimal size of elem. school is 550 - ours is made to accomodate 1,000 students
95	718628	new administrative offices with windows to see front doors
97	719137	larger and updated lunchroom
		Arrangement of office area - wasted space.
99	719264	Closed (interior) courtyards provide limited access and are difficult to maintain and are noisey during instructional times.
100	719942	we desperately need more restrooms for student use.
103	720228	I would make the academic hallways at the end of the building so that we could add classrooms space to the existing hallways when funds are available
109	720673	Update existing older spaces/ classrooms, restrooms, hallways.
111	720773	I would like to change the basic structure of most classrooms, opt for better room arrangement with updated and more flexible furniture.
115	720904	We could use more specialty areas for intervention and small group teaching.
126	721254	Lobby not as large. Space used for office.

134	721512	THe office is too far from some of the classrooms. The gym is near the center of the building.
		Larger cafeteria. Additional serving line and more table space.
139	721575	Additional meeting/conference rooms.
166	723719	just need more classrooms to support smaller class size
167	723727	decrease the # of kids or add in paras for kindergarten
175	724335	wider hallways-more cameras-larger cafeteria-more storage space-more teacher workrooms-larger auditorium-larger media center-
182	726731	Bathrooms; storage areas; parking in front by main entrance
189	727493	Add wireless technology, keyless entries, more outer access roads for easy pick-up and delivery of students.
193	728611	We need an additional hallway to accomodate six classes currently in mobiles.
196	729434	Students must leave the building to have access to the gym.
199	731807	Outside landscaping - need for more trees, etc. Update lighting and paint color inside building to brighten it up.
205	736287	The classrooms are not large enough for the older students.
223	750897	At this point, we'd be satisfied just tyo have enough decent space to expand by a grade per year up through grade 6.
226	756310	The school will be replaced with a new building in 2006. Staff is heavily involved in planning.

APPENDIX D

OPEN-ENDED DATA SUMMARY

Category	Features/ Responses	Frequency	Responses
Unique or Other Communal Space	Athletic fields.	3	14 Participants Responded
	Amphitheatre.	1	
	Garden.	1	
	Outdoor Classroom.	2	
	Physical Education Facility.	1	
	Gymnasium.	5	
	Auditorium.	1	
	Coffee Shop.	1	
	Playground.	2	
Unique or Other Classroom Space and Furnishings	Total Wireless campus and all students have laptops.	1	10 Participants Responded
	Unique labs and classroom spaces.	3	
	Computer labs.	1	
	Media center.	2	
	Conference rooms.	1	
	Administrative/counseling offices.	2	
	Cafeteria.	1	

	Special rooms- gifted and special education.	2	
	Enrichment – Art, Music.	3	
	Restrooms.	2	
	Teacher Workroom.	1	
	Nurses Station.	1	
Unique or Other School Grounds	Outdoor Classroom.	4	12 Participants Responded
	Greenhouse.	1	
	Wetlands.	1	
	Patios.	1	
	Fountain with wall seating.	1	
	Pavilion.	1	
	U.S. map on concrete.	1	
	3 level playground.	1	
	Weather station accessible via internet.	1	
	Challenge course.	1	
Unique or Other Sustainable Energy Designs	Computerized energy management/computer controlled temperatures.	3	5 Participants Responded
	Rooftop recovery units.	1	
	None.	1	
	Minimal Windows	1	

Unique or Other Schedule	300 minute academic time daily.	1	1 Participant Responded
Unique or Other Special Programs	Special centers for special education classes and small group instruction.	1	1 Participant Responded
Unique or Other Preschool Programs	Headstart housed in separate building.	1	5 Participants Responded
	Pre K-2, 3, 4.	3	
	Speech.	1	
	Local Church Programs.	1	
Unique or Other Teacher Facilities	Planning together and independent.	1	4 Participants Responded
	Storage space.	1	
	Teacher workrooms on grade hall.	1	
	Teacher workroom and lunch area.	1	
Unique or Other Safety	Lock all exterior doors excluding main entrance.	1	10 Participants Responded
	Security guard at entrance.	1	
	Classroom emergency alert alarms/fire alarms.	2	
	Practice of security procedures.	1	
	Evacuation to off campus sites.	1	
	Random security checks of weapons and drugs.	1	
	Door bell at front with camera.	1	

	Visitors sign in and badges.	2	
	Staff I.D. badges.	2	
	Transportation data collected for students.	1	
	Fences.	1	
	Communication with local law authorities.	1	
	Weather alert radios.	1	
	Traffic schedules arranged in advance.	1	
	Play areas supervised by certified personnel.	1	
Features Reported as Unsatisfactory: Comments and Explanations.	Space.	4	29 Participants Responded
	Furnishings.	4	
	Maintenance repairs/outdated equipment.	3	
	Safety.	3	
	Input in design.	3	
	Outdoor areas.	9	
	Support school mission and curriculum.	1	
	Playground.	1	
	Parking.	2	
	Aesthetics (interiors, colors).	4	
	Finance.	2	

Favorable Features (liked most)	Open Space.	3	31 Participants Responded
	Centralization of cafeteria and media center.	2	
	Designed rooms for specialties (art, music, labs).	3	
	Collaborative planning.	1	
	Building design.	1	
	Interiors (colors, murals).	4	
	Community, parental involvement.	1	
	Classroom size.	1	
	Grade level on separate hallways with certain accessible spaces.	2	
Most Effective Features	Functional floorplan, accessibility, building design.	5	22 Participants Responded
	Centralization of Cafeteria and media center.	1	
	Traffic design.	1	
	Main entrance as controlling feature.	1	
	Space (hall, movement).	3	
	Aesthetic designs (murals, interior colors).	1	
	Furniture (new or refurbished).	1	

	Commons area (large is attractive).	2	
	Grade levels with separate halls or wings.	1	
	Open design.	1	
	All classrooms located inside.	1	
	Two-story maximizing land area.	1	
	Windows and doors for every classroom.	1	
	Outside land space.	1	
	Flexibility.	1	
	Specialized Areas.	1	
Features Would Like to Change	Build new school or additions.	5	32 Participants Responded
	Offices.	4	
	Teacher work areas.	2	
	None.	1	
	Outdoor spaces.	4	
	Renovate older sections.	3	
	Increase building and classroom size.	7	
	Entrances layout.	1	
	Cafeteria.	3	
	Restrooms.	3	
	Classrooms and furniture.	1	
	Specialty Areas.	1	

	Lobby.	1	
	Conference room.	1	
	Safety.	1	
	Storage.	2	
	Parking, student drop-off.	2	
	Wireless technology.	1	
	Access to gym.	1	
Design Interest for Learning	Facility designs of comprehensive high schools.	1	8 Participants Responded
	Collaborative planning and involvement.	1	
	How to match building and design.	1	
	Nothing.	1	
	Effectiveness.	1	
	Impact in student achievement.	1	
	Options of school designs and costs.	1	

APPENDIX E

PERMISSION GRANTED FOR VIRGINIA SURVEY

CURRY
UNIVERSITY of VIRGINIA

Curry School of Education
405 Emmet Street South
P.O. Box 400265
Charlottesville, VA 22904-4265
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Department of Leadership,
Foundations, and Policy

November 6, 2004

This letter constitutes authorization for Jennifer L. Hadden, a doctoral student at the University of Georgia, to use the New Design Features survey created at the Thomas Jefferson Center for Educational Design, the University of Virginia.

Daniel L. Duke
Director
Thomas Jefferson Center for
Educational Design

APPENDIX F

VIRGINIA SURVEY

Thomas Jefferson Center for Educational Design
and the Virginia Association of School Superintendents

INVENTORY OF NEW EDUCATIONAL DESIGN FEATURES

The purpose of this pilot study is to learn more about the kinds of innovative design features being implemented in Virginia's schools. The Thomas Jefferson Center for Educational Design and the Virginia Association of School Superintendents would like to develop a comprehensive inventory of these design features and make it available to every school division in the Commonwealth.

We appreciate your taking the time to respond to this survey. If you would like a copy of our report, please check the line below.

____ Please send me a copy of the final report on New Design Features in Virginia's schools.

Research Team
Dan Duke, Principal Investigator
Monica Gillespie, Project Director
Beverly Epps, Researcher
Jacqueline Griesdorn, Researcher

Name of person completing form:_____

Title of person completing form:_____

School Name:_____

School Division:_____

School Address:_____

City:_____ State:_____ Zip Code:_____

Phone Number: (____)_____ Fax: (____)_____

School E-mail:_____School website address:_____

Date school opened:_____

Is your school a single building or campus? _____single building _____campus
Date of last major renovation:_____
Is a major renovation currently being planned for your school? yes_____ no _____
Grades covered by school:_____
Total number of students (as of fall, 1998): _____
Total number of classified personnel (as of fall, 1998): _____
Total number of certified personnel (as of fall, 1998): _____
Total number of full time teachers (as of fall, 1998): _____
Total number of part time teachers (as of fall, 1998): _____

We thank Creative Office Environments and Bond, Comet, Westmoreland & Hiner, both of Richmond, VA, for providing funding for this study.

We estimate that it will take you approximately fifteen minutes to complete this survey. We know your time is valuable, and we thank you in advance for your cooperation.

Part I. Physical Design

Organization of Classrooms

Please check all that apply to your school.

"houses" or "sections" organized by grade level
_____entire school _____part of school
"houses" or "sections" organized by theme
_____entire school _____part of school
"houses" or "sections" organized by academic discipline
_____entire school _____part of school
"houses" or "sections" organized on an interdisciplinary basis
_____entire school _____part of school
"houses" or "sections" organized into family clusters (one class per grade level)
_____entire school _____part of school

Other types of classroom organization in use in your school, please specify:

Safety and Security Features

Please fill in the blanks using the following numbering system:

0 = feature not currently in building
1 = feature installed within the last 3 years
2 = feature older than 3 years

____ perimeter fencing
____ metal detectors
____ alarm systems
____ photo identification badges for students
____ uniformed police officer(s) on permanent assignment
____ one-way door locks
____ security cameras
____ computerized barcode system for library books
____ strategic positioning of offices (near restrooms and/or entrances)
____ extra-wide corridors
____ walkie-talkies (used by school administrators)
____ telephones in classrooms
____ school bus security cameras
____ modified lockers (for example, shorter lockers to permit better supervision)
_____ modified restrooms (for example, doorless entry)
____ controlled access to building
____ other safety features, please specify:

Classroom Space

Please use the following numbering system to describe the classroom spaces and their interiors in your school.

0 = feature not currently in building
1 = feature installed in the last 3 years
2 = feature more than 3 years old

____ instead of desks students sit at tables in most classrooms
__✓__ student work stations
____ learning centers in classrooms
____ movable walls between some classrooms
____ special rooms to accommodate tutorials and small groups of students
____ special surfaces on classroom and/or corridor walls for display of student work
____ instructional floor design (for example alphabets, maps, numbers)
____ special storage for student projects
____ uniquely designed rooms, please describe:

Classroom Furnishings

Please indicate if your school has any of the following furnishings by filling in the blanks with the appropriate number.

0 = furniture not currently in building
1 = furnishings acquired within the last 3 years
2 = furnishings like this acquired more than 3 years ago.

____ classroom(s) has/have ergonomically tested furniture
____ portable desks for teachers
____ portable instructional centers
____ informal seating (such as couches, arm chairs, ect.)

Which of the following people most frequently make interior furnishing choices in your school division: (Check all that apply)

____ Superintendent	____ teachers	____ principals
____ students	____ school board	____ architect
____ district purchasing agent	____ other, please specify_____	

Do you feel you have choices with regards to furniture manufacturers and distributors?
____ yes ____ no If "no" please explain:

_____

_____

Are you satisfied with the furniture in your classrooms?_____yes _____no
If "no" please explain:_____
Do children ever comment about the condition or comfort of the classroom furniture
_____yes _____no?

Technology

Please fill in the blanks using the following numbering system:

0 = technology not currently in building
1 = technology acquired within the last 3 years
2 = technology older than 3 years old.

____ computer labs
____ computers in most classrooms
____ computers in media center
____ laptop access in most classrooms
____ laptop loan program for home use
____ foreign language labs
____ television up link capacity
____ television down link capacity
____ closed circuit television in schools
____ televisions in most classrooms
____ school website
____ graphing calculators
____ school-wide internet access
____ network is school-based
____ network in central office only
____ TV monitors in corridors
____ other technology features, please specify:

Organization of Administrative Offices

Please check where appropriate.

Are administrative offices dispersed throughout school building? ____yes ____no
Are guidance offices dispersed throughout school building? ____yes ____no
Does your building have special rooms for community volunteers? ____yes ____no

PART II: Additional Design Features

Please use the same numbering system to fill in the next several sections.

0 = feature not currently in building
1 = feature introduced to school in the last 3 years
2 = feature is more than 3 years old

Communal Space

____ courtyard(s)
____ atrium(s)
____ food court(s)
____ student lounge(s)
____ cafetorium
____ community area/ commons
____ multipurpose areas.
____ other please specify:

School Grounds

____ gardens (student maintained)
____ gardens (staff maintained)
____ gardens (community project)
____ outdoor labs
____ nature trails
____ uniquely designed playground space, please describe:

____ other features of school grounds, please describe:

Facilities for Teachers

____ private offices for all teachers
____ private offices for some teachers
____ shared offices by department
____ shared offices by grade level
____ shared offices by team
____ shared offices (other) please specify:_____
____ teachers' workroom/resource center(s)
____ teachers' cafeteria
____ teachers' lounge(s)
____ other facilities for teachers, please specify:

Community Use of School Facilities

____ public library located in school
____ public access to school library
____ day care center in school
____ public access to other school facilities, please specify:
____ adult education classes
____ computer lab(s)
____ gymnasium
____ public performances in school auditorium
____ public access to outdoor athletic facilities
____other features:

Energy Use and Sustainable Design

____ central air conditioning
____ air conditioning units in most classrooms
____ air conditioning units in offices only
____ recycling programs
____ geothermal heating
____ day lighting
____ solar panels
____ other:_____

Overcrowding

Is your school currently overcrowded? yes____ no_____
What measures have you taken to deal with overcrowding?

Open Response 1: Assuming that you might want to make some changes to your school building, what **one** change would you consider to be most important for the effectiveness of the overall program?

Part III: Special Programs and Organization of Instruction

Please use the same numbering system to fill in the blanks:

0 = school does not have program
1 = program has been implemented within the last 3 years
2 = program is more than 3 years old

Early Childhood Education

____ Head Start
____ preschool special education program
____ 4 year old preschool program
____ other preschool programs
Please specify:

Special Programs

____ conflict resolution training
____ peer mediation training
____ in school suspension
____ probation office in school
____ social services office in school
____ homework assistance center
____ special summer programs
Please specify:

____ medical offices (other than in school clinic)
____ ninth grade transition program for at-risk students
____ dropout prevention program
____ values or character education program.
Please specify:

____ alternative education program within school (school within a school)
____ focus schools
____ magnet program(s)
____ special academic centers
____ drug prevention
____ teen pregnancy
____ other special programs:

Vocational and Career Education

____ apprenticeship program
____ "school- to-work"
____ work/study placements
____ school/business partnerships
____ pairing of academic and vocational classes
____ other special programs:

Organization of Instruction

Secondary School Schedule

____ 4 x 4 block
____ AB schedule
____ modified AB schedule
____ modified block
____ 6 period
____ 7 period
____ 8 period
____ extended day program
____ other, please specify:

Elementary School

____ self-contained classrooms
____ modified block schedule
____ extended day program
____ multiage classrooms
____ elementary students study different subjects with different teachers (full or partial departmentalization)
Please describe:

Secondary and Elementary Instruction

____ team teaching across grade levels
____ team teaching within grade level
____ teacher looping (within school)
____ teacher looping (between schools)
____ community service requirement

Open Response 2: Is your school district considering organizing grade levels differently from the current design? If so, what is the new design?