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Policy Alternatives That Provide California School Districts With the Policy Options Necessary to Develop Facilities to Enhance Student Learning Opportunities and Optimize Financial Resources

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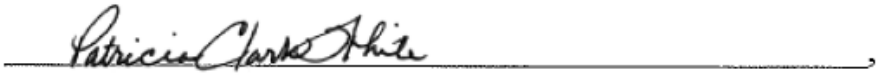 , Associate Dean

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ABSTRACT

Policy Alternatives That Provide California School Districts With the Policy Options Necessary to Develop Facilities to Enhance Student Learning Opportunities and Optimize Financial Resources

by Brett A. Mitchell

Purpose: The purpose of this study was to develop policy alternatives by the years 2019 to 2025 that would assist state policy makers, legislators, and advocates in adding definition to California school facility development and funding.

Methodology: This study involved descriptive statistics using a Delphi study method. Within the theoretical framework established for policy analysis, this Delphi study was inclusive of the knowledge and expertise of an expert panel that was nominated through peers. The Delphi panel consisted of 24 experts knowledgeable about statewide school facilities policy in California. The Delphi study was comprised of 3 rounds of electronic questionnaires utilizing an online survey tool called SurveyMonkey.

Findings: Ten policy statements were considered to be of high priority in this study; 4 policy statements received full consensus and 6 policy alternatives received a Rating of substantial consensus on combined ratings of importance and likelihood of implementation.

Conclusions: Based on the research findings, 8 conclusions were drawn including (a) requiring a deferred maintenance and a replacement facility fund was clearly the highest priority as a result of this study when the requirement was tied to being a prerequisite for state matching funds, (b) policy alternatives that suggested revisions to existing legislation that would introduce the idea of the distribution of state funds in an

equitable manner and in accordance with a district's financial wherewithal, and (c) legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.

Recommendations: Further research is recommended in the following areas: (a) replicate this study with the distinction of enhancing student learning as the highest priority in legislation and optimizing financing as a secondary priority, (b) replicate this study using a different expert panel and utilizing the same or different selection criteria, and (c) conduct a Delphi study or a qualitative study that compares and contrasts the responses of the expert panelists to help define the differences and similarities and the assortment of policy alternatives relating to policy alternatives to improve K-12 facilities and their funding.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I: INTRODUCTION

> No subject connected with the interests of instruction affords a source of such mortifying and humiliating reflections as that of the condition of a large portion of the school houses.
>
> —Henry Barnard, 1848

The decisions to date, and the ones not yet made, with respect to facilities, must be viewed as hardy decisions that affect the daily performance of the teachers and students that grace the halls of the school building (Monk, 2007). The decisions made regarding school facilities can positively or negatively affect long-term learning and other aspects of academic achievement (Schneider, 2002). In most cases, school districts are left to themselves to generate revenues that support school facility needs (Perry, 1998).

While there are a few states with funding policies that assist districts, as of 1989 there existed 19 states of the 50 that had no such provisions for their respective school districts (Honeyman, 1990). Since 1986, the state of California has supplied funding from statewide bonds to assist districts in building schools. To apply for the bond funding, districts had to provide matching local funds. Yet, in California alone, nearly 80% of all students are attending school in facilities that fail to meet industry standards with respect to maintenance, operations, and capital improvement projects (Vincent & Jain, 2015). Landmark legal decisions such as *Serrano v. Priest* were intended to foster equity in school districts by providing requisite funding from state agencies via state bond initiatives. However, these bond funds have been exhausted, and there is no legislative support to pursue more (Maclay, 2015). More recently, California's voter base authorized California to sell $9 billion in school construction bonds (Bates, 2017).

Without state funds to equalize school district facility funding, wealthy districts are able to invest more capital in their facilities due to their higher tax base (Vincent & Jain, 2015). An unintended consequence of this inequity is that school districts in California spend disproportionally less on maintenance and operations expenses for facilities in districts serving low-income students (Vincent & Jain, 2015). Meanwhile, Governor Jerry Brown and the legislature have continued to oppose any efforts at new bond authority aimed at school facilities in California (Siders, 2016).

Despite the investment of more than $20 billion from 1986 to 1996 (Perry, 1998), and, in more recent years, $35.4 billion from 1998 to 2014, many California students continue to attend school in public school facilities that are inadequate by modern standards (Perry, 1998; Vincent & Gross, 2015). The bulk of California's public schools were built between 1950 and 1965, and they have been poorly maintained. Annual decreases in state support of school districts have also resulted in schools that are not only old but poorly maintained (Perry, 1998). At both the national and state level in California, government leaders and educators have agreed on the idea that the issue of public school facilities funding has reached crisis proportions (Perry, 1998). Student learning is at stake if school districts do not soon provide solutions to aging facilities and provide schools with modern facilities (Perry, 1998). Given the condition of California's school facilities, there is an increasingly urgent need to develop state policies aimed at improving or replacing school facilities.

Background

Each day in California, millions of students in the state's public school system sit in facilities that assist in defining their academic experience (Vincent & Jain, 2015). The

decisions made regarding school facilities can positively or negatively affect long-term learning and other aspects of daily performance (Cash, 1993; Koski, 2011; Schneider, 2002). In most cases, school districts are left to themselves to generate revenue to support the facility needs of their schools (Perry, 1998).

With California policy shifting from a state and local partnership to a local control model, public school facility financing or funding opportunities have increased in their reliance on funds generated locally within school district boundaries. Operational funds for school districts come primarily from local property tax and a transfer of tax under California's Local Control Funding Formula (LCFF). Under the LCFF guidelines, allocation of funds on a per-student basis is based on grade level and other demographic information. At the same time, capital improvement funds are generated from district-imposed developer fees, should there be population growth in the district. Further, state-generated funds originating with statewide bond initiatives have resulted in $44 billon statewide and have been designated for school improvement projects (Bates, 2017; Maclay, 2015). At this point, California has allocated most of the $44 billion in statewide school construction bonds approved by voters since 1998, including the most recent Proposition 51initative, leaving public school districts to cover a majority of their facility costs on their own. It is estimated that schools in California require annual expenditures on an average of $18 billion per year to renew and/or replace the current inventory of school facilities statewide. However, research has indicated that school districts in the state are spending only $13 billion per year (Perry, 1998; Vincent & Jain, 2016). As a result, nearly 80% of California's student populations are housed in facilities that fail to

meet the minimum industry standard benchmarks for capital outlays for routine maintenance, new construction, or modernization (Vincent & Jain, 2015).

By the year 1989, only 19 states out of 50 had made provisions in their policies to address school facilities (Honeyman, 1990, 1999; U.S. General Accounting Office, 2016). Of those schools surveyed nationally, there has been a 37% reduction in capital expenditures, approximately $28 billion, between the fiscal years of 2008 and 2013 (Leachman, Albares, Masterson, & Wallace, 2016). Since 1986, the state of California has supplied funding from statewide bonds to assist districts in building schools. To apply for the bond funding, districts had to provide matching local funds. Yet in California alone, nearly 80% of all students are attending schools whose facilities fail to meet industry standards with respect to maintenance, operations, and capital improvement projects (Vincent & Jain, 2015). Landmark legal decisions, such as *Serrano v. Priest*, were intended to provide equity to school districts. While the legislation itself was not a mandate to provide funds, it was a mandate for the state to provide equity to school districts across the state with respect to school facility expenditures. The result of this legislation was that the state of California began providing bond funding for facilities. However, these bond funds have either been exhausted or not utilized, and there is not legislative support to pursue more (Maclay, 2015). Because there are no state funds for school districts to apply for facility funding, conditions remain unequal across districts. Wealthy school districts are able to invest more capital in their facilities due to their higher tax base (Vincent & Jain, 2015). A consequence of this inequity is that school districts in California that serve low-income students spend disproportionately less on maintenance and operation expenses for

facilities. For example, research has shown that the highest poverty school districts, where more than 81.3% of students qualify for free and reduced lunch (FRL), needed to spend an average of $200 more per student on routine maintenance and nearly $300 less per student on capital improvements than did the schools with less than 31% FRL (Vincent & Jain, 2015).

Despite the investment of more than $20 billion from 1986 to 1996 (Perry, 1998), and in more recent years of $35.4 billion from 1998 to 2014, many California students continue to attend school in public school facilities that are inadequate by modern standards (Vincent & Gross, 2015). The bulk of California's public schools were built between 1950 and 1965, and the annual decreases in state support of school districts have resulted in schools that are not only old but also poorly maintained (Perry, 1998). At both the national and state level in California, government leaders and educators have all agreed that the issue of public school facility funding has reached crisis proportions (Perry, 1998). Student learning is at stake if school districts do not soon provide solutions to aging facilities and provide schools with modern facilities (Perry, 1998).

History of School Facilities

School facility history begins in 1647 near Massachusetts Bay during the Colonial Era. Subsequent eras for school facilities include the Common and Urban School Eras that span from 1840-1920. From that era, an open school design dominated school facilities until the mid-1970s. Modern school design had its beginnings in the early 1990s. The Colonial Era design is the earliest form of design and construction in the American school system (Tanner & Lackney, 2006). Thomas Jefferson in speaking to the American school system in 1817 was quoted as saying:

> The object [of public education] is to bring into action that mass of talents which lies buried in poverty in every country for want of the means of development, and thus give activity to a mass of mind which in proportion to our population shall be the double or triple of what it is in most countries. (Jefferson, n.d., "40.1 A Bill for Educating the Masses," para. 1)

Even the earliest design concepts tell us much about the pedagogical philosophies that prevailed during the colonial design era and how these pedagogical efforts were directed toward students (McClintock & McClintock, 1968). For example, as far back as colonial times, America was primarily agrarian. This meant that much of a community's effort was focused on farm life. The workforce was decentralized and focused on their individual farms. Families gathered only as needed (Koski, 2011; McClintock & McClintock, 1968). For this era, design was simple, predominantly utilizing the one-room schoolhouse as the typical educational facility (Koski, 2011).

The Common School (1840-1880) and Urban School (1850-1920) movements focused their efforts on facilities that could be built and operated inexpensively. According to Tanner and Lackney (2006), these institutions were "highly formalized, hierarchical [in] structure designed to sort students who were eligible for promotion to a higher level in the system from those who were not" (p. 6).

The open schools design era (1960–1975) was a popular design during its time, as it was believed that this open classroom design would support the optimization of student outcomes. This pedagogical philosophy toward open spaces was promulgated by such renowned educators as Dewey, Froebel, and Montessori. Unfortunately, this open classroom design was reported as being a failure in fulfilling its design intent (Marshall,

1981; Tanner & Lackney, 2006). The prevailing philosophy during the Open Schools Era espoused the use of appropriately sized furniture that was modular in form, as it was believed to best serve the learner and would not create a distraction from the learning environment. In other words, the approach places more focus on the tactile environment and less on the building system (Saint, 1987). This was accentuated by social demands of the 1960s that placed pressure on the schools to be more cognizant of the students' individuality and to facilitate the synthesis of cooperation and open exploration of thought and expression (Saint, 1987).

The modern-to-future school construction era (1992–2025) has progressed to this date with no significant discovery that accurately defines a design process that ensures the facilities' ability to support teaching and its learning outcomes (Koski, 2011). Significantly, however, the energy crisis of the 1970s placed demand on the trending architecture to pay close attention to energy conservation when considering school construction. As a result of this demand, many schools became windowless during that era (Bradley, 1996).

Understanding the architectural concepts used in each of these eras of school construction is commonly known as era architecture. Era architecture provides much insight about the didactic means utilized during their respective time frames. It also provides the pedagogical philosophies that were the norms during these times (Koski, 2011; McClintock & McClintock, 1968).

Facilities' Effect on Learning

As the philosophy of school design evolved, researchers explored the effects of school facilities on student learning. The U.S. General Accounting Office (GAO, 2016)

announced in a 1995 study that the nation's schools were in poor condition in every state. Other studies have found that student achievement scores were higher in schools with better building conditions (Cash, 1993; Koski, 2011). Factors found to contribute to student learning were building age and condition, acoustics, Indoor Air Quality (IAQ), and daylighting (Cervantes, 1999; Fisk, 2002). Design embraces all activities that go on inside the four walls of the classroom. Yet, design carries beyond those walls and into the environment found outdoors. Many educators are trending toward embracing the outdoor elements and incorporating them into the daily lessons of the students (A. Taylor, 2009). Designers must also account for all of the characteristics of the students who will use the facilities. For this reason, design has taken on many forms across the years in an effort to match pedagogical philosophies to design during its respective era (McClintock & McClintock, 1968).

Building Age and Condition

Research has indicated that students in modern buildings have consistently outperformed students assigned to older buildings (Chan, 1979). In his seminal 1979 study, Chan was able to utilize ex post facto data to prove that building age had a direct effect on student scores according to the Iowa Test of Basic Skills (ITBS). Chan (1979) further suggested that student performance on standardized test scores was higher in school facilities that were older but had been modernized when compared to those students who were in older buildings that had not been modernized. Further research has shown that schools in the state of Georgia serving students in the fourth grade produced similar results. When comparing student ITBS scores that were divided into categories based on the age of the facility and the date of the modernization, researchers found that

the older school buildings that had not been modernized experienced scores that were lower than the scores in the more modern buildings (Plumley, 1978).

Acoustics

Research directed at acoustic effects on learning has borne somewhat contradictory results. A seminal study completed with students located in a building with proximity to an elevated train route showed that the students were reading at a full grade level below other students located in classrooms on the opposite, more quiet side of the building (Bronzaft & McCarthy, 1975). However, a different study found that students in a Virginia classroom performed at a higher level in a noisier environment (Hines, 1996). Despite the conflicting studies, the consensus of the literature that was reviewed demonstrated that acoustics were, in fact, a factor when considering the students' learning environment. This is especially true for second-language learners, younger students, and students with a diagnosis of hyperactivity (Koski, 2011).

Indoor Air Quality (IAQ)

Field research conducted recently provides examples of how IAQ affects student performance and productivity. IAQ, for the purposes of this research, includes both daylighting and thermal conditions. In this research, performance was measured in speed and accuracy of such things as typing, reading, multiplication, and word memory, which improved between 3% and 7% with a difference in temperature alone of three degrees. In addition, productivity in the form of reduced absenteeism displayed a favorable cost to benefit ratio when compared with the proper ventilation of a building (Fisk, 2002). This IAQ affects this performance and productivity in at least four ways. Four examples of this effect include infectious disease, allergies, asthma, and acute building-related health

symptoms more commonly known as “sick building syndrome” (SBS), and contribute to the direct impact of the indoor environmental conditions such as air movement and temperature (Fisk, 2002). Other recent research has predicted that poor IAQ proportionately affects a person’s ability to perform mental tasks requiring concentration, calculation, and memory (Heath & Mendell, 2002). One study found that educational outcomes improved when the environment of the IAQ was also improved (Myhrvold, Olsen, & Lauridsen, 1996).

Daylighting

Researchers purport that the introduction of natural daylight to any human, much like organic plant life, is necessary for humans to flourish, just as it is necessary for plant life (Koski, 2011). An in-depth study performed in Sweden in 1992 produced results showing that hormone levels in student behavior were adversely affected by classrooms without windows. This study led researchers to the conclusion that designers should avoid designing classrooms without windows (Küller & Lindsten, 1992). Further studies proved that students in classrooms with the most amount of daylight experienced a 20% to 26% faster learning rate when compared to students in classrooms with minimal daylight (Heschong et al., 1999). In addition, louvered skylights provided the greatest learning environment by generating an additional 19% increase in students’ learning rate when compared to environments with large amounts of daylight but from alternate sources. Researchers concluded that great care in the lighting features of school facilities is important in the design of these facilities and its impact on student learning. Finally, research concluded that students in classrooms with the most window area experienced

15% to 23% faster learning rates than students housed in classrooms with the least amount of windows (Heschong et al., 1999).

Instructional Practices That Enhance Student Learning

> One must care about a world one will never see.
>
> —Bertrand Russell

Educators today face an ever-increasing challenge that revolves around testing issues and student achievement. The high-stakes challenge continues to elevate in importance to administrators, policy makers, and boards of education (Durham & Hebert, 2008; Lawrence, Jones, & Smith, 1999). This heightened awareness of student achievement has also left a large population of students feeling less cared for and attended to while present in the classroom (Lawrence et al., 1999). This focus remains in contrast to research indicating that the creation of a caring and compassionate school environment can ignite a passion for learning within students (Scott & Marzano, 2014). Further, enhanced teacher-student and peer relationships can inspire purpose and develop a sense of belonging (Scott & Marzano, 2014). According to Scott and Marzano (2014), the development of this sense of belonging will have the following added benefits:

1. Creating a safe and welcoming environment that encourages the student to be present and positive
2. Encouraging the discovery of the importance for the educator to instruct and awaken the learner
3. Assisting with distinguishing between methodical, metaphorical, and mystical truths and to understand the importance and role that each play in student achievement
4. Promoting student engagement through enhanced self-esteem.

Jim Collins (2001), in his book *Good to Great*, urges organizations to take that critical first step toward improvement. The need for an instructional environment that supports a student's well-being is evident in literature. (Marzano, 2003)

Financial Resources

School facilities require a great deal of investment on a regular basis to ensure the proper support of the educational environment. In California, funding for school facilities in the future remains undefined (Vincent & Gross, 2015). In the past, there existed a proven local participation partnership with public school facilities financing made possible by various statewide bonds. These partnerships contained an element of a financial match to a state grant amount made available through state-level bonds. Over the past several years these bonds have provided $44.4 billion to school districts (Vincent & Gross, 2015). These resources proliferated when combined with proceeds from local bond or other revenue-generating resources at the local district level. In 2019, with the exception of Proposition 51, there are no funds available from the state as all bond authorizations were expended. (Siders, 2016) Additionally, there does not appear to be any relief in sight from the state based on a refusal by Governor Jerry Brown to issue bond funds allowed under the passage of Proposition 51 (Maclay, 2015; Siders, 2016; Vincent & Gross, 2015). The absence of monies can be traced to Brown's concern about the state's role in funding school facilities. California Governors from years past have supported the passage of state bonds that support the improvement of school facilities. (Smith, 2019) It is the philosophy of the current governor that school facilities should be funded at the local level given the state's "wall of debt" (Vincent & Gross, 2015). In the budget proposed by Governor Brown for the 2014-2015 budget years, California's "wall

of debt" now appears to be $26.2 billion. Most of this debt included short-term debts incurred since the 2007-2008 budget year. These debts included deferred payments to schools, colleges, and the state's Medicaid program known as Medi-Cal (Tatum, Carter, Ravi, & Kaldani, 2014). Since no funds are now available at the state level, school districts must rely on their own means for most, if not all, of the funding needed for facilities (Maclay, 2015).

With a proposed elimination of any reliance on state bond monies and a shift back to local control, there is potential for debate regarding the equity of the local control funding model. Additional potential exists for inequitable funding given the disparity found in an assessed valuation formula that ranges from districts that are very poor to those that are very wealthy (Vincent & Gross, 2015). This shift from state control back to local control could undermine the guidelines set forth in *Serrano v. Priest* (Vincent & Gross, 2015). The 1968 court case *Serrano v. Priest* began in the Superior Court of Los Angeles County with John Serrano as the plaintiff filing suit against then-California State Treasurer Ivy Baker Priest. The suit claimed that the state of California "fail[ed] to meet the requirements of the equal protection clause of the Fourteenth Amendment of the United States Constitution" due to the district to district disparities in their respective tax base ("Serrano v. Priest," 2016, para. III). In that landmark Superior Court case, the state of California was required to develop a funding mechanism that ensured equity across districts where there existed inequities due to the variations of the assessed valuation tax base ("Serrano v. Priest," 2016). The *Serrano v. Priest* decision was praised for its egalitarianism and its ability to provide better education in urban areas (Goldstein, 1972).

Further, in 1978, voters in California passed Proposition 13 (Goldstein, 1972). This resulted in a cap of 1% of a property's assessed value. Prior to this tax rate, school districts in California were flush with cash from the pre-Prop 13 tax base. Since revenue from property taxes played a vital role in funding local public schools, school districts began to see revenues decline proportionately once Prop 13 took effect ("Unfulfilled Promises," 1991). The absence of a steady and reliable source of income continues to be a facilities conundrum for school districts across California, even with the passage of Proposition 51 in 2016, which authorized the state to issue $9 billion in bond funds for school improvements (Ulrich, 2018; Vincent, 2016).

Statement of the Research Problem

Research has shown that students perform better academically when the facilities they are housed in are in good condition (Cash, 1993; Cervantes, 1999; Koski, 2011). There are several building elements that exist in facilities that have been found to contribute to the enhancement of a student's ability to learn. These elements are building age, building condition, acoustics, daylighting, and IAQ (Cash, 1993; Koski, 2011). Careful thought must also be placed in design efforts in order to further positively affect student learning. It is vital to provide functional space to engage active learning (Perry, 1998). School facilities that are well maintained and foster safety further enhance learning conditions in schools (Cervantes, 1999).

The estimated facilities funding needed in California has recently been estimated to be more than $117 billion in new construction and modernization projects (Vincent & Gross, 2015). With Governor Brown's proposed elimination of any reliance on state bond monies and a shift back to local control, there exists potential for the inequity that

existed prior to *Serrano v. Priest* (Maclay, 2015; Vincent & Gross, 2015). Given the more than $117 billion statewide facility financing need and Governor Brown's unwillingness to place capital improvement bond measures on the state ballot, there exists an immediate need for developing policy alternatives that provide California school districts with the ability to develop facilities that enhance student learning opportunities and optimize the district's financial resources. Understanding what policy alternatives can be utilized in the future to build facilities that enhance student learning can help to inform state and school district leaders as they make facilities decisions that will impact students over the next 10 to 20 years. Research on what future statewide educational policy alternatives are necessary for educational facilities in California can contribute to solving California's school facilities crisis.

Purpose Statement

The purpose of this Delphi study was to identify what statewide educational policy alternatives experts believe are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025.

Research Questions

Research Question 1

What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 2

What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 3

What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 4

What statewide educational policy alternatives, rated for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Significance of the Problem

Research has indicated that student achievement scores have a direct correlation with the condition of the buildings in which they are housed (Cash, 1993). Other factors found to contribute to student learning were building age and condition, acoustics, IAQ, and daylighting (Hines, 1996; Koski, 2011; Vandiver, 2011). Nearly 80% of all students in California are attending school in facilities that fail to meet industry standards with respect to maintenance, operations, and capital improvement projects (Vincent & Jain, 2016). Despite the investment of more than $20 billion from 1986 to 1996 (Perry, 1998), and, in more recent years, $35.4 billion from 1998 to 2014, many California students

have continued to attend public school facilities that are inadequate by modern standards (Vincent & Jain, 2016).

Today in California, all of the state's bond funds have been exhausted, leaving no ability to support facilities improvements throughout the state (Maclay, 2015). Governor Brown and the legislature continue to oppose any efforts at new bond authority aimed at school facilities in California (Siders, 2016). Government leaders and educators, at both the national and state level in California, have agreed that the issue of public school facilities funding has reached crisis proportions (Perry, 1998).

There exist competing philosophies on how to solve this facilities crisis. The Coalition for Adequate School Housing (CASH) is an organization that was established in 1978 to support state and local funding for K-12 construction. Its membership is comprised of over 1,500 school districts, county offices, and private construction-related businesses. Since 1982, CASH has participated in over $52 billion in statewide school bond initiatives aimed at building and/or modernizing schools in the state of California (Coalition for Adequate School Housing [CASH], 2016). It is the belief at CASH that the state of California has a constitutional obligation to ensure that all K-12 school students are provided adequate access to school facilities (Hannah, 2015). However, the administration under Governor Brown continues to have significant concerns with the existing facilities program in the state that is supported by CASH bond efforts. Governor Brown has asserted that the existing system was created during an enrollment trend that was increasing in the state, when local school districts faced more stringent bond thresholds, and the state's debt service was significantly lower (California Department of Finance, 2016). In contrast, the state is now expecting to see a 10-year decline in

projected enrollment; the statewide voter threshold is now 55% for local school bonds, and the state pays over $2 billion in annual debt service for school bonds (California Department of Finance, 2016). Governor Brown has contended that the existing facilities program is overly complex and involves too many regulatory agencies (California Department of Finance, 2016). Finally, Governor Brown has been adamant that the existing program is not flexible enough for school districts to reflect design preferences at the local level and therefore is no longer sustainable (California Department of Finance, 2016). The state of California is in need of new policy alternatives that address the facilities needs of K-12 education, and of funding mechanisms, by the years 2019 to 2025.

This study is significant to state and local policy makers, education policy makers, education administrators, and facility planners in an effort to define various facilities and funding policy alternatives necessary to meet school facility needs by the years 2019 to 2025. The present study was intended to explore policy alternatives that may require districts to first conduct a thorough assessment plan of facilities conditions, and/or master planning improvement plans, both of which address school aging and growth. Also, based on these assessments and planning efforts, this study was intended to explore policy alternatives that may require school districts to begin the process of local facility funding alternatives.

Next, this study was intended to explore policy alternatives that may require statewide funding policy alternatives for districts that are unable to adequately fund capital improvement efforts at the local level. Current policy alternative research is very limited in its existence. This researcher found one study that suggests that policy is

needed that establishes stable and dedicated state funds, equitable distribution of these state funds (with an adjustment for local wealth) as well as improved standards for school facility planning and budgeting; finally, the study suggests establishing a California school facility database to guide spending (Vincent & Jain, 2016).

The researcher utilized a Delphi research process involving a panel of industry experts comprised of state legislators, school district officials, state agency representatives, trade association leaders, school facilities advocates, and related businesses. This panel contributed policy alternative recommendations and came to a consensus using an anonymous process to explore policy alternatives necessary at the state and local level. The present study further explored which policies suggested by the expert panelists are the most important, and in order of importance, which policies are likely to be implemented by the years 2019 to 2025. New conclusions from this Delphi study will assist in bringing clarity to the issues faced by California's school districts with regard to the future of facilities legislation by gaining consensus among the competing interests of the panelists.

Definitions

Academic achievement. Academic achievement is the generalized performance of students academically given the condition of the facilities that house a sample of students.

Bond funds. Bond funds are California state general obligation bond funds provided to support California school districts in the modernization and maintenance of their school facilities.

Capital improvement campaigns. A capital improvement campaign is any effort by a school district aimed at improving the capital facility of that district by any means of funding.

CASH. Acronym used for an organization known as the Coalition for Adequate School Housing, which exists to monitor the regulation and supervision of the state bond funds program.

Delphi study. Delphi study is a technique that harnesses expert opinions for critical decision-making tasks in education (Clayton, 1997).

Era architecture. Era architecture is the style of architecture that was present and intended to match a given period of pedagogical philosophy.

Facilities. All elements of the school environment capable of being manipulated through the design and construction process. Some of these elements may include classroom spaces, administrative buildings, and structures with unique purposes such as gymnasiums, libraries, and multipurpose rooms. For the purposes of this study, facilities would also include the operations systems, school grounds, and exterior features of the school (Brubaker, Bordwell, & Christopher, 1998; Nair & Fielding, 2005; Tanner & Lackney, 2006).

Pedagogical philosophy. A pedagogical philosophy dictates one's idea of teaching and learning. It describes a method of how to teach and a justification of why to teach a specific way. A pedagogical philosophy statement can demonstrate reflection and purpose in teaching, communicate goals, and promote symbiosis across the curriculum.

Policy alternatives. Policy alternatives are statements that specify intended actions and related implementation that are likely to create alternatives or serve to

improve futures. This term is used interchangeably with the term policy option (Ainsworth, 2001).

Proposition 13. Proposition 13 was an amendment to the Constitution of California, enacted in 1978, that restricted tax base revenues to school districts once it took effect.

Serrano v. Priest. *Serrano v. Priest* refers to three cases decided by the California Supreme Court in the 1970s. In that landmark Superior Court case, the state of California was required to develop a funding mechanism that ensured equity across districts where there existed inequities due to the variations of the assessed valuation tax base.

Delimitations

This study was conducted from November 13, 2018 through January 30, 2018, and was intended and designed to identify policies that were both important and likely to be implemented by the years 2019 to 2025. This study was delimited to a panel of 24 informed experts selected from four groups. The first group was school district personnel knowledgeable in school financing and construction. The second group was industry experts in school construction and financing. The third group was state agency experts with knowledge of school construction and financing. The fourth group consisted of informed policy makers and legislative advocates.

Organization of the Study

The remainder of this study is organized into four chapters, references, and appendices. Chapter II presents the review of literature related to the history of school finance, accountability, and professional learning in public schools. Chapter III describes

the research design, methodology, and population used to collect data for this study. Chapter IV outlines the analysis of the data and a discussion of the findings. Lastly, Chapter V presents a summary, conclusion, and recommendations for policy alternatives to guide statewide policy implementation that would insure adequate K-12 school facilities and their funding.

CHAPTER II: REVIEW OF THE LITERATURE

Chapter II is divided into four primary areas of focus. To begin, focus is brought to the current state of K-12 school facilities in California in showing a compelling need for policy alternatives that effect K-12 school facilities and their funding. The balance of the three sections includes the history of school facilities, a schools' facilities effect on learning, and financial resources for school districts today. Additionally, the primary focus area of a facilities' effect on learning is further broken down into four subcategories that support the idea of that particular focus. These four subgroups are building age and condition, acoustics, Indoor Air Quality (IAQ), and daylighting. The remaining sections encompass some of the gaps in the research, a conclusion, and a synthesis matrix. The literature review provides a background on the current and future conditions and policies affecting policies related to improving California K-12 school facilities.

Review of the Literature

The State of School Facilities

Both on the national front, and more specifically in California, legislators and educators have both agreed that the issue of school facilities has risen to a crisis situation (Perry, 1998). Nationwide, school facilities were given a grade of "F" with regard to infrastructure by the American Society of Civil Engineers (National Clearinghouse for Educational Facilities, 2011). In fact, many of the schools have been classified as unsafe and compromise student health (Honeyman, 1998). A large number of schools today have required students to take a step backwards in time as a result of inadequate and outdated facilities that currently exist in school districts (Cervantes, 1999; National Clearinghouse for Educational Facilities, 2011). Despite this, the U.S. Department of

Education's efforts at evaluating these conditions have not been completed since 1965 (Cervantes, 1999). Disproportionately across the country it has been estimated that 74% of school facilities need immediate repair or even replacement. Additionally, 12% of these schools were identified as being inadequate learning spaces (Hansen, 1992). In California alone, nearly 80% of the student population attends school in districts with facilities that fail to meet the minimum benchmark standard for the school facility industry in terms of facilities maintenance, operational spending, or capital renewal efforts (Honeyman, 1990). Further, the majority of California's public schools were constructed in an effort to address the post-World War II population explosion that occurred between 1950 and 1965, without having been properly maintained since. As a result, school facilities have not properly housed today's public school students, nor have they been sufficient for the growth in projected enrollment, further exacerbating the situation (Maclay, 2015; Perry, 1998). The increasing uselessness of aged school facilities seems to provide support that attention has been diminutive to the impact that these school facilities have on the academic achievement of the students utilizing them and to the behavioral aspects of these same students (GAO, 1995).

To add to the issue of the current state of California K-12 facilities conditions, the California Department of Finance (CDF) estimated in October of 1997 that the state of California would add to its student population another 300,000 new students from the 1997-1998 school year to 2001-2002 school year, bringing the student population estimates at that time to nearly six million (Perry, 1998). This was occurring while more than half of the K-12 public school districts in the state of California failed to meet the minimum consideration of industry standard for annual spending on maintenance and

operations or on capital improvements (Maclay, 2015). Between the years 2008 and 2012, more than half of the school districts in California, roughly 57%, did not meet these industry standard benchmarks on capital improvement renewal projects, and a staggering 60% failed to meet the industry standard benchmark for basic maintenance and operations (Maclay, 2015; Vincent & Jain, 2015). Currently, it is projected that between 2012 and 2024, California public schools will see an enrollment increase statewide of 533,749, or 8.5% of the population in 2011. The costs to house these new enrollments come in at a staggering cost of over $17 billion ("California K-12 Public School Facilities," 2016; see Table 1).

Table 1

Total Cost for School Districts to House New Students

New enrollment (seat)[a]	GSF[b] per new seat	Cost per GSF	Estimated total cost
426,999	100	$400	$17,079,960,000

Note. From "California K-12 Public School Facilities," 2016, National Council on School Facilities website (https://kapost-files-prod.s3.amazonaws.com/published/56f1a3fa1458ec2f64000031/2016-california-state-of-our-schools.pdf?kui=GIv8a_IWccktcAUXu7rmqg).
[a]Estimated 80% of the total projected increase in enrollment. [b]Gross square footage (National Council on School Facilities, 2016)

At this rate, California school districts would be required to invest at least $1.7 billion per year in additional funds to pay for the added space to accommodate the increased student population (Maclay, 2015; Vincent & Jain, 2015).

Further evidence reveals that there is a disparate rate at which school districts are critically underfunded. A district with a higher tax base due to a higher property value, or "assessed valuation" per student, generates on average more property value per student than do those districts with a lesser assessed valuation (Vincent & Jain, 2015).

Additionally, school districts that serve low-income students have been shown to spend a disproportionately high amount of monies per student on maintenance and operations (Vincent & Jain, 2015). This has placed a much higher burden on school districts that serve low-income students and are not within the spirit or guidelines set forth in California's new Local Control Funding Formula (LCFF; Vincent & Jain, 2015). Comprehensive research suggests that there is a direct correlative relationship between wealth and facilities (Honeyman, 1998). School districts with a higher taxable property value (measured by assessed value, AV) per student have traditionally outpaced school districts with lower AV with respect to raising funds for capital improvements (Vincent & Jain, 2015).

With the passage of Proposition 13 in the state of California in 1978, the primary responsibility for the financing of modernization and new construction shifted from the school districts themselves to the state (Brunner & Vincent, 2006). This proposition began the prohibition of a property tax override that funded general obligation bonds, thus eliminating the primary source of local income for school districts' facility needs (Brunner & Vincent, 2006). Proposition 13 also came at a time when student enrollment had begun to again increase, creating even more financial pressure on the state for needed facility funding (Brunner & Vincent, 2006). While school districts spent in excess of $20 billion on school facilities from 1986 to 1996, it has been entirely inadequate for the overwhelming need, despite sounding like a large amount of money (Perry, 1998). Since 1998, California has passed and issued $35 billion in general obligation bonds as part of a statewide initiative to address facility conditions issues (Vincent & Jain, 2015).

According to Vincent and Jain (2016), little has been accomplished since this time to address California's facility needs:

> Policymakers have long debated how to best address California's school facilities funding needs. Since 1998, a state grant program called the School Facility Program (SFP) bolstered local investment. Funds for the program largely ran out in 2012, and there has not been a statewide vote to approve additional state resources since 2006. (Vincent & Jain, 2016, p. 4)

Since that time, further funding from the state for California school districts for items such as construction, modernization, and routine maintenance have ceased to exist (Vincent & Jain, 2015). School facilities are aging and have been poorly maintained due to budget shortfalls. Reductions in general fund expenditures over the last 20 years have forced many school districts to defer much-needed routine maintenance costs (Perry, 1998). This unfortunate trend in school facility funding could signal the onset of costly long-term consequences for the state's school districts as the accumulation of neglect triggers health and safety issues (Maclay, 2015). To add to the growing concern about the condition of public school facilities, communities have faced extraordinarily high costs for facilities improvements when compared to other vital education expenses amid a lack of state assistance (Honeyman, 1999). In fact, most states provide less per-student support for facilities in school districts than prior to the Great Recession (Leachman et al., 2016). These cuts by many states in K-12 funding are a result of a combination of multiple outside influences (e.g., low revenues and rising costs) and state policy choices (e.g., cuts in spending to address budget shortfalls; Leachman et al., 2016). Capital spending is necessary from state and local sources to assist with building new schools,

modernizing and expanding existing facilities, and furnishing schools with modern technologies. However, most states' capital spending fell drastically due to the recession (Leachman et al., 2016). In addition to the decline in funding levels, in the state of California, Governor Brown in 2016 actively and openly opposed any ballot measure that failed to preserve his rainy day fund, including a $9 billion general obligation school bond sponsored by the Coalition of Adequate School Housing (CASH) that would bring needed improvements to school districts across the state (Siders, 2016).

History of School Facilities

General Span

Bradley (1996) stated that "the schoolhouse has undergone an architectural evolution. As the ever-changing cultural, political, and economic forces affecting our society have influenced its design, its form has matured" (p. 107). Transcending time and trending design philosophy is the notion that a school facilities design has an effect on both the content of education and the form in which it is being delivered (Eurich, 1992). The school building has long represented the notion of democracy and the authority of the population that utilizes it. In fact, no other facility in society exists today that appropriately defines the many characteristics of our culture as well as the schoolhouse (Eurich, 1992). From the first schoolhouse to the present-day facility, the program of education has been inspired and advanced based on the value of the culture at that time in history (Eurich, 1992; Kennedy, 2001). It has been intimated that just as schools are formed by its community, so too is a community formed by the physical school facility (Eurich, 1992).

Contempt for School Facility Conditions

Early contempt for facilities conditions proved to be an indicator that a school's community held strong feelings about a perceived lack of adequacy. In an assessment of the school's conditions at that time, Barnard (1848) stated,

> Better stables were provided for cattle, better folds for sheep, and even the unclean beasts felt the improving hand of reform. But in the meantime the school-houses, to which the children should have been wooed by every attraction, were suffered to go where age and the elements would carry them. (p. 16)

During that period of the middle 1800s, less than one third of public school facilities would have been considered tenable by any member of any socioeconomic group (Barnard, 1848; Hansen, 1992). An assessment of the facilities during that era indicated that one third of the school facilities would be in what is considered good repair, one third in a condition that barely provided the basic need for comfort and convenience for both teachers and pupils alike, and the final third were, "to all intents and purposes, unfit for the reception of man or beast" (Barnard, 1848, p. 59). Deference for school facilities required that these no longer be built inexpensively, with little concern for quality, and with an assumption that only an indifferent community would allow their student to be housed in these dilapidated buildings (Barnard, 1848).

Among the other indicators that the nation's infrastructure was in an alarming state of disrepair, none was more evident than the dreadful condition of the nation's public schools. Despite the fact that laws had begun to be established that required that all children go to school, it was an inequity that students were required to attend school in facilities that were in such poor condition (Hansen, 1992). Cervantes (1999) stated that

more than 5 million students attend school in facilities that are considered substandard every day. Using the definition of a school facility as one that is at least 50 years old, and unable to access and utilize modern technology, most of the school facilities in the United States would be considered well beyond their useful life (Hansen, 1992). A study that started in 1983 found that the deferment of necessary maintenance and repairs on school facilities nationwide resulted in an estimated need of $24 billion. Left unaddressed, the need grew to $41 billion by 1989 and $100 billion in 1991—well in excess of the cost of the actual maintenance and repair, had it been completed in a timely manner (Hansen, 1992).

Realizing the Connection Between Facilities and Education

De Tocqueville (1984) stated, "The school house, regardless of shape and size, endeavored to support the ideals of a democracy and the absolute sovereignty of the people" (p. 183). Even in the earliest of iterations of school facility classroom designs, much was said in those designs about the pedagogical means utilized in those facilities. These facilities also exposed the goal of the pedagogy that directed those teaching efforts (McClintock & McClintock, 1968; Seaborne, 1974). The symbiotic relationship between classroom and instruction described by McClintock and McClintock (1968) existed throughout the history of education, with little attention paid to harnessing the correlation for the benefit of student learning and the classroom design (Koski, 2011). Schools in the United States were built predominantly in the 20th century. Roughly half of these have been built since 1920 (Brubaker, 1999; Gulliford, 1996). During the timeframe spanning from the 1920s to the 1950s, little attention was paid to efficiency and current architectural trends as these facilities were typically very large and built with walls that

were thin and roofs that were flat. These characteristics translated into buildings that were not energy efficient by today's standards (Brubaker, 1999). In fact, the first modern schools can be traced back to the 1950s era during a period when "progress" meant replacing old and inefficient structures with new and more modern facilities, with little attention paid to its daily use (Brubaker, 1999). Contrasting that perspective to that of today, experts now believe that many of the remaining old structures that date back to the early 1900s have great character and should be protected, centralizing a pedagogical theme around the era architecture (Brubaker, 1999). There was a rapid expansion of school facilities in the 1950s that continued well into the 1960s. During this era, many new and innovative features were incorporated into the design, with some thought being given to how the facility could support learning (Brubaker et al., 1998). The 1970s showed a slowing in population growth, and thus a slowing in enrollment trends, creating a surplus of classroom space in districts across the country (Brubaker et al., 1998; Koski, 2011). Creativity, inspired by fresh ideas on how best to educate, influenced the design of school facilities in the 1980s and 1990s (Brubaker et al., 1998). Cutler (1989) reported, "Educators invented the idea that schooling and the schoolhouse were indispensable to education. They tied the schoolhouse educational theory and the curriculum making it a full partner in the learning process" (p. 27). The 1960s brought about the intimate link between the schooling and the schoolhouse that began the "schools without walls" movement of that time. In what was heralded as a revolutionary environment, students were encouraged to learn in an atmosphere that began to associate them with adults on a daily basis (Cutler, 1989). American educators had begun to shift their thoughts to the fact that their students should be instructed in adequate classroom

spaces, since increasing attention was paid to the form, design, and position of those spaces. Since U.S. citizens had begun to invest large sums of money into the development of new school facilities, these facilities began to be recognized for their design and prominence in the community (Cutler, 1989). Little doubt exists that the politicizing of the public school enhanced the perspective that there exists a relationship between the education of a student and the school facility in which this education takes place (Cutler, 1989).

Development of the Facility Connection to Community and Learning

Kennedy (2001) stated, "School facilities should not be warehouses where students are deposited for several hours a day. Unfortunately, many of the nation's classrooms were designed and built without much consideration of the critical activities that would be taking place within those walls" (p. 31). A well-designed school facility provides a learning environment that is based on a comprehensive programming effort reflective of teaching staff's goals and objectives. Studies have maintained that architects should develop a school's design so that it is reflective of an educational effort (Gilbert & Taylor, 1989). Recent design philosophies from industry experts reflect that the ultimate design of a school facility should not be bland, but rather a reflection of the programming effort in the design and a complement and enhancement to the learning environment (Gilbert & Taylor, 1989; Kennedy, 2001). Each and every school facility affects the essence, appearance, attractiveness, and the economic prosperity of the community by which it was built; it is a reflection of the community (Educational Facilities Laboratories, 1960). The architectural design of a school facility is a one of the best indicators, absent direct observation, of how instruction occurs in a school's classroom.

A well-designed school facility will symbolize the learning that is happening inside its walls (McClintock & McClintock, 1968). Classroom designs tell educators more than just the educational means in a school facility classroom; they also reveal the essence of the pedagogical direction and flow espoused in an educational effort (McClintock & McClintock, 1968).

Era Architecture

Early Colonial Schools (1630-1650)

In early colonial America, life was primarily agricultural and centralized around the local farmhouse. The populace enjoyed a mixed coexistence comprised of the local tradesmen, craftsmen, and farmers. This mix of populace existed in a decentralized manner and only assembled as needed (Koski, 2011). Significant during this era was the 1635 passage by the Massachusetts legislature of the Old Deluder Satan Act that obligated parents to instruct their children in matters of the Bible (Tanner & Lackney, 2006). It was primarily for this reason that during this early time period of colonial education, "home schooling" was the quite literal description for the facility in which education was delivered, and as such, facilities were never an issue (DeYoung, 1989; Graves, 1993). Community life was primarily centered around the social support of the settlements, townships, or villages of these moderately isolated populations (Tanner & Lackney, 2006). During this time, the educational needs of students were restricted to the vocational contributions these students could make to the business needs of the family and local community (Gulliford, 1996). As time passed and need increased, school facilities began to take on a new look as they progressed beyond the traditional home school or church setting. Resources grew, and in the year 1647, the Massachusetts

Legislature enacted the first law in the United States that provided for the establishment of system of education that actually required the construction of a facility. It took a period of time for the new law to actually take form, but soon these communities began to see the one-room school house being built in their communities (Tanner & Lackney, 2006). Interestingly, these one-room school facilities were fashioned after an original English educational institution commonly referred to as the Dame School (C. Johnson, 1963). In this version, the "schoolroom" was a very large and open space often attached to a residence or other community building, such as a church. However, reformers were quick to call for the building of a smaller, more intimate space that was partitioned in order to express a desire to personalize the pedagogy and curriculum (Tanner & Lackney, 2006). Seaborne (1974) credited Samuel Wilderspoon with the introduction of the term *classroom* into education in 1823 with the passage from his book, *The Importance of Educating the Infant Children of the Poor*, with the following statement:

> The class that is done first is taken into a separate room, where the children have each another lesson, though in a different way from the first, for in what we call the class room, the children are being formed into a square so that they all can say their lessons together. (p. 329)

The classroom, at that time, represented a shift in instructional practices that included the recitation of the presented material in unanimity by students that is often criticized by educators today. This "simultaneous method" was the reliance on a group learning dynamic and was soon given that same name. It was the only method believed successful during that era in such spaces (Barnard, 1848). Whatever the style of architecture in that day, either as one large room or a more isolated style, there was an element of having

students out of their seats and organized into a smaller group setting. By the year 1851, the combination of these two facilities types and teaching styles had taken root in official policy, and the facilities with large spaces were now being required to be broken down into smaller spaces of "classrooms," even if only separated by a curtain. It then quickly became the prerequisite for government aid in construction funding (Seaborne, 1974).

Late Colonial Schools (1650-1849)

During the late Colonial period, the school facilities were predominantly one-room school houses because there was singularity in the purpose. The one-room school design, as developed by Joseph Lancaster, gained much attention during the 1700s due to its perceived innovative features. That singularity of purpose was to cater to the students who lived in that immediate area surrounding the schoolhouse (Gulliford, 1996). In this model, a delegate system was utilized, wherein the more advanced students, referred to as monitors, were responsible for teaching the day's lesson to smaller groups of less advanced students after receiving instruction from a master teacher (Gulliford, 1996). These early schoolhouses were modestly furnished and suffered from poor ventilation and wood heat that often made the classroom smoky. The light was dim because oil lamps were the only source of light. The classroom itself was very small and did not provide sufficient learning space for student seating or other student movement (McClintock & McClintock, 1968). Many of these school locations were chosen due to the uselessness of the land where that facility would be situated (Koski, 2011). Gulliford (1996) stated, "Farmers did not want the school near their land because the schoolchildren would trample their crops and their dogs would harass livestock while the children were in school" (p. 143).

Despite these complexities, the schools proved to be flexible and grew along with the needs of the communities they served (Gulliford, 1996). As the communities grew, these facilities were often expected to house up to 50, or sometimes more, students in the classrooms. The teacher was often the only employee on a school's payroll and had the ultimate responsibility for the educational outcomes of all students, including the monitors charged with assisting the less advanced students (Gulliford, 1996). Eurich (1992) stated, "With the one room schoolhouse the teacher had to be all things to all people; school boards expected much from them for a very small salary" (p. 9). Regardless of this spatial hardship often faced during this era, teachers were able to successfully navigate these challenges and efficiently educate their students (McClintock & McClintock, 1968). In 1840, a gentleman from Massachusetts named Horace Mann started to campaign for government funding for public education. Mann's efforts eventually led to state-funded education, but also came with regulation (Education in Early America Weekly, 2018). Mann advocated the economic benefits of a public education by convincing business owners of the time that a higher quality employee would be found through a public education system. These local merchants and businesses were eager to support the idea, but the actual wage earners were at first reluctant. Employers made it clear at that time that a more disciplined and educated workforce was needed for the Industrial Revolution and placed an expectation on the public-school system to provide such an employee. By the 19th century, the public education system had realigned its desired learning outcomes to accommodate the expectations placed on them by industry and society as a whole. From these expectations, school design went through a period of transformation and adopted a

system of linear and sequential floor plans, rather than the one room option This new design was intended to emulate the factories in which the students were employed (Education in Early America Weekly, 2018).

Lancaster Schools (1800-1850)

During the 19th century, the United States had transformed its educational setting to something that was more formal, regulated, and systemic. These ideals were inspired by the English school reformer, Joseph Lancaster. Formerly, the public-school systems set in place in New York and Philadelphia during the early 19th century were very large classroom spaces that were capable of holding more than 250 students. Such large numbers of students in one large room soon proved to be unmanageable (Cutler, 1989). Additionally, these schoolhouses that remained from the early and late colonial periods were often located inconveniently, suffered from a dusty environment, were noisy, and were often close to major thoroughfares (McClintock & McClintock, 1968). Regardless of the poor environment, Tanner and Lackney (2006) stated, “The one room schoolhouse was an appropriate design response that served the basic educational and social needs of small rural communities” (p. 84).

Joseph Lancaster was an English educator and a visionary in school design and architecture in both European and American cities. His influence was especially evident in cities whose population had exceeded the capacity of their small schools. Lancaster was credited with bringing the first Lancastrian method school to Baltimore, Maryland (Tanner & Lackney, 2006). In the Lancaster model, the more advanced students acted as monitors for the younger, less advanced student (Eurich, 1992). The monitors became primarily responsible for the learning and behavior of the younger students under their

tutelage. Utilizing this method, a single professional educator could effectively manage the needs of a greater number of students (Tanner & Lackney, 2006). Generally this model had one large room with several smaller rooms attached. The Lancastrian model schools multiplied rapidly, yet they died out almost as quickly. By the year 1840, the Lancaster model school had nearly ceased to exist (Gulliford, 1996). However, a lasting impression had been fashioned by this instructional model. Until its inception, education was costly and took a great deal of time because it was delivered almost on an individual basis, or in small groups at best (Lackney, 1994). The establishment of the principle of large group instruction at a lower cost, and with a shift in mindset of educating the many rather than the few, the Lancaster schools gave way to a free, public-supported school still recognized today (Tanner & Lackney, 2006).

In contrast to the images one would normally conjure when considering the Industrial Revolution, such as large steam engines and billowing black smoke, the innovative measures of public education were equally influential during the Lancaster era. As the United States went through a dynamic change, so did the public schools. On pace with industry were these public schools that saw a shift from the agricultural economy to a more industrial and urbanized culture. The United States saw tremendous new inventions, new methods of manufacturing, as well as innovation in transportation, and the emergence of a new form of communication, all of which changed the face of history. Across the United States, cities began to populate in areas where none had existed previously. This change in population and the new economy led to the increase of innovative kinds of schools, such as the Lancaster model, which challenged the established pedagogical theorists of that time (Tanner & Lackney, 2006). These

challenges brought forth new types of schools, just as the Lancaster model, which brought new types of organization, classroom size, and educational setting (de Tocqueville, 1984). In 1847, the Quincy School became the first public school in the United States whereby the students were organized by grade level (Educational Facilities Laboratories, 1960; Koski, 2011). Regardless of the eventual failure of the Lancaster model school, the possibilities that were created, rather than an imperfect implementation, was a significant influence in the establishment of a public, taxpayer based model for schools as evidenced during the common school movement (Graves, 1993).

Common School Movement (1840–1880) and Urban Schools (1850–1920)

By the year 1830, a fresh desire for new architectural solutions had developed (Cutler, 1989). This new desire led to an idea that schools could be built and operated less expensively than previous designs under a new modern concept. The common school, according to Tanner and Lackney (2006) was "highly formalized, hierarchical [in] structure designed to sort students who were eligible for promotion to a higher level in the system from those who were not" (p. 92). Further, school facility officials in Boston adopted the concepts proposed by the architects Mann and Bradford in the early 1840s. Under the design of Mann and Bradford, there was an emphasis placed on building efficiency, while incorporating the idea of graded instruction that was prominent in the Quincy school design of the Lancaster era (Cash, 1993). Soon, this new standard of specification allowed for school facilities to be subdivided into several self-contained classrooms (Cutler, 1989; Koski, 2011). According to the Education Facilities Laboratories (1960), design changed during this transition such that "the total space per

pupil normally ranged from 40 to 80 square feet. However, by 1940 the range was 80 to 100 square feet per pupil, and in the postwar period the range was from 80 to 130 square feet" (p. 24). The new common school concept was especially popular in the more urban areas where families were poor and parents worked close by in factories (Tanner & Lackney, 2006). According to Tanner and Lackney (2006), "Factories created to produce things led to factories to produce learning" (p. 101). By this time, many educators believed that there was a direct connection between the schoolhouse and civic virtue (Cutler, 1989).

During the first part of the 20th century, there was discourse on whose responsibility it was for school design. Many were beginning to believe that school design was ultimately the responsibility of the educators. Even though many in the United States began to resist the standardized and graded classrooms that came with the common school, its use grew tremendously during these early years of the 20th century (Cutler, 1989; Gulliford, 1996). According to Cutler (1989), "Such a layout made possible the closer supervision of students and greater specialization of instruction" (p. 26). By this time, high schools were now required to house significantly larger populations with a broad range of abilities and study interests. Remedial college classes began to be used, along with shop classes, accounting, automobile mechanics, office machines, metalwork, printing, carpentry, and clerical training (Gulliford, 1996). Later in the 20th century, the federal government also began to support these vocational education programs in an effort to support commerce at the time. These programs required an even greater footprint in the facilities (Educational Facilities Laboratories, 1960).

During the latter part of the 19th century and early part of the 20th century, the urban school was also developed. While other school designs had simply joined multiple classrooms spaces, the urban school sought to balance the plan with some uniformity of design. Tanner and Lackney (2006) observed, "The factory model school layout was a direct response to the needs of the common school educational system that required repetition and uniformity" (p. 113). Tanner and Lackney further observed, "The objective was to create a new curriculum in which developmental, intellectual and social goals were integrated. . . . The physical setting of the Urban School was a means through which the developmental curriculum was supported" (p. 114). Brubaker et al. (1998) reported that urban schools during this era contained "brick walls, axial plans, pitched walls, and due to rising land costs were housed on very small sites" (p. 52). Similar to earlier school designs, both common and urban schools lacked the proper air circulation and sanitary requirements (Bradley, 1996; Cutler, 1989).

Crow Island School (1940-Present)

In the post-World War II era, baby boomers flocked in large numbers to the public-school system, introducing a new and drastic increase in school construction activity. School administrators and their architects scrambled to meet the enrollment needs of that time. The rapid response to these enrollment trends forced the design teams to focus on economy and efficiency in the school design and ignored the time-consuming process of matching trending pedagogy with design intent (Graves, 1993). To this end, the Crow Island School in Winnetka, Illinois, was constructed in 1940 and was hailed for its innovative design features (Educational Facilities Laboratories, 1960). Bradley (1996)

reported that “in 1940, in Winnetka, Illinois, the application of architecture to education changed dramatically” (p. 8). According to Graves (1993),

> By the time Crow Island was finished, the participants in the process had swept away all traces of the Victorian Schoolhouse: gone were the imposing scale, formal architecture and rigid organization of classroom cells within a two or three story box. (p. **73**)

The design of the Crow Island School was such that every room was given careful attention to is color scheme and the flexibility of the space. Additionally, entire wings were assigned to graded classrooms, with each wing having its own identity and a warm and welcoming environment that was perceived to be personalized to each learning environment (Bradley, 1996). Crow Island was a single-story design that ran buildings in parallel fashion with an offset clock tower as its prominent architectural feature (Brubaker et al., 1998; Tanner & Lackney, 2006). This creative new design created foyer space and gave thought to more storage areas outside of the classroom setting. Kitchens and other project learning areas were also introduced with the design. Tanner and Lackney (2006) reported that the design included a “main classroom space with an exterior glass wall on two sides . . . and a door to a semi enclosed outdoor classroom” (p. 119). Despite the trendy new design, concern began to mount that the design lacked the attention to the individual needs of the students (Ehrenkrantz, 1999; Lackney, 1994). The Crow Island School has been a successful design for schools. Tanner and Lackney (2006) stated, “The architects emphasized child-scaled environments throughout the building, with classrooms designed to support a variety of learning activities and provide a sense of belonging” (p. 122). The Crow Island School was an overwhelming success

from the time it was introduced and continues today as a tribute to the influence of a facilities design that was intended to support both students and teachers (Brubaker et al., 1998).

Open School Design (1960-1975)

During the 1960s, societal expectations turned to sensitivity toward a student's individuality along with ideals set on an exploring one's own thoughts and individual expressions. The open plan classroom was welcomed with enthusiasm from school district staff and architects (Tanner & Lackney, 2006). The open classroom concept was an idea that was brought forth from England in the 1960s during a period of time that the United States had become more service oriented (Marshall, 1981). The open classroom had come to exist in post WWII England due to the complex situation teachers at that time faced (Horwitz, 1979). During the war, many students had been displaced due to evacuations. Post war, many of these England schools found that students were at various academic levels (Marks, 2009). Hence, teachers utilized the open classroom concept to address the varying levels of ability created by the war and its evacuations (Lackney, 1994). Educators in the United States showed an interest in the concept due to what they believe to be an "informal education" (Rothenberg, 1989, p. **70**). The intent was to couple self-directed learning with a specific classroom environment and observe what the impact of the environment and spatial characteristics of the space had on learning outcomes (Cutler, 1989; Marks, 2009). The open school concept influenced hundreds of schools in the 1960s and 1970s (Dewey, 1998). The concept was a departure from the fixed classroom concept that was often boxy with several identical spaces, referred to as an "egg-crate" plan due to the dozens of identical spaces (Educational

Facilities Laboratories, 1960; Marks, 2009). Cutler (1989) stated that the schoolhouse must be designed "to provide opportunities for every youngster to develop all that is in him in body, mind and spirit" (p. 13). Tanner and Lackney (2006) noted that open plan schools were designed with "large, open, flexible spaces adaptable to team teaching and small group and individualized instruction" (p. 114). In the open plan concept, the walls were left out of the design to accommodate these new approaches to educating students (Educational Facilities Laboratories, 1960; Marks, 2009). The design intent of removing the fixed walls was such that the educators could think beyond the constraints of the 30-by-30-foot size of a classroom. The students now had the flexibility to work together in large groups, smaller groups, or on an individual basis (Marshall, 1981). Regardless of the configuration, Brubaker et al. (1998) stated, "Regardless of the nature of the curriculum, the open spaces would be adaptable to the changing educational needs" (p. 32). Horwitz (1979) has hypothesized the open classroom as "a style of teaching involving flexibility of space, student choice of activity, richness of learning materials, integration of curriculum areas, and more individual or small-group than large group instruction" (p. 73).

While research continues on the effectiveness of the open classroom concept, there has been no definitive answer to the question of its benefit to students (Horwitz, 1979; Marshall, 1981). Yet, theorists have intimated that the open school design indeed should have assisted in the progress of school facilities that were designed to support student outcomes. Yet many have believed the open classroom to be a universal failure in design for education (Lackney, 1994; Marshall, 1981). Tanner and Lackney (2006) surmised, "In the history of the design and construction of school facilities there had

rarely been such an alignment of the philosophies of educational theorists and the production of school builders" (p. 267). It could be argued that open school plans never should have failed. This failure is a living testament to the need to include scientific research whenever schools are being designed, in addition to the desires of the day-to-day practitioners within those facilities (Brubaker et al., 1998). Occasionally, the open classroom was a success; however, it failed far more often. Despite the open classroom concept being new to school personnel at the time, there simply was not enough training in its use (Horwitz, 1979).

To add to the frustration of the open classroom, the design suffered from very poor acoustics, which also had an adverse effect on teaching and learning (Evans & Maxwell, 1997; Hyatt, 1982). Teachers were simply unable to make the necessary adjustments to the noise and disruption the open classroom setting provided (Lackney, 1994). Tanner and Lackney (2006) reported, "Almost immediately teachers complained of noise and visual distractions in these open plan schools" (p. 268).

Modern to Future School Construction (1990-2015)

Neither architects nor educators to date have been able to define the one design that guarantees the ideal school facility that best supports teaching and learning. The unpredictable changes in population are likely responsible for any widespread replication of any given design (Broome, 2003; Brubaker et al., 1998). Other societal demands alter architectural trends; as Bradley (1996) reported, when the "energy crisis of the '70s focused attention on conservation and many schools became windowless" (p. 26). The school construction industry in the 1980s and 1990s was dogged by such things as the home school trend, the escalating cost of construction, and less monies for schools from

the states. School designers in future years will need credible research to support the design decisions for the ever-changing needs of students (Bradley, 1996; Eurich, 1992).

Facilities' Effect on Learning

Research indicates that the physical environment of a school facility can have a positive or negative effect on a student's learning. Students housed in school facilities that were built with attention given to the physical environment experienced much more success in their academic studies and had better attendance and less disciplinary and health issues (Bradley, 1996). The research further suggests that student learning is enhanced when the facility (a) is a central component to the community, (b) is able to adapt to the needs of its students, (c) allows teachers to function properly, (d) encourages communication, (e) provides for the proper behavioral settings, and (f) accommodates a variety of learning styles (Hawkins & Overbaugh, 1988). Hawkins and Overbaugh (1988) further opined, "When the interface between learning and facilities occurs, there can be little doubt the school building can and will make a difference" (p. 5).

Building Age and Condition

The U.S. General Accounting Office (1995) declared that throughout the nation, all schools were in poor condition. The report went on to claim that half of the students in the nation at that time were attending schools in major need of repair (GAO, 1995; Lyons, 2001). During this same time period, the National Center for Educational Statistics (2000) claimed that the average age of schools at the time to be 40 years. Lyons (2001) stated that "40 percent of schools claimed to have unsatisfactory working conditions. Further, more than 75 percent of schools were built before 1970, which put their age at close to four decades. This is significant as most buildings begin

deteriorating rapidly by age forty, even if all the original equipment is replaced" (p. **6**). This type of statistic led the U.S. Department of Education to determine that many of the nation's school facilities, especially in the high-poverty and urban areas of the United States, are a threat to a student's health, safety, and ability to learn (National Clearinghouse for Educational Facilities, 2011). Research conducted in Georgia school facilities found that students in modern classroom facilities consistently outperformed students housed in older facilities (Chan, 1979). Research further indicated that student scores improved when older schools were modernized (Chan, 1979). Students scored lower on tests when housed in facilities that had not been modernized as compared to higher test scores among students in modernized schools (Plumley, 1978). There can be no question that the age of a school facility will affect the educational outcomes of the students housed in that facility (McGuffey & Brown, 1978). In 1992, it was found that the building age of a school facility had a significant effect on student achievement in the state of Virginia (Ikpa, 1988). Research performed on 280 fourth through sixth graders housed in the newest and oldest facilities in a district in Virginia proved that the students in the newer facilities consistently outperformed those students housed in the older facilities in every category tested. The study also found that student attendance was better, and the newer schools had fewer disciplinary issues than those students in the older facilities (Bowers & Burkett, 1988; Lemasters, 1997).

Acoustics

Despite the obvious implication that noise can potentially distract a student from learning, there are mixed results on the degree to which noise has an effect on student achievement (Bronzaft & McCarthy, 1975). Contrarily, E. W. Hines (1996) found that

> Virginia students performed best in classrooms rated with the least acoustical control and deemed to be noisier. The consensus of the literature demonstrated that acoustics play an important role in student learning, especially for second language learners, younger students, and students displaying characteristics of hyperactivity. (p. 54)

A 1997 study of two schools of similar demographics and socioeconomic conditions, differing only in the exposure to noise, found that the school subjected to a higher level of noise performed more poorly on reading comprehension and language acquisition (Evans & Maxwell, 1997). Another study in Seattle, Washington, in 1982, with a much larger sample size, divided the sample into three noise zones and compared the performance in each. The study confirmed that students in the quiet schools outperformed the students in the noisy schools (Hyatt, 1982; Lemasters, 1997). Cohen, Glass, and Singer (1973) reported similar findings when they studied the effect of noise on children living in multistoried apartment buildings in New York. The researchers hypothesized that "noise level from the street would adversely affect children living in apartments closer to the ground" (p. 409). Children living in upper floors would be expected to outperform their neighbors near street level due to the fact that ambient noise would be lessened (Cohen et al., 1973). The researchers further expected to find that "the longer children lived in the apartments the more significant their learning difficulties would become" (p. 411). The apartment buildings used in the research were along a busy thoroughfare in New York City. The research findings were conclusive in revealing that reading levels and auditory discrimination had been adversely affected by the noise in the building (Cohen et al., 1973). The most cited and irrefutable evidence of the effect that

noise has on student learning can be found in a 1975 study conducted by Bronzaft and McCarthy. The research from the study found that reading scores were much lower in every case when student learning was compared to education on the noisy side of the building to the quiet side of the building (Bronzaft & McCarthy, 1975). Finally, Koski (2011) stated, "Research has demonstrated that classroom acoustics must be considered in order to maximize student achievement and learning. The interplay of sound, hearing, and learning is complex and affected by many factors" (p. 198).

Indoor Air Quality (IAQ)

Research has proven that there is a correlative relationship between the degradation of a school's facilities, its level of indoor air pollutants, and the effects on student performance (Lucarelli & Pennestrì, 2015). Inadequate IAQ is pervasive in the United States and its effects are too significant to avoid. Approximately 15,000 schools across the United States have been experiencing a poor IAQ, which, in turn, is affecting over 8 million students (Schneider, 2002). Of the many variables adding to the research on this topic, few were as ardent by debaters on both sides of the IAQ topic (B. L. Collins, 1975; Larson, 1965).

Daylighting. Despite the many variables considered under facilities, few sparked more debate than the effect of daylight on a student's achievement (Larson, 1965). Windowless environments no doubt have an effect on student achievement and learning outcomes (Larson, 1965). Advocates for classrooms infused with natural light propose that humans need elements from the sun not just to survive but to flourish. Research shows that patients in European hospitals healed faster in buildings with windows and sunlight (Heschong et al., 1999). Studies found that students in classrooms with the most

amount of daylighting progressed 20% more quickly on mathematics examinations and a full 26% on reading comprehension assessments in a single year than those with lesser amounts of daylighting (Heschong et al., 1999). Similarly, the students in classrooms with the largest window areas progressed 15% quicker in mathematics and 23% quicker in reading than students in classrooms with the least amount of glass (Heschong, Wright, & Okura, 2002). Further, students in classrooms with windows that could be opened progressed an additional 8% more quickly than students in classrooms with fixed windows (Heschong et al., 2002). A separate study in Seattle and Fort Collins indicated that mathematics and reading comprehension scores were found to be 7% to 18% better in classrooms where the greatest amount of daylighting was found. These findings suggest that natural light, or daylighting, is a critical feature to any school classroom design (Heschong et al., 1999). A study in Sweden in 1992 found that human hormone levels and the behavior of students were adversely affected by classrooms without windows, leading researchers at the time to the conclusion that classrooms should not be designed without windows (Küller & Lindsten, 1992).

Thermal conditions. Researchers over the years have sought to identify a link between the thermal conditions of a classroom and student achievement. Although much has been reported through research that would support the link, most of the studies are now considered outdated (Koski, 2011). Additionally, much of the research was completed in countries with more frigid climates, such as Sweden. Climates, such as that of California, may dilute significance of these studies (Koski, 2011; Küller & Lindsten, 1992).

In 1931, the New York State Commission on Ventilation began to research the effects of the thermal conditions in classrooms on students' mental and physical abilities. The research indicated that students in classrooms where the temperatures were kept at or above 75 degrees resulted in the students producing less physical work. When temperatures were above 80 degrees, the amount of physical work decreased even more (Herrington, 1952).

Another study in 1979 resulted in similar findings in a subsequent classroom setting where student achievement and task performance were adversely affected by increased temperature (King & Marans, 1979). In addition, students in the study indicated a notable increase in discomfort and exhibited an increased level of off-task behavior in classrooms with higher temperatures (King & Marans, 1979). On the other hand, these same studies also reported that academic performance increased, as did work performance, when thermal conditions were optimal (King & Marans, 1979). McCardle (1966) reported that "forty matched pairs of sixth-grade students completed tasks more quickly with significantly fewer errors given proper heat, humidity, and air flow conditions" (p. 64). Students in controlled environments regularly had higher test scores than did those students in noncontrolled environments. In fact, during two sessions of summer school, the students in the controlled environment showed greater academic improvement than those in the noncontrolled environment (Canter, 1976). Students in rooms with optimal temperatures also made fewer errors and took less time to complete tasks than those students in a noncontrolled thermal environment (McCardle, 1966). In a similar study, office workers were shown to be more efficient when in a controlled and more comfortable thermal environment than those who were in a noncontrolled

environment. Studies utilizing military personnel, office employees, and students all displayed comparable results when efficiency was compared in controlled and noncontrolled environments (Canter, 1976; Mackworth, 1946). Several studies that involved the military revealed a significant correlative effect between a room's temperature and an individual's performance (Bursill, 1958). A similar study was conducted with members of the British workforce. In this study, telegraph officers exhibited similar results to the Bursill study such that thermal conditions had a negative effect on their performance (Mackworth, 1946). Research determined that the same sample of people who worked in a 90-degree environment was found to be half as efficient as when this same sample worked in a 70-degree environment (Yaglou, 1961). In Sweden, the Malmo School of Education set out in 1969 to study the effect of a temperature increase on student performance. The results indicated that short-term retention and reading comprehension were adversely affected by an increase in the room temperature (Holmberg & Wyon, 1969). More significantly, reading comprehension was distinctly improved at a temperature of 68 degrees rather than a warmer environment (Holmberg & Wyon, 1969). Yet another study reported that performance in reading speed, mathematical factoring, and multiplication all declined as the temperature in the classroom increased (Harner, 1973). Finally, another study summarized the effect of temperature and noise on the mental capability of military personnel. The researchers noted a significant decline in personnel performance starting at 80-degree temperatures (Viteles & Smith, 1946).

Safety

According to Frieberg (1984), "Much like the air we breathe, school climate is ignored until it becomes foul" (p. 13). Neal Kumar Katyal (2002), attorney and professor at Yale Law School, suggested taking a more proactive role by actually designing facilities such that the architecture may be used as crime control. He stated, "Design should: (1) create opportunities for natural surveillance by residents, neighbors, and bystanders; (2) instill a sense of territoriality; (3) build communities and avoid social isolation; (4) protect targets of crime" (pp. 1048-1049). In support of these views, Katyal cited statistics that show that "crimes at universities are more likely to occur in places with poor visibility, large bushes, and no buildings across the street" (p. 1051). Comprehensive understanding of the relationship between crime and architectural planning and design for school facilities is critical given that law enforcement efforts are only partially effective against crime (Katyal, 2002). Architects have intimated that crime is preventable simply by changing design features and placing many of a school's facilities' features, such as bus stops, doors, and benches, in a more strategic location (Katyal, 2002). Crime can be reduced through architecture by making public areas more visible and more difficult to escape. Architecture can influence a community and change attitudes and beliefs of individuals regarding a particular community, even drawing a more law-abiding citizen into a community. Katyal (2002) further stated,

> When neighborhoods are planned in ways that make surveillance more likely, criminals will incur additional expenditures to carry out their crimes, and such expenditures can deter the criminal act. These constraints on crime-cost deterrence, legal risks, social norms, and individual tastes-are not, of course,

> influenced by architecture alone, but architecture may be able to alter these variables more easily than the police. (p. 1058)

School Size

Koski (2011) stated that "the historical roots of American educational facilities can be found in small schools. One-room school houses typically served fewer than one hundred students of multiple ages" (p. **94**). In California, school size categories range from "very small" to "small," then "midsize," "large," and lastly "very large" with small-sized school districts ranging in size from 101-1,000 and large-sized districts being defined as those schools with student populations ranging from 10,001-40,000 (Ehlers, 2018). In the year 2000, the average U.S. high school enrollment was 752 students. In middle schools during this same time period, the average enrollment was 595 students, and for the average elementary school, 446 students were enrolled (Hoffman, 2001; Koski, 2011). Research suggests that a small elementary school should be 300 to 400 students, while a small high school should see enrollments of 400 to 800 students (Williams, 1990). Abundant offerings of a more comprehensive instructional program with a higher quality carried out at lower costs, rather than actual enrollment counts, often act as the definition of a larger school versus a smaller school. These small high schools, as an example, were often defined as schools with enrollment of approximately 499 to 500 students (Great Schools Staff, 2018).

The school design model began to morph in the 1950s when J. B. Conant (1962) stated,

> High schools were too small to provide a diversified curriculum except at exorbitant cost. School leaders holding similar viewpoints ushered in the school

> consolidation movement whereby small local schools were abandoned in favor of large megastructures serving students from multiple neighborhoods or large areas in urban centers. (Copa & Pease, 1992, pp. 29-30)

However, it was not until the 1990s, that theorists in education started to doubt the effectiveness of large schools—when compared to small schools—when they theorized that these larger models failed to meet the academic needs of students, when compared to small schools (Koski, 2011). In fact, Gaylaird Christopher (1990) stated that "the single most important factor that affects student achievement is school size" (p. 32). Similarly, Raywid (1996) believed that "the superiority of small schools has been established at a level of confidence rare in the annals of education research" (p. 51). Many small schools were very successful in achieving improved attendance, an increase in a positive attitude toward school, increased academic productivity, and enriched fulfillment within the school (Raywid, 1996). Conversely, there is compelling evidence that school size reduction will increase student participation, reduce rates of dropout, improve academic performance, and improve instructional efficiency (Raywid, 1996). A seminal study in small schools conducted by Kathleen Cotton (1996)— a synthesis of 103 separate studies on the topic of the effectiveness of school size—indicated that small schools produced better, or at least equal, academic outcomes on almost every occasion. Despite this information, schools continue to get larger in size. From the year 1940 to 1990, the total number of elementary and secondary schools declined by 69%, despite the fact that there was a 70% increase in the U.S. population (Howley & Bickel, 1999; Walberg, 1992). Consequently, enrollment during this same timeframe increased by five times in the average U.S. school (Howley & Bickel, 1999; Raywid, 1996). Studies during earlier

years also found that schools with a smaller size were less prone to the influences of poverty on academic performance (Howley & Bickel, 1999). Current studies in selected school districts in the United States again supported the fact that small schools are, at a minimum, equal to larger schools, but in most cases are far superior (Howley & Bickel, 1999).

Technology

Research has been nearly unanimous with regard to the need for current technology in school facilities, including the adoption of procedures aimed at keeping these same facilities current with technology over the life of a facility's use (Kennedy, 2001; Thornburg, 2014). According to Thornburg (2014), "The constantly changing landscape of educational technology can be thought of as a series of transitions from older tools to newer ones" (p. 2). The role of technology in the classroom is actually an issue of literacy. Stokes (2000) stated that "the term 'literacy' now refers to concepts beyond reading and writing," and that "literate students must be knowledgeable of and skillful with globalization, automated social interaction, the World Wide Web, and new cultural dynamics" (p. 56). Technology is now commonplace for students in the United States. The American workplace has become increasingly reliant on the technological skills of students as well as the process of interacting and processing information (C. Day & Spoor, 1998). In fact, C. Day and Spoor (1998) intimated that "technology is the inescapable companion of the 21st century citizen" (p. 33).

E-learning is method of gaining this literacy and involves new mechanisms for communicating through networks, multimedia, content portals, search engines, electronic libraries, distance learning, and web-enabled classrooms (Stokes, 2000). E-learning is

expected to transform the classroom by allowing students' access to web-based tutoring, easy online access to real-time grades by the parent community, and by opening student coursework to multiple locations and modes of delivery, including the home, rather than exclusively at the school site (McGowen, 2007). E-learning, in its basic form, should be considered another function of literacy and social interaction (Stokes, 2000). Technology in the e-learning environment is allowing teachers to vary instructional practices in accordance with the learning style of the student. In addition, video and amplification systems, along with other interactive devices such as white boards, have expanded on the tools available today for the classroom teacher faced with a classroom full of students with differing abilities and learning modalities (Milshtein, 2003).

Technology in education has also allowed for a much greater intimacy between the student and the teacher, school administration, and the business community (McGowen, 2007). In fact, Stokes (2000) reported,

> This new mode of learning promises to transform the experience of the classroom in a numbers of fundamental ways: by augmenting traditions textbook materials with online resources and content portals; by enhancing customary "chalk and talk" lectures through the use of rich multimedia and interactive content; and by extending student discussions beyond the walls of the classroom via a wide range of new communications platforms supporting inter-classroom collaboration. (p. 1)

Technology has had other significant effects on school facilities with respect to classroom layout and infrastructure. Student desks have ceased being arranged in rows with the teacher strategically located at the front of the classroom in traditional lecture fashion (English, 2003). Many classrooms are now using student tables instead of desks

so that student interaction can be enhanced. These more modern configurations, which include student tables instead of desks, have also lent themselves well to the appropriate placement of computers and other technology apparatus (Daniels, 2003).

A costly and unintended consequence of the increased use of technology in the classroom is that these devices have placed a burden on the power infrastructure of many schools in the United States (Yan, 1999). With the average age of a school facility being 40 years, updating this infrastructure comes at a great cost. Most of the schools in the United States were simply not built to support these electrical loads that come with the new technology (Dewees, 1999). Additionally, the use of the World Wide Web and its networking into the everyday lesson in the classroom comes with the need for the proper network wiring. The new industry standard mode for transmitting voice and video data is fiber optic wiring. Unfortunately, many schools do not have the financial wherewithal for this expensive mode of data transmission (Yan, 1999).

Technological advances have also impacted school design beyond that of classroom instruction. A new emphasis has been put in place for designers of school facilities to use automated access and monitoring that control and record access to schools (Szczerba, 2000). With high levels of security concerns in today's school climate, school facility officials have charged their architectural community with an increased technology for campus safety and security. Digital surveillance cameras have become the norm on school campuses across the United States (English, 2003).

Instructional Practices That Improve Student Achievement

The primary factor in student achievement is instructional practices. Yet, an institutional awareness of this fact seems to largely elude educators today (Schmoker,

2006). Instruction has six to 10 more times more impact on achievement than any other factor (Mortimore, Sammons, Stoll, & Ecob, 1988). Marzano (2003) cited numerous studies demonstrating that two separate teachers working with similar socioeconomic student populations can achieve significantly different results on the same assessments.

Schmoker (2006) stated emphatically that the actual impact of the taught curriculum on student achievement is incalculable. Research has shown that among factors that affect student achievement, setting out a sound set of standards and making those standards known is the single most important factor when considering student achievement (Marzano, Pickering, & Pollock, 2001; Porter, Garet, Desimone, & Birman, 2003).

Identifying Similarities and Differences

Identifying similarities and differences is basic to the human thought process and may be at the core of student learning (Gentner & Markman, 1994). The simplest and most effective way to differentiate the contrast between similarities and differences is to simply present it to the student (Marzano et al., 2001). Asking students to identify similarities and differences is another effective way to differentiate between the two (Chen, Yanowitz, & Daehler, 1995; Gick & Holyoak, 1980). Graphically representing similarities and differences also enhances student understanding and achievement (Cole & McLeod, 1999; Glynn & Takahashi, 1998). While none of these are simple tasks, highly structured tasks may simplify the process (Marzano et al., 2001).

Summarizing and Notetaking

A meta-analysis completed by researchers has shown that effective summarizing can increase student achievement by as much as 47% (Marzano et al., 2001). To

summarize effectively, the instructor must ensure that the learner deletes some information, substitutes some information, and keeps other information (Kintsch, 1979; Kintsch & Van Dijk, 1978). In order to delete, substitute, and keep information effectively, the learner must engage in the analysis of the information at a very intimate level (Rosenshine & Meister, 1994; Rosenshine, Meister, & Chapman, 1996). The learner must also be aware of the explicit structure of the material in an effort to summarize information (Marzano et al., 2001; Meyer & Freedle, 1984).

Reinforcing Effort and Providing Recognition

Reinforcing effort and providing recognition can yield a 29th percentile gain in student achievement. This practice engages the students' attitudes and beliefs rather than engaging their cognitive skills (Marzano et al., 2001). Instructors should reward students based on an expectation of performance using symbolic recognition rather than just tangible rewards (Marzano et al., 2001). This allows for the empowerment of the learner to make the connection between his or her effort and his or her achievement (Chen et al., 1995; Schmoker, 2006). Practical applications of this tactic are holding high expectations, displaying student work, praise for students' efforts, encouraging students to share their thoughts and ideas, honoring individual learning styles, meeting individually with students, and other outward forms of celebrations (Marzano et al., 2001).

Homework and Practice

Homework discussions have been a persistent topic of debate in education, and attitudes toward it have been cyclical (Gill & Schlossman, 2000). For the past 20 years, homework has been heralded as being characteristically good by educators and

politicians alike (Gill & Schlossman, 2000). With yields in the 29th percentile in gains, homework and practice also take on an importance (Kintsch & Van Dijk, 1978; Marzano et al., 2001). The goal for homework, in order for it to be effective, is that the learner be asked to practice, to review, and to apply new knowledge (Christopher, 1990; Marzano, 2003). The amount of homework assigned to students should be varied based on grade level and include parents, while stating the purpose and allowing for feedback (Marzano et al., 2001). Basic functions of homework should include the activities of retell, recite, and review learning for the day at home and in a manner that the parent can be informed of the goals and objectives of the material (Marzano et al., 2001).

Nonlinguistic Representations

The practice of using nonlinguistic representations has been a significant strategy to assist students in processing, organizing, and retrieving information and has been shown to lead to improved learning (Clemons, Igel, & Gopalani, 2010; Marzano et al., 2001). Students have the ability to make meaning from knowledge that is presented in multiple modes. How the information is presented can be very impactful and enhance knowledge construction, with visual or nonlinguistic representations contributing to how students experience classroom content (Jewitt, 2009; Kress & Van Leeuwen, 1996; Marzano et al., 2001). Nonlinguistic representations can be accomplished by having students create graphic organizers, generate mental pictures, make physical models, draw pictures and pictographs, and engage in kinesthetic activities (Clemons et al., 2010).

Cooperative Learning

Cooperative learning is a group-based instructional strategy where students work together collaboratively under a particular set of conditions (Igel, 2010). Cooperative

learning has been accepted as one of the most theoretically-grounded instructional strategies (D. W. Johnson, Johnson, & Roseth, 2010).

Cooperative learning is the utilization of social interdependence theory (SIT) as an instructional practice. SIT is a social constructivist theory that suggests that learning is maximized through well-designed and intentional social interaction with other students (Gerlach, 1994; Vygotsky, 1978). Despite its valuable theoretical base, cooperative learning has often been misunderstood and used improperly (Antil, Jenkins, Wayne, & Vadasy, 1998; Koutselini, 2008). Teachers have often believed that simply putting students into groups establishes a cooperative learning environment when, in fact, this is simply collaborative learning (Igel, 2010). According to Igel (2010), a variety of cooperative learning strategies have been developed throughout the years. Among them are the Jigsaw technique, Jigsaw II, Student Teams Achievement Divisions (STAD), Student Team Learning, Teams-Games Tournaments, Group Investigation, Cooperative Structures, Numbered Heads Together, Learning Together, Cognitive Engagement in Cooperative Learning (CECL), and Complex Instruction.

Setting Objectives and Providing Feedback

Successful schools mandate that the instruction be clear about the goals for learning (Apthorp, Barley, Englert, Lauer, & Van Buhler, 2005; B. M. Taylor, Pearson, Clark, & Walpole, 2000). Classrooms and lessons that are well structured with clear goals and expectations for the learners experience the greatest gains in student achievement (Igel, Clemons, Apthorp, & Bachler, 2010). To facilitate the enhanced learning, students should be party to the process of setting objectives and be provided with feedback on their success in achieving these objectives (Hattie & Timperley, 2007).

The process of creating a standard that guides learning is called setting objectives (Marzano et al., 2001). Setting objectives is an element of self-regulation whereby students create goals and monitor their own advancement toward the achievement of these goals (Bransford, Brown, & Cocking, 2000). To be successful, it is imperative that teachers build a common commitment to learning goals and develop students' strategies to monitor their progress (Hattie & Timperley, 2007).

Generating and Testing Hypothesis

Marzano et al (2001) defined "generating and testing hypotheses" as a technique that requires students to apply previous or developing knowledge to novel situations (p. 114). This process involves two types of thinking: deductive and inductive. For deductive thinking, students utilize prior knowledge to assist in creating general rules to assist with making predictions about future events or novel situations (for example, utilizing the knowledge of historical events from the past to help predict the outcome of future international policies; Marzano et al., 2001). With inductive thinking, students collect information and then produce principles that describe events or phenomena (for example, collecting data on the freezing points of salt solutions in an effort to form a general rule with respect to how salt can affect the freezing point of water; Marzano et al., 2001). Yet, these two very different types of thinking are not mutually exclusive, and numerous problems are solved by utilizing a combination of the two processes (Marzano et al., 2001).

Cues, Questions, and Advanced Organizers

Asking students questions and prompting them with cues is a common exercise among teachers (Clemons et al., 2010). One research study indicated that roughly 80%

of student-teacher exchanges involve cues and questions (Filippone, 1998). Student learning is improved when teachers recognize and take advantage of a students' prior knowledge and preconceptions about the topic (Bransford et al., 2000; Mestre, 1994). The strategy involved with utilizing cues, questions, and advanced organizers is one that guides students from the known to the unknown by initiating and, as suitable, recreating a cognitive framework of familiar concepts in which to incorporate new information (Marzano et al., 2001). Marzano et al. (2001) also identified three types of cues/questions that, when used together, can provide a rich learning experience for the student:

- Explicit cues are simply way of stimulating prior knowledge by providing a preview of the information to be learned. Explicit cues may bring to the forefront a relevant personal experience of the student or other situations encountered.
- Questions that produce implications become essential for guiding students in the process of classifying and "filling in" missing information in presented material. Inferences can be about things, people, actions, events, or states of being.
- Analytic questions assist students in analyzing and critiquing information, thus enabling a deeper understanding of the content. (p. 131)

Financial Policies Affecting School Facilities

Although the funding of schools historically has been perceived as a local function (primarily through the property tax), it now seems that for the first time the major source of revenue is the state government. The state is providing 47.4% of school

revenuers; the local government and other sources 43.7%; and the federal government 8.8% (National Center for Educational Statistics, 2000). School facility capital outlay has long since been a concern for education policy makers. Despite the fact that school finance authorities have remained vocal regarding capital outlay for school facilities, it appears as though the topic has been largely ignored. Regardless, financing school facilities can invoke emotion and often seems an insurmountable challenge (Thompson, Camp, Horn, & Stewart, 1988).

States' Roles in School Facility Funding—an Historical Perspective

K-12 school facilities require a steady influx of capital investment in order to support the education of the students. Yet, there is an uncertainty in a sustained support of capital investment, especially in California schools (Vincent & Gross, 2015). Historically, the property tax in both the United States, as well as California, is an established principle dating back to the 1800s (Lindholm, 1970). The property tax became a major source of revenue for state and local governments after the Civil War at a time when free universal education had been introduced. School districts became quickly and largely reliant on these sources of funds for capital outlay for school facilities (Lindholm, 1970). California alone has an established history dating back to 1927 for usage of state tax and bond-provided funds for local school districts' use in facility improvements (Vincent & Jain, 2016). Over the course of time since 1927, the California Department of Education (CDE) started to assist school districts with the planning of school facilities. The Division of the States Architect (DSA) was tasked with oversight of code enforcement for school designs (Vincent & Gross, 2015). In 1976, the California state legislature enacted the Leroy Green School Building Lease–Purchase Law (LPP).

This new law was a new vehicle for school facility funding for school districts. Eligibility for these LPP funds was based on a school's capacity in comparison to its enrollment status, as well as a school facility's age (Brunner & Vincent, 2006). The amount of state bond dollars provided to school districts since the LPP is nearly $40 billion (Brunner & Vincent, 2006; Vincent & Gross, 2015). Additionally, local capital raised through general obligation bonds is in excess of $60 billion (Brunner & Vincent, 2006; California Department of Finance, 2016). However, by the middle of the 1980s, it had become clear that these funds alone would not be sufficient to address the growing facilities needs of districts statewide and create a great margin between actual need and state provided funding (Brunner & Vincent, 2006). To add to the complexities of facilities being underfunded in California, there was growing discourse regarding the disparity in local funding abilities and its inherent inequities (Burrup & Brimley, 1982). This disparity resulted in a per-student funding range from $274-$1,223 for two separate districts (Baldwin Park and Beverly Hills) in the same county in California, thus leading to the landmark lawsuit know as *Serrano v. Priest* (Burrup & Brimley, 1982; California Research Bureau, 1999). Burrup and Brimley (1982) went on record, stating, "The consequences of the breakthrough of the Serrano decision have been almost overwhelming to matters of school finance" (p. 327). State officials, as one result of the Serrano decision, were now tasked with providing equity to the school finance formulas that were in place at the time, placing an even larger burden on the state tax or bond dollar (Burrup & Brimley, 1982; Perry, 1998).

On the heels of the Serrano decision, at a time when school finance equity had been placed directly on the doorstep of the California legislator, came another taxpayer

panacea known as Proposition 13, which now restricted property taxes to 1% of the 1976 market value. This piece of legislation singlehandedly reduced property tax revenues by local governments in the state of California by 57% (Burrup & Brimley, 1982; Shapiro & Sonstelie, 1982). Burrup and Brimley (1982) stated,

> The passage of Proposition 13 shifted the primary responsibility for financing new school construction and modernization from local school districts to the state. By prohibiting property tax overrides to fund local general obligation bonds, Proposition 13 eliminated the primary source of local revenue for new school construction and modernization. Consequently, in the aftermath of Proposition 13, school districts were forced to turn to the state to meet their school facility needs. (p. 396)

This brought an entirely new demand to the already overburdened state LPP in that school districts were now struggling to raise the 10% required match for new construction or modernization projects. The California Research Bureau (1999) reported,

> The increased demand for state funding, coupled with the fact that in June of 1978, voters once again rejected a statewide bond initiative designed to fund the Lease-Purchase Program, led to a large shortfall in funding for new school construction and modernization projects. (p. 14)

Some relief came to local government in 1986 when voters approved Assembly Bill (AB) 2926, which authorized local school districts to levy developer fees to assist in the financing of new schools (California Research Bureau, 1999). In March of 1996, relief came with a statewide bond passage of $6 billion to assist in funding the LPP. Then, in November of 1998, the legislature passed Senate Bill (SB) 50, known as the

Leroy Green School Facilities Act of 1998, effectively replacing the LPP with a new program known as the School Facilities Program (SFP), which was backed by $9.2 billion from Proposition 1A (The California Research Bureau, 1999; Office of Public School Construction, 2018). While this new money was welcomed by many in the state, it fell far short of the nearly $50 billion need (Perry, 1998; Vincent & Jain, 2016).

California General Obligation Bonds Policy

The state of California has a history of providing schools with funds generated by tax revenues and other sources. One of the major sources of revenue since 1998 is the General Obligation (GO) bond (Vincent & Jain, 2015). In 1927, the CDE began to assist with school planning and the DSA. As an intended funding match to local funds under the SFP, since 1998, Table 2 shows that the state has successfully passed and spent $66.2 billion in GO bonds.

Table 2

California School Bond History

Program	Prop 1A	Prop 47	Prop 55	Prop 1D	Prop 51
New const.	$2,900,000,000	$6,250,000,000	$4,960,000,000	$1,900,000,000	$200,000,000
Modern	$2,100,000,000	$3,300,000,000	$2,250,000,000	$3,300,000,000	$150,000,000
Overcrowding/ hardship	$1,000,000,000	$1,700,000,000	$2,440,000,000	$1,100,000,000	
Class size reduction.	$ 700,000,000	$ 0	$ 0	$ 0	
Charter schools	$ 0	$ 100,000,000	$ 300,000,000	$ 500,000,000	$ 500,000
Joint use	$ 0	$ 0	$ 50,000,000	$ 29,000,000	
Career/tech ed	$ 0	$ 50,000,000		$ 500,000,000	
Totals	$6,700,000,000	$11,400,000,000	$10,000,000,000	$7,329,000,000	$400,000,000

Note. California Statewide K-12 School GO Bonds (Propositions); 1998–Present. Adapted from *Reforming California School Facility Finance—Guided By Principles*, by J. Vincent and L. S. Goss, 2015, University of California, Berkeley (http://citiesandschools.berkeley.edu/uploads/2015_Guided_by_Princples.pdf).

Other Sources of Funding

The Energy Improvement and Extension Act of 2008 (Div. A, Sec. 107) allocated $800 million for new Clean Renewable Energy Bonds (CREBs; U.S. Department of Energy, 2018). According to Klein (2009),

> The Act authorizes a total of $2.4 billion (an increase of $1.6 billion) for Clean Renewable Energy Bonds used to finance renewable energy facilities. The authorization is subdivided into thirds: 1/3 for state/local/tribal governments; 1/3 for qualifying projects of public power providers; and 1/3 for qualifying projects of electric cooperatives. CREBs are used to finance qualified energy production projects, including facilities for wind, bio-mass, geothermal and solar energy, trash combustion, refined coal production, and certain hydropower facilities. (p. 3)

Prop 39 policy. In addition to other sources of facility funding and energy upgrades, De Alth and Rueben (2005) stated,

> In addition to passing two of California's largest school bond initiatives, in November of 2000 California voters also passed Proposition 39, the Smaller Classes, Safer Schools and Financial Accountability Act. The Act allowed a district to issue local general obligation bonds subject to the approval of 55 percent of voters (rather than two-thirds voters), conditional on several accountability requirements. (p. 30)

More specifically, districts now, upon successful passage of a Proposition 39 bond initiative, must set up a citizen's oversight committee to verify that bond funds are expended in a manner consistent with the bond language. In addition, the amount that

can be levied on the taxpayer can be no greater than $60 per $100,000 of assessed valuation (De Alth & Rueben, 2005).

Qualified Zone School Academy Bonds (QZABS) policy. According to Banicki and Manos (2007), "The practice of federal incentives and financial support for upgrading and renovation of existing school facilitates with low or no bond interest cost begins with the Taxpayer Relief Act of 1997" (p. 1). Unfortunately, the first year of the Taxpayer Relief Act had no district utilization for these zero-interest bonds that were made available by the federal government. Many believed that the financial institutions simply did not understand the legislation fully. As a result, more zero-interest offerings were duplicated and extended in the America Reinvestment and Recovery Act of 2009 (Banicki & Manos, 2007). QZABS were first introduced by the federal government as incentives for local business matching funds to encourage career and professional programs. Districts were required to focus on one school in the district, while also collaborating with other districts in an effort to expand technology and career prep programs (Banicki & Manos, 2007). One major congressional concern for the QZAB program was whether the federal government should actually increase its level of responsibility for school construction in the states (Boren, 2003). Some contended that the federal government was already doing its part by exempting districts from tax on state and local bond initiatives. According to Banicki and Manos (2007), the qualifications for funding are based on surrounding enterprise zones as well as school low-income rates. The legislation requirements are as follows:

1. The individual school must be located in an enterprise zone or enterprise community.
2. There is a reasonable expectation that at least 35% of the school's students will be eligible for the free- or reduced- price lunch program.
3. The school is required to receive donations from private entities worth at least 10% of the value of the money borrowed.
4. The donations must include at least a 10% match from a business or commercial enterprise.
5. Charter schools are encouraged to apply.
6. Bonds mature at 20 years maximum, and are spent out in 5 years.
7. The school must have an education program designed in cooperation with a business.
8. The school must subject its students to the same standards and assessment as other students in the local education authority (LEA).
9. The school must have an educational plan approved by the LEA (Banicki & Manos, 2007).

Proposed school projects should represent the following:

1. Not be new school construction.
2. School renovation.
3. School repair—health and safety.
4. Equipment—as well as infrastructure.
5. Technology upgrades.
6. Developed challenging curriculum.
7. Train teachers.

8. Environmental concerns.

9. Energy efficiency (Banicki & Manos, 2007).

Developer fees (Mello-Roos) policy. Adding to support from state funded bond initiatives, school districts have developed other alternatives for providing capital funding for school facilities, such as Mello-Roos taxes (The California Research Bureau, 1999). Mello-Roos taxes were implemented in 1982 as part of the Mello-Roos Facilities District Act. This act has enabled school districts to create Community Facility Districts (CFDs) that are within the boundaries of a given district (Honeyman, 1999). These CFDs are assessed a special tax intended to finance a school district's new construction projects. These Mello-Roos tax initiatives must be approved by the voters of that CFD by a two-thirds vote threshold (Rivasplata, 1991). As an example, the first school district to utilize the Mello-Roos tax initiative was the Wilsona School District in Lancaster, Pennsylvania. The district, as a result of the tax, was able to build a new school at the additional cost of approximately $2,000 to the homebuilder (The California Research Bureau, 1999).

Certificates of participation policy. Certificates of Participation (COPs) are yet another avenue for school districts to pursue for facility funding. This method is often complicated, but can be accomplished without voter support (The California Research Bureau, 1999). The most frequently utilized application is when a school district leases a new school from another governmental agency or nonprofit entity, which then raises the needed monies to build the school facility by selling shares (COPs; Klein, 2009). Ultimately, lien revenue COPs are very similar to bonds. However, a primary disadvantage of the use of COPs as a capital improvement funding mechanism is that it does not generate revenue, as is the case with a bond, as a source for lease payments.

Generally, these payments come from the school district general fund (The California Research Bureau, 1999).

Conceptual Framework

According to Miles and Huberman (1994), a conceptual framework "lays out the key factors, constructs, or variables, and presumes relationships among them" (p. 440). Levering (2002) added that a conceptual framework provides knowledge, not of "hard facts," but rather, "soft interpretation of intentions" (p. 38). The researcher selected the use of a conceptual framework as the lens through which to focus the study, rather than a theoretical framework. The advantages of conceptual framework analysis, rather than a theoretical framework, are its flexibility, its capacity for modification, and its emphasis on understanding instead of prediction (Jabareen, 2009).

The two areas of instructional practices that enhance student learning and facilities conditions that affect the learning environment provide the conceptual framework for this policy study (Figure 1). In Figure 1, the diagrammatic intent is to indicate that two factors the drive school facility policy are school facility factors and instructional practices. The expert panelists used in this Delphi study had expertise in school construction, education, and school facilities policy. The focus then, of the panel

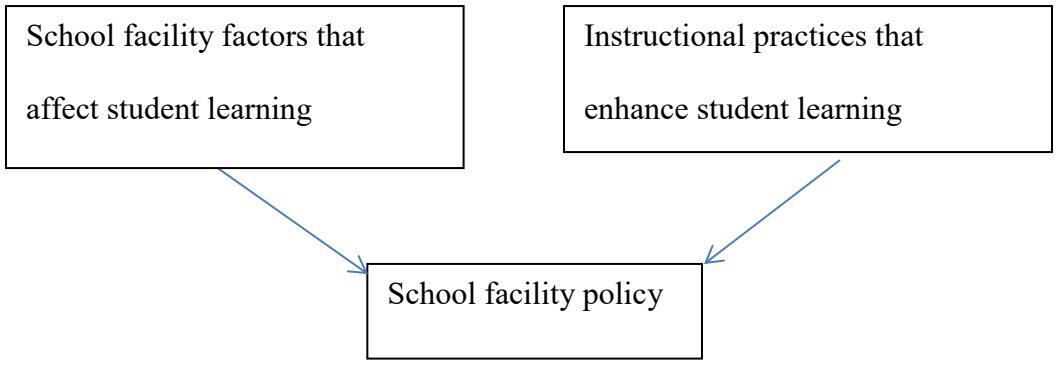

Figure 1. School facility factors affecting student learning.

of experts was to focus on the driver relating only to school facility factors that affect student learning. Their backgrounds in school facilities conditions, instructional practices, and school facilities policy were determined by the researcher to be the primary foundation for their individual recommendations on future school facilities policy.

School Facility Factors That Affect Student Learning

The conceptual framework for this research study was grounded in the premise that the conditions of a school's facilities impact student achievement positively, or negatively, depending on the condition. Research for this study supports the probability of a relationship between a school facility's condition and student achievement. Prior research on school facilities' conditions and student achievement found that a consistent relationship exists between facilities in poor condition and poor student performance (Cash, 1993; Filardo, Vincent, Sung, & Stein, 2006; Hines, 1996; Lemasters, 1997; Schneider, 2002). In addition to offering tangible barriers to learning, school facilities in poor condition may also affect student performance (Cash, 1993). Hickman (2002) determined that new school facilities appear to positively impact pride for students and staff as well as morale and attitude, while poor school building conditions increase the likelihood that teachers will leave their schools (Filardo et al., 2006).

Overbaugh (1990) established that the physical environment affected teachers in their professional performance. In that same study, teachers rated classroom equipment, classroom furnishings, and ambient features as the most essential environmental features. The study determined the perceptions of teachers on how school facilities affected their ability to function as a professional. The study also discovered that teachers were generally content with the physical environmental of their instructional areas. Lackney

(1994) offered a study to the U.S. House of Representatives Committee on Science that argued the impact of educational facilities on student behavior, attitudes, and performance. Lackney further determined in that study that school facilities were, in fact, important to the teaching and learning process. Lackney also declared that there was an association between physical characteristics of school buildings and educational outcomes. O'Neill (2000) examined the correlation between student achievement, school facilities, attendance, behavior, and teacher turnover rate. The study reinforced the research that school facilities that were well designed and maintained would enhance the learning environment for teachers and students. O'Neill and Oates (2001) further researched whether improving school facilities had a positive effect on student behavior, attendance, student learning, and teacher turnover rate and found that there was a direct relationship between student achievement and building quality.

Earthman (2002) concluded that a school facility's conditions, in fact, do affect academic achievement of students. Earthman further established that school building design characteristics and components have a quantifiable impact on student learning. Earthman (2004) studied the link between school facility quality and academic outcomes and found that there was an association between building quality and academic outcomes. Further, Earthman evaluated temperature, heating, and air quality as the elements that affected student achievement. Hadden (2005) considered: (a) energy efficient, flexible, and sustainable designs; (b) aesthetics; (c) safety; (d) collaboration; (e) classroom space and furnishings; (f) technology; (g) organization of classroom administrative offices, (h) student communal spaces and school grounds; (i) teacher facilities; (j) instructional and social program services and opportunities; (k) classroom instructional opportunities;

(l) instructional opportunities and educational programs; (m) organization of instruction; and (n) community or social use. In that research, Hadden reinforced the research that school facilities did impact student learning by shaping the environment.

Higgins, Hall, Wall, Woolner, and McCaughey (2005) analyzed 25 years of research and found that most researchers reinforced the fact that there was an association between school quality and student performance. Uline and Tschannen-Moran (2008) surveyed school climate as the link between school facilities and student achievement and found a positive correlation between a school facility's condition, school climate, and student achievement. Caddick (2008) presented research on the behalf of the National Education Association to the U.S. House of Representatives Committee on Education and Labor that argued the relationship between school facility adequacy and student achievement. Caddick's results indicated that the quality of facilities was related to all of the school climate variables: teacher professionalism, collegial leadership, community engagement, and academic press. McGowen (2007) examined the connection between school facility conditions and school outcomes that contemplated student academic achievement, attendance, discipline, completion rate, and teacher turnover rate. In that study, McGowen found that student achievement, attendance, and completion rate were not statistically significant in relation to school facility conditions, and discipline or behavior were significantly related to school facility conditions.

Stallings (2008) performed a quantitative research study that explored public school facilities and teacher job satisfaction. Stallings explored the difference between teachers whose intentions were to stay in their current positions versus those whose intent was to leave, with respect to their perceptions of the conditions of public school facilities.

Stallings's research found that the work environment impacted the job satisfaction of teachers and that teachers' work environment might be associated with their decisions to remain in teaching. Bishop (2009) observed three new high school facilities that opened in the Commonwealth of Virginia between 2006 and 2007. Bishop investigated the connection between the new high schools, student achievement, and staff attitudes and behaviors. Bishop's research found that both student behaviors and staff and student morale were improved in the new buildings.

Instructional Practices That Enhance Student Learning

Individual teachers can have a deep and lasting influence on student learning—even where schools have been deemed ineffective (Marzano et al., 2001). Brophy and Good (1986) commented that "the myth that teachers do not make a difference in student learning has been refuted" (p. 370). Further research has shown that teacher effectiveness is an overriding reason that students make academic gains. This is in contrast to heterogeneity among students and classroom size, which, in contrast, were shown to have little effect on academic gain (Sanders, Wright, & Horn, 1997).

Marzano et al. (2001) identified nine research-based strategies that increase student improvement, as follows:

1. Identifying similarities and differences
2. Summarizing and note taking
3. Reinforcing effort and providing recognition
4. Homework and practice
5. Nonlinguistic representations
6. Cooperative learning

7. Setting objectives and providing feedback

8. Generating and testing hypothesis

9. Ques, questions and advanced organizers. (pp. 3-132)

Clarification of the purpose and goals has also been linked to a student's academic achievement in providing explicit information on how a teacher defines success (Hattie, 2012). Results of a meta-analysis showed that classroom discussions produced large gains in student comprehension and academic achievement (Hattie, 2012; Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). Another study found that student feedback that is targeted, specific, and timely can produce a 28% increase on average in student achievement (Goodwin & Miller, 2012; Marzano et al., 2001). Research also indicated that the regular use of formative assessments has a favorable impact on student academic achievement (Hanover Research, 2014, Hattie, 2012). Further, meta-cognitive strategies have been found to improve student academic achievement by providing opportunities to plan, organize, and monitor their own work, direct their own learning, and to be able to self-reflect on the academic journey (Wilson & Conyers, 2016).

Conclusion

No building articulates cultural values as well as the school building facility. It speaks of a community's hopes, dreams, and aspirations while painting the picture of a better life and an even better world. Some may say that a school's facilities are shaped by the community that it serves; equally, communities are shaped by the school facilities that they build (Eurich, 1992). The school facility has experienced an architectural evolution over time. As the cultural, political, and economic times have changed, these same forces have influenced the design and developed its form (Bradley, 1996).

What has remained consistent throughout the history of the schoolhouse is that research has proven that students perform better academically, behaviorally, and are healthier when careful attention is given to a school facility's physical environment (Bradley, 1996). De Tocqueville (1984) stated that "the schoolhouse, regardless of shape and size, endeavored to support the ideals of a democracy and the absolute sovereignty of the people" (p. 319). Despite this information, the U.S. General Accounting Office (1995) reported that "every state in the nation possessed schools in poor condition" (p. 5). The report further stated that "more than half of the 42 million students in 1995 attended schools in need of at least one major repair" (p. 20). It was further reported that 40% of schools claimed that the facilities had unsatisfactory working conditions and that 75% of schools in the United States were built prior to 1970, making these facilities decades old (Lyons, 2001). To add complexity to the issue of facilities conditions in California, the state has historically underspent on facilities maintenance and improvement needs (Vincent & Jain, 2015). Burrup and Brimley (1982) contended that "most Americans think of the high cost of educating the nation's citizens, but comparatively few give much thought to the much higher cost of not educating them" (p. 292). Despite the conditions of the schools in California alone, and the estimated $18 billion per year needed statewide to address deferred maintenance issues, the state has not replenished its bond revenues that are traditionally used for school facility improvements since 2006 (Vincent & Jain, 2016). For the last 20 years Californians have experienced a rise and fall in investment activity for school facilities. The last several years have seen an overall decline (Vincent & Jain, 2016).

Since *A Nation at Risk* was published over 3 decades ago, the United States has sought better opportunities to prepare students for the global workplace (Thompson et al., 1988). In the book *That Used to be Us: How America Fell Behind in the World It Invented and How We Can Come Back*, Friedman and Mandelbaum (2011) explained:

> The merger of globalization and the IT revolution that coincided with the transition from the twentieth to the twenty-first century is changing everything every job, every industry, every science, every hierarchical institution. . . . This merger has raised the level of skill a person needs to obtain and retain any good job, while at the same time increasing the global competition for every one of those jobs. (p. 56)

Researchers have surmised that school districts must seek to reform their current practices and seek opportunities, beginning with adequate school housing, to prepare these students for this new workforce (Friedman & Mandelbaum, 2011; Giddens & Stasz, 1999). Research also indicates that there is an urgent need for education reform requiring comprehensive organizational change with respect to school condition and capacity (Darling-Hammond, 2010; Tye, 1999).

Synthesis Matrix

A synthesis matrix (Appendix A) was utilized to determine common themes and patterns that crossed literary sources for the study (Roberts, 2010). The analysis of related literature to a topical study provides for an assimilation of what is known about a topic (Patton, 2014). Literary themes related to school facilities in California that surfaced are the history of school facilities; the design intent as it relates to pedagogy in history of school facility design; a school facility effect on learning including IAQ such

as daylighting and thermal control, school building age and condition, school size, safety and technology; and lastly a historical accounting of school facility financing, including the various types of capital improvement financing mechanisms.

CHAPTER III: METHODOLOGY

Overview

The aim of this Delphi study was to develop and analyze policy alternatives that would promote adequate school facilities and generate strategies for their funding in California K-12 public schools. The Delphi study was generated in response to related demographic trends of the education environment for the current economy.

This chapter includes (a) research design, (b) population and sample, (c) instrumentation, (d) data collection, (e) data analysis, (f) limitations, and (g) summary.

Purpose Statement

The purpose of this Delphi study was to identify what statewide educational policy alternatives experts believe are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025.

Research Questions

Research Question 1

What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 2

What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 3

What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 4

What statewide educational policy alternatives, rateed for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Design

The research design of this study was descriptive research and is a form of policy analysis. The process of analyzing policy has its roots in post-World War II. As the United States grew, so did its penchant for understanding and developing policy. During this formative era of policy analysis, the study of the topic at a student level was consistent with the social norms at that time (Fischer & Forester, 1987). The use of a logical process allowed policy analysts in decision-making positions to investigate courses of action that were an alternative means to traditional practices (Stokey & Zeckhauser, 1978). The continued practice and study of policy analysis over the years

has allowed for dramatic growth in knowledge, understanding, and use of policy in shaping society today. Evidence of the practice of policy analysis can be found in the significant increase in publications, academic offerings, and vocational opportunities that are more prolific today than in years past (Nagel, 1984).

While researchers rarely utilize the same functional characteristics of policy analysis, there remains a shared value of the structure, causal relationships, and the outcome and effect of alternative policy (Bauer & Gergen, 1968; Dunn, 1986). Often, functional characteristic differences are clearly defined by the researcher and vary between "policy analysis" and "policy research." In basic terms, policy analysis is generally viewed as an applied social science, whereas policy research includes a more comprehensive approach leading to actionable activity (Bauer & Gergen, 1968). Some definitions of policy analysis associated the process of the analysis with considering policy alternatives in an effort to develop new policy based on a defined set of goals or desired outcomes (Nagel, 1984). Yet another definition placed policy analysis in the context of decision making: "By improving our ability to predict the consequences of alternative policies, and providing a framework for valuing consequences, the techniques of policy analysis leads us to better decisions" (Stokey & Zeckhauser, 1978, p. 329).

Policy analysis is similar to policy evaluation; yet, policy analysis differs since the analysis does not judge an existing set of policies. Policy analysis is oftentimes conducted utilizing an iterative process. Through the iterative process of policy analysis, the researcher is able to establish objectives, define alternatives, predict outcomes, and define new criteria as a method to refining the analysis process (Stokey & Zeckhauser, 1978).

Policy evaluation is intended to evaluate decisions after putting them into practice. Policy evaluation considers specific decisions and assesses the effects of those decisions while evaluating policies at a given time (Nagel, 1984). The ex post facto emphasis of policy evaluation clearly differentiates it from policy analysis, which is future oriented (White, 1992).

This study is focused on developing alternative strategies for action, not assessing existing policy. Experts may, however, endorse some current policies as relevant to the future, or even suggest modifications or additions to improve existing policies. The research questions have strategically omitted reference to a specific opinion of any one expert, and the experts remain anonymous to the other experts participating in the Delphi process. Neither has the study been designed to endorse current trends or hypotheses. The benefits of policy analysis, as attempted in the study, were to provide a range of potential alternatives to decision makers, and not to act as an advocate for any given opinion (White, 1992). Within the context of policy analysis, this study was designed around the perceptions of an expert panel to accomplish the following:

1. Develop potential policy alternatives, which may have an impact on addressing facilities needs and funding sources for California K–12 public schools by the years 2019 to 2025;
2. of those policy alternatives developed as a part of this Delphi study, determine which policy alternatives have the highest importance in addressing facilities' needs and funding sources;

3. of those policy alternatives developed as a part of this Delphi study, determine which policy alternatives have the highest degree of likelihood of implementation for California K–12 public schools by the years 2019 to 2025; and
4. of those policy alternatives developed as a part of this Delphi study, identify the top five to 10 statewide educational policy alternatives rated as important and as having the highest degree of likelihood of being implemented by the years 2019 to 2025 to address facilities needs and funding for California K–12 public schools by the years 2019 to 2025.

The methodology of this Delphi study was adapted from three previous Delphi studies, including Phillip D. White's 1992 dissertation, *Policy Alternatives for Meeting New School Facilities' Needs K–12 in California for the 1990s: A Delphi Study*, Patrick Ainsworth's 2000 dissertation, *Policy Alternatives for Increasing the Number of California's Graduating High School Students Having Essential Employability Skills Necessary to Compete in the New Economy*, and Carol Tsushima's 2015 dissertation *Building Career and Technical Education Capacity in California's Secondary Schools*. This study, as was the case for the aforementioned Delphi studies, is descriptive and is intended to forecast the future relative to educational policies.

The Delphi Process

The Delphi method was designed in the mid-1950s by Olaf Helmer and Norman Dalkey at the RAND Corporation. Its methodology was intended to reach consensus or judgment (Ainsworth, 2001; Linstone & Turoff, 1975). Olaf and Helmer joined together in 1964 with the intent to develop a long-range forecasting tool with its intent focused on scientific discoveries that had not been made at the time (Ulschak, 1983).

The study utilized the Delphi process to employ an expert panel to respond to an iterative method of surveys utilizing structured questionnaires. A critical component of the design was the careful definition and selection of an expert panel. The expert panel represented a cadre of individuals familiar with the need for statewide policy development related to K–12 school facilities planning in California. The Delphi method is one of the several types of survey techniques that can produce data for descriptive studies (Koski, 2011; White, 1992). The Delphi survey process gives experts, who may not normally have an avenue to provide input on complex issues, an opportunity to provide valuable insight aimed at the resolution of such complex issues. The Delphi process allows for structured group communications and solicitation of expert opinion through the use of carefully worded questionnaires, leading to a consensus of opinion (J. Day & Bobeva, 2005; Koski, 2011). The value of the Delphi study process can be found in the techniques utilized to produce alternatives as well as the quality and cumulative knowledge of the panel of experts. Both the techniques employed and the quality of the panel are essential in producing the broadest representation of alternatives and distinguishing value. The Delphi process has been acknowledged for producing a divergent source of expert opinion and synthesizing the multitude of potential alternatives toward a consensus of opinion (Linstone & Turoff, 1975; White, 1992). The foundation of the Delphi process accepts that the shared analysis regarding the future accentuates the probability to produce a higher quality and more accurate product than an individual assessment. Defining the criteria for selecting the expert panel are then crucial elements of any successful Delphi study (White, 1992). In his tome on studies of the future, Cornish (1977) described the steps included in a Delphi Process:

1. First, the person conducting the poll identifies experts willing to participate and instructs them on the procedure, which may consist of a series of questionnaires sent by mail. Typically, a Delphi expert does not know who the other experts are or at least does not know who makes the statements reported to him during the course of the poll. All he knows is what the Delphi coordinator tells him about the results of the poll
2. Second, the same question may be presented to the experts several times. After the first time, however, the experts are informed about the results of the poll. The Delphi coordinator makes known what the average forecast was and perhaps what the range of opinion was. He may ask persons to state the reasons for their views. These reasons are reported to the group as a whole
3. Third, the experts can freely review their views based on the basis of the reasons offered by their colleagues, but are also free to adhere to their original judgments. No one except the Delphi coordinator will know which expert has switched his opinion. (pp. 118-119)

Further criteria were further synthesized by Linstone and Turoff (1975) for determining whether the Delphi process is the appropriate methodology: (a) The problem or solution being sought does not lend itself to precise analytical techniques, but can benefit from the collective subjective judgments of the group; (b) group meetings are infeasible due to cost and time limitations; (c) the individuals needed to contribute have no history of adequate communication, and may represent a diversity of experience and expertise making collective complex problem analysis difficult; (d) disagreements among individuals are severe or politically significant, and therefore require a structured

supervised communication process; and (e) the heterogeneity of participants must be preserved to avoid domination by personalities.

Appropriateness of the Delphi

The Delphi study was determined to be a suitable technique for this study. This study solicited a panel of experts for their opinions regarding education facility policies that would likely be developed and implemented between the period of research and the year 2025 and would facilitate the development of policy alternatives that support education facility programs. This study utilized a Delphi panel of 24 experts participating in a minimum of three rounds focusing on the identification of the possibilities for policy alternatives and subsequently rating these policy alternatives as to their importance and likelihood of implementation. The purpose of this study was in alignment with the basic premise of Delphi research, which is to utilize a representative group to assist with the forecast of the upcoming events (Turoff & Hiltz, 1998). The purpose of the study conformed to the rationales presented by Dalkey, Lewis, Rourke, and Snyder (1972):

1. An expert panel was selected that could generate potential policy options for a period of 3 to 5 years.
2. The experts generated informed findings based on their accumulated knowledge and experience in educational facilities and funding.
3. The policy statements generated by the expert panel members in Round 1 were utilized as the source for the second and third round surveys.
4. Rounds 2 and 3 allowed the expert panelists to rate both the importance of policy statements, and the possibility of occurrence.

This Delphi study paralleled the following criteria proposed by Linstone and Turoff (1977) and the characteristics identified by Weathermen and Swenson (1974) in utilizing the Delphi study process in lieu of a more traditional group process:

1. Determining educational policy alternatives is inherently intuitive and benefits from the collective judgments of the diverse panel of identified experts.
2. Convening the diverse group of experts in one location to discuss educational policy options would be fraught with logistical problems and would he cost prohibitive. Instead, soliciting their input through electronic means lessened the impact on their time and availability, and promoted participation.
3. The diversity of the group members experience and expertise, the differences of their political views, and corresponding group dynamics would be difficult to manage in a group setting. Utilizing independent electronic surveys served to structure input, hasten consensus, avoid domination by personalities, and preserve anonymity.
4. The study was managed by the author to focus the process on identifying possible policy alternatives, and then raiding both the importance and likelihood of options to reach consensus. (Ainsworth, 2001, pp. 99-100)

Population

A population is a group of elements that conform to specific criteria. These elements may consist of individuals, objects, or an event (McMillan & Schumacher, 2010). There are 1,024 school districts in California, each led by their respective school boards and superintendents (CDE, 2017). School district superintendents in California are responsible for and involved in remodeling, constructing, and maintaining their

school facilities. There is no statewide data collected on the scope of their efforts, and therefore it is not possible to identify how many of the superintendents have had significant experiences in facilities development. It is possible to estimate the number of districts involved in building facilities using state funding. Since 1998, there has been $235 billion spent on California public school facilities made available through state or local bonds or developer fees (Vincent & Jain, 2015, 2016). This has resulted in many school facilities having been built or remodeled in 930 of the 1,047 school districts in California (California Department of General Services, 2006). Assuming there is a single superintendent for each of those districts, the total pool of superintendents with capital improvement campaigns can be estimated at 89% of the total district superintendents in California.

Neither is there specific data on how many individuals are involved in the planning, approval, financing, and construction of schools in the state. Each of these aspects of the construction process rely on professionals with experience in navigating the laws and regulations in California. There is, though, a professional organization that was formed in 1978 to promote, develop, and support school districts and their personnel in supporting facility improvement efforts. The Coalition for Adequate School Housing (CASH) was formed to promote, develop, and support the districts and their personnel in facilities development. CASH is committed to advocating for the school districts and connecting the facility needs of districts with the legislative requirements governing their respective design and construction. The membership includes a variety of business stakeholders in addition to the school district representatives. CASH membership includes over 1,500 school districts, county offices, and private sector businesses. Of this

membership, 528 are public sector and 589 are private sector (CASH, 2016; see Table 3). While not all of the businesses and professions involved in school facilities development and construction are members of CASH, Table 3 provides an indication of the number of individuals with varying levels of expertise and experience who, at the time of this study, were actively involved in school construction and related policy issues in California.

Table 3

CASH Membership Categories and Populations per Category

Agency	# Members	Agency	# Members
Architects	130	Attorneys	35
Construction managers	44	Consultant planners	43
Contractors/developers	36	Election consultants	2
Energy consultants	9	Energy management	6
Engineers/licensed Professionals	22	Environmental/geotechnical Consultants	23
Financial consultants	15	Floorcovering	6
Furniture suppliers	11	Handicap access	2
HVAC contractors	5	Inspectors	6
Program managers	16	Real estate consultants	2
Security consultants	5	Technology consultants	11
Solar providers	4	Charter schools	3
Community college districts	4	County offices of education	3
K–12 school district personnel	371	Key state departments	4

The target population of the study, as derived from Table 3 was the following:

1. The 930 school district staff or former staff who represent 89% of the 1,047 school districts in the state that have experienced some form of school facilities improvement.
2. School policy experts, lobbyists, and state agency personnel (21): (a) financial consultants (15); (b) election consultants (2); (c) key state departments (4).
3. School construction industry (407): (a) architects/engineers (184), (b) contractors /construction managers (188), (c) attorneys (35).

Sample

Vital to any Delphi process is the selection of the expert panel, since the expert panel will serve as a smaller sample of the greater population for the study (McMillan & Schumacher, 2010). Researchers have agreed that the expert panel compiled as a part of the Delphi process should include expert panelists who have personal and practical knowledge and insight of the particular area of study and have witnessed its impact (Brady, 2015; Helmer & Rescher, 1959; Lang, 1995; Linstone & Turoff, 1975). Careful selection of an expert panel within a Delphi study yields a host of opinions gathered from industry experts believed to be considerably more accurate than of those opinions taken individually (Lang, 1995).

Delphi studies have historically ranged in size from as few as 11 expert panelists to 50 and still yielded respectable results (Brockhoff, 1975). And while there is no published limit to the size of an expert panel involved in a Delphi study, research has shown that there are few new ideas generated, or other measurable results, when the size of the expert panel grows beyond the traditional size of 25 to 30 carefully selected expert panelists (Brooks, 1979; Delbecq, Van de Ven, & Gustafson, 1975).

Delbecq et al. (1975) opined that the following are the most important factors contributing to reliability and validity for a Delphi study: "(a) personal involvement in the nature of the study, . . . (b) possesses vital information to the study, . . . (c) is actually able to commit the time necessary to participate in the study, . . . and (d) belief that the aggregation of the individual judgments will provide value and is otherwise inaccessible (pp. 17-21).

Sample Size

The sample size, or panel size, of experts chosen to participate in the study was limited in number to a maximum of 24 experts knowledgeable about statewide school facilities policy in California. No prescribed optimal sample size exists in the Delphi study technique. However, one key factor is obtaining a representative sample size (Weatherman & Swenson, 1974). Most Delphi studies have optimal operating numbers between 15 and 20 panelists to allow for the compilation of large quantities of responses between rounds (Ulschak, 1983; White, 1992). This number of expert panelists optimizes the process for the large quantity of responses between rounds (Ulschak, 1983). Panels of experts with less than 15 members are subject to limited numbers of alternatives and may be of limited value. While the study was designed on the premise that all 24 participants would participate in all three rounds, circumstances may prevent some from submitting input in each round. Therefore, the minimum number of panelists participating in each round of this study was set at 18 of the 24 experts.

Improved technology, however, allows the Delphi study to process a much greater amount of alternatives and larger groups of respondents (Turoff & Hiltz, 1996). Weatherman and Swenson (1974) stated that, when considering a panel of experts for a Delphi study, the most important variables related to reliability and validity are (a) representativeness of the panel, (b) appropriateness and competence of the panel, (c) commitment of the panel, (d) clarity of responses, and (e) independence of responses.

Selection Process for the Expert Panel

The snowball sampling strategy was utilized as the selection process for the participants in the expert panel. According to McMillian and Schumacher (2010),

> Snowball sampling, also called network sampling, is a strategy in which each successive participant or group is named by a preceding group or individual. Participant referrals are the basis for choosing a sample. . . . This strategy may be used in situations in which the individuals sought do not form a naturally bounded group but are scattered throughout the populations. (p. 327)

The snowball sampling process allows the researcher to define attributes or certain traits in an expert panelist, which allows the researcher to recruit lesser known populations (Biernacki & Waldorf, 1981; Faugier & Sargeant, 1997). Snowballing contrasts with utilizing the three advisors to nominate all of the expert panelists, which may overlook a potential expert from a lesser known population. The snowball sampling method also then allows each identified expert panelist to refer other potential expert panelists who may fit the attribute or traits believed to be important for an expert panelist in this study (McMillan & Schumacher, 2010; Patton, 2014).

Snowball sampling can be particularly useful when "insider" information into the research topic is desirable in the effort to locate expert panelists. In this study, the three advisors were asked to nominate two expert panelists from within their knowledge category shown below. The three advisors for the study were industry experts that had experience in advocating for legislative changes, were former school district personnel and were in the construction industry. (Table 4) Each potential expert panelist was also asked to refer the researcher to two more potential expert panelists, who were again asked to provide referrals for two more potential experts. In this manner, the researcher utilizing the snowball method casts a wide net to an ever-widening network of individuals considered to be expert panelists (Watson, 2008). The focus of the study is

on statewide policy alternatives using experts from areas throughout California. While diverse geographical representation was the intent of the study, the snowball sampling technique and the availability of experts to participate did not yield a true geographic representation among the experts.

In this study, potential expert panel nominations were identified for both policy and practical experts in the areas of K–12 public school facility construction and financing. These two basic areas incorporated such notions as planning, design, construction, and all potential funding mechanisms made available to K–12 public school districts. Three advisors were utilized to help identify the potential expert panelists and came from the following three categories: (a) school policy experts, lobbyists and state agencies; (b) K–12 education staff or former staff; and (c) school construction industry.

These three advisors were then asked to make recommendations for potential expert panelists within their respective category as listed in Table 4. These three advisors were chosen from industry based on their comprehensive knowledge and are listed in Table 3. Further, expert panelists needed to fall within the selection criteria for panel members listed in Table 4. All expert panelists who were nominated were required to meet the criteria for selection for expert panelists. Nominations to the expert panel included school facility directors, planners, and financial officers, superintendents, state regulatory agency employees; legislative analysts, advocates, construction managers, contractors, architects and engineers, and they fell within the three categories listed above.

Table 4

Name, Title, and Qualifications of Advisors Used to Pick Expert Panelists

Name/position	Qualifications
Kathleen Moore—school policy experts, lobbyists and state agencies Owner Kathleen Moore & Associates	1. Owner, Kathleen Moore and Associates 2. Former director, School Facilities and Transportation Services Division, California Department of Education 3. Former director of Planning and Development, Elk Grove Unified School District 4. Education, University of California, Berkeley, BA, Political Science
Dr. Keith Larick—K–12 Education staff or former staff Doctoral Program Chair, Brandman University	1. Former superintendent of Sacramento City Unified, Placentia/Yorba Linda Unified, and Tracy Unified over a 30-year period. 2. Consultant to more than 300 educational organizations focusing on leadership, transformational change, futures, technology, and schools of the future. 3. Recognized by the Association of California School Administrators with the Exemplary Service Award and Region 7 Superintendent of the Year. 4. Publications include "Eight Tasks for Superintendents of the 90s," *The Education Digest*; "Can School Leadership Transform—to Face the Future?" *The School Administrator*; "Classrooms of the Future," *The Futurist*.
Bruce Hancock—School construction industry Owner Hancock, Park & DeLong	1. Former chair of the State Allocation Board, Office of Public School Construction 2. 31 years school facility program experience 3. 18 years of management and policy development experience for K–12 schools

The researcher was able to obtain 24 nominations for the expert panel. These potential expert panelists were contacted initially by the researcher via email and/or telephone to determine their interest, with a follow-up e-mail correspondence formally requesting participation in the expert panel forum (Appendix B). The researcher also provided, as part of the initial participation memo e-mail correspondence, a general timeline for the research ranging from November 13, 2018, to January 30, 2019, a

description of the study, and a request for verification that the nominee met two or more selection criteria as either a practitioner or theoretical expert, as found in Table 5. A geographically diverse group of 24 experts agreed to participate in the study. This cross-section of 24 participants came from 14 counties, across the state of California (Appendix C). Once confirmation was received from the nominee, the researcher followed up with another telephone call to the potential expert panelists to allow for some personalizing of the process.

Table 5

Selection Criteria for Expert Panelists

Category 1	Category 2	Category 3
School policy experts, lobbyists, and state agencies	K–12 education staff or former staff	School construction industry
Initial nomination by Kathleen Moore	Initial nomination by Keith Larick	Initial nomination by Bruce Hancock
Have served in a position with a state agency, legislator(s), or department heads for the state of California.	Have served in a position in the school setting and demonstrate knowledge about school facility policy, and facility improvement processes.	Have served in a position in the school facility building industry and that demonstrate knowledge about school facility policy, and facility improvement processes.
Have delivered presentations related to facility policy or facility improvement processes	Have delivered presentations related to facility policy or facility improvement processes	Have delivered presentations related to facility policy or facility improvement processes
Have conducted research, consulted, or authored a publication that relates to facility improvement policy in California.	Have conducted research, consulted, or authored a publication that relates to facility improvement policy in California.	Have conducted research, consulted, or authored a publication that relates to facility improvement policy in California.
Have participated on a state board, local board, policymaking, or advisory board related to the school facility improvement process.	Have participated on a state board, local board, policymaking, or advisory board related to the school facility improvement process.	Have participated on a state board, local board, policymaking, or advisory board related to the school facility improvement process.

Once the researcher had confirmed that each member of the expert panel met two or more of the selection criteria via e-mail correspondence, a "Participation in the Delphi Study" memo (Appendix D) was e-mailed on November 18, 2018 to each expert panelist. The participation memo contained detailed information regarding the process of the Delphi study, the research timeline, and all study requirements. On November 29, 2018, an e-mail was sent to each expert panelist to conduct an initial Delphi study test to confirm computer formats and search for browser preferences that were compatible (Appendix F). The Delphi study initial test survey was an electronic survey technique created online by the researcher utilizing Survey Monkey (Appendix E). In addition, the participation memo and the round 2 survey were field-tested by three doctoral students from Brandman University familiar with the Delphi study process. This initial test was completed prior to distribution to the expert panelists.

Instrumentation

Traditionally, the Delphi methodology used in a research setting is based primarily on a structured multitiered process aimed at gathering expert opinion (Adler & Ziglio, 1996). The first round begins with a qualitative approach geared at exploration potential into possible solutions to the research problem utilizing open-ended responses (Adler & Ziglio, 1996). The second round of the study was intended to allow the panelists to assess the opinions of the entire panel and seek consensus (Adler & Ziglio, 1996). Subsequent rounds were intended to allow the panelists an opportunity to rate the "importance" of the policy alternatives presented and in turn their "likelihood" of implementation. The final compilations were a set of proposed policy alternatives that

the panelists had collaborated on and brought to consensus. The process for collaboration and obtaining consensus was a series of questionnaires referred to as rounds.

Questionnaires are often used in data collection due to their ability to provide authentic views from the expert panelists (Brady, 2015). In fact, Delbecq et al. (1975) wrote, "Delphi is essentially a series of questionnaires. The first questionnaire asks individuals to respond to a broad question. Each subsequent questionnaire is built upon responses to the preceding questionnaire. The process stops when consensus has been approached among participants" (p. 83).

The instruments used in this study were electronic forms of surveys utilizing a web-based survey engine known as SurveyMonkey (https://www.surveymonkey.com/). SurveyMonkey was an appropriate method for data collection for this Delphi study as it coupled the simplicity of generating the various types of surveys needed for the study, both qualitative and quantitative, with the ease of ability for the expert panelists to access the survey online. E-mails were sent during each round with the SurveyMonkey weblink access information accompanied by a three-digit security code (Appendix D). The first round of this Delphi study was intended to provide the expert panelists with a questionnaire of an investigative nature aimed to solicit qualitative responses in an open-ended fashion (Rowe & Wright, 1999). The benefit of the open-ended, qualitative style responses in the Delphi process is the ability to inspire the ideology of a panel of experts into an expression of opinions (Bijl, 1992). During subsequent rounds, expert panelists were afforded the opportunity to rate the response of all other expert panelists, utilizing Likert scale format rated by the degree of importance and the likelihood of implementation (Brady, 2015). The rounds of the Delphi study were terminated upon a

consensus developed among the group of expert panelists (Hasson, Keeney, & McKenna, 2000).

The instrument utilized in this Delphi study for Round 1 consisted of an open-ended question (Appendix I). The intent of Round 1 was to collect the opinions from the expert panel on what statewide educational policy alternatives experts believe are necessary for improving K–12 educational facilities by the year 2018 to 2025 to enhance student learning opportunities and optimize financial resources. Expert panelist responses were categorized by the researcher in an effort to create a comprehensive list and to minimize the duplication in responses (Clayton, 1997). The literature review synthesis matrix was used to filter and clarify the input in Round 1 and to develop the list of policy alternatives used in Rounds 2 and 3. The review of the concepts from the literature helped to ensure that the final list was complete and comprehensive. Categorical themes created in Round 1 served to populate the Round 2 survey data. The final list contained 50 policy alternatives that were suggested by the expert panelists.

The responses collected from Round 1 were then assembled into descriptive categories and put in the form of a survey used in Round 2 (Appendix K). As a function of the survey, expert panelists were asked in Round 2 to rate each of the policy alternatives from Round 1 in terms of importance and, separately, in terms of likelihood of implementation. Two primary queries were presented in Round 2. The first query was, "Of the policy alternatives developed in Round 1, rate each policy alternative in terms of the importance of that policy alternatives implementation by the year 2025." A 10-point Likert scale was utilized with a score of 10 being the most important policy alternative. The second primary query was, "Of the policy alternatives developed in

Round 1, rate each policy alternative in terms of its likelihood of implementation by the year 2025." In turn, a similar 10-point Likert scale was utilized to determine the likelihood of implementation, with 10 being the most likely policy alternative to be implemented.

The results from Round 2 were calculated and shared with the expert panelists in Round 3 (Appendix M). This round was intended to share the overall scores from all participants from Round 2and to consider the opinions compiled from the other expert panelists. Expert panelists were provided, in this round, an opportunity to modify previous round responses while reassurance was provided that this was not a requirement.

Validity and Reliability

Reliability infers that a consistency exists in the results when a given testing process is repeated on a given population (Patten & Newhart, 2017). The procedures utilized in the data collection for this Delphi study are aligned with the recommendations of research for the Delphi study process and contained three iterative rounds (Adler & Ziglio, 1996; Brady, 2015). The Delphi process is intended to be predictive of policy by design, and thus adheres to a process that is systemic, random, confidential, and with results that rely on the expertise of those expert panelists involved in the study. Adherence to such a process renders the Delphi process inherently valid and reliable (Adler & Ziglio, 1996). In addition, since the Delphi process is not collaborative by nature, researchers have determined that careful and descriptive instructions are necessary to assist the panelists with completing each of the three rounds in an effort to improve the validity of the results (Adler & Ziglio, 1996; Majchrzak & Markus, 2014).

To maximize the validity of this study, prior to the referral process commencing, the three former Brandman University Doctoral students were asked to complete the "Consent to Participate" survey prior to it being sent to expert panelists (Appendix I). After completion, the three former students were also asked to provide feedback to the researcher via a "Field Test Participant Feedback Questionnaire" found in Appendix Q. Then, the iterative referral process continued within the three categories (Majchrzak & Markus, 2014). Field testing coupled with detailed examination and administration of qualitative and quantitative data by the researcher provided for the triangulation necessary to validate findings (Hasson et al., 2000; Roberts, 2010).

Data Collection

Data collection procedures used in Delphi studies are typically completed using three rounds of questionnaires. Each questionnaire is created by the researcher (Hasson et al., 2000; Rowe & Wright, 1999). All three rounds of this Delphi study utilized questionnaires created electronically using an online application called SurveyMonkey. Prior to collecting data for the study, the researcher obtained approval from the Brandman University Institutional Review Board (BUIRB) to conduct the study (Appendix R). This ensured that the study and its data collection methods were ethical to be used with human subjects (Patton, 2014). This was an appropriate method for obtaining approval from the BUIRB as the study posed minimal risk for participants beyond what would be experienced in their day-to-day activities (McMillan & Schumacher, 2010).

Round 1

Materials were provided in an introductory e-mail to all expert panelists on December 2, 2018 (Appendix H). Each e-mail contained specific information on how each panelist could access the survey, along with a three-digit security code, thus completing Round 1. Expert panelists utilized on online survey instrument known as SurveyMonkey and were queried during this initial instructional e-mail to answer, in qualitative form, an open-ended question: "What five to ten statewide educational policies do you believe should be enacted in California that are most likely to develop facilities that enhance student learning opportunities, and optimize financial resources?" (Appendix I). Expert panelists were asked to limit their responses to five policy alternatives in order to prevent an overwhelming amount of responses to the survey. However, an opportunity was provided within Round 1 to provide more than 10 responses, should the panelist feel compelled to do so. Round 1 survey responses were then categorized after review by the researcher.

By December 22, 2018, 22 of the 24 expert panelists had responded to the Round 1 questionnaire. A list was compiled by the researcher that omitted vague, incomprehensible, and duplicate responses to the Round 1 questionnaire. The final list contained a total of 61 policy alternatives that served as data for Round 2.

Round 2

On December 28, 2018, the researcher utilized the e-mail process for notification to the expert panelists, similar to Round 1 (Appendix J). The Round 2 e-mail acted as a greeting to the panelists and requested that the questionnaire for Round 2 be completed by January 4, 2019 (Appendix K). The expert panelists utilized on online survey

instrument known as SurveyMonkey for the Round 2 responses. The e-mail contained the weblink access to SurveyMonkey, as well as a three-digit security access code. The Round 2 survey requested that the expert panelists rate the 61 policy alternatives identified by the expert panelists in the previous round. Round 2 consisted of a process of rating policy alternatives submitted in Round 1 by the expert panelists (Appendix K). Round 2 asked each expert panelist to rate each policy alternative, developed in Round 1, on a scale ranging from 1 to 10, with 1 being of highest importance, to determine the policy alternatives' level of importance for that policy to be implemented by the years 2019 to 2025. Each policy alternative that received a median score of 7 or higher was considered to be of high importance. Each policy alternative was also rated on a percentage scale from 0% to 100%, with 100% being the most likely to implemented, as to that policy alternatives likelihood of implementation, by the years 2019 to 2025. Each policy alternative that received a median score of 60% or higher was considered to have a high likelihood of implementation. By January 15, 2019, 23 of the 24 panelists had responded to the Round 2 questionnaire. The researcher then compiled the expert panelist responses, identified the median panel response rate for each activity, and used this information to further develop the questionnaire for Round 3.

A priority matrix (Figure 2) was developed to present the policy alternatives that the expert panel agreed had both the highest importance and probability of occurrence by the years 2019 to 2025 and that provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources. The priority matrix categorized the policy alternatives from high to low for both importance and possibility of occurrence and provided the expert panelists

with a visual representation for evaluating the need to revise a response to an individual policy alternative. The scales for the vertical "Y" axis of the priority matrix were determined by the researcher based on the scalability of the responses from the expert panelists generated in Round 2, with respect to each policy alternative's level of importance.

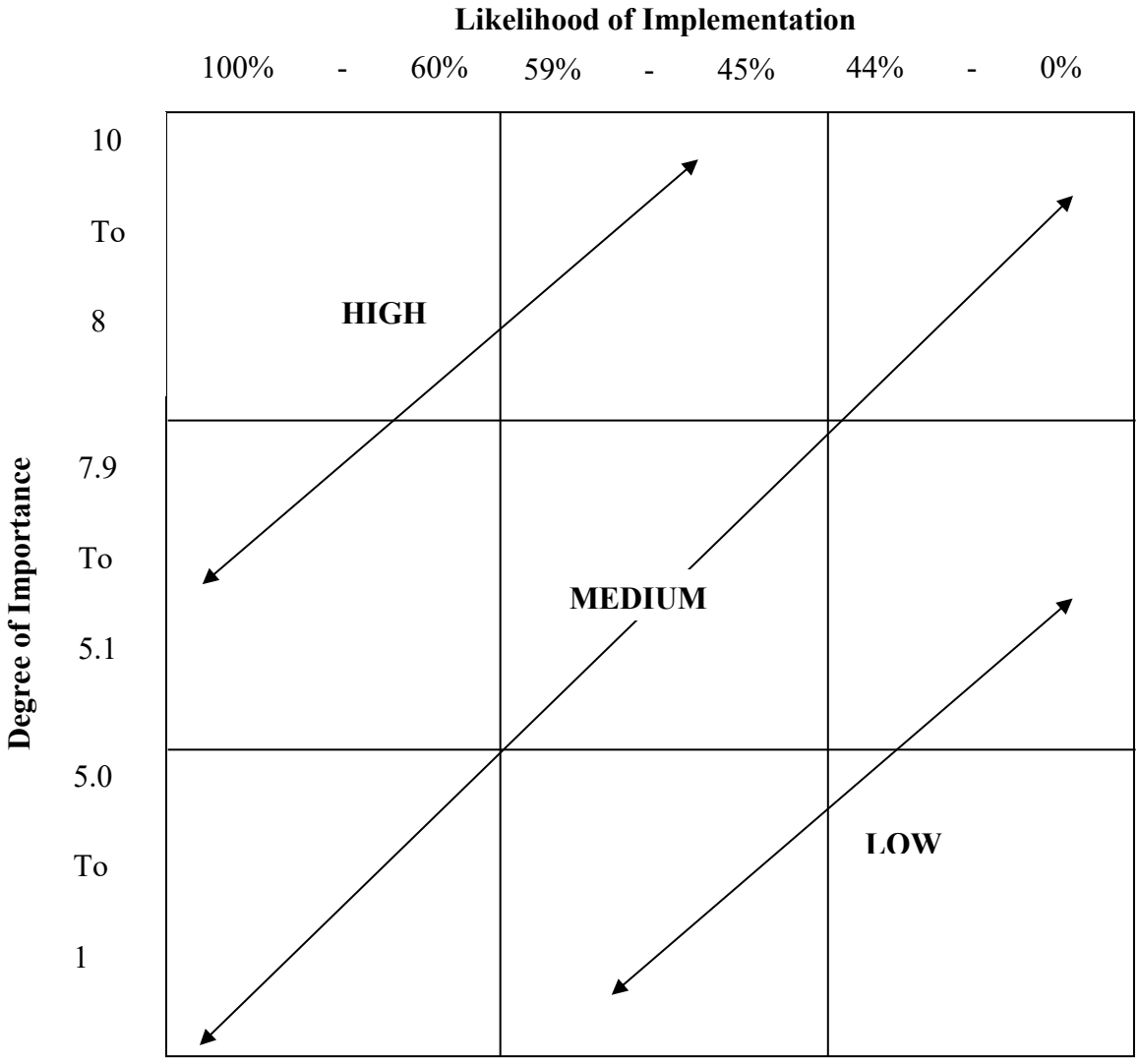

Figure 2. Priority matrix which provides a high to low visual representation of ratings received from the expert panel.

Round 3

On January 20, 2019, an e-mail notification was sent to the expert panelists (Appendix L). The e-mail was intended to greet the expert panelists for the Delphi study and to briefly describe the Round 3 process. Expert panelists utilized an online survey instrument known as SurveyMonkey for the survey. The e-mail contained the weblink access to SurveyMonkey as well as a three-digit security access code. Round 3 further incorporated the presentation of the mean rating for each policy alternative option presented in Round 2 by the expert panelists, and their own rating for each policy alternative, in comparative fashion (Appendix M). Additionally, the expert panelists were given the priority matrix to visually display the relative ratings derived from the results of Round 2 (Figure 2). The expert panelists were provided the results of the Round 2 survey and then asked to (a) review each policy alternative provided to them in the Round 1 survey, take note of their personal rating of that policy alternative, and compare it to the mean score for all expert panelists on that particular policy alternative, and the priority matrix; (b) make revisions that expert panelists may deem necessary to their previous rating, if at all; (c) provide any additional comments regarding the rationale for changes in their ratings for each policy alternative. Upon completion of Round 3, the researcher sent an e-mail thanking the panelists for their participation. The e-mail shared with the panelists the timeline for the results and that the results would be shared with each panelist using the same confidentiality as the process itself. The researcher further confirmed with the panelists that all surveys were subsequently downloaded from SurveyMonkey and saved on a secure cloud storage device.

Data Analysis

Data were collected from December 4, 2108, through January 20, 2019. Target deadlines were communicated to the expert panelists at the onset of the study with explicit directions included that specifically addressed the timeline for completion and submittal of the data for each round of the study. In all cases, the data were submitted by the expert panelists by the established deadlines. Descriptive statistics were utilized in Rounds 2 and 3 for data analysis in this study. Frequency, median, and percentage scores, and interquartile ranges (IQRs) were used to determine the degree of importance as well as the likelihood of implementation, for each policy alternative. The median score from Rounds 2 and 3 provided the panelists with comparative results of their individual responses to that which indicated the central tendency derived from the balance of the panel (McMillan & Schumacher, 2010). This type comparative analysis is recommended for data with a high degree of variability due to its being unaffected by the actual scores (McMillan & Schumacher, 2010).

Next, the IQR was utilized to measure the overall dispersion within the data points, which provided a measure of variability. The IQR is calculated by finding the numerical difference between the average of the first and the third quartile range sets of data. Researchers have found that a low IQR indicates a higher degree of consensus (Giannarou & Zervas, 2014). Based on the data gathered, the researcher used an IQR of 2 or less to determine consensus (Giannarou & Zervas, 2014). In the process of calculating the IQR for likelihood of implementation, whole numbers (1-10) were utilized instead of percentages. Additionally, a priority matrix (Figure 2) was utilized to provide

for a visual representation of the ratings for each policy alternative from high to low for both significance and for likelihood of implementation.

IQRs were used to determine the degree of importance and likelihood of implementation for each policy alternative recommended by the panel of experts in Round 1. The researcher prepared a frequency distribution after the completion of Round 2 (Appendix O). Subsequent to Round 3, the researcher recalculated the mean ratings for each policy alternative based on revised responses and revised the frequency distribution based on those responses (Appendix P).

Limitations

The Delphi method was popularized by researchers as a tool for planning and forecasting. The Delphi study process provides the methodology necessary to focus expert attention on a specific issue and has been accepted by experts for providing such (Weatherman & Swenson, 1974). While the Delphi method utilizes industry experts' written solutions to a given problem—without bias from other experts—there exist some inherent limitations to the process:

1. Unfamiliarity with the other expert panelists may challenge the experts' notion that the study is benefitting from the contribution of industry peers, and there is a perception that their value is limited (Turoff & Hiltz, 1996).
2. Communication and interpretation clarity become a challenge for expert panelists. Without direct interaction of the panelists and their ideas it may introduce the possibility of questioning the interpretations of those ideas (Delbecq et al., 1975).
3. The nature of the process and the questionnaires may lead to bias. This bias may be attributed to an expert panelist's desire to provide answers they think are important to

the researcher and conversely not provide based on an impression held of the researcher (Linstone & Turoff, 1975).

4. Key input or response questions in Round 1 may seem unimportant initially; yet, as the study progresses through subsequent rounds, new input or response may not be included that could strengthen the study (Simmonds, 1977).
5. Critical to the Delphi process is the careful selection of industry experts to an expert panel. Failure to select properly may impact the quality of responses received from the expert panelists. This may reduce credibility, as the study may become unavailable to a broader source. The experts selected for this study were school policy experts, lobbyists, and state agency representatives (Bijl, 1992; Vernon, 2009).
6. The process of selecting an expert panel must adhere to the guidelines set by the expert criteria in an effort to ensure a plausible selection to the study process (Adler & Ziglio, 1996; Bijl, 1992).
7. The results of the study represent a compilation of the panel's opinion and are not intended to predict the opinions of an entire population (Malhotra, Das, & Chariar, 2014)
8. The focus of the study is on statewide policy alternatives using experts from areas throughout California. While diverse geographical representation was an intent of the study, the snowball sampling technique and the availability of experts to participate did not yield a true geographic representation among the experts.
9. Policy alternative 36, which was considered of high importance and had consensus, would require that there be a statewide inventory on school districts facility's needs.

As worded, it implies that individual school districts would carry this statewide requirement.

10. During the course of the 3 rounds, 2 of the expert panelists dropped out of the study.

Summary

Chapter III began by restating the Delphi study. The study's research design, methodology, population and sample, and instrumentation were all components described in this chapter. Also included in Chapter III were the data collection and analysis process, and the limitations of the study. Chapter IV discusses the results of this study, and Chapter V examines conclusions and recommendations for future studies.

CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

Overview

This Delphi study convened a panel of experts to develop consensus on the importance of identifying what statewide educational policy alternatives experts believe are necessary to provide California school districts with policy options necessary to improve K-12 public education facilities. The aim of these policy alternatives was to enhance student learning opportunities and optimize financial resources for school districts in California. Further, the study was intended to determine the importance of these policy alternatives and the likelihood of their implementation. A Delphi study method was utilized to respond to the study's three research questions and then to develop consensus among the panel members

This chapter consists of seven sections: (a) purpose statement, (b) research questions, (c) research method and data collection procedures, (d) population, (e) sample, (f) presentation of the data, and (g) summary.

Purpose Statement

The purpose of this Delphi study was to identify what statewide educational policy alternatives experts believe are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025.

Research Questions

Research Question 1

What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 2

What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 3

What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 4

What statewide educational policy alternatives, rated for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Method and Data Collection Procedures

This study utilized the Delphi method to allow for a panel of experts to identify what statewide educational policy alternatives experts believe would be necessary to provide California school districts with some policy options that would be necessary to

improve K-12 public education facilities. This methodology is frequently utilized by researchers to predict future events based on the opinions of experts in the field of study (Brooks, 1979). Specifically, the Delphi method stimulates individual views of expert panelists and then quantifies those opinions such that consensus is reached through a series of surveys or questionnaires. This Delphi study utilized three electronic form questionnaires that were produced utilizing the online application, SurveyMonkey. This method was desired since it could accommodate the geographically varied population of expert panelists (O'Keefe, Elshaug, Burgess, Peirce, & Nettelbeck, 2012).

On December 2, 2018, an e-mail was sent to the expert panelists with a link to the Round 1 survey. In that survey was content that informed the expert panelists that their involvement in the study was projected to occur from December 2, 2018, to January 15, 2019 (Appendix H). The e-mail also contained the participants' three-digit identification code, instructions for completing Round 1 and a link to the Round 1 questionnaire (Appendix I). The instructions invited the expert panelists to respond to the open-ended question, "What statewide educational policy alternatives do experts believe should be enacted in California that are most likely to develop school facilities that enhance student learning opportunities, and optimize financial resources by the years 2020 to 2025?" By December 22, 2018, 92% of the expert panelists had responded to the Round 1 questionnaire. A total of 126 responses were submitted by the panelists. The researcher then compiled the responses. The final list contained 61 policy alternatives and was used to develop the questionnaire for Round 2.

On December 28, 2018, a second e-mail was sent to the expert panelists (Appendix J). The e-mail then requested that the questionnaire for Round 2 (Appendix

K) be completed by January 4, 2019. The e-mail contained instructions for completing Round 2 and a link to the Round 2 questionnaire. The instructions further requested that the expert panelists rate each policy alternative by two factors. First, using a Likert scale from 1 to 10, with 10 being most important, participants were asked to identify the degree of importance for each activity. Second, using a Likert scale from 0% to 100%, with 100% being most likely to be implemented, experts were requested to identify each activity's likelihood of implementation. By January 15, 2019, 96% of the panelists had responded to the Round 2 questionnaire. The researcher then assembled the responses, identified the median panel response rate for each proposed policy alternative, and then used the information to develop the questionnaire for Round 3.

On January 20, 2019, a third and final e-mail was sent to the expert panelists (Appendix L). The e-mail requested that the questionnaire for Round 3 be completed by January 27, 2019. The e-mail also contained specific instructions for completing Round 3 and a link to the Round 3 questionnaire (Appendix M). For this third and final round, each expert panelist received his or her own survey, which compared the Round 2 survey results with that of his or her own for ease of use. The instructions to the expert panelists requested that they use the link provided in the e-mail to review and compare their ratings with the panel median rating for each policy alternative from Round 2. Finally, each expert panelist was provided an opportunity to change his or her responses, should he or she desire to do so. By January 27, 2019, 96% of the panelists had responded to the Round 3 questionnaire.

The primary objective of the Delphi study process is to seek consensus among a group of experts panelists through an anonymous, iterative, and systematic process. In

this Delphi study, the procedure allowed the members to interact anonymously through the electronic medium of the Internet to assist in gaining consensus on the policy alternatives. Consensus is indicated by the medians of the various alternatives in the final round (Weatherman & Swenson, 1974). The median indicated the collective judgement of the panelists for each policy alternative. Although the median is useful for determining the panel members' relative ratings of the policy options, it does not adequately describe the strength of consensus among experts. Interquartile range was used to determine the strength of consensus among the experts. The interquartile range is the middle 50% of ratings between the first and third quartiles (Goehring, 1981). Consensus for this study was considered achieved when the interquartile range (IQR) was 2 or less. The IQR, the interval between Quartile 1 and Quartile 3, as well as the percentage of the number of panelists' ratings were calculated, and are provided in this chapter to demonstrate the strength of consensus on the 61 alternatives.

Population

This study utilized the Delphi process to forecast and obtain consensus regarding policy alternatives that a group of expert panelists suggested needed implementation by the years 2019 to 2025. Expert panelists in this study were selected from a larger population of K-12 school administrators, state agency representatives, lobbyists, advocates, legislative analysts, and construction industry professionals knowledgeable about school facilities. A population is a group of elements that conform to specific criteria. These elements may consist of individuals, objects, or an event (McMillan & Schumacher, 2010). There are 1,024 school districts in California, each led by their respective school boards and superintendents (California Department of Education,

2017). Since 1998, $235 billion has been spent on California public school facilities made available through state or local bonds or developer fees (Vincent & Jain, 2015, 2016). This has resulted in many school facilities having been built or remodeled in 930 of the 1,047 school districts in California (California Department of General Services, 2006).

Also, no specific data exist on how many individuals are involved in the planning, approval, financing, and construction of schools in the state. There is, though, a professional organization that was formed in 1978 to promote, develop, and support school districts and their personnel in supporting facility improvement efforts. The Coalition for Adequate School Housing (CASH) membership includes a variety of business stakeholders in addition to the school district representatives. CASH membership includes over 1,500 school districts, county offices, and private sector businesses. Of this membership, 528 are public sector and 589 are private sector (CASH, 2016; see Table 3). Not all of the businesses and professions involved in school facilities development and construction are members of CASH.

The target population of the study was the following:

1. The 930 school district staff or former staff who represent 89% of the 1,047 school districts in the state that have experienced some form of school facilities improvement.
2. School policy experts, lobbyists, and state agency personnel (21): (a) financial consultants (15); (b) election consultants (2); (c) key state departments (4).
3. School construction industry (407): (a) architects/engineers (184), (b) contractors /construction managers (188), (c) attorneys (35).

Sample

A crucial element to the Delphi study process is the selection of the expert panel, because the panel functions as a sample of the greater population for the study (McMillan & Schumacher, 2010). The sample population for this study was comprised of 22 expert panelists who shared a professional knowledge in school facilities construction and funding.

The snowball sampling strategy was utilized as the selection process for the participants in the expert panel. The snowball sampling process allows the researcher to define attributes or certain traits in an expert panelist, which allows the researcher to recruit lesser known populations (Biernacki & Waldorf, 1981; Faugier & Sargeant, 1997). The snowball sampling method allows each identified expert panelist to refer other potential expert panelists who may fit the attribute or traits believed to be important for an expert panelist in this study (McMillan & Schumacher, 2010; Patton, 2014). Each potential expert panelist was also asked to refer the researcher to two more potential expert panelists, who were again asked to provide referrals for two more potential experts. In this manner, the researcher utilizing the snowball method casts a wide net to an ever-widening network of individuals considered to be expert panelists (Watson, 2008). Three advisors were utilized to help identify the potential expert panelists and came from the following three categories: (a) school policy experts, lobbyists and state agencies; (b) K–12 education staff or former staff; and (c) school construction industry.

These three advisors were then asked to make recommendations for potential expert panelists within their respective category as listed in Table 6.

Table 6

Expert Panelists' Final Selection Information

Category 1 School policy experts, lobbyists, and state agencies	Category 2 K–12 education staff or former staff	Category 3 School construction industry
Participant 1 California Department of Education, Administrator	Participant 7 K-12 Education, Superintendent	Participant 15 Private Company, Architect
Participant 2 Not for Profit Advocacy, Secretary & Treasurer	Participant 8 K-12 Education, Director of Facilities	Participant 16 Private Company, Architect
Participant 3 University of California, Director	Participant 9 K-12 Education, Interim Superintendent	Participant 17 Private Company, Architect
Participant 4 Los Angeles Unified School District, Legislative Advocate	Participant 10 K-12 Education Associate Superintendent of Business Services	Participant 18 Private Company COO, Former K-12 Facilities Director
Participant 5 Private Company, Legislative Advocate	Participant 11 K-12 Education Chief of Facilities, Construction & Maintenance	Participant 19 Private Company CEO
Participant 6 Private Company, Legislative Advocate	Participant 12 K-12 Education Superintendent (Retired)	Participant 20 Private Company CEO
	Participant 13 K-12 Education Asst. Sup. Facilities	Participant 21 Private Company Director of K-12
	Participant 14 K-12 Education Director Facilities	Participant 22 K-12 Education Deputy Superintendent

Presentation and Analysis of the Data

The questionnaire from Round 1 solicited an open-ended response from expert panelists: "What statewide educational policy alternatives do experts believe should be enacted in California that are most likely to develop school facilities that enhance student

learning opportunities, and optimize financial resources?" This yielded 127 responses from 22 expert panelists. The expert panelists' recommendations for policy were then summarized and synthesized by the researcher into 61 recommendations for policy. These synthesized responses were then utilized by the researcher to populate the Round 2 questionnaire. The Round 2 questionnaire requested that the expert panelists rate each policy alternative first by degree of importance (1 = low to 10 = high) and then by likelihood of implementation (0% = low to 100% = high) by the years 2019 to 2025. Twenty-one of the 24 panelists responded to the Round 2 questionnaire. One invited panelist was on vacation during the development period, but generally agreed with the scoring results and asked to be allowed to be included in Round 3. One expert panelist who previously committed to the Delphi Study decided not to participate. The researcher then calculated the median panelist score for each policy alternative's degree of importance and likelihood of implementation. These data were then used to populate the Round 3 questionnaire. The Round 3 questionnaire requested that the expert panelists review their rating for each policy alternative from Round 2 and compare it to the median panelist rating. The expert panelists were provided with the opportunity in Round 3 to revise their original ratings from Round 2.

Table 7 lists the frequency and the sum of the changes in ratings from the expert panelists for the importance and likelihood of implementation of the policy alternatives between Rounds 2 and 3. Six expert panelists chose not to make changes to their ratings of the degree of importance, as did six expert panelists choose not to make changes to their ratings of the likelihood of implementation. Four experts chose not to make changes to their ratings of either degree of importance or likelihood of implementation.

Sixteen expert panelists chose to make changes from Round 2 to Round 3. Two hundred two changes were made to the ratings of degree of importance, whereas 198 changes were made to the ratings of likelihood of implementation. Four experts made changes to their ratings of the degree of importance but did not make changes to their ratings of the likelihood of implementation. Despite having six expert panelists who made no revisions to the Round 2 scoring in Round 3, there were no experts who made changes to their ratings of the likelihood of implementation that did not also make changes to their ratings of the degree of importance.

Table 7

Frequency and Sum of Changes for Importance and Likelihood of Implementation of Policy Alternatives From Round 2 to Round 3

	Importance		Likelihood of Implementation	
Number of changes	Number of panelists	Sum of changes	Number of panelists	Sum of changes
0	6	0	6	0
1	2	2	1	1
2	2	4	0	0
3	1	6	0	0
4	2	8	1	4
5	0	10	2	10
6	2	12	1	6
7	1	7	0	0
8	0	0	2	16
9	1	9	3	27
10	1	10	0	0
12	1	12	1	12
15	0	0	2	30
18	1	18	0	0
22	0	22	1	22
33	1	33	0	0
34	0	0	1	34
48	0	0	1	48
49	1	49	0	0
	22	202	22	198

Table 8 indicates the rating change values for the degree of importance and the likelihood of implementation ratings that had positive or negative changes for the 61 policy alternatives introduced to the expert panelists. The expert panelists made a total, for both Round 2 and Round 3, of 178 increases and 177 decreases to the 61 proposed policy alternatives. However, two panelists accounted for 82 of the increases and 82 of the decreases, thus leaving the increases and decreases for the remaining 20 panelists at 109 increases and 93 decreases to 61 policy alternatives. There were 48 changes resulting in a 1- or 2-point increase or decrease in the value for the degree of importance, and 75 changes that resulted in a 10% to 20% increase in the value for the likelihood of implementation.

Table 8

Rating Change Values and Sum of Changes for Importance and Likelihood of Implementation Ratings for Policy Alternatives

Importance				Likelihood of Implementation			
Rating change value	Increase	Decrease	Sum of changes	Rating change value	Increase	Decrease	Sum of changes
1	29	22	51	10%	38	25	63
2	27	24	51	20%	25	39	64
3	14	8	22	30%	23	16	39
4	6	13	19	40%	6	13	19
5	5	3	8	50%	3	11	14
6	0	1	1	60%	1	1	2
7	0	1	1	70%	0	0	0
8	0	0	0	80%	1	0	1
9	0	0	0	90%	0	0	0
Totals	81	72	153		97	105	202

There were fewer changes made to the rating for the degree of importance, with that total equal to 153, than to that of likelihood of implementation. The largest change in the ratings for likelihood of implementation was a decrease of 80% for Policy

Alternative 45, which would "require school district facility staff to hold accreditations from Association of Physical Plant Administrators (APPA) or similar facilities manager training institutions." Ninety-four percent of the changes in ratings for degree of importance were values of four points or less, and 99% of the ratings for the likelihood of implementation were values of 50% or less.

Tables 9 and 10 display the proposed policy alternatives, listed by policy number, for which the ratings were most frequently revised between Round 2 and Round 3.

Table 9

Policy Alternatives With Most Frequently Changed Ratings Between Rounds 2 and 3 for Importance

Policy alternative	Frequency of change	Round 2		Round 3		Difference	
		Median	IQR	Median	IQR	Median	IQR
19	6	4	3.25	4	3.25	0	0.00
3	5	6	4.00	4	3.00	-2	-1.00
15	5	1	4.00	4	1.25	3	-2.75
25	4	4	4.00	4	4.00	0	0.00
28	4	2	4.00	4	2.25	2	+0.25
30	4	5	4.00	4	3.25	-1	-0.75
34	4	4	4.00	4	3.25	0	-0.75
37	4	7	4.00	4	2.25	-3	-1.75
38	4	6	4.00	4	3.00	-2	-1.00
44	4	4	4.00	4	3.00	0	-1.00
45	4	2	4.00	4	4.00	2	0.00

Of the 11 proposed policy alternatives for which ratings were most frequently changed, two had median score changes of three in the importance rating. Four had median score changes of two and one of the policy alternatives had a change of one. Policy Alternative 15, which proposed to "require the state of California to adopt policy that mandates colleges to contribute to the state K-12 education funding to assist in ensuring college readiness," had a decrease in the IQR by 2.75, which indicates an

increase to the level of consensus among the expert panelists in Round 3. This decrease in Policy Alternative 15 was enough to indicate consensus by the expert panelists.

Table 10

Policy Alternatives With Most Frequently Changed Ratings Between Rounds 2 and 3 for Likelihood of Implementation

Policy alternative	Frequency of change	Round 2		Round 3		Difference	
		Median	IQR	Median	IQR	Median	IQR
21	7	60%	4.00	60%	3.25	0	-0.75
25	7	50%	4.00	50%	4.00	0	0.00
3	6	60%	4.00	70%	3.00	+10%	-1.00
6	6	50%	4.00	50%	2.25	0	-1.75
15	6	10%	4.00	10%	1.25	0	-2.75
19	6	50%	4.00	50%	3.25	0	-0.75
38	6	60%	4.00	60%	3.00	0	-1.00
27	5	50%	4.00	50%	4.00	0	0.00

Of the eight proposed policy alternatives for which the ratings for likelihood of implementation were most frequently changed, only one had a change to the median of 10%. Policy Alternative 15, which proposed to "require the state of California to adopt policy that mandates colleges to contribute to the state K-12 education funding to assist in ensuring college readiness," had a decrease in IQR from Round 2 to Round 3 to 2.25, thus achieving consensus. Of the eight policy alternatives, all but two had a decrease in IQR showing that the iteration between rounds tended toward consensus, without actually having reached consensus in seven of the eight most frequently changed policy alternatives.

Research Question 1

The first research question in this Delphi study was, "What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities

and optimize financial resources?" Abbreviated versions of the 61 policy alternatives and the expert panelists' median ratings for Rounds 2 and 3 regarding degree of importance and the likelihood of implementation can be found in Appendix S. A comprehensive list of the unabbreviated proposed policy alternatives can be found in Appendix N. The proposed policy alternatives are listed in the same order in which they were shown in the Delphi study's questionnaires for both Rounds 2 and 3.

Research Question 2

The second research question in this Delphi study was, "What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" In Round 2, the expert panelists were asked to rate the degree of importance of the 61 proposed policy alternatives, from Round 1, on a 10-point Likert scale, with 1 indicating low importance and 10 indicating high importance. Average median rate comparison for both importance and likelihood of implementation, for each policy, between Rounds 2 and 3 can be found in Appendix S. The median rate order for importance as determined in Round 3 is listed in Table 11. The range of median panel scores for importance in Round 3 was from 3 to 9. A frequency distribution table for Round 3, importance, is located in Appendix O.

For the purposes of this Delphi study, the proposed policy alternatives that received a median score of 7 or higher and had an IQR of 2 or lower were considered to have high importance and consensus. The median of 7 was selected as it had the highest degree of maximization compared to other median scores. Selecting the median score of 8, as an example, yielded significantly more policy alternatives to consider, yet there was

no increase to the amount of consensus. Fifty nine percent (36) of the 61 proposed policy alternatives received a median score of 7 or higher after Round 3, with nine receiving an IQR of 2 or less, signifying consensus of high importance on 15% of the policy alternatives. Table 11 lists the 36 proposed policy alternatives that were considered to have high importance, in order of median rating. Table 11 is intended to show all policy alternatives that received a median score of 7, or higher, in rated order of median importance first, then low IQR second. Table 12 lists the nine policy alternatives that were considered to have both high importance and achieved consensus for Round 3. In contrast to Table 11, Table 12 shows only those policy alternatives that received an IQR of 2 or less.

Table 11

Round 3 Median Rate Order for Importance for Policy Alternatives Considered of "High" Importance.

Rate	Policy	Median	IQR	Rate	Policy	Median	IQR
1	3	9.0	1.00	19	51	8.0	3.00
2	4	9.0	2.00	20	55	8.0	4.00
3	17	9.0	2.00	21	13	7.5	2.50
4	30	9.0	2.00	22	2	7.0	3.00
5	36	9.0	3.00	23	5	7.0	3.25
6	37	9.0	2.00	24	6	7.0	3.25
7	50	9.0	3.00	25	9	7.0	4.25
8	56	9.0	4.25	26	11	7.0	3.00
9	21	8.5	2.25	27	16	7.0	2.25
10	22	8.5	2.25	28	27	7.0	5.25
11	24	8.5	2.25	29	29	7.0	2.00
12	32	8.5	2.00	30	31	7.0	2.25
13	10	8.0	2.25	31	33	7.0	3.50
14	12	8.0	3.00	32	38	7.0	2.25
15	23	8.0	2.00	33	40	7.0	3.25
16	26	8.0	2.00	34	57	7.0	3.00
17	43	8.0	3.00	35	58	7.0	3.25
18	48	8.0	2.50	36	60	7.0	3.50

Eight of the proposed policy alternatives received the highest rating for degree of importance of 9. Five of eight of the highest rated policy alternatives had an IQR of 2 or less, indicating consensus.

The proposed policy alternatives that received a median score of 7 or more and had an IQR of 2 or less were considered to have high importance and achieved consensus. The nine policy alternatives that met these parameters for Round 3 are listed in Table 12.

Table 12

Round 3 Policy Alternative Findings of High Importance and Consensus

Rate	Policy number	Policy alternative	Median	IQR
1	3	Require school districts to create a reserve account for the maintenance and replacement of existing and new facilities.	9	1
2	4	Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.	9	2
3	17	Require the state of California to require restricted maintenance accounts.	9	2
4	30	Enact legislation that requires new construction grants to be increased. Modernization grants should be increased to a minimum of 50%. Grants should be adjusted on a more-timely basis.	9	2
5	37	Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.	9	2
6	32	Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc., to be developed.	8.5	2
7	23	Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district ability to generate local income.	8	2
8	26	Incentivize districts to replace deteriorating facilities needing new facilities when there is no enrollment growth.	8	2
9	29	Enact legislation that allows school districts that are unable to pass local bonds to utilize other sources of funds such as state loans that regenerate program funds.	7	2

Policy Alternative 3, which would "require school districts to create a reserve account for the maintenance and replacement of existing and new facilities," had the greatest consensus (1) among the expert panelists in terms of its importance, with a median score of 9. The 27 policy alternatives that that met the requirement of a score of 7, but had an IQR of 2.25 or more indicating a lack of consensus are listed in Table 13.

The policy alternatives that received the highest rated median score (9), yet lacked consensus were Policy Alternative 36, "Enact legislation that requires school districts in the state of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed vs. improvements completed," and Policy Alternative 50, "Enact legislative action that requires the state of California to set and maintain a policy that all students have access to safe, clean quality classrooms and establish an annual facilities budget that supports it," respectively. Three of the policy alternatives that received the second highest median score of 8.5 (21, 22, and 24), yet fell just short of consensus with scores of 2.25, were policy alternatives that suggested revisions to existing legislation.

Research Question 3

The third research question in this study was, "What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" During Round 2, the expert panelists were invited to rate the likelihood of implementation for the 61 policy alternatives, from Round 1, on an 11-point scale of 0% to 100%. The scale was divided by increments of 10, with 0% indicating there was no likelihood of implementation and

Table 13

Round 3 Policy Alternative Findings of High Importance and a Lack of Consensus

Rate	Policy number	Policy alternative	Median	IQR
1	36	Enact legislation that requires school districts in the state of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed vs. improvements completed.	9.0	3.00
2	50	Enact legislative action that requires the state of California to set and maintain a policy that all students have access to safe, clean quality classrooms and establish an annual facilities budget that supports it.	9.0	3.00
3	56	Place the California Dept. of Education in charge of all state school facilities funding processes.	9.0	4.25
4	21	Adapt current "hardship" program to allow for allocations to districts in an equitable manner.	8.5	2.25
5	22	Enact legislative revisions that consider the socioeconomic status of the school district and the ability of that District to pass bonds or receive developer fees.	8.5	2.25
6	24	Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should be modify these formulas such that low-wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high-wealth districts a less generous match.	8.5	2.25
7	10	Implement a .25% to .5% statewide sales tax as a permanent funding source, with "pay-as-you-go" options, established for state matching funds specific to facilities construction and/or maintenance, yet separate from existing Prop 98 allocations.	8.0	2.25
8	12	Allow districts to retain a portion of their local property tax growth for local maintenance and/or construction needs. These funds must be outside of LCFF and Proposition 98 and restricted for school facilities.	8.0	3.00
9	43	Require school districts to develop a comprehensive facilities master plan as a condition of WASC accreditation.	8.0	3.00
10	48	Require all state agencies to be held to a reasonable review timeline similar to districts.	8.0	2.50

Table 13—*continued*

Rate	Policy number	Policy alternative	Median	IQR
11	51	Enact legislation that requires the state of California to adopt a policy mandating that instructional needs define facility needs, not vice versa, and provide the matching resources to meet that policy.	8.0	3.00
12	55	In many parts of the state, housing affordability is a concern in retaining good teachers, administrators and staff. Enact legislative that requires the state of California to consider laws that encourage developers and school districts to partner so that excess assets could be utilized for the betterment of the community.	8.0	4.00
13	13	Since 1998, debt service for school bonds has been appx 2.5% of the state budget. A reduction over time of this debt could be accomplished with the debt service "savings" committed to school facilities.	7.5	2.50
14	2	Adopt a policy that relates the savings from energy solutions (e.g., solar) to additional funding for educational facilities.	7.0	3.00
15	5	Require school districts to develop a life cycle cost analysis as a total cost of ownership on construction projects.	7.0	3.25
16	6	Eliminate requirement for DSA approval PRIOR to OPSC funding a project and allow for some versions of preliminary funding or other simplifications to the application process.	7.0	3.25
17	9	Increase the state lottery percentage to districts, yet specific to facilities construction and/or maintenance, as a permanent funding source established for state matching funds, outside of Prop 98.	7.0	4.25
18	11	Require the state of California to allocate 5% of all state revenues to school district maintenance and/or construction.	7.0	3.00
19	16	Require the state of California to designate a small portion (.05%) of Prop 13 moneys specific to facilities improvements.	7.0	2.25
20	27	Enact legislation that requires the state of California to provide school facility planning technical assistance to school districts.	7.0	5.25
21	31	Enact legislation that allows state funding for current design strategies such as maker spaces.	7.0	2.25

Table 13—*continued*

Rate	Policy number	Policy alternative	Median	IQR
22	33	Mandate that any Local Control Accountability Plan (LCAP) plan that does not address facilities in a comprehensive manner is illegal.	7.0	3.50
23	38	Enact legislative that requires districtwide education specifications for each type of educational facility including support facilities.	7.0	2.25
24	40	Adopt a system of accountability that holds elected public and school district officials accountable for the adequacy of their school facilities.	7.0	3.25
25	57	Institute a "per pupil" funding allocation specifically for facilities and adopt a policy that allows districts to borrow against that money specifically for facilities improvements.	7.0	3.00
26	58	Enact legislation that allows for alternative sources to fund school facilities other than GO Bonds such as public-private partnerships. These public-private partnerships can be paid back utilizing a revenue stream created by making Prop 98 permanent and specific to facilities improvements.	7.0	3.25
27	60	Enact legislation that requires school districts to consider joint use or shared use opportunities of district facilities with other public agencies such as parks and recreation, day care, senior services, libraries, performing and fine arts programs and community colleges.	7.0	3.50

100% indicating the highest likelihood of implementation. Average median rate comparison for both importance and likelihood of implementation, for each policy, between Rounds 2 and 3 can be found in Appendix S. The median rate order for likelihood of implementation as determined in Round 3 is listed in Table 14. The range of median panel scores for likelihood of implementation in Round 3 was 10% to 70%. A frequency distribution table for Round 3, likelihood of implementation, is located in Appendix P.

Table 14

Round 3 Median Rate Order for Policy Alternatives Considered to Have a High Likelihood of Implementation and Consensus

Rate	Policy	Policy alternative	Median	IQR
1	4	Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.	70%	2
2	17	Require the state of California to require restricted maintenance accounts.	70%	2
3	24	Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should be modifying these formulas such that low-wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high-wealth districts a less generous match.	70%	2
4	37	Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.	70%	2
5	32	Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc., to be developed.	60%	2

For the purposes of this Delphi study, the proposed policy alternatives that received a median score of 60% or higher and had an IQR of 2 or lower were considered to have a high likelihood of implementation and consensus. Eight percent (5) of the 61 proposed policy alternatives received a median score of 60% or higher after Round 3, with an IQR of 2 or less, signifying consensus of likelihood of implementation. Table 14 lists the five proposed policy alternatives that were considered to have likelihood of implementation with consensus. Policies 4, 17, 24, and 37 all had the highest median rating for likelihood of implementation of 70% for Round 3. Policy Alternative 32 had consensus on a 60% likelihood of implementation.

The eight policy alternatives that that met the requirement of a score of 6, but had an IQR of 2.25 or more indicating a lack of consensus are listed in Table 15.

Table 15

Round 3 Policy Alternative Findings of Likelihood of Implementation and a Lack of Consensus

Rate	Policy	Policy alternative	Median	IQR
1	3	Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.	70%	3.00
2	23	Require the state of California to require restricted maintenance accounts.	70%	3.25
3	21	Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should be modify these formulas such that low-wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high-wealth districts a less generous match.	70%	3.25
4	22	Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.	70%	3.00
5	31	Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc., to be developed.	60%	3.00
6	36	Enact legislation that requires school districts in the state of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed vs. improvements completed.	60%	2.25
7	38	Enact legislative that requires districtwide education specifications for each type of educational facility including support facilities.	60%	3.00
8	56	Place the California Dept. of Education in charge of all state school facilities funding processes.	60%	3.25

The policy alternatives that received the highest rated median score of 7, yet lacked consensus were Policy Alternative 3, “Require school districts to allocate a

minimum amount of funds to deferred maintenance to be eligible for state matching funds"; Policy 23, "Require the state of California to require restricted maintenance accounts"; Policy 21, "Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should modify these formulas such that low-wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high-wealth districts a less generous match"; and Policy 22, "Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan."

Research Question 4

Research Question 4 asked the expert panelists, "What statewide educational policy alternatives, rated for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?"

The priority matrix in Figure 3 represents a graphical representation of the interaction between panel median ratings for the importance and likelihood of implementation of policy alternatives reported in this study for Round 3. The priority matrix has nine cells, with degree of importance on the vertical axis and likelihood of implementation on the horizontal axis. A 10-point scale indicates the values for importance with low on the bottom and high at the top. A 10-point scale indicates the values for likelihood of implementation with low on the right and high on the left. Within the nine cells, three arrows cross three cells each, which are representative of the

high, medium, and low groupings. The nine-cell matrix is read from left to right, starting in the top left-hand corner with cell 1 and ending in the bottom right-hand corner with cell 9.

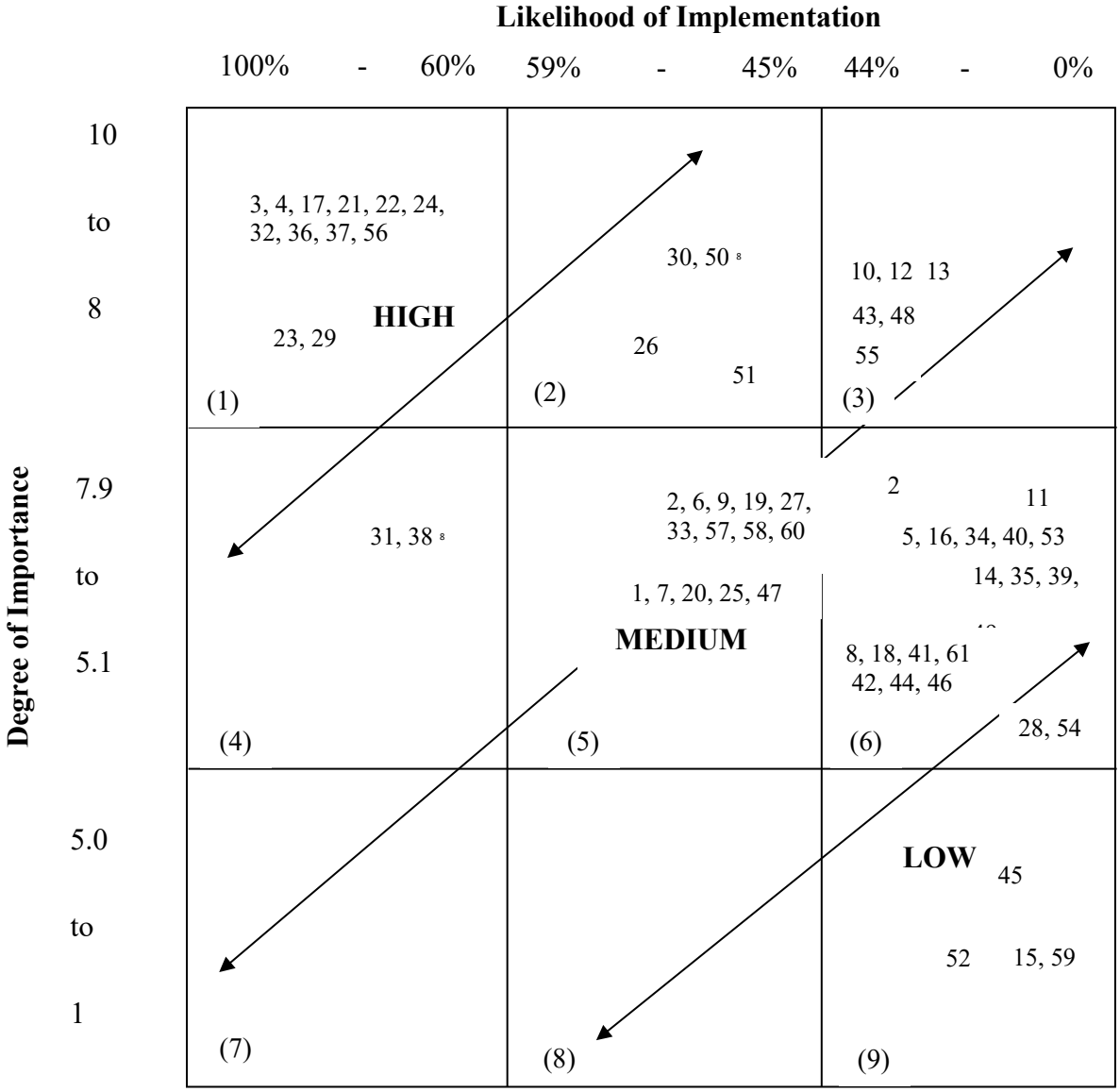

Figure 3. Priority matrix displaying Round 3 policy alternative composite panel median ratings for importance and likelihood of implementation. The numbers in parentheses indicate the cell numbers.

The high-priority cells in Figure 3 include 1, 2, and 4. The medium-priority cells include 3, 5, and 7. The low-priority cells include 6, 8, and 9. As a result, the cell in the

top left-hand corner of the matrix contains the policy alternatives that have the highest degree of importance and the highest likelihood of implementation. Conversely, the cell in the bottom right-hand corner of the priority matrix contains the policy alternatives that have the lowest degree of importance and the lowest likelihood of implementation.

For the purposes of this Delphi study, the policy alternatives with a median panel score of 8 or higher were considered to have a high degree of importance, 6.9 to 5.1 medium, and 5.0 to 1.0 low. A median value of 60% or higher was considered high for likelihood of implementation, 59% to 45% medium, and 44% and below was considered a low likelihood of implementation. The panel median values selected for high, medium, and low importance and likelihood of implementation are aligned to the upper, middle, and lower quartiles of the priority matrix.

The activities in the medium cells were determined by the panel to not have as high a degree of importance or likelihood of being implemented as those in the top priority. The expert ratings represented each individual panelist's best judgement of each finding according to its degree of importance and likelihood of implementation.

Although each policy alternative was submitted by an expert panelist who believed it to be important, if the activity did not receive a collective judgement of high importance and likelihood of implementation by a majority of expert panelists, it was determined to be less of a priority. As a result, activities that did not receive a collective judgement of high importance and likelihood of implementation were determined not to be a priority for the purposes of this study; however, these should not be discounted for future research.

Eleven policy alternatives were considered to be of high priority in this study due to their proximity in cell 1 of the priority matrix, which represents research findings that have a high degree of importance and high likelihood of implementation. Policy Alternatives 3, 4, 17, 21, 22, 23, 24, 32, 36, 37, and 56 fell into this category. Activities highlighted in cell 2 were rated high in degree of importance and medium in likelihood of implementation. Policy Alternatives 26, 30, 50, and 51 were included in cell 2. Six policy alternatives were categorized as high in importance and low in likelihood of implementation. Policy Alternatives 10, 12 13, 43, 48, and 55 were recorded in cell 3.

Combined Importance and Likelihood of Implementation of Policy Alternatives

The Venn diagram in Figure 4 provides a graphical representation of the combined consensus regarding the highest degree of importance and highest likelihood of implementation of policy alternatives, listed in Tables 12 and 14. The Venn diagram consists of overlapping circles that are representative of differing groups of information. The overlapping of the two circles represents the information that both sets have in common. In Figure 4, the first circle represents consensus regarding the highest degree of importance, and the second circle represents consensus regarding the highest importance.

The overlapping of the circles represents consensus among the panel of experts regarding both highest importance and highest likelihood of implementation. The last circle represents consensus among the panel of experts regarding the likelihood of implementation.

Nine policy alternatives received consensus on high ratings of importance. Five policy alternatives received consensus on high ratings of likelihood of implementation.

Four policy alternatives received consensus on high ratings of importance and likelihood of implementation.

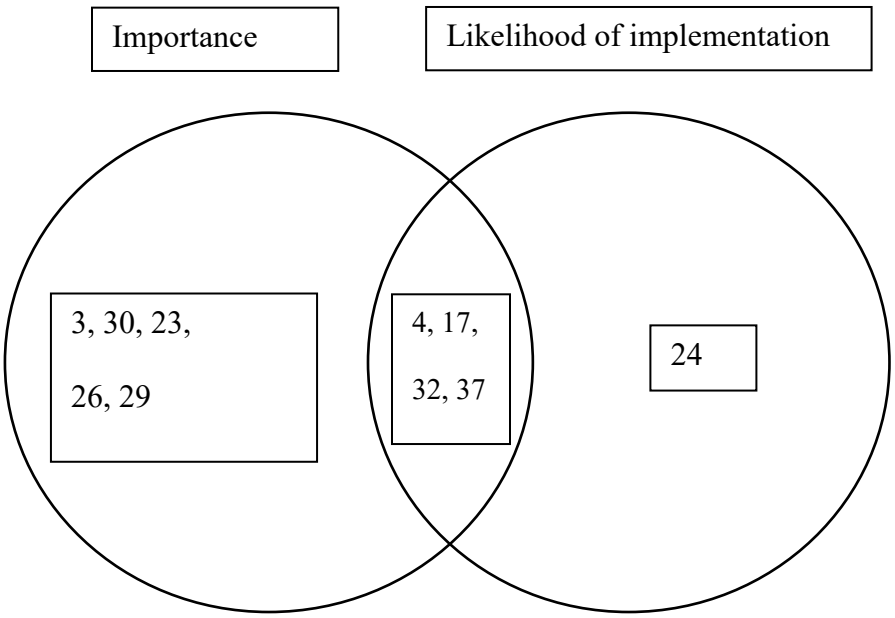

Figure 4. Venn diagram displaying consensus on Round 3 policy alternatives for high degree of importance and high likelihood of implementation.

Table 16 illustrates the highest median ratings for combined importance and likelihood of implementation with consensus. Table 17 was developed to show the policy alternatives in rated order that scored high for both importance and likelihood of implementation, establishing either substantial or full consensus. To accomplish this, the researcher utilized a combined median rating of both importance and likelihood of implementation. This calculation was accomplished by converting the percentage score for the likelihood of implementation into a corresponding 10-point Likert scale numerical response, similar to the rating for importance. For example, 70% was changed to 7 and 80% was changed to an 8, and so forth. Then, all of the scores were tallied for both sets of data for importance and likelihood and the combined medians calculated. Policy

Table 16

Highest Round 3 Order of Median Ratings: Combined Importance and Likelihood of Implementation With Full Consensus or Substantial Consensus

Rating	Pol no.	Policy alternative with full consensus	Comb. median	Median Imp	Median Likl	IQR Imp	IQR Likl
1	4	Require school districts to create a reserve account for the maintenance and replacement of existing and new facilities.	8	9	7.0	2	2.00
2	17	Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.	8	9	7.0	2	2.00
3	37	Require the state of California to require restricted maintenance accounts.	8	9	7.0	2	2.00
4	32	Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district ability to generate local income.	7	9	6.0	2	2.00
		Policy alternative with substantial consensus					
5	3	Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.	8	9	7.0	1	3.00
6	24	Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc. to be developed.	7.5	9	7.0	2.25	2
7	26	Enact legislation that requires school districts in the state of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed vs. improvements completed.	7	8	5.0	2	2.50
8	23	Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district ability to generate local income.	7	8	7.0	2	3.25
9	30	Enact legislation that requires new construction grants to be increased. Modernization grants should be increased to a minimum of 50%. Grants should be adjusted on a more-timely basis.	7	9	5.0	2	3.25
10	29	Enact legislation that allows school districts that are unable to pass local bonds to utilize other sources of funds such as state loans that regenerate program funds.	7	7	6.5	2	3.50

alternatives were thusly selected from the highest rated order policies for importance (Table 12) and likelihood of implementation (Table 15). Policies that had a median score of 7 or higher for importance were chosen. Twenty policy alternatives from the high importance rating had a median of 8; therefore, only the policy alternatives with an IQR of 2 or lower were included in the combined median ratings list. Policy alternatives with a likelihood of implementation score of 60% or higher were used from the likelihood of implementation ratings and with an IQR of 2 or lower.

Table 16 shows the 10 policy alternatives. Four policy alternatives achieved full consensus and six reached substantial consensus among the experts. This table also includes the full text of the policy alternatives as given to the experts in Rounds 2 and 3.

Four policy alternatives—4, 17, 32, and 37—were on both rated order lists for importance and likelihood of implementation showing full consensus. Policy Alternatives 3, 23, 24, 26 and 30 all met the minimum median requirements, yet lacked an IQR of 2 or less in either the importance or likelihood category, indicating substantial consensus.

Summary

The purpose of this Delphi study was to identify what statewide educational policy alternatives experts believe are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025. A panel of 22 experts in the area of school facilities participated in this Delphi study. The study utilized a Delphi process to identify policy alternatives necessary and

obtain consensus regarding each policy's degree of importance and likelihood of implementation according to the expert panel.

The Delphi study process consisted of three rounds. Round 1 requested that the expert panelists respond to the question, "What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" A total of 61 policy alternatives were identified in Round 1. In Round 2, the expert panelists were requested to rate each policy alternative by two factors: (a) degree of importance, using a scale from 1 to 10, with 10 being most important, and (b) likelihood of implementation, using a scale from 0% to 100%, with 100% being most likely to be implemented. The data from Round 2 were then examined to determine the panel's median response rate for each activity. In Round 3, the expert panelists were asked to review and compare their ratings with the panel median rating for each policy alternative from Round 2 and to take the opportunity to change their responses should they desire to do so.

There were 355 changes made to 61 policy alternatives from Round 2 to Round 3. The expert panelists made increases to 178 ratings and decreases to 177 ratings from Round 2 to Round 3 for both degree of importance and likelihood of implementation respectively. The largest number of changes resulted in small changes in value of 3 or less. There were 102 changes resulting in a 1- or 2-point increase or decrease in the value of degree of importance, and 102 changes resulted in a 10% or 20% increase or decrease in the value of likelihood of implementation.

Ten policy alternatives were considered to be of high priority in this study (Figure 4). Nine policy alternatives received consensus on high ratings of importance. Two policy alternatives received consensus on high ratings of likelihood of implementation. Three policy alternatives received consensus on high ratings of importance and likelihood of implementation. These activities were illustrated in a Venn diagram (Figure 4). Activities 3, 4, 17, 23, 26, 29, 30, 32, and 37 attained full consensus by the expert panelists regarding their high degree of importance. Full consensus by the expert panelists for Policy Alternatives 4, 17, 24, 32, and 37 was attained for their high degree of likelihood of implementation. Policy Alternatives 4, 17, 2, and 37 attained full consensus by the expert panelists for both importance and likelihood of implementation. These 10 policy alternatives constitute the research findings that experts believe are of the highest priority in order to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025.

Chapter IV illustrated the review of the process and the data collected for this Delphi study. Sixty-one policy alternatives were rated to decide if there was a consensus that the expert panelists believed was necessary to enhance student learning opportunities and optimize financial resources for school districts in California. These findings were summarized and used in Chapter V to develop conclusions and recommendations for action. The policy alternatives identified as findings in this Delphi study.

As a result of this Delphi study a summary of the research questions and findings are listed in Table 17.

Table 17

Summary of Research Questions and Findings

#	Research question	Research finding
1	What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?	Sixty-one policy alternatives were drawn from 127 raw data responses. Policy ideas were mandated reserves; funded, predictable, and sustainable funding sources; revisions to existing policy; master planning; advocacy for new state laws; and building efficiencies, agency revisions, equity, and alternative funding sources.
2	What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?	Fifty nine percent (36) of the 61 policy alternatives received a median score of 7 or higher after Round 3, with 9 receiving an IQR of 2 or less, signifying consensus of high importance on 15 percent of the policy alternatives. These 9 policy alternatives were specific to funding.
3	What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?	Twenty-one percent (13) of the 61 policy alternatives received a median score of 60% or more after Round 3, with 5 receiving an IQR of 2 or less, signifying consensus on likelihood of implementation on 8% of the research findings. These 5 were linked to legislation mandating funding.
4	What statewide educational policy alternatives, rated for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?	Ten policy alternatives achieved had a combined median of 7 or higher, but an IQR of 2 or higher, signifying substantial consensus. Four of the 10 had and IQR of 2 or lower, signifying full consensus. These 4 policy alternatives were specific to funding

CHAPTER V: FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter includes the purpose of the study, research questions, summary of the major findings, unexpected findings, the researcher's conclusions, implications for future action, and recommendations for further research.

Purpose Statement

The purpose of this Delphi study was to identify what statewide educational policy alternatives experts believe are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025.

Research Questions

Research Question 1

What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 2

What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 3

What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by

the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Research Question 4

What statewide educational policy alternatives, rated for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?

Methodology

The Delphi study methodology was utilized for this study to gain consensus from a group of expert panelists on policy alternatives necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources. Within the framework of policy analysis, this Delphi study was intended to gain the insights of a nominated expert panel. Industry experts on a panel provide an opportunity for legitimacy in the forecasting exercise (Cornish, 1977). The goal of the Delphi study was to identify the highest priority policy alternatives that the experts believed were important and likely to be implemented by the year 2025.

This Delphi study utilized three rounds of electronic questionnaires that were designed using SurveyMonkey software online and used during the Delphi process to systematically solicit expert panelist input. Communications from the researcher with the expert panelists were conducted via e-mail and SurveyMonkey. During Round 1, expert panelists responded to an open-ended question designed to produce policy alternatives. An abbreviated version of 61 coded policy alternatives was developed from the 127 policy alternatives recommended by the expert panel. The expert panelists utilized this

set of 61 policy alternatives in Round 2, in which they rated each policy alternative on the degree of importance and likelihood of implementation by the year 2019 to 2025. In Round 3, the expert panelists were asked to review the median rating for each policy alternative and provided the opportunity to change their initial response from Round 2.

Summary of Findings

Finding 1

To address Research Question 1, the expert panelists were asked to identify, "What statewide educational policy alternatives do experts believe are necessary for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" A total of 61 policy alternatives were created from the synthesis and consolidation of the 127 raw data responses. Two of the policy alternatives suggested mandated reserves; eight were directed at funded, predictable, and sustainable funding sources; 11 suggested revisions to existing policy; three suggested better master planning efforts; and 18 advocated for new state laws and advocacy. The balance of the policy alternatives was focused on building efficiencies, agency revisions, equity, and alternative funding sources.

Finding 2

To address the second research question, the expert panelists were asked to identify, "What statewide educational policy alternatives do experts rate as most important for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" Expert panelists rated the degree of importance of the 61 policy alternatives on a 10-point Likert scale, with 1 indicating low importance and 10 indicating high importance.

For this Delphi study, the policy alternatives that received a median score of 7 or higher and had an IQR of 2 or lower were considered to have high importance. The range of median panel scores for importance in Round 3 was 3 to 9. Fifty-nine percent (36) of the 61 policy alternatives received a median score of 7 or higher after Round 3, with nine receiving an IQR of 2 or less, signifying consensus of high importance on 15% of the policy alternatives. The following are the nine policy alternatives on which the expert panelists reached consensus regarding high importance:

1. Require school districts to create a reserve account for the maintenance and replacement of existing and new facilities.
2. Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.
3. Require the state of California to require restricted maintenance accounts.
4. Enact legislation that requires new construction grants to be increased. Modernization grants should be increased to a minimum of 50%. Grants should be adjusted on a more-timely basis.
5. Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.
6. Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, and so forth, to be developed.
7. Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district's ability to generate local income.

8. Incentivize districts to replace deteriorating facilities needing new facilities when there is no enrollment growth.
9. Enact legislation that allows school districts that are unable to pass local bonds to utilize other sources of funds such as state loans that regenerate program funds.

Finding 3

To address the third research question, the expert panelists were asked to identify, "What statewide educational policy alternatives do experts rate as having the highest likelihood of implementation for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" Expert panelists rated the likelihood of implementation for the 61 policy alternatives on an 11-point scale of 0% to 100%. For this Delphi study, a high panel median rating of 60% or higher with an IQR of 2 or lower indicated consensus of the expert panelists that there is a high likelihood of implementation of that particular policy alternative.

Five of the 61 policy alternatives met these parameters, indicating consensus on 8% of the research findings. The following are the five policy alternatives on which the expert panelists reached consensus regarding a high likelihood of implementation:

1. Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.
2. Require the state of California to require restricted maintenance accounts.
3. Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should be to modify these formulas such that low-wealth districts (as measured by assessed property value per

student) would receive a more generous match from the state and high-wealth districts a less generous match.

4. Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.
5. Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, and so forth, to be developed.

Finding 4

Research Question 4 asked the expert panelists, "What statewide educational policy alternatives, rated for importance and highest likelihood of implementation, do experts rate as priorities for improving K-12 public educational facilities by the years 2019 to 2025 to enhance student learning opportunities and optimize financial resources?" To address this question, a priority matrix (see Figure 3 in Chapter IV) was utilized to illustrate a graphical representation of the interaction between panel median ratings for the importance and likelihood of implementation of policy alternatives reported in this study for Round 3. Ten policy alternatives were considered to be of high priority in this study. Policy Alternatives 3, 4, 17, 23, 24, 26, 29, 30, 32, and 37 fell into this category. Policy Alternatives 5, 13, 15, 19, 28, 30, 32, and 35 were rated high in degree of importance. Policy Alternatives 4, 17, 24, 32, and 7 were rated high in likelihood of implementation.

A Venn diagram (see Figure 4 in Chapter IV) was developed to display the graphical illustration of the juncture between consensus regarding the highest degree of

importance and consensus regarding the highest likelihood of implementation. Four policy alternatives received consensus on high ratings of importance and likelihood of implementation. These policy alternatives—4, 17, 32, and 37—are listed as follows:

1. Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.
2. Require the state of California to require restricted maintenance accounts.
3. Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, and so forth, to be developed.
4. Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.

Further, to determine consensus, policy alternatives were shown in rated order that scored high for both importance and likelihood of implementation, utilizing the combined median rating of both importance and likelihood of implementation. Ten policy alternatives achieved had a combined median of 7 or higher with an IQR of 2 or lower for both importance and likelihood of implementation. However, only the following four had an IQR of 2 or lower establishing full consensus:

1. Require school districts to create a reserve account for the maintenance and replacement of existing and new facilities.
2. Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.
3. Require the state of California to require restricted maintenance accounts.

4. Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district's ability to generate local income.

Finding 5

Substantial consensus was considered achieved when the expert panelists' combined median rating for importance and likelihood of implementation was high but lacked consensus. The same combined median rating of 7 was utilized in similar fashion when determining high importance. The following six policy alternatives achieved substantial consensus by having a combined median of 7 or higher, yet they only had an IQR of 2 or higher for either importance or likelihood of implementation:

1. Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.
2. Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, and so forth, to be developed.
3. Enact legislation that requires school districts in the state of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed versus improvements completed.
4. Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district's ability to generate local income.
5. Enact legislation that requires new construction grants to be increased. Modernization grants should be increased to a minimum of 50%. Grants should be adjusted on a more-timely basis.

6. Enact legislation that allows school districts that are unable to pass local bonds to utilize other sources of funds such as state loans that regenerate program funds.

Unexpected Findings

The researcher found four unexpected findings from the Delphi study's data collection process following Rounds 2 and 3:

1. There was a noticeable difference between the average Round 3 median rating for importance and the Round 3 policy ratings for likelihood of implementation. The Round 3 policy ratings for importance were 7. However, in contrast, the average Round 3 median rating for likelihood of implementation was 40%.
2. It was unexpected that only four policy alternatives that dealt with funding equity received ratings of only 60% for likelihood of implementation. These four policy alternatives received the highest rating of 9 and dealt with funding equity to all districts across the state. This result, despite the recent focus on equity by policy makers, as evidenced by a new outreach investment of $54 million to assist in bringing an equity focus into schools (Smith, 2019), The low median ratings for these four policy alternatives that focused on equity acted to bring them out of the category of being the highest priority by bringing their respective median ratings down to an eight.
3. Category 1 of the expert panelists was legislative advocates and lobbyists who are involved in the crafting and enacting of legislation. Of the six expert panelists who participated from Category 1, their average median rating for likelihood of implementation was 30%. Conversely, their median ratings of 7 for importance were high throughout the policy alternatives. This indicated their belief that many policy

options were important but unlikely to be enacted. For individuals engaged in the legislative process, this dichotomy in their ratings was unexpected and unique among the three categories of experts.

4. None of the policy alternatives specifically mention or even allude to enhancing student learning opportunities, which was in the purpose statement. Most of the options have a direct link to the other variable of optimizing financial resources. This could be due to the makeup of the expert panel. Or, it may be that the experts involved in facilities are focused primarily on the financing of and building of schools and assume the right decisions will be made regarding facilities that enhance learning. Whatever the reason, the experts in facilities policy assembled for this Delphi study focused on policies that optimize funding but did not offer any policy options regarding the enhancement of student learning.

Conclusions

The majority of California's public schools were constructed in an effort to address the post-World War II population explosion that occurred between 1950 and 1965. During this era, financing was plentiful as schools were largely paid for through the developer fee process that passed the schools' impact fees onto the homeowner (Brunner & Vincent, 2006). However these same facilities have not been properly maintained since that time (Vincent & Jain, 2016). As a result, school facilities have not properly housed today's public school students, nor have they been sufficient for the growth in projected enrollment (Maclay, 2015; Perry, 1998). As school conditions became disparate based on the wealth of the district, the landmark decision of *Serrano v. Priest* would task the state of California with the burden of providing equity to the school

finance formulas that were in place at the time, placing an even larger burden on the state tax or bond dollar (Burrup & Brimley, 1982; Perry, 1998).

On the heels of the *Serrano* decision came another taxpayer panacea known as Proposition 13, which now restricted property taxes to 1% of the 1976 market value. This piece of legislation singlehandedly reduced property tax revenues by local governments in the state of California by 57%, nearly eliminating the primary source of local revenue for new school construction and modernization (Burrup & Brimley, 1982; Shapiro & Sonstelie, 1982).

In an effort to overcome the financial distress placed on school facilities efforts, the state of California has passed a series of GO bonds totaling $66.2 million since 1998 (Vincent & Jain, 2015). Despite this investment, many California students continue to attend school in public school facilities that are inadequate by modern standards (Perry, 1998; Vincent & Gross, 2016).

As a consequence, California's aging school facilities are adversely affecting student learning (Hawkins & Overbaugh, 1988; U.S. General Accounting Office, 2016).

This Delphi study was designed to identify what statewide educational policy alternatives experts believe are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources by the years 2019 to 2025. Based on the research findings and information collected from the literature review, the researcher drew eight conclusions. The conclusions infer a deeper understanding of the suggested policy alternatives and their potential impact on school facilities in California. The resultant conclusions emerged from the findings of this study:

1. Requiring a deferred maintenance and a replacement facility fund was the highest priority as a result of this study (Policies 3 and 4). However, only when the requirement was tied to being a prerequisite for state matching funds did the policy alternative receive full consensus. Otherwise, the duplicate policy alternative suggestion that was made open ended, and not tied as a prerequisite for a district to receive matching funds, was just simply a requirement and consensus could not be achieved for the likelihood of implementation. This suggests that while the policy is vital, doubt of a passage of legislation for such a policy unless it was limited in scope to the attachment of state matching grant funds exists. Requiring districts that seek to utilize state matching fund grant monies to keep and maintain a deferred maintenance and facilities minimum amount of monies in a categorical fund can assist in the improvement of school facilities.
2. Three of the policy alternatives that received the second highest median score of 8.5 (21, 22, and 24), yet fell just short of consensus with IQR scores of 2.25, were policy alternatives that suggested revisions to existing legislation that would introduce the idea of the distribution of state funds in an equitable manner and in accordance with a district's financial wherewithal. While these policies had high median ratings in both importance and likelihood of implementation, the expert panelists could not reach a consensus on either. Continuing to seek consensus on language revisions to proposed legislation aimed at providing for school facilities across the state in an equitable manner will help to improve school facilities in an equitable manner across all school districts in the state of California.

3. It is often said that failing to plan is planning to fail. The high priority rating for Policy 37, which requires legislation "that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable and long-range facilities master plan," was the only new and innovative policy alternative suggested by the expert panelists. This policy alternative received the highest ratings for both importance and likelihood of implementation, yet fell just short of consensus for likelihood with an IQR of 2.25. This policy would require a great deal of discipline and organization by school district personnel. In light of school district personnel frustrations with the Local Control Accountability Plan (LCAP), this added level of organization was highly regarded nonetheless. Even a similar policy that additionally required a school district to engage in the master planning of its facilities as a condition of WASC accreditation scored very high in both importance and likelihood but again lacked consensus due to an IQR of 2.25 or higher. Enacting legislation that requires school districts to engage in long-range master planning of its school facilities will improve school facilities and guide funding efforts.
4. There is a substantial lack of agreement among facilities policy experts. This hinders the implementation of innovative future school facilities policies. Slightly more than 6%, four policy alternatives, of the 61 from Rounds 2 and 3 reached full consensus. Six more policy alternatives achieved substantial consensus for either importance or likelihood of implementation. Engaging in a consensus discussion for the six policy alternatives that reached only a substantial consensus will provide legislators with 10

viable policy alternatives to consider that will improve K-12 school facilities and their funding.

5. Overwhelmingly, the expert panelists were in full consensus that transferring school district facilities, in a lease-back format, to Joint Partnerships Agreements (JPA), Community Financial Districts (CFD), or the county offices of education were NOT important or likely to be implemented. This sentiment had the lowest scoring combined median of 3. The transference of school district property in a lease-back format to other governmental agencies is not likely to enhance school facilities in the state of California.
6. The highest level of consensus by the expert panelists on any given policy alternative, signified by the lowest IQR of 1.25 on both importance and likelihood of implementation, was a legislative requirement to contribute .05% of all the state's Proposition 13 proceeds to a designated fund specific to K-12 school facilities. The expert panelists were in consensus with a relatively high median rating of 7 for importance but with only a rating of 40% likely to be enacted. This prevented this policy alternative from qualifying as being a high priority. Of significance here is that continued efforts at raising the likelihood of implementation to 70% would place this policy alternative at one of the highest priorities of all of the policy alternatives with full consensus. Enacting a policy that targets a .05% contribution from Proposition 13 proceeds, designated for K-12 school facilities in the state of California, is perceived as a means to improve K-12 facilities with a long-term, measurable, and reliable funding mechanism.

7. The next highest level of consensus, with an IQR of 1.5 on both importance and likelihood of implementation, by the expert panelists on a policy alternative, was a policy requiring that the state of California should seek federal funding for its schools. This policy alternative scored a combined median of 3.5. This was a clear indication and consensus on policy alternatives that was not important to the expert panelists. Based on these data, policy makers in the state of California should not seek federal funding for their school improvement needs.
8. Utilizing the SurveyMonkey website in this study was an effective approach. The online communication platform provided the necessary tools to facilitate the policy Delphi process. Communication between the researcher and the expert panel was realized and anonymity was assured. The SurveyMonkey website helped to limit and expedite the data collection for the three rounds by sending participation invitations to the panelists, e-mailing message reminders to complete the three rounds of surveys, and providing 24-hour access to the questionnaires for the panel.

Implications for Action

Given the research findings in this study and the conclusions drawn by the researcher, the following actions are recommended to policy makers on what policies are necessary to provide California school districts with the policy options necessary to improve K-12 public education facilities to enhance student learning opportunities and optimize financial resources:

1. It is clear to the researcher, that in order to reverse the continual degradation of existing school facilities and to implement a comprehensive replacement policy, there must be a very clear and different course of action in the state. While a centralized

and state controlled funding mechanism may still be the best method of dispersing funds, as well as insuring equity across the state, the funding source by which facilities improvements are made possible must change. For this reason, the study clearly indicated that private sector utilization, rather than the reliance of state bonds, was of high importance. However, there was very little consensus that such a policy shift could be achieved. Despite the indication that there are billions of private sector dollars available for such an effort. To generate interest from private sector investors, the state must put in place reliable and consistent revenue streams that is the reimbursement mechanism for these private sector investors.

2. Policy makers in the state of California must revisit the requirements under the current School Facilities Program (SFP) and consider revised policy that requires districts to minimally fund the deferred maintenance program and facility replacement program in order to be eligible for state matching shares for modernization and new construction under that program. Verification of district spend efforts would need to be a component of the policy to prevent complacency. Requiring school district inventories of facilities, careful tabulation of capital needs, and the prioritization of projects is the most effective means of avoiding such complacency. The LCAP reporting method for facilities conditions assessments should be enhanced for this effort, with more depth added to the verification process, as current facilities conditions assessments under LCAP are not in the spirit of the real need.
3. Policy makers in the state of California should revisit the requirements under the current (SFP) regulations and consider revised policy that ensures equity among districts with the distribution of state matching funds for modernization or new

construction. Distributing funds on the first-come, first-served basis does not consider equity in its practice. Policy makers should consider each district's ability to generate matching funds through developer fees, GO bonds, or other resources. Districts with little or no ability to self-generate matching funds should experience higher levels of funding from the SFP program. In addition, a per pupil formula should be adopted in an effort to avoid the first-come, first-served method of distribution currently under law.

4. Policy makers in the state of California need to revisit the requirements under the current (SFP) regulations and consider revised policy that would require school districts to develop a long-range, comprehensive, prioritized, and equitable facilities master plan. Such planning allows for the development of a facilities inventory from which implementation plans are developed. State organizations such as the Office of Public School Construction (OPSC) or the Fiscal Crisis & Management Assistance Team (FCMAT) should provide the necessary training for these master planning efforts. All funding should be allocated only in strict accordance to a verifiable need supported by the master planning effort and specifically the district's implementation plan. Master plans should go well beyond the bricks and mortar of the construction effort and be inclusive of funding mechanisms including, where needed, monies from the state of California.
5. Policy makers in the state of California must increase efforts at gaining consensus on facilities policy. Forums, such as the CASH organization's annual Facilities Forum, are largely attended by an extended population of professionals who are an extension of this Delphi study's sample population. Sessions during these forums that promote

policy discussions, in an attempt to reach consensus on policy alternatives, will prove to gain further consensus on policy intended to insure adequate K-12 school facilities and other funding opportunities.

6. Policy makers in the state of California must increase efforts to achieve policy consensus for policies that target a long-term, verifiable, and consistent revenue stream for K-12 school facilities. The policy alternatives suggested in this study include a .05% portion of all Proposition 13 proceeds, making Proposition 98 permanent and other taxes such as a permanent .25% sales tax specific to school facilities. Unfortunately, the expert panelists could not achieve consensus. Further discussions on these and other revenue stream ideas will increase consensus among lawmakers, thus improving the likelihood of implementation to match the rating of importance given in this study.

Recommendations for Further Research

1. This state facilities policy alternative study could be replicated with the distinction that enhancing student learning is the highest priority in legislation and optimizing financing is a secondary priority.
2. This study could be replicated using a different expert panel and utilizing the same or different selection criteria. A variation of this policy Delphi study could also be conducted to ensure that the panel is well represented by larger population of experts in the state.
3. It is recommended that further research be conducted that analyzes data on the effectiveness of the high-priority policy alternatives. This Delphi study identified policy alternatives and sought to achieve consensus on their priority by a panel of

experts. The Delphi study did not, however, provide data on the effectiveness of these policy alternatives.

4. A Delphi study or a qualitative study that compares and contrasts the responses of the expert panelists could be conducted to help define the differences and similarities and the assortment of policy alternatives relating to policy alternatives to improve K-12 facilities and their funding.
5. The results of the study highlighted that the panelists reached full consensus on four policy alternatives as having high importance. It is recommended that a mixed-methods research study be conducted to further study the perspectives of policy makers and industry experts regarding these four policy alternatives.
6. The results of the study highlighted that the panelists reached substantial consensus on six policy alternatives as having high importance. It is recommended by the researcher that further discussion regarding the language of the policy alternatives occur in an effort to bring these six policies to full consensus. At that time, a mixed-methods research study should be conducted to further study the perspectives of policy makers and industry experts regarding these six policy alternatives.
7. Expert panelists identified the requirement for a deferred maintenance and a replacement facility fund as the highest priority as a result of this study. However, consensus could not be reached when considered as a stand-alone policy. Consensus could be reached on the policy only when tied to districts that intended to apply for state matching funds. It is recommended that a study be conducted to identify the barriers to the implementation of the policy statement specific to deferred maintenance

and a replacement facility fund requirement and what support is needed to overcome those barriers.

8. The results of the policy alternative study highlighted that the panelists could not reach consensus on 60% of policies for likelihood of implementation. It is recommended that further research be conducted that investigates how greater consensus can be found among policy alternatives that yields higher ratings in the likelihood of implementation.
9. A national study could be conducted on policy alternatives that ensure adequate K-12 facilities and their funding.
10. A national study could be conducted that compares California school facilities with other states, and then compares and contrasts those other states' funding mechanisms with those in California.

Concluding Remarks and Reflections

School construction in California experienced rapid expansion as a result of rapid growth in the state in the early 1900s. The massive growth brought onto the scene an inventory of schools that are still housing students today. This research study began with a passion in my mind for the students learning environment in aged and outdated facilities. Further, I sought to investigate how aggressive experts surrounding school facilities would be toward advancing policy that proved to improve school facilities across the state of California. I am encouraged after this study to see the amount of ideas that industry experts promulgated as a result of this study. I am further encouraged by the array of responses, as the original 126 responses were spread across no less than 16 topical areas.

However, I was discouraged by a few items in this study. First, I am disappointed about the presence of despair in implementing policy. It became very apparent to me that no matter how important the expert panelists found a policy, there seemed to be no hope of its implementation. The results of the ratings indicated, collectively, that on average only 40% of the policy alternatives given in this study were unlikely to be implemented.

Further, I was disappointed by the lack of innovation given to the policy alternatives that were proposed by the expert panelists. It has been said that "insanity is doing the same thing over and over again, yet expecting different results." The policy alternatives suggested in the study were largely in the form of a revision or a "tweak" to existing policy in the state. While some of the tweaks were well-intentioned ideas that insured a greater amount of equity within existing policy, most fell short of being considered innovative in their approach.

School facilities in California are old, aging, and without a comprehensive plan to catch up to the needs inventory. The current inventory on K-12 school facilities needs is staggering. Without a comprehensive solution soon, the results could be cataclysmic to K-12 education. However, my recent observation is that the state of California is resilient and responsive to cataclysmic needs to its residents. I evidence this by the state's recent experience of fires and floods during the period of time of my going to pen with this research study. The response to the needs of those in peril was swift, responsive, and without prejudice. I remain hopeful and encouraged that the state of California will see it facilities conundrum as perilous, if action is not taken soon. Then, as it has in the past to other catastrophic events, take comprehensive action to correct the problem and provide K-12 students in the state of California with the facilities they need.

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APPENDICES

APPENDIX A

Synthesis Matrix

Reference	Facilities History	Design Intent	IAQ	Building Age	School Size	Safety	Technology	Funding
Banicki and Manos (2007)								X
Barnard (1848)	X				X			X
Barnard, McClintock, and McClintock (1970)	X							
Boren (2003)								X
Bowers and Burkett (1988)				X				
Bradley (1996)	X							X
Bronzaft and McCarthy (1975)			X					
Brubaker (1999)	X							X
Brunner & Vincent (2006)								X
Bursill (1958)			X					
Canter (1976)			X					
Chan (1979)			X	X				
Christopher (1990)	X							
Cohen (1999)								X
Cohen et al. (1973)		X	X					
Collins (1975)			X					
Conant (1962)						X		
Cotton (1996)						X		
Cutler (1989)	X	X						
Daniels (2003)							X	
Day and Spoor (1998)							X	
De Alth and Rueben (2005)								X
Dewees (1999)							X	
Education in Early America Weekly (Accessed 2018)	X	X						
Educational Facilities Laboratories (1971)	X							X
Ehrenkrantz (1999)	X	X	X					
English (2003)							X	
Eurich (1992)	X							
Evans and Maxwell (1997)			X					
Frieberg (1984)						X		
Gilbert and Taylor (1989)	X							
Graves (1993)	X	X						X
Gulliford (1996)	X	X						
Harner (1973)			X					
Hawkins and Overbaugh (1988)		X						
Heschong et al. (1999)			X					
Hines (1996)			X					
Holmberg and Wyon (1969)			X					
Horvath (1984)	X							
Horwitz (1979)	X	X						
Howley and Bickel (1999)						X		
Hyatt (1982)			X	X				

Ikpa (1988)				X				
Katyal (2002)						X		
Klein (2009)								X
Koski (2011)	X	X	X	X	X			
Lackney (1994)	X	X	X					
Lindholm (1970)								X
Lyons (2001)				X				
Mackworth (1946)			X					
Marks (2009)	X	X						
Marshall (1981)	X		X					
McCardle (1966)			X					
McClintock and McClintock (1968)	X							
McGowen (2007)							X	
McGuffey and Brown (1978)			X					
Milshtein (2003)							X	
National Center for Educational Statistics (2000)				X				
O'Neill (2000)	X	X						
Plumley Jr (1978)				X	X			
Raywid (1996)						X		
Rivasplata (1991)								X
Saint (1987)	X							
Schroeder (1977)	X							X
Seaborne (1974)	X	X						
Stokes (2000)							X	
Szczerba (2000)							X	
Tanner and Lackney (2006a)	X							
Tanner and Lackney (2006b)			X	X	X	X	X	
Thompson et al. (1988)								X
Thornburg (2014)							X	
Tocqueville (1984 (Renewed))	X							
Viteles and Smith (1946)			X					
Yaglou (1961)			X					
Yan (1999)							X	

APPENDIX B

Invitation to Participate in the Delphi Study

Date
Name
Address

Dear Mr./Mrs./Ms./Dr.

I hope you are having a great year thus far. As you may know, I am a doctoral candidate at Brandman University. I also act as the Director of Facilities, Construction and Modernization at the San Juan Unified School District (SJUSD). I am in the process of developing a Delphi study for my dissertation. My dissertation topic is directly related to the adequacy of school facilities state wide and the respective districts funding challenges for their facilities. My intention for this Delphi study is to seek input from panel of experts with experience in education facilities and their funding challenges in an effort to introduce some ideas for policy that would lead to the improvement of educational facilities statewide. Additionally, the study would identify the likelihood of implementation of the proposed policies.

Since, you have been identified as an "expert" in education facilities and their funding; may I invite you to be a member of this expert panel? The Delphi study will consist of three rounds of electronic questionnaires. The time between each round is anticipated to be 2-3 weeks. Each round of questioning shall take approximately 20-30 minutes to complete. The first round of questions will be sent out on December 2, 2018. Thus, the final round should be completed by January 15, 2019

Following receipt of this letter via email, I will endeavor to contact you via phone to explain more in depth, the specifics of the study. At that time, I would also be happy to answer any questions you may have. Additionally at the telephone contact, I would like to inquire of you for any further recommendations for other experts in education facilities and their funding and their potential for participating on this panel.

Thank you in advance for considering this request. I look forward to speaking with you personally on the opportunity.

Sincerely,

Brett A. Mitchell
Doctoral Candidate, Brandman University

APPENDIX C

List of Delphi Expert Panelist for Study

1. Participant 1
   Administrator,
   California Department of Education,

2. Participant 2
   Not for Profit Advocacy,
   Secretary & Treasurer

3. Participant 3
   Director
   University of California

4. Participant 4
   Legislative Advocate
   Los Angeles Unified School District

5. Participant 5
   Legislative Advocate,
   Private Company

6. Participant 6
   Legislative Advocate
   Private Company

7. Participant 7
   Superintendent,
   K-12 Education

8. Participant 8
   Director of Facilities,
   K-12 Education

9. Participant 9
   Interim Superintendent,
   K-12 Education,

10. Participant 10
    Associate Superintendent of Business Services,
    K-12 Education

11. Participant 11
    Chief of Facilities, Construction & Maintenance,
    K-12 Education

12. Participant 12
    Superintendent (Retired),
    K-12 Education

13. Participant 13
    Asst. Sup. Facilities,
    K-12 Education

14. Participant 14
    Director Facilities,
    K-12 Education

15. Participant 15
    Architect,
    Private Company

16. Participant 16
    Architect,
    Private Company

17. Participant 17
    Architect,
    Private Company

18. Participant 18
    COO, Former K-12 Facilities Director,
    Private Company

19. Participant 19
    CEO,
    Private Company

20. Participant 20
    CEO,
    Private Company

21. Participant 21
    Director of K-12,
    Private Company

22. Participant 22
    Deputy Superintendent,
    K-12 Education

APPENDIX D

Participation in Delphi Study Memo

Date: November 18, 2018
To: Delphi Study Expert Panelists
From: Brett A. Mitchell
Subject: Participation in the Delphi Study

Dear Expert Panelist:

Thank you for your interest and agreement to participate in this Delphi study. The study is titled, *policy alternatives that provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources.*

This Delphi study will seek a panel of identified industry experts with experience in K–12 educational facilities and its funding sources to first identify some policy alternatives necessary statewide to insure adequate K-12 school facilities, including funding sources. As a second step in the Delphi Study process, the panel of identified industry experts will be asked to rate each policy alternative in terms of degree of importance, and in turn the likelihood of implementation.

Delphi Study Process

Three rounds of electronic questionnaires are anticipated for this Delphi study process:

1. The first questionnaire will request that you identify the policy alternatives that would provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources.
2. The second questionnaire will list those responses from the entire expert panel and in turn request that you rate each response regarding its degree of importance and likelihood of implementation.
3. The third questionnaire will provide each expert panelist with the feedback from the second questionnaire, with respect to your responses and the interquartile mean for the entire expert panel. You will then be requested to review the feedback and then be provided with an opportunity to change your original responses. Lastly, each expert panelist will be asked to provide written comments on any of the activities that are of particular significance.

Please note: An additional round may be necessary if consensus is not attained.

Delphi Study Dates

This Delphi study is anticipated to be conducted from December 1, 2018 to January 15, 2019. Each round, as detailed above, is scheduled to be conducted for one work week with a week break in between each round. While the process is intended to be conducted quickly, there is some flexibility built into the timeline to allow for flexibility and any unforeseen challenges which may arise.

Delphi Study Requirements

To ensure the validity and reliability of this study, expert panelists are requested to review the list of following requirements of a Delphi study and to confirm your willingness and ability to participate:

1. A critical component of the Delphi process is that each round be structured in a manner that ensures communication between the expert panelists and the researcher remain anonymous. Be assured that your name and contact information will not be shared with other expert panelists involved in the study. Also, it is requested that each expert panelist not discuss participation on the panel until the Delphi study is complete.

2. The selection criteria and selection process for this study has been designed to ensure that the chosen expert panelists are qualified to identify both policy alternatives, as well as rating both the importance and likelihood of implementation, for developing facilities to enhance student learning opportunities and optimize financial resources. Therefore, you are assumed to have the necessary expertise and experience to effectively contribute to this study.

3. In each round, detailed instructions will be provided to the expert panelist by the researcher to guide the process. Instructions should be viewed only as a means to inform the expert panelist and not to influence your proposed policy alternatives, nor their rating.

4. In each round, prompt responses will assist in the timely completion of the study. The time necessary to complete each round is anticipated to be twenty to thirty minutes.

5. Email will be utilized to communicate with expert panelist and to notify each expert panelist when rounds are open. Again, your timely response in each round will assist in expediting the completion of the study.

6. Survey Monkey will be used to summarize the expert panelist responses. The response forms for each round will be sent as a link within the body of an email.

   You have also been assigned the following three digit code: XXX. You will be requested to provide this code during each survey.

7. All computer networks, email systems, and associated internet browsers are compatible with Survey Monkey. Please contact the researcher as soon as possible if they experience difficulty in accessing the forms.

8. At the completion of the study, each expert panelist will receive a copy of the results of the study along with recognition in the final summary of the survey.

9. All questions or concerns should be directed to the researcher, Brett A. Mitchell at bmitche1@mail.brandman.edu or 530.260.1152. I will return your email or call within 24 hours.

Consent to Participate

Prior to dissemination of the questionnaires, the researcher must obtain consent from the expert panelist to participate in this research study. Please utilize the following link to provide your consent electronically: https://www.surveymonkey.com/r/X76TF77

The Brandman University Bill of Rights document is also attached to this memo for your review and information.

Finally, if you have questions or concerns regarding the information provided in this memo or the research study, please contact Brett A. Mitchell at bmitche1@mail.brandman.edu or 530.260.1152.

Warm regards,

Brett A. Mitchell

Brett A. Mitchell
Doctoral Candidate
Brandman University

BRANDMAN UNIVERSITY INSTITUTIONAL REVIEW BOARD

Research Participant's Bill of Rights

Any person who is requested to consent to participate as a subject in an experiment, or who is requested to consent on behalf of another, has the following rights:

1. To be told what the study is attempting to discover.
2. To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice.
3. To be told about the risks, side effects or discomforts of the things that may happen to him/her.
4. To be told if he/she can expect any benefit from participating and, if so, what the benefits might be.
5. To be told what other choices he/she has and how they may be better or worse than being in the study.
6. To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study.
7. To be told what sort of medical treatment is available if any complications arise.
8. To refuse to participate at all before or after the study is started without any adverse effects.
9. To receive a copy of the signed and dated consent form.
10. To be free of pressures when considering whether he/she wishes to agree to be in the study.

If at any time you have questions regarding a research study, you should ask the researchers to answer them. You also may contact the Brandman University Institutional Review Board, which is concerned with the protection of volunteers in research projects. The Brandman University Institutional Review Board may be contacted either by telephoning the Office of Academic Affairs at (949) 341-9937 or by writing to the Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA, 92618.

APPENDIX E

Consent to Participate in Research

Consent to Participate in Research

1. Introduction

Your participation in a research study is being requested because you meet the criteria of an expert panelist in the area of education facilities and/or funding for those facilities. This study, ***"Policy Alternatives That Provide California School Districts With the Policy Options Necessary to Develop Facilities to Enhance Student Learning Opportunities and Optimize Financial Resources"*** is being conducted by Brett A. Mitchell M.A.Ed, a doctoral student with Brandman University. The results of this study will contribute to my dissertation.

Consent to Participate in Research

2. Purpose of the Study

The purpose of this Delphi study is to identify statewide policy alternatives that provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources. This study will be collecting data from 24 expert panelists who are either theorists or practitioners in K-12 school facility planning, construction or financing techniques.

Consent to Participate in Research

3. Participant Identification

For the duration of the data collection procedures of this study, each participant will use a three (3) digit code for identification purposes. The researcher will keep the identifying codes safe-guarded in a locked file drawer for which only the researcher has access.

Consent to Participate in Research

4. Research Procedures

The Delphi research design of this study is intended to utilize three (3) electronic questionnaires to collect data over the course of three (3) rounds. It is anticipated that panelists will be able to complete each round in no more than thirty (30) minutes. The proposed timeline for this study is provided below:

1. **Round One (Date) - The first questionnaire will request that you review the identify statewide**

policy alternatives that could provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources.

2. Round Two (Date) - The second round will list the responses from the entire panel of experts received from the panelists in round one, and request that you identify the degree of importance for each activity and it likelihood of implementation.
3. Round Three (Date) - The third round is intended to provided you with feedback on your responses from round two panelist responses. You will then be asked to reveiw the feedback and decide whether or not you would like to revise your original response. You will also be requested to provide any written comments that you may have on any of the activities that were valuable or of interest to you.

The final results of the study will be sent to all panel members.

Consent to Participate in Research

5. Potential Risks and Discomforts

Participation in this Delphi study requires minimal risk to the participants. A vital component of the Delphi process is that each round of the study shall be structured in a manner that ensures communication between the expert panelists maintains anonymity. However, the researcher acknowledges that the expert panel may experience minimal discomfort while responding to the questionnaires.

Consent to Participate in Research

6. Potential Benefits to Participation and/or Society

The data collected during each round of the Delphi study should prove to be informative and valuable for panel members professionally and, in some circumstances, personally. In addition, the results of this study will provide California educators and school facility experts with recommended policy alternatives that could lead to effective implementation of policy aimed at improving California's school facilities.

Consent to Participate in Research

7. Researcher's Contact Information

The researcher, Brett A. Mitchell, can be contacted at any time with questions or concerns with respect to this Delphi study.

Brett's contact email is bmitche1@mail.brandman.edu and his personal cell phone number is 530.260.1152. Brett will make an effort to respond to any inquiry within 24 hours.

Consent to Participate in Research

8. Participation Withdrawal

I understand that I may refuse to participate in, or, I may withdraw from, this study at any time without any consequences. Also, the investigator may stop the study at any time. I also understand the information that identifies me will be kept confidential and not released without consent under via a separate agreement and that all identifiable information will be protected to the limits allowed for by law. If the study design or the use of the data is to be changed, I will be so informed and my consent shall be obtained. I further understand that if I have any questions, comments, or concerns about the study, or the informed consent process, I may write our call the Office of the Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA 92618, Telephone (949) 341-7641. I acknowledge that I have received a copy of this form and the Research participant's Bill of Rights.

1. I have reviewed and understand my rights as a research participant.

By selecting the "***AGREE***" button, you are indicating that you have read the informed consent form and the information in this document and that you voluntarily agree to participate.

If you do not wish to participate in the survey, you may decline participation by clicking on the ***DISAGREE***" button.

If you have additional questions regarding your participation and would like to have the researcher contact you, please select the "***CONTACT***" button.

- ◯ AGREE
- ◯ DISAGREE
- ◯ CONTACT. I would like the researcher to contact me to discuss my participation further.

APPENDIX F

Delphi Study Initial Test E-mail

Thank you for agreeing to participate in this Delphi study. This study is designed to identify some policy alternatives necessary statewide to insure adequate K-12 school facilities, including funding sources.

This is an initial test to simulate the forms which panelists will be utilizing in each of the three rounds necessary to complete the Delphi process. The forms can be accessed by using the following link: https://www.surveymonkey.com/r/BVV5J6Q

Please respond to each question and submit the form at the bottom of the page by December 1, 2018

Thank you again for your participation and if you have questions or concerns, I can be reached at bmitche1@mail.brandman.edu or 530.260.1152.

Warm regards,

Brett A. Mitchell

Brett A. Mitchell
Doctoral Candidate
Brandman University

APPENDIX G

Delphi Study Initial Test

1. Instructions

Thank you for agreeing to participate in this Delphi Study, which is designed to identify statewide policy alternatives that provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources.

This is an initial test to simulate the forms which panelists will be utilizing in each of the three rounds necessary to complete the Delphi Study process.

Please respond to each question below and submit the from at the bottom of the page by (Insert Date)

1. Please provide your contact information:

Name	
County	
Email Address	
Telephone Number	

2. Will you be available to participate in all three rounds of this Delphi study during the months of July and August?

- ◯ Yes
- ◯ No

3. Did you experience difficulty in accessing this survey?

- ◯ Yes
- ◯ No

If you marked "Yes", please explain:

4. Please use the space below for questions, concerns, or additional comments regarding this study:

APPENDIX H

Delphi Study Round 1 E-mail

Date: December 2, 2018
To:
From: Brett Mitchell
Subject: Round One Questionnaire
Three Digit Participant Code: XXX

Thank you for agreeing to participate in this Delphi study which is designed to seek a panel of identified industry experts with experience in K-12 educational facilities and its funding sources to identify some policy alternatives necessary statewide to insure adequate K-12 school facilities, including funding sources.

Some examples of policy alternative ideas might be:
"The state of California needs to increase the LCFF to include monies specific to facilities," or;
"The state needs to adopt a policy as a part of accreditation that requires school districts to master plan facilities improvements."

Again, these are only examples and I encourage you to think of 5-10 policies necessary to insure adequate K-12 facilities and their funding.

This is the first of three rounds which panelists will participate in to complete the Delphi process. The study will occur between December 2, 2018 and January 15, 2019. The Round One Questionnaire can be accessed by using the following link: https://www.surveymonkey.com/r/F5R2ZPZ

If you complete the survey, and think of another idea later, you will be able to log back into the survey to catalogue the policy idea later, as long as it is during the week that the survey is open.

I am really looking forward to the policy ideas that are generated in this study. I hope that you are as well. If you could, please respond by Friday, December 7, 2018.

Thank you again for your participation and if you have questions or concerns, I can be reached at brettmitchell916@gmail.com, or my university email at bmitche1@mail.brandman.edu, or by telephone at xxx.xxx.xxxx.

Brett Mitchell
Doctoral Candidate
Brandman University

APPENDIX I

Delphi Study Round 1 Questionnaire

Delphi Study Round 1 Questionnaire

Instructions

Thank you for agreeing to participate in this Delphi study, which is designed to identify statewide policy alternatives that provide California school districts with the policy options necessary to develop facilities to enhance student learning opportunities and optimize financial resources. The study will occur between December 2, 2018 and January 15, 2019.

This is the first of three questionnaires which panelists will be utilizing to complete the Delphi study process. Please respond by Friday, December 7, 2018.

1. Name of Expert Panelist

1

2. Please respond to the following question;
"***What statewide educational policies do you believe should be enacted in California that are most likely to develop facilities that enhance student learning opportunities, and optimize financial resources***"?

Some examples of policy alternative ideas might be:
"The state of California needs to increase the LCFF to include monies specific to facilities";
or;
"The state needs to adopt a policy as a part of accreditation that requires school districts to master plan facilities improvements".

Again, these are only examples and I encourage you to think of 5-10 policies necessary to insure adequate K-12 facilities and their funding.

Up to ten responses are allowed for below. However, you may use the comment box at the end of the survey for additional suggestions for policy alternatives.

Suggestion: Survey Monkey is not intended to be an editing program, you may wish to formulate your ideas for policy alternatives in Microsoft Word, separating each idea, then simply "copy" and "paste" into the response boxes below.

Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	
Suggest a Policy Alternative	

3. If you have more than 10 suggestions, please utilize this comment box to add more policy alternatives, leaving a line between each and numbering them 11, 12, 13...etc.

APPENDIX J

Delphi Study Round 2 E-mail

Date: December 28, 2018
To: Expert Panelists
From: Brett Mitchell
Subject: Round Two Questionnaire
Three Digit Participant Code: XXX

Thank you for agreeing to participate in this Delphi study which is designed to seek a panel of identified industry experts with experience in K-12 educational facilities and its funding sources to identify some policy alternatives necessary statewide to insure adequate K-12 school facilities, including funding sources.

This is the second of three rounds which panelists will participate in to complete the Delphi process. The Round Two Questionnaire can be accessed by using the following link:

https://www.surveymonkey.com/r/76H3LNT

Please complete this by January 4, 2019.

Thank you again for your participation and if you have questions or concerns, I can be reached at bmitche1@mail.brandman.edu or 530.260.1152.

Brett Mitchell
Doctoral Candidate
Brandman University

APPENDIX K

Delphi Study Round 2 Questionnaire

Delphi Study Round 2 Questionnaire

Introduction

The Round 1 questionnaire requested that you respond to the following question:

"What statewide educational policies do you believe should be enacted in California that are most likely to develop facilities that enhance student learning opportunities, and optimize financial resources"

There were a total of 126 responses collected from 22 Experts as part of the Round 1 survey. I have done my best to "Code" these into the simplest form possible, synthesizing similar themes and responses into 61 policy alternatives to consider.

* 1. Expert Panelist Name:

Delphi Study Round 2 Questionnaire

Round 2 Questionnaire Instructions

Please complete the second part of this Delphi study questionnaire by January 4, 2019

Using your professional judgement, please rate each of the responses to the "Round 1 Questionnaire" on each of 2 scales: (1) the importance of that policy alternatives enactment, and (2) the likelihood of that policy alternative being implemented by the years 2020-2025.

- **Importance - Please rate each policy alternative from 1 to 10, with 1 being the least important and 10 being the most important, on that policy alternatives importance of implementation.**
- **Likelihood of implementation - Please rate each policy alternative from 0% to 100%, with with 100% being the most likely event, in terms of that policy alternatives likelihood of implementation by the years 2020-2025.**

Delphi Study Round 2 Questionnaire

Please rate the following proposed policy alternatives.

1

Energy Efficiency Initiatives

Require School Districts to create a mandated program that all campuses reach Zero Net Energy by a specified date.

* 2. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 3. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Adopt a policy that relates the savings from energy solutions (e.g. solar) to additional funding for educational facilities.

* 4. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 5. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Mandated Reserves

Require School Districts to create a reserve account for the maintenance and replacement of existing and new facilities.

* 6. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 7. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require school districts to allocate a minimum amount of funds for deferred maintenance to be eligible for state matching funds.

* 8. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 9. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Life Cycle Cost Analysis

Require school districts to develop a Life Cycle Cost Analysis as a total cost of ownership on construction projects.

* 10. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 11. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

DSA/Design Related

Eliminate requirement for DSA approval PRIOR to OPSC funding a project and allow for some versions of preliminary funding or other simplifications to the application process.

* 12. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 13. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Ensure DSA fees include ONLY Fire & Life Safety, accessibility and structural scopes of work.

* 14. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 15. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Develop standard designs of facilities that are adjusted for different weather zones.

* 16. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 17. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Funded, Predictable and Sustainable Funding Source

Increase the state lottery percentage to districts, yet specific to facilities construction and/or maintenance, as a permanent funding source established for state matching funds, outside of Prop 98.

* 18. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 19. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Implement a .25%-.5% statewide sales tax as a permanent funding source, with "pay-as-you-go" options, established for state matching funds specific to facilities construction and/or maintenance, yet separate from existing Prop 98 allocations.

* 20. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 21. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require the state of California to allocate 5% of all state revenues to school district maintenance and/or construction.

* 22. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 23. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact Legislation that allows Districts to retain a portion of their local property tax growth for local maintenance and/or construction needs. These funds must be outside of LCFF and Proposition 98 and restricted for school facilities.

* 24. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 25. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires the state of California to implement a reduction of school bond debt over time. The savings to which are committed to school facilities.

* 26. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 27. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that mandates a "business percentage fee" for businesses to contribute to the State education funds that are specific to facilities or matching funds, similar to developer fees at a State level. Explanation: Schools are developing career-ready business leaders and creating more families/students (e.g. Amazon in Seattle).

* 28. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 29. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require the state of California to adopt policy that mandates colleges to contribute to the State K-12 education funding to assist in ensuring college readiness.

* 30. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 31. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require the state of California to designate a small portion (.05%) of Prop 13 moneys specific to facilities improvements.

* 32. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 33. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Maintenance

Enact legislation **that requires school districts to have restricted maintenance accounts.**

* 34. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 35. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require school district personnel to report any lack of maintenance to County Office Boards of Education.

* 36. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 37. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Facility costs research and solutions.

Enact a study of California School Construction costs to guide regulations intended to reduce costly regulations without sacrificing safety.

* 38. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 39. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require feeder schools/districts to have regular discussions about optimizing facilities/operations & connectivity.

* 40. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 41. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Revisions to existing policy

Adapt current "hardship" program to allow for allocations to districts in an equitable manner.

* 42. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 43. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislative revisions that consider the socioeconomic status of the School District and the ability of that District to pass bonds or receive developer fees.

* 44. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 45. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district ability to generate local income.

* 46. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 47. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should modify these formulas such that low wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high wealth districts a less generous match.

* 48. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 49. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that allows for the determining of eligibility for new construction funding to be based on the projections of district enrollment growth for housing development plans based on final rather than tentative tract maps.

* 50. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 51. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Incentivize districts to replace deteriorating facilities, rather than modernize, when there is no growth in enrollment.

* 52. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 53. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires the state of California to provide school facility planning technical assistance to school districts.

* 54. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 55. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Restructure attendance calendars (year-round flexibility) and daily schedules (starting earlier and ending later using staggered schedules) to improve use of existing facilities with the goal of reducing the need for instructional facilities.

* 56. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 57. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that allows school districts that are unable to pass local bonds to utilize other sources of funds such as state loans that regenerate program funds.

* 58. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 59. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires new construction grants to be increased. Modernization grants should be increased to a minimum of 50%. Grants should be adjusted on a more-timely basis.

* 60. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 61. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Delphi Study Round 2 Questionnaire

Please rate the following proposed policy alternatives.

Enact legislation that allows state funding for current design strategies such as maker spaces such as "STEAM" or "STEM" labs.

* 62. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 63. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Funding Equity

Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc., could/should be developed.

* 64. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 65. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Local Control Accountability Plan (LCAP) Accountability

Enact legislation that mandates that any Local Control Accountability Plan (LCAP) that does not address facilities in a comprehensive manner is illegal.

* 66. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 67. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Local Control Funding Formula (LCFF)

Increase the Local Control Funding Formula (LCFF) to allow for comprehensive funding to K-12 school facilities and its various program needs.

* 68. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 69. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Adopt a "Per pupil" grant funding formula that is received as a part of LCFF, while still requiring district matching funds.

* 70. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 71. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

State Inventory on Facilities

Enact legislation that requires school districts in the State of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed vs. improvements completed.

* 72. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 73. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Facilities Master Planning

Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable and long-range facilities master plan.

* 74. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 75. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislative that requires district wide education specifications for each type of educational facility including support facilities.

* 76. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 77. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

State Laws and Advocacy

Require legislators to seek Federal level financial support for its schools.

* 78. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 79. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Adopt a system of accountability that holds elected public and school district officials accountable for the adequacy of their school facilities.

* 80. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 81. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that places authority on Facility Directors to report to state level officials as to the adequacy of school facilities.

* 82. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 83. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that proves to relax bidding requirements, which will in turn increase competition amongst contractors, improve quality and provide for more competitive pricing.

* 84. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 85. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require school districts to develop a comprehensive facilities master plan as a condition of WASC accreditation.

* 86. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 87. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Allow schools to be built on CSU and UC campuses without having to meet the Title 5 site standards or Field Act. Schools to be designed, built and operated by the UC and CSU campuses.

* 88. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 89. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require District facility staff to hold accreditations from Association of Physical Plant Administrators (APPA) or similar facilities manager training institutions.

* 90. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 91. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Legislative action that requires the state of California to establish bulk buying and/or contracting systems to save money.

* 92. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 93. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislative revisions to current policy that allows for the State Allocation Board quorum to be by a simple majority of those present, not 6 out of 10, and to only serve to hear appeals and regulatory/policy issues. Apportionment's for standard consent items should emulate general fund apportionment's or something similar.

* 94. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 95. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Require all state agencies to be held to a reasonable review timeline similar to districts.

* 96. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 97. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislative revision that requires developers to be solely responsible for mitigating the entire cost of building schools and passing that cost along to the homeowner.

* 98. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 99. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation action that requires the state of California to set and maintain a policy that all students have access to safe, clean quality classrooms and establish an annual facilities budget that supports it.

* 100. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 101. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires the state of California to adopt a policy mandating that instructional needs define facility needs, not vice versa, and provide the matching resources to meet that policy.

* 102. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 103. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires the state of California to provide technical assistance to districts in construction contracting.

* 104. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 105. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that creates a fixed funding formula based on age of facility and projected enrollment.

* 106. Please identify the degree of importance (1/low - 10/high).

1 2 3 4 5 6 7 8 9 10

* 107. Please identify the likelihood of implementation. (0%/low - 100%/high)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Enact legislation that eliminates the first come first serve funding practice under current policy.

* 108. Please identify the degree of importance (1/low - 10/high).

1 2 3 4 5 6 7 8 9 10

* 109. Please identify the likelihood of implementation. (0%/low - 100%/high)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

In many parts of the state, housing affordability is a concern in retaining good teachers, administrators and staff. The state should consider laws that encourage developers and school districts to partner so that excess assets could be utilized for the betterment of the community.

* 110. Please identify the degree of importance (1/low - 10/high).

1 2 3 4 5 6 7 8 9 10

* 111. Please identify the likelihood of implementation. (0%/low - 100%/high)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Place the California Dept. of Education in charge of all state school facilities funding processes.

* 112. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 113. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Public-Private-Partnerships

Institute a "per Pupil" funding allocation specifically for facilities and adopt a policy that allows districts to borrow against that money specifically for facilities improvements.

* 114. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 115. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that allows for alternative sources to fund the its facilities other than GO Bonds such as Public-Private Partnerships. These Public-Private partnerships can be paid back utilizing a revenue stream created by making Prop 98 permanent and specific to facilities improvements.

* 116. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 117. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Transference of ownership/shared use

Transfer school district ownership and maintenance to a JPA, CFD or County Office of Education. The school district would then lease the buildings, allowing the district to focus on education not real estate and property maintenance.

* 118. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 119. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires school districts to consider joint use or shared use opportunities of district facilities with other public agencies such as parks and recreation, day care, senior services, libraries, performing and fine arts programs and community colleges.

* 120. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 121. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

Enact legislation that requires County office development of real estate and facility acquisition strategies that are used to assist districts with property acquisition/surplusage and facilities development.

* 122. Please identify the degree of importance (1/low - 10/high).

1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○

* 123. Please identify the likelihood of implementation. (0%/low - 100%/high)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
○	○	○	○	○	○	○	○	○	○	○

APPENDIX L

Delphi Study Round 3 E-mail

Date: January 20, 2019
To: Expert Panelists
From: Brett Mitchell
Subject: Round Three Questionnaire

Thank you for agreeing to participate in this Delphi study which is designed to seek a panel of identified industry experts with experience in K-12 educational facilities and its funding sources to identify some policy alternatives necessary statewide to insure adequate K-12 school facilities, including funding sources.

This is the third and final questionnaire which panelists will participate in to complete the Delphi process. This survey is intended for you to compare your original scores provided in the Round 1 survey to that of the median scores developed from that round, and to make revisions to your scores, if needed. The Round Three Questionnaire can be accessed by using the following link: [Individual link provided to each] Please respond to the questionnaire by January 26, 2019.

Thank you again for your participation and if you have questions or concerns, I can be reached at bmitche1@mail.brandman.edu or 530.260.1152.

Brett Mitchell
Doctoral Candidate
Brandman University

APPENDIX M

Delphi Study Round 3 Questionnaire

Delphi Study Round 3 Questionnaire

Introduction

Thank you again for agreeing to participate in this Delphi study. This will be the third and final survey that will be distributed to the expert panelists for this study.
As a reminder, the questionnaire in Round 1 requested that you respond to the following question:

* 1. Please confirm your three digit identification code below:

1

Delphi Study Round 3 Questionnaire

Round 3 Questionnaire Instructions

This is the final round for this Delphi process. Please complete this questionnaire by [Date].

In this third round survey, you are being requested to compare your ratings compare your ratings, in terms of importance and likelihood of implementation, for each policy alternative from Round 2, to the median rating of the entire panel.

After comparing the information, each expert panelist will then have the opportunity to either leave your rating as was originally indicated in Round 2, or to revise your rating based on your comparative analysis.

Note: Changing your original rating from Round 2 is neither intended nor implied. If you choose to leave your ratings as indicated in Round 2, you may select the option, "I do not want to change my rating" and the survey direct you on to the next policy alternative activity. You are not being compelled to edit you original response.

For example:
School districts should adopt policies that will insure....

- **Degree of Importance (1/low - 10/high)**
  - **Your score : 4** (Note: From Round 2 Summary provided)
  - **Panel Median Score: 9**
- **Likelihood of Implementation by 2020 (0%/low - 100%/high)**
  - **Your score: 90%** (Note: From Round 2 Summary provided)
  - **Panel Median Score: 40%**

Please select one of the following Responses:

- **I do not wish to change my original responses.**
- **I would like to revise my original responses.**

2

Delphi Study Round 3 Questionnaire

Please consider if you would like to revise your Round 2 rating of the following policy alternative.

School districts should adopt policies that will insure....

Degree of Importance: (1/low - 10/high)
Your score : __ **(Note: From Round 2 Summary provided)**
Panel Median Score: 9

Likelihood of Implementation by 2020 (0%/low - 100%/high)
Your score: __**(Note: From Round 2 Summary provided)**
Panel Median Score: 40%

2. Please select from one of the following responses:

- ◯ I do not want to change my response
- ◯ I would like to change my response.

3

APPENDIX N

List of Unabbreviated Research Findings From Expert Panel

1. Require listing of life expectancy of facilities and major equipment, and an accompanying funding plan. Funding could be from use of a sinking fund within the annual budget to fund the maintenance of facilities, or from direct annual allocation, or most likely a combination. Without this plan and funding within the LCFF, the LCFF budget would not be approved. The issue is that the buildings do not advocate for themselves. Under the new funding structure and with the demise of the Deferred Maintenance Program, there is no requirement to count the cost of unfunded major maintenance or the quantify what it should be. When the cost is fully counted, it is staggering. The few districts that I am aware of doing a legitimate job of this had to downplay the cost while they came up with a way to fill the gap over time. This is not a hole that we can bond our way out of. If the district funds maintenance out of long term debt financing, much of the funded work needs replacement again before the debt is paid off. This approach also removes the allocation of the funding from the routine expenses of the district, so they then become allocated to other ongoing areas. So when the maintenance is required again later, they are still paying it off and have to make the debt again, establishing an ever increasing level of poverty of funding for the district. (I will send you my white paper on this.) It needs to have some form of state oversight requirement because the timeline is so long that no one in today's decision will be here for the ramifications years later. Many districts are already in the failure mode due to this occurring in prior years. And another factor is that bond money is very expensive and is an exhaustible source that will not cover new construction and modernization, much less adding major maintenance to it.

2. Enable districts to have the same type of election they currently do to approve General Obligation Bonds, but allow the district plan to use funding in real time or to bond. This would use the same oversight committee and tax caps in place now. Many urban districts have enough cash flow streams from the election to fund their modernization projects in real time and not incur debt; this would effectively make projects cost half as much for the taxpayer! And the urban districts tend to be older and have a more difficult time accessing the state School Facilities Program. Theoretically they could do this now through a parcel tax, but to be used in less tax friendly areas of the state it would need to carry the other elements that have proved to help the comfort level of the more conservative voter. (One would think that this is a no-brainer to add to the district tool box of options, however opposition to this idea has been twofold: one from the hesitance to explain to taxpayers how much bonds really cost them, which education regarding this approach might do, and secondly from the lobbying forces who make bond funding happen.

3. State provide a long term stable adequate and restricted revenue source to provide matching funds for eligible local school district projects. The money needs to be

outside of Proposition 98 and include matching funds for routine maintenance, preventative maintenance as well as major and deferred maintenance.

4. The state needs to set and maintain a policy that all students have access to safe, clean quality classrooms and provide the necessary matching funds for that purpose.

5. The state needs to adopt a policy that instructional needs define facility needs, not vice versa, and provide the matching resources to meet that policy.

6. The state needs to allow all school districts to retain a portion of their local property tax growth for local maintenance needs. These funds must be outside of LCFF and Proposition 98. The property tax funds must be restricted to school maintenance.

7. State should provide more funds for facility maintenance and operations State should revisit the requirement for restricted maintenance accounts.

8. State should establish an inventory of school facilities statewide.

9. State should assist districts in conducting regular facility conditions assessments.

10. State should prioritize funding to the "worst of the worst" school facilities, to bring up the bottom State should assist districts in defining "educational suitability" of facilities and how to assess it.

11. State should provide school facility planning technical assistance to school districts.

12. State should establish bulk buying and/or contracting systems to save money.

13. State should provide technical assistance to districts in construction contracting.

14. State should establish a funded and predictable program to provide capital funding for upgrading existing school facilities.

15. Establish a State annual facilities budget based on age of facility and enrollment projection.

16. Create a fixed formula based on age of facility and projected enrollment.

17. Eliminate the first come, first serve program.

18. Establish an easy 3 phase program: planning, construction, close-out.

19. Require a Facilities Master Plan from the school district demonstrating equity among their schools.

20. The State should require as a condition of receiving state bond funding that each school district submit a facilities master plan.

21. The next State bond fund should incentive behavioral changes around how school district plan modernization projects by encouraging more preventative measures with the use of state and local bond funds to reduce long-term costs.

22. State should require school districts to incorporate more facilities planning in the LCAP process to ensure facilities are supporting the school district's goals.

23. The state is unlikely to continue to fund school bonds and school renovations and repairs on an ongoing basis and thus should provide local school districts with more tools to find revenues at the local level.

24. Facilities Master Plans to be submitted to the State should take into consideration the educational opportunities or gaps that exist in each school to ensure equity among HS, MS, and ES.

25. In many parts of the state, housing affordability is a concern in retaining good teachers, administrators and staff. The state should consider laws that encourage developers and school districts to partner so that excess assets could be utilized for the betterment of the community.

26. Provide K12 school facilities funding as a part of the annual budget process.

27. Provide K12 school facilities funding from ongoing dedicated, non-GO Bond revenues.

28. Ensure that educational adequacy is addressed in planning for local Bond measures.

29. Require School Districts seeking state facilities funding to prepare a Facilities Master plan as a condition of funding.

30. Ensure that limited state facilities resources are targeted to Districts with identified need.

31. State funding should ensure equity in resources availability for funding.

32. Target state funds based up local ability to match--base policy on Assessed Valuation.

33. Place the California Dept. of Education in charge of all state school facilities funding processes.

34. The state needs to adopt a policy requiring School Districts to create a mandated program that all campuses reach Zero Net Energy by a specified date.

35. The state needs to adopt a policy requiring School Districts to create a mandated program that all campuses reach Zero Net Energy by a specified date.

36. The state needs to adopt a policy requiring School Districts to create a reserve account for the maintenance and replacement of existing and new facilities.

37. The state needs to adopt a policy requiring a Life Cycle Cost Analysis on construction projects.

38. The State Allocation Board should replace its requirement that all projects must be approved by DSA prior to receiving funding with a system that would require approval of "preliminary" design by OPSC and/or CDE and a subsequent approval by DSA within a specified time period.

39. A sustainable funding source needs to be established for state matching funds that is not subject to political whims or the will of one governor. A source that mirrors the Prop 98 guarantee but is not included within the Prop 98 allocation.

40. Policies that ensure districts must allocated minimum amount of funds to deferred maintenance to be eligible for state matching funds for construction.

41. Enact a study of California School Construction costs within the intent to reduce regulations that don't detract from safety but will decrease our exorbitant construction costs.

42. Begin with Coalition for Adequate School Housing's (CASH) streamlining white paper (2015) and refine to simplify the application process currently used to access funds.

43. Study the current "hardship" program and adapt where needed to ensure it provides funds to school districts in an equitable manner.

44. Since 1998, debt service for school bonds has been appx 2.5% of the state budget. Weaning ourselves of this debt could be accomplished over the next 30 years, with the debt service "savings" committed to school facilities. It would have to be protected in a restricted account.

45. Allocate funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc., could be developed.

46. The State needs to adopt a policy that mandates a minimum percentage amount of the annual budget to be allocated to educational facilities. This percentage can be developed from historical averages of "adequate" years and related to percentages allocated to other public facilities.

47. The State needs to adopt a policy that mandates a "business percentage fee" for businesses to contribute to the State education funds similar to developer fees at a State level. Explanation: Schools are developing career-ready business leaders and creating more families/students (e.g. Amazon in Seattle).

48. The State needs to adopt a policy that mandates colleges to contribute to the State education funds. Explanation: Schools are developing college-ready students.
    The State needs to revise a policy to increase the percentage of monies that come from the lottery to educational facilities.

49. The State needs to adopt a policy that provides a minimum of one-sixth (one half of one-third which is the typical local bond amount) of a facilities conditions assessment (FAC) to local educational agencies (LEAs) that complete an FAC and apply.

50. The State needs to adopt a policy that relates the savings from energy solutions (e.g. solar) to additional funding for educational facilities.

51. The State of California need to make the following statement "Any LCAP plan short of a Facilities component is illegal."

52. The State of California need to increase the LCFF to pay for the Special Education needs in order to allow School Districts around the State to afford Facilities component in their LCAP Annual plan.

53. The State of California need to make the DSA fees limited to include ONLY (Fire/Life/Safety/Accessibility/and Structure). School District MUST not pay money to DSA for none related DSA items like paint, flooring, landscaping, etc. which might be a big chunk of money.

54. The State should adopt new changes to the Leroy Green mechanism of disbursing Construction monies to School Districts around the State (New Construction & Modernization). The new criteria should take in consideration the socioeconomic status of the School District and ability of that District to pass bonds or get developer fees.

55. The State's OPSC Department should create a Box system, similar to DSA's box to track amount of money disbursed to individual School sites vs. improvements done at these sites. There should also be criteria for dispersing the money in addition to what Leroy Green criteria has in place.

56. The State should fund an ongoing State Bond system to help support the build and modernize Schools utilizing different mechanisms.

57. The State should fight hard through their Congressmen and Senators to get Federal support for California Schools, the Golden State with the most.

58. Setting “Accountability System” in place to hold Decision makers and public officials at any School District or government office to the quality of decisions he/she makes if depleted the District from their resources, these public officials should be held accountable.

59. State should give authority to Facilities Directors to report directly to the State and empower them to make suggestions and voice their concerns through Lessons Learned Intranet program or phone Application. The feedback from this Intranet (or phone application) should be shared with Director of Facilities from all over the State of CA.

60. Relax the bidding requirements, to increase competition amongst contractors in order to get good quality and better prices.

61. Per pupil grant funding from the state, perhaps as part of LCFF. This concept would still require district matching funds and LCFF would link school district need to the formula.

62. The lack of a statewide inventory makes funding facilities very difficult at the state level. Submitting a district-wide inventory with annual CBEDs would help build that database.

63. While the state funding program was intended to improve statewide equity, school districts with larger A/V and constituency support (like basic aid districts) can accomplish more in one bond than many districts can accomplish on multiple bonds. Perhaps the state program needs to have a tiered system for funding which is tied to ability to generate local income. While financial hardship does this, it is complicated and requires some level of sophistication in the district staff.

64. Life cycle cost analysis of some kind may provide a disincentive to portables and other construction that is not intended to last. The general fund impacts of low state funding are placed on the locals...with long term costs of M&O.

65. With a per pupil allocation mandated by law, it would give school districts the ability to borrow against that allocation, similar to what school districts do to borrow against their developer fees. This money would have to be restricted so that Districts don't “borrow” from those dollars for non-facilities related costs.

66. Because CDE is only "required" to review state funded projects, there is no really knowledge of adequacy as it relates to facilities across the state. While the database would improve that, an adequacy evaluation (Williams-like) might be a valuable tool to add to the database. This would then fold into a facilities master plan - perhaps mandated to access state funds?

67. The current formulas whereby the state matches local funds (50-50 for new construction and 60-40 for modernization) should be modified so that low wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high wealth districts a less generous match.

68. Districts seeking state funds for new construction or modernization should be required to have a facilities master plan, and the state should help low wealth districts fund the development of such plans. In determining eligibility for new construction funding, projections of district enrollment growth based on housing development plans should be based on final rather than tentative tract maps.

69. The state's modernization assistance program should be revised to focus on each district's district-wide capital renewal needs as articulated in its facilities master plan. Currently, funding is available only for specific buildings that have not been upgraded for 20 years. In the future, funding should be keyed to district attendance and wealth rather than the enrollment capacity of buildings meeting years-in-use criteria.

70. At regular periods (e.g., one or-two-years) the state should reserve for each district a portion of the funds available under the state's modernization/capital renewal program. The amount of the reservation would be based on the district's attendance and wealth. To access reserved funds, districts would submit lists of proposed renewal projects aligned with the district's facilities master plan and approved by its school board in a public meeting. The reserved funds could be used either in the current or in future periods, but only in combination with local matching funds.

71. The state's modernization program should be revised in a two-step process. As a first step the modernization funds made available through the next voter-approved state school bond measure (say, in 2020) would be mostly focused on improving facilities in the low wealth districts with the highest need for facilities upgrades (as determined by Facilities Condition Index scores). Thereafter, modernization funds made available through subsequent voter-approved bond measures would be distributed more broadly to all districts based on attendance and district wealth.

72. The state should provide assistance to districts needing new facilities not to accommodate enrollment growth but rather to replace extremely deteriorated existing facilities.

73. Require districts to evaluate the total of ownership and a commitment/requirement to budget accordingly as demonstrated in the LCFF. Right now, "good repair" is a

point in time and a TCO will help decision makers to understand the long term needs for ongoing "good repair" .

74. Accreditation should look at facilities…The evidence is clear that facilities matter on achievement.

75. Consider a change to Prop 13 change to assign a portion of a district's debt limit to on-going facility repairs etc. For example, a unified district's debt limit would be, say, 2.45% of assessed value with the residual .05% being an annual, permanent assessment. This reliable source of funds may allow facility needs to be addressed earlier and thereby reducing the need for local bonds—thus the lower debt threshold of 2.45 in this example. This could supplement the 3% RRM account.

76. The state has historically been using "conditions of funding" to implement changes—labor compliance, DTSC etc. This creates a difference in standards between schools based on funding assistance. If state goals are to advance a public good or enhance student safety, they should be applied to all projects not just those for which state money is used--i.e. DSA is required for all projects to ensure structural safety, not just state funded projects. As state funding is likely to be further restricted, the impact of state goals tied to school facility funding will decrease.

77. Clarity of roles. The district is responsible for the planning, funding and maintenance of school facilities. The district is responsible for the planning, funding and maintenance of schools the state provides standards and limited fiscal assistance in the area.

78. Transfer the ownership and maintenance to a JPA or CFD type organization. The district then leases the buildings allowing the district to focus on education not real estate and property maintenance.

79. Right now there are exceptions to programs that can be in non-Field Act buildings. Is there greater flexibility in the future for charter like occupancy? Were the alternative school and other exceptions bases in part on the time spent in the building?

80. Allow schools to be built on CSU, UC campuses without having to meet the Title 5 site standards or Field Act. Will be designed, built and operated by the UC CSU campus.

81. Support a state professional certification that would be like the A4LE certification. We have licensed engineers, architects, industrial hygienists. Etc. Time to make a professional class of school facility manager who could provide a more formal annual FIT review to the same rigor that the district's finances are annually audited by an outside private firm.

82. Policies addressing new School Facilities Programing.

83. Policies addressing new funding models.

84. Policies addressing additional funding mandates for RRM & Deferred Maintenance.

85. Policies streamlining environmental approvals.

86. Policies to fund unfunded facilities mandates such as the new MS4 Permit

87. Policies restructuring bidding requirements.

88. Policies providing additional funding for safety and security.

89. Policies address equity between older and newer schools.

90. Consider alternative sources to fund the state program besides GO Bonds such as Public-Private Partnerships.

91. Mandatory state-wide inventory of school facilities by type and location for each school in each district for adequacy in providing appropriate educational environments for grade level, subject matter, enrollment population and density and district total enrollment.

92. Mandatory district wide education specifications for each type of educational facility including support facilities.

93. Mandatory 10-year district facilities master plan including current and anticipated facility modernizations, new construction and closures.

94. Mandatory analysis of joint use or shared use opportunities of district facilities with other public agencies such as parks and recreation, day care, senior services, libraries, performing and fine arts programs and community colleges.

95. Consider facility impacts of restructuring school student attendance calendars (year-round flexibility) and daily schedules (starting earlier and ending later using staggered schedules) to improve use of existing facilities with the goal of reducing the need for instructional facilities.

96. Include additional apportionment in the LCFF dedicated to instructional environment adequacy.

97. Require school districts to have a master plan as part of their LCAP process that aligns their educational goals, facility needs and capital outlay strategies.

98. Focus on the educational specifications being the driver to rightsizing schools.

99. Require community conversations that define their needs based upon Equity vs. Equality.

100. Incentivize school campuses that maximize joint-use facilities & operations. Aka; Parks & Recreation, After- Care programs, non profits' Boy's & Girls Clubs, Health Clinic, Community College.

101. Incentivize facility projects that maximize campus utilization and reduce the overall facility needs. Aka; set utilization targets for an ES, MS, HS. Example- a Gym teacher does not have a dedicated classroom, they utilize the gym, fields, fitness rooms but they do have a common Office. Why not every high school teacher have a similar arrangement.

102. Redefine the metric for "Adequate School Housing" to Community Centered Education.

103. Require feeder schools/districts between ESD, HSD, USD, CCD to have regularly discussions about optimizing facilities/operations & connectivity.

104. Consider alternative sources to fund the state program besides GO Bonds such as a permanent increase to sales tax of .25 to .5 percent to develop pay-as-you-go program which would be cheaper for all taxpayers in the long run.

105. Financial hardship changes to account for districts with lower assessed valuations so that they can obtain sufficient funding for project(s).

106. Districts that attempt to tap into local resources through bonds but are unable to do so should have another source of funds, e.g., state loan which would regenerate program funds.

107. Governance - State Allocation Board quorum should be majority of those present, not 6 out of 10, and only serve to hear appeals and regulatory/policy issues. Apportionments for standard consent items should emulate general fund apportionments or something similar.

108. State agency reviews – Districts should be able to file construction documents to DSA and OPSC concurrently, but apportionments would not occur until DSA approval is garnered.

109. Timelines for review – All state agencies should be held to a reasonable timeline as districts are.

110. Address adequacy of grants: New construction grants need to be increased to reflect reality.

111. Modernization grants should be increased to a minimum of 50% of the NC grant.

112. Grants should be adjusted on a more-timely basis, e.g., monthly or quarterly basis at apportionment.

113. School design to enhance student learning changes over time, e.g., maker's spaces and other collaborative spaces are “in,” yet state funding isn't provided for these spaces. There should be funding for them.

114. Require a certification such as APPA for facility Maintenance Directors.

115. Centralize facility ownership and expertise at County Office for better life cycle operation and lower cost.

116. Have a separate entity own school facilities and charge a rent of full life cycle cost to Education entities--similar to GSA and DGS approach.

117. Incentivize disposal of facilities greater than projected need, excess facilities are an albatross around the neck of Districts.

118. Develop some standard designs of facilities and have them tailored for different weather zones--Las Vegas USD saw costs come down over time as designs were built.

119. Raise visibility of maintenance unwisely deferred by a public report to Boards conducted by County offices.

120. Have County offices develop robust real estate and facility acquisition skill and sell these services to Districts--San Diego CoE is doing this.

121. Require District facility staff to hold accreditations from APPA or similar institutions.

122. Standardize the facility Master Plan elements including projected need--many are trivial.

123. Develop the statewide inventory of educational assets and require a Facilities Condition Assessment of all.

124. There has always been an implicit assumption, which was expressly discussed in the era during which the Mira, Hart, Murietta laws governed school facilities financing, that the state was responsible for 1/3 the cost, developers were responsible for 1/3 the cost, and local citizens were responsible for the remaining costs. While this policy may have unjustly burdened the state and local citizens with burdens imposed by profit oriented developers, at least responsibilities were

well defined. In the current system, the responsibility lies with no entity. A legitimate policy demands, first and foremost, that financial responsibility be assigned to someone. In my opinion, the developer should be responsible for mitigating the entire cost, and passing that cost along to the homeowner--the beneficiary of both the home and the school--or others burdened by the cost should have a say in whether developments should be approved or disapproved.

125. CA should adequately fund CA schools. Doing so would allow districts to allocate a reasonable amount toward facilities.

126. CA school districts should be required to allocate five % of all state revenues to maintenance.

127. When districts are planning to implement new technology, the total cost of ownership must be included in the expenditure plan.

APPENDIX O

Frequency Distribution Table Round 3: Importance

Round 3 Frequency Distribution Table: Importance

Policy	Ratings										
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	0	0	1	1	3	4	3	4	3	1	2
2	0	1	0	3	0	3	0	5	7	2	1
3	0	0	0	0	0	0	2	1	1	9	9
4	0	0	0	0	0	0	1	2	5	4	10
5	0	0	2	0	1	2	4	3	4	4	2
6	0	2	1	0	2	4	1	4	5	0	3
7	0	1	1	2	1	5	3	0	5	0	4
8	0	2	2	3	3	7	1	1	1	1	1
9	0	1	2	1	1	2	2	5	2	4	2
10	0	0	0	1	0	2	2	4	6	4	3
11	0	2	0	2	0	5	0	4	5	1	3
12	0	0	1	0	1	2	2	3	6	3	4
13	0	1	1	1	1	1	2	4	6	2	3
14	0	0	1	0	1	7	7	3	1	2	0
15	0	4	4	7	0	4	0	2	0	0	1
16	0	1	1	0	1	3	3	8	3	1	1
17	0	0	0	0	0	0	1	2	4	7	8
18	0	4	1	4	0	4	3	2	1	1	2
19	0	0	2	0	4	2	3	3	4	1	3
20	0	3	0	3	0	7	2	2	4	0	1
21	0	0	1	0	0	0	2	2	6	5	6
22	0	0	1	0	2	0	0	2	6	4	7
23	0	0	0	0	2	1	0	4	5	6	4
24	0	1	0	0	0	1	0	3	6	2	9
25	0	0	2	3	2	2	5	4	1	1	2
26	0	0	0	1	0	2	1	4	8	4	2
27	0	0	3	3	0	0	4	3	4	1	4
28	0	4	3	1	0	7	4	1	1	0	1
29	0	0	0	0	2	2	4	6	5	2	1
30	0	0	1	0	2	1	0	3	2	9	4

31	0	1	1	0	0	3	3	4	6	2	2
32	0	0	1	0	2	0	1	3	4	7	4
33	0	2	0	2	1	2	0	5	5	3	2
34	0	0	2	0	0	4	5	3	3	2	3
35	0	2	3	1	3	0	6	4	1	1	1
36	0	1	0	0	1	1	1	2	2	8	6
37	0	0	0	0	0	0	2	1	5	5	9
38	0	0	0	0	1	4	1	8	4	3	1
39	0	2	1	2	2	4	3	5	3	0	0
40	0	0	1	1	1	2	3	4	3	3	4
41	0	2	4	1	1	7	2	2	1	0	2
42	0	3	1	3	1	6	2	1	1	0	4
43	0	2	2	0	0	2	2	2	8	1	3
44	0	5	1	3	1	3	3	4	1	1	0
45	0	5	2	2	3	3	3	1	0	1	2
46	0	2	3	1	1	7	4	2	1	0	1
47	0	1	3	3	2	2	4	0	4	2	1
48	0	1	0	0	1	2	1	3	6	3	5
49	0	4	1	1	0	3	5	1	2	3	2
50	0	0	0	1	0	1	2	3	2	5	8
51	0	0	0	0	0	2	4	2	6	6	2
52	0	2	3	4	3	2	3	0	3	1	1
53	0	2	3	2	1	2	1	4	3	1	3
54	0	2	2	2	3	4	3	1	2	2	1
55	0	4	1	0	0	3	0	2	7	4	1
56	0	1	0	3	0	2	0	3	1	7	5
57	0	1	0	3	0	3	2	5	4	2	2
58	0	1	1	1	0	3	2	6	3	3	2
59	0	5	3	6	4	1	0	2	0	0	1
60	0	1	1	1	0	4	3	5	2	0	5
61	0	0	0	2	1	11	4	2	1	0	1

APPENDIX P

Frequency Distribution Table Round 3: Likelihood of Implementation

Round 3 Frequency Distribution Table: Likelihood of Implementation

Policy	Ratings										
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	0%	30%	10%	40%	10%	60%	0%	40%	20%	10%	0%
2	0%	0%	50%	0%	10%	90%	30%	20%	10%	0%	0%
3	0%	0%	0%	30%	10%	50%	20%	40%	50%	20%	0%
4	0%	0%	0%	20%	0%	20%	40%	70%	40%	10%	20%
5	10%	0%	40%	30%	50%	50%	30%	10%	0%	0%	0%
6	10%	20%	0%	20%	50%	50%	30%	10%	30%	0%	0%
7	0%	20%	0%	40%	40%	60%	20%	0%	30%	0%	10%
8	30%	40%	20%	60%	30%	20%	0%	0%	10%	0%	10%
9	20%	40%	30%	10%	10%	60%	40%	0%	10%	0%	0%
10	0%	40%	20%	20%	40%	70%	10%	10%	10%	0%	0%
11	70%	70%	10%	40%	0%	20%	0%	10%	0%	0%	0%
12	20%	10%	20%	40%	40%	60%	10%	10%	0%	0%	0%
13	10%	40%	30%	10%	40%	40%	20%	0%	20%	10%	0%
14	10%	50%	30%	60%	30%	20%	20%	0%	0%	0%	0%
15	20%	20%	10%	40%	90%	40%	0%	0%	0%	0%	0%
16	0%	0%	0%	10%	0%	20%	40%	80%	40%	10%	20%
17	30%	50%	20%	40%	0%	20%	10%	30%	0%	0%	20%
18	0%	10%	40%	30%	0%	50%	50%	30%	10%	0%	0%
19	20%	10%	30%	30%	20%	60%	20%	10%	10%	0%	0%
20	0%	10%	20%	0%	20%	30%	50%	20%	60%	10%	0%
21	0%	10%	0%	20%	10%	40%	40%	40%	40%	10%	10%
22	10%	0%	20%	10%	10%	20%	40%	50%	50%	10%	0%
23	10%	0%	0%	0%	20%	40%	30%	70%	30%	10%	10%
24	0%	20%	10%	40%	0%	60%	20%	30%	10%	10%	10%
25	0%	10%	0%	40%	30%	70%	20%	40%	10%	0%	0%
26	0%	20%	40%	20%	20%	50%	40%	10%	20%	0%	0%
27	10%	50%	60%	50%	30%	10%	0%	0%	10%	0%	0%
28	0%	20%	30%	20%	30%	60%	10%	30%	10%	10%	0%
29	0%	20%	0%	40%	10%	90%	10%	20%	20%	0%	10%

30	0%	20%	0%	20%	20%	40%	60%	40%	10%	10%	0%
31	0%	0%	20%	20%	0%	40%	60%	50%	10%	10%	10%
32	30%	10%	30%	20%	10%	60%	40%	10%	0%	0%	10%
33	10%	40%	20%	30%	40%	50%	20%	10%	0%	0%	0%
34	20%	30%	40%	30%	70%	20%	0%	0%	10%	0%	0%
35	10%	10%	0%	20%	10%	50%	60%	40%	20%	0%	0%
36	0%	0%	0%	0%	20%	30%	10%	90%	50%	10%	10%
37	0%	0%	0%	20%	40%	30%	40%	60%	30%	0%	0%
38	20%	30%	40%	80%	10%	40%	0%	0%	0%	0%	0%
39	0%	20%	60%	20%	30%	40%	10%	20%	0%	0%	20%
40	30%	60%	0%	20%	60%	40%	10%	0%	0%	0%	0%
41	30%	0%	60%	50%	20%	30%	30%	0%	0%	0%	0%
42	20%	30%	10%	30%	50%	40%	30%	10%	0%	0%	0%
43	30%	10%	30%	20%	50%	40%	20%	10%	0%	0%	10%
44	60%	30%	50%	20%	10%	30%	20%	0%	0%	0%	0%
45	30%	40%	10%	10%	80%	40%	10%	0%	0%	0%	0%
46	30%	20%	30%	20%	0%	80%	10%	20%	0%	10%	0%
47	20%	10%	30%	30%	40%	40%	10%	20%	0%	20%	0%
48	70%	40%	30%	40%	0%	30%	0%	0%	10%	0%	0%
49	10%	40%	10%	10%	20%	60%	20%	30%	10%	0%	10%
50	10%	40%	30%	20%	50%	40%	10%	10%	0%	0%	10%
51	0%	60%	20%	50%	30%	20%	30%	0%	10%	0%	0%
52	10%	30%	40%	20%	50%	30%	30%	10%	0%	0%	0%
53	10%	10%	20%	80%	10%	40%	40%	10%	0%	0%	0%
54	30%	20%	10%	30%	50%	20%	10%	10%	30%	0%	10%
55	20%	0%	10%	20%	10%	40%	60%	20%	20%	10%	10%
56	10%	20%	20%	40%	20%	60%	30%	0%	20%	0%	0%
57	10%	40%	10%	20%	30%	60%	10%	10%	10%	20%	0%
58	70%	70%	60%	20%	0%	0%	0%	0%	0%	0%	0%
59	0%	20%	10%	20%	50%	50%	0%	20%	0%	0%	50%
60	0%	20%	50%	50%	50%	30%	10%	10%	0%	0%	0%
61	0%	30%	10%	40%	10%	60%	0%	40%	20%	10%	0%

APPENDIX Q

Field-Test Participant Feedback Questionnaire

As a doctoral student and researcher at Brandman University, your assistance is appreciated in helping design this survey instrument. Your participation is critical to the development of a valid and reliable instrument.

Below are some questions that I have developed. I would appreciate your answering these questions after completing the round 2 questionnaire sent previously. Your answers will assist me in refining the written instructions the survey itself.

I am providing you with a hard copy of the survey as well, in case the need for a reminder of its contents should arise. Thank you again for your assistance.

1. How many minutes did it take for you to complete the consent survey, starting from the moment your logged into the survey until the time of completion?_____

2. How many minutes did it take for you to complete the Round 2 survey, starting from the moment your logged into the survey until the time of completion? _____

3. Was the initial part of the consent survey that requested you to provide consent information concerning for you at all? (Y/N) _____

   If so, please state the nature of your concern. _____
   _____

4. Were the surveys introductions clear and concise enough to inform you of the nature of the research? (Y/N) ____ If not, what could you recommend for the introduction to be better?_____
   _____

5. Were the instructions to complete the surveys complete enough for you to understand what to do? (Y/N) ____ If not, could you briefly state the issue and what could be done to improve the instructions? _____
   _____

6. Were the policy suggestions from the qualitative responses in Round 1 prompt clear? (Y/N) _____ If not, could you describe the issue and how to improve the scale?
   _____
   _____

7. As you were able to progress through the round 2 survey, in which you were asked to provide quantitative responses to a specific prompts from Round 1, were you left with any question in your mind as to how to proceed? (Y/N) _____

APPENDIX R

BUIRB Approval

BRANDMAN University

Brett Mitchell <bmitche1@mail.brandman.edu>

BUIRB Application Approved As Submitted: Brett A. Mitchell

MyBrandman <my@brandman.edu> Fri, Oct 5, 2018 at 4:10 PM
To: bmitche1 Student <bmitche1@mail.brandman.edu>
Cc: "Ainsworth, Patrick" <painswor@brandman.edu>, buirb <buirb@brandman.edu>, "Devore, Douglas" <ddevore@brandman.edu>

Dear Brett A. Mitchell,

Congratulations, your IRB application to conduct research has been approved by the Brandman University Institutional Review Board. This approval grants permission for you to proceed with data collection for your research. Please keep this email for your records, as it will need to be included in your research appendix.

If any issues should arise that are pertinent to your IRB approval, please contact the IRB immediately at BUIRB@brandman.edu. If you need to modify your BUIRB application for any reason, please fill out the "Application Modification Form" before proceeding with your research. The Modification form can be found at the following link: https://irb.brandman.edu/Applications/Modification.pdf.

Best wishes for a successful completion of your study.

Thank you,
Doug DeVore, Ed.D.
Professor
Organizational Leadership
BUIRB Chair
ddevore@brandman.edu
www.brandman.edu

APPENDIX S

Abbreviated Round 1 Policy Alternatives, With Rounds 2 and 3 Panel Median Ratings

Table S1

Abbreviated Round 1 Policy Alternatives, With Rounds 2 and 3 Panel Median Ratings

		Median scores			
		Importance		Likelihood	
	Policy alternatives	R-2	R-3	R-2	R-3
1	Require school districts to create a mandated program that all campuses reach zero net energy by a specified date.	7	6	50%	50%
2	Adopt a policy that relates the savings from energy solutions (e.g., solar) to additional funding for educational facilities.	7	7	50%	50%
3	Require school districts to create a reserve account for the maintenance and replacement of existing and new facilities.	9	9	60%	70%
4	Require school districts to allocate a minimum amount of funds to deferred maintenance to be eligible for state matching funds.	9	9	70%	70%
5	Require school districts to develop a life cycle cost analysis as a total cost of ownership on construction projects.	8	7	40%	40%
6	Eliminate requirement for DSA approval PRIOR to OPSC funding a project and allow for some versions of preliminary funding or other simplifications to the application process.	7	7	50%	50%
7	Ensure DSA fees include ONLY Fire & Life Safety, accessibility and structural scopes of work.	6	6	50%	50%
8	Develop standard designs of facilities that are adjusted for different weather zones.	5	5	30%	30%
9	Increase the state lottery percentage to districts, yet specific to facilities construction and/or maintenance, as a permanent funding source established for state matching funds, outside of Prop 98.	7	7	50%	50%
10	Implement a .25% to .5% statewide sales tax as a permanent funding source, with “pay-as-you-go” options, established for state matching funds specific to facilities construction and/or maintenance, yet separate from existing Prop 98 allocations.	8	8	40%	40%
11	Require the state of California to allocate 5% of all state revenues to school district maintenance and/or construction.	7	7	10%	10%

Table S1—*continued*

	Policy alternatives	Median scores: Importance R-2	Importance R-3	Likelihood R-2	Likelihood R-3
12	Allow districts to retain a portion of their local property tax growth for local maintenance and/or construction needs. These funds must be outside of LCFF and Proposition 98 and restricted for school facilities.	8	8	40%	40%
13	Since 1998, debt service for school bonds has been appx 2.5% of the state budget. A reduction over time of this debt could be accomplished with the debt service "savings" committed to school facilities.	8	8	40%	40%
14	Mandates for a "business percentage fee" for businesses to contribute to the state education funds that are specific to facilities or matching funds, similar to developer fees at a state level. Explanation: Schools are developing career-ready business leaders and creating more families/students (e.g., Amazon in Seattle).	6	6	30%	30%
15	Require the state of California to adopt policy that mandates colleges to contribute to the state K-12 education funding to assist in ensuring college readiness.	3	3	10%	10%
16	Require the state of California to designate a small portion (.05%) of Prop 13 moneys specific to facilities improvements.	7	7	40%	40%
17	Require the state of California to require restricted maintenance accounts.	9	9	70%	70%
18	Require school district personnel to report any lack of maintenance to County Office Boards of Education.	5	5	30%	30%
19	Enact a study of California school construction costs to guide regulations intended to reduce costly regulations without sacrificing safety.	7	7	50%	50%
20	Require feeder schools/districts between ESD, HSD, USD, CCD to have regular discussions about optimizing facilities/operations & connectivity.	5	5	40%	50%
21	Adapt current "hardship" program to allow for allocations to districts in an equitable manner.	9	9	60%	60%
22	Enact legislative revisions that consider the socioeconomic status of the school district and the ability of that district to pass bonds or receive developer fees.	8	9	60%	60%

Table S1—*continued*

	Policy alternatives	Median scores			
		Importance		Likelihood	
		R-2	R-3	R-2	R-3
23	Enact legislative revisions that utilize a tiered system, beyond financial hardship, that is tied to a district ability to generate local income.	9	8	60%	70%
24	Revise the current formulas for state matches to local funds (50-50 for new construction and 60-40 for modernization). This policy should be modify these formulas such that low-wealth districts (as measured by assessed property value per student) would receive a more generous match from the state, and high-wealth districts a less generous match.	9	9	70%	70%
25	Enact legislation that allows for the determining of eligibility for new construction funding to be based on the projections of district enrollment growth for housing development plans based on final rather than tentative tract maps.	6	6	50%	50%
26	Incentivize districts to replace deteriorating facilities needing new facilities when there is no enrollment growth.	8	8	50%	50%
27	Enact legislation that requires the state of California to provide school facility planning technical assistance to school districts.	7	7	50%	50%
28	Restructure attendance calendars (year-round flexibility) and daily schedules (starting earlier and ending later using staggered schedules) to improve use of existing facilities with the goal of reducing the need for instructional facilities.	5	5	20%	20%
29	Enact legislation that allows school districts that are unable to pass local bonds to utilize other sources of funds such as state loans that regenerate program funds.	7	7	50%	50%
30	Enact legislation that requires new construction grants to be increased. Modernization grants should be increased to a minimum of 50%. Grants should be adjusted on a more-timely basis.	9	9	50%	50%
31	Enact legislation that allows state funding for current design strategies such as maker spaces.	7	7	60%	60%
32	Allocate available funds based on local ability (or inability) to fund schools. A formula that includes assessed value, new development, surplus property, etc., to be developed.	9	9	60%	60%

Table S1—*continued*

	Policy alternatives	Median scores			
		Importance		Likelihood	
		R-2	R-3	R-2	R-3
33	Mandate that any Local Control Accountability Plan (LCAP) plan that does not address facilities in a comprehensive manner is illegal.	7	7	50%	50%
34	Increase the Local Control Funding Formula (LCFF) to allow for comprehensive funding to K-12 school facilities and its various program needs.	7	7	40%	40%
35	Adopt a "per pupil" grant funding formula that is received as a part of LCFF, while still requiring district matching funds.	6	6	30%	30%
36	Enact legislation that requires school districts in the state of California to establish an inventory of school facilities statewide and utilize a database to track monies dispersed vs. improvements completed.	9	9	60%	60%
37	Enact legislation that both funds and requires districts seeking state funds for new construction or modernization to have a comprehensive, equitable, and long-range facilities master plan.	9	9	70%	70%
38	Enact legislative that requires district wide education specifications for each type of educational facility including support facilities.	7	7	60%	60%
39	Require legislators to seek federal level financial support for its schools.	6	6	30%	30%
40	Adopt a system of accountability that holds elected public and school district officials accountable for the adequacy of their school facilities.	8	7	40%	40%
41	Enact legislation that places authority on facility directors to report to state-level officials as to the adequacy of schools' facilities.	5	5	40%	40%
42	Enact legislation that proves to relax bidding requirements, which will in turn increase competition amongst contractors, improve quality and provide for more competitive pricing.	5	5	30%	30%
43	Require school districts to develop a comprehensive facilities master plan as a condition of WASC accreditation.	8	8	40%	40%
44	Allow school districts to build schools on CSU and UC campuses without having to meet the Title 5 site standards or Field Act. Schools to be designed, built and operated by the UC and CSU campuses.	5	5	40%	40%

Table S1—*continued*

	Policy alternatives	Median scores			
		Importance		Likelihood	
		R-2	R-3	R-2	R-3
45	Require school district facility staff to hold accreditations from Association of Physical Plant Administrators (APPA) or similar facilities manager training institutions.	5	4	20%	20%
46	Legislative action that requires the state of California to establish bulk buying and/or contracting systems to save money.	5	5	40%	40%
47	Enact legislative revisions to current policy that allows for the State Allocation Board quorum to be by a simple majority of those present, not 6 out of 10, and to only serve to hear appeals and regulatory /policy issues. Apportionments for standard consent items should emulate general fund apportionments or something similar.	6	6	50%	50%
48	Require all state agencies to be held to a reasonable review timeline similar to districts.	8	8	40%	40%
49	Enact legislative revision that requires developers to be solely responsible for mitigating the entire cost of building schools and passing that cost along to the homeowner.	6	6	20%	20%
50	Enact legislation action that requires the state of California to set and maintain a policy that all students have access to safe, clean quality classrooms and establish an annual facilities budget that supports it.	9	9	50%	50%
51	Enact legislation that requires the state of California to adopt a policy mandating that instructional needs define facility needs, not vice versa, and provide the matching resources to meet that policy.	8	8	40%	40%
52	Enact legislation that requires the state of California to provide technical assistance to districts in construction contracting.	4	4	30%	30%
53	Enact legislation that creates a fixed funding formula based on age of facility and projected enrollment.	7	7	40%	40%
54	Enact legislation that eliminates the first come first serve funding practice under current policy.	5	5	30%	30%

Table S1—*continued*

	Policy alternatives	Median scores			
		Importance		Likelihood	
		R-2	R-3	R-2	R-3
55	In many parts of the state, housing affordability is a concern in retaining good teachers, administrators and staff. Enact legislative that requires the state of California to consider laws that encourage developers and school districts to partner so that excess assets could be utilized for the betterment of the community.	8	8	40%	40%
56	Place the California Dept. of Education in charge of all state school facilities funding processes.	9	9	50%	60%
57	Institute a "per pupil" funding allocation specifically for facilities and adopt a policy that allows districts to borrow against that money specifically for facilities improvements.	7	7	40%	50%
58	Enact legislation that allows for alternative sources to fund the its facilities other than GO Bonds such as public-private partnerships. These public-private partnerships can be paid back utilizing a revenue stream created by making Prop 98 permanent and specific to facilities improvements.	7	7	40%	50%
59	Transfer school district ownership and maintenance to a JPA, CFD, or County Office of Education. The school district would then lease the buildings, allowing the district to focus on education not real estate and property maintenance.	3	3	10%	10%
60	Enact legislation that requires school districts to consider joint use or shared use opportunities of district facilities with other public agencies such as parks and recreation, day care, senior services, libraries, performing and fine arts programs and community colleges.	7	7	50%	50%
61	Enact legislation that requires county office development of real estate and facility acquisition strategies that are used in service to districts.	5	5	30%	30%

Note. R-2 = Round 2; R-3 = Round 3.