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# A Delphi Study of Possibilities of Learning by 2035: Identify and Describe the Educational Changes for High Schools in California that are Possible and Probable by 2035 as Perceived by a Panel of Experts

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# A Delphi Study of Possibilities of Learning by 2035: Identify and Describe the Educational Changes for High Schools in California that are Possible and Probable by 2035 as Perceived by a Panel of Experts

A Dissertation by

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There is no passion to be found playing small in settling for a life that is less than the one you are capable of living.

—Nelson Mandela

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As I have now reached the top of this mountain, it is the bottom of the next, so I must keep climbing.

ABSTRACT

A Delphi Study of Possibilities of Learning by 2035: Identify and Describe the Educational Changes for High Schools in California that are Possible and Probable by 2035 as Perceived by a Panel of Experts

by Guillermo Lopez

**Purpose:** The purpose of this Delphi study was to identify and describe the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In addition, the purpose was to determine the level of desirability of educational changes identified as probable by a panel of experts. Finally, the purpose was to describe the actions necessary to promote the desirable educational changes by 2035 as perceived by the expert panel.

**Methodology:** The Delphi method was used as a mixed methods approach to build consensus among experts. Fifteen experts from diverse secondary education disciplines were purposively chosen based on specific criteria. Educational changes meeting an 85% consensus threshold were investigated further to determine actions needed for probable and desirable changes to occur by 2035.

**Findings:** This study identified three major findings related to actions necessary to promote these changes as discusses in the conclusions.

**Conclusions:** This study's conclusions were based on what the panel members identified as the actions necessary to promote probable and desirable changes. First, school districts need to establish partnerships to ensure a focus on learning for both students and staff, and second, school districts need to consistently implement strategic planning and continual monitoring of learning.

**Recommendations:** Implications for action were developed to support the recommended changes based on the data findings, conclusions, expert panel members' ideas, and new learning from this study.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

# PREFACE

Following discussions and considerations regarding the opportunity to explore the future and educational change, three faculty researchers and four doctoral students discovered a common interest in forecasting the educational changes perceived by experts by 2035. In addition, the researchers were interested in exploring the actions necessary to promote desirable educational changes by 2035. These common interests resulted in a thematic study conducted by a research team of four doctoral students.

The four peer researchers and three faculty advisors ultimately chose a Delphi design that would be the most appropriate methodology because the goal of the Delphi design is to build consensus from a group of experts in the area of interest (Linstone & Turoff, 1976). In this study, the Delphi design assisted the researchers to glean information about the future of education from recognized experts in the field of educational innovation and the future. Each researcher used a panel of five members meeting four of seven agreed upon criteria. The team cocreated the purpose statement, research questions, definitions, survey prompts, and study procedures to ensure thematic consistency.

The term *peer researchers* refers to the other researchers who conducted this thematic study. They were Christopher Frymire, California community college; Guillermo Lopez, California high schools' secondary public education (Grades 9–12); Anita Palacios, California elementary public education (Grades TK–6); and Mary Pluff, California 4-year higher education.

# CHAPTER I: INTRODUCTION

> Education is the passport to the future, for tomorrow belongs to those who prepare for it today.
>
> —Malcolm X, Brainy Quotes

Today's education systems are too often inherited from decades-old structures and measures born in the industrial era, which have not changed to meet the educational needs of the 21st century (Darling-Hammond, 2021). However, the disruptions caused by the global COVID-19 pandemic have created several chances to reinvent education by introducing new abilities for educators to reconstruct schools. The pandemic also made clear the urgency of capitalizing on innovations that have emerged for creating student-centered approaches to foster 21st-century education systems (Vegas & Winthrop, 2020).

Because of the global pandemic that disrupted schooling for masses while fast-tracking regional tendencies toward digitalization and automation, restructuring secondary education structures has never been more pressing (Materu, 2020). To prepare all students for educational achievement, public education will need to essentially reimagine the current state of the country's schools and classroom settings. The current public education structure needs to catch up with how the world is growing and educational leaders need to recognize what is known about how students learn (Srinivasan, 2021). As new businesses are developed, and traditional industries grow, the skills required to obtain these types of jobs are growing faster than in previous decades. Professors and educational leaders need to approach skills development with a flexible, expanding mindset that will help students across the international, information-based economy and through their professions (Jahanian, 2020).

There is an undeniable need to train the next generation in emerging digital competencies to be fluent in designing, developing, or employing technology responsibly (Materu, 2020). In addition, 21st-century scholars need to address problems from many viewpoints, nurture and develop creativity, participate in multifaceted forms of communication, and influence critical thinking skills (Vander Ark, 2021). Equally important, personalization and a fast-paced approach will likely be priorities as schools encounter learning and opportunity holes that were exacerbated during the pandemic. Technology can be used to support individualized learning, but instruction will have to change (Knips, 2020).

The pandemic forced school systems to reevaluate and adjust their infrastructure, budget, supply chains, policies, and culture to operate safely after reopening. For example, the poor conditions of public school buildings and grounds were barriers to meeting the public health guidelines that would enable the most impoverished districts to mitigate the spread of the COVID-19 virus and reopen schools (Heming, 2021). Those schools that had vacant classroom space and adequate classroom aides staggered schedules, spaced desks at least six feet away from each other, and enabled for reduced classroom sizes to meet public health mandates.

Another impact of the pandemic was connections with areas of communities that customarily are not involved in students' learning (Vander Ark, 2021). For example, when schools began to close, teachers started to collaborate with parents in new ways; school districts developed new partnerships with communal health, social welfare, and media industries; and business firms partnered with nonprofits to support students learning in new ways (Vegas & Winthrop, 2020). As a result, an exceptional educational

environment evolved, setting opportunities for a postpandemic world and calling for academics with greater responsibility and teaching with true transparency (Goodwin University, 2021). Students, faculty, and staff are learning new traditions, altering how they operate, and engaging in additional innovative ways.

The pandemic toppled virtually each part of school system at once because the change was not only from classrooms to computer screens; it also forced educators to reevaluate the familiar notions about teaching, attendance, assessments, funding, the role of technology, and the human contacts that hold it all organized (St. George et al., 2021). In the 2022–2023 school year, school districts had to reconsider the increasing notion that some changes could continue to evolve.

## Background

### History of Secondary Education

The Elementary and Secondary Education Act (ESEA) states that public school systems and individual public schools are held accountable for monitoring and improving achievement outcomes for students and closing achievement gaps (Congressional Research Service, 2022). This requirement sustains a focus that was initiated by amendments to the ESEA made by the No Child Left Behind Act of 2001 and modified under Every Student Succeeds Act (Congressional Research Service, 2022). The current high school model is that every student will achieve a greater degree of ability in core academic subjects, increased foreign languages, interdisciplinary courses, and alternative assessment approaches (Mintz et al., 2022).

The general outline for high school offerings was formed by a group of education luminaries assembled by the National Education Association (NEA) in 1892 and referred

to as the Committee of Ten (Rislov, 2017). The original recommendations of the Committee of Ten are still generally followed today in comprehensive high schools, including 12 years of schooling and 8 years of primary education followed by 4 years of secondary schooling. This initial secondary education model expected that the majority of students would not attend higher education and that most of the students had slight need for demanding academic expectations (Heick, 2015).

**National Issues in Education**

Although education has continued to evolve over time, the current education system is affected by a wide range of challenges, from school safety, lack of parental involvement, poverty, and much more. For several years, a series of high-profile mass shootings in U.S. schools have caused dozens of deaths and led to discussions about improved ways to keep students safe at school (Trade Schools, Colleges and Universities, 2022). Another challenge has been targeted violence in schools. Targeted violence refers to violent acts that are deliberate and directed at specific individuals, groups, or locations (School Safety.gov, n.d.). In these cases, the culprits identify their targets for specific motives, such as the experience of a grievance or to make a political or philosophical statement. Parents' involvement in their student's school activities appears to have the most substantial impact on students' academics (Waterford.org, 2022). However, parents of marginalized or low-socioeconomic students are not as involved in their students' education as parents of higher socioeconomic students. Consequently, students of disengaged parents are negatively affected in school, and a lack of parenting is linked with low grades and overall performance (Layton, 2015).

Student poverty is a growing problem. The data from the U.S. Census Bureau of 2018 estimated that an overwhelming 11.9 million children are living in poverty (USC Rossier School of Education, n.d.). Poverty has been correlated to negative impact on achievement tests, and the lingering stress can impact children's physical, mental, sensitive, and perceptive functioning (Trade Schools, Colleges and Universities, 2022). Unfortunately, many of the barriers that schools attempt to overcome, such as opportunity, achievement, and graduation rate, are associated with poverty (Trade Schools, Colleges and Universities, 2022). Despite all of these challenges, public education still offers significant benefits, such as school readiness programs and scholarship programs, to students who attend their classrooms every day, which increases access to early college and career programs for low-income students (Giovetti, 2022). Safeguarding equity in education is an essential component in closing the achievement gap (Darling-Hammond, 2019). The recent pandemic and distance learning have magnified equity concerns in schools, and new considerations related to internet accessibility, home life, and other factors are affecting student engagement and achievement (Thompson, 2021).

According to the Education Law Center's (2022) annual report *Making the Grade,* even before the COVID-19 pandemic, the condition of school funding in many states struggled to provide adequate funding for public school students. Predominately, districts with minimal funding sources, especially those serving concentrations of students from low-socioeconomic families, have been impacted the most (Darling-Hammond, 2019). Although school funding levels fluctuated dramatically from one school district to another because of their demographics, the federal-funded implementation of the equity

funding proposal alleviated this concern (Education Law Center, 2022). For the 2022–2023 school year, TK–12 and community colleges in California saw an increase in surplus in the Proposition 98 funding alone of $37.2 billion (Fensterwald & Xie, 2022). This additional funding is expected to help cover the rising costs of maintaining the infrastructures, pay raises, new hires, and the higher pension costs for teachers and other employees.

Schools across California and the nation are scrambling daily to fill classrooms amid a substitute teacher shortage. California was facing a shortage of 50,000 teachers going into the 2022–2023 school year (Benson & Brown, 2022). In some cases, school districts are more impacted now than before the pandemic. According to C. Jones (2022), despite the fact that school districts in California have received more robust funding allocations to expand staff, many districts have been left with greater than expected hiring needs. Another possible variable is that substitute teachers are being more selective as to where they want to work along with the type of assignment. Because schools post their openings and substitutes choose which ones they want to accept, some substitute teachers might have a personal preference for certain schools and may avoid low-income communities (Heong, 2022).

**Evolution of Secondary Education**

Ever since the second half of the 20th century, high school and posthigh school educations (university and college) have significantly increased in enrollment nationally. Between 1970 and 2020, the fraction of adults with no prior high school completion decreased from 23% to fewer than 10%; the percentage of individuals with limited or complete high school education increased from 16% to 36%, and individuals with a

posthigh school education increased from about 3.3% to 10% (Williams, 2021). One of the factors correlated to this expansion was the implementation and access to digital technology in the mid-1980s. The changes in technologies and education have evolved very quickly since the mid-1990s (Rislov, 2017). As a result, in the past 2 decades, teaching was grounded in books and lectures, but today it has transitioned to iPads and websites. Previously, the norm was for students to devote long periods of time in libraries seeking books for a project or for exploration (Will, 2019).

A significant change in the curriculum used in schools is the shift to teaching students skills rather than content (Darling-Hammond, 2021). Previously, students remained passive recipients who were taught and expected to memorize material (Heick, 2015). The curriculum used today has grown with opportunities for students to collaborate in groups to analyze and converse on topics. This growth has been essential to develop the students' familiarity and communication skills and be more helpful for college and career preparation instead of focusing on memorizing the facts (Will, 2019). Secondary school reform has been an ongoing work in progress. Public schools continue to meet the requirements and deliver a suitable education for students with various needs by utilizing innovative instructional practices (Mintz et al., 2022).

Some of the innovations currently applied in secondary education schools include project-based learning, flexible scheduling, flipped classroom, and inquiry-based learning. Project-based learning (PBL) has been identified as a teaching technique by which students collaborate for extended periods to examine and answer multifaceted questions, problems, or trials (Rislov, 2017). Similarly, flexible scheduling is also implemented for students and teachers to have prolonged time to focus on several

instructional strategies and more student-tailored connections. Block scheduling is a form of flexible scheduling that increases the class period to 90 or 120 min every other day instead of the traditional daily class time of 40–50 min (Mintz et al., 2022). The flipped classroom model was pioneered by Aaron Sams to flip or reverse traditional instruction (Chernova, 2022). In a flipped classroom, students complete the instructional portion at home on their own time and work on the problem-solving application during class time. In this model, students learn new concepts prior to class and then check their understanding during various class activities. Last, inquiry-based learning (IBL) allows students to make use of their natural curiosity as students must ask questions, generate information and data, apply knowledge in new ways, synthesize their findings, and arrive at well-supported conclusions (Bauld, 2022).

**Theoretical Foundations**

Theoretical foundations in research provide the context for this study because they allow one to explore the variables to be measured and the relationships between them (C. C. Gibson, 2005). In this study, some of the foundational theories included organizational change theory, systems theory, social systems theory, futures thinking theory, appreciative inquiry theory, and continuous improvement theory. Kurt Lewin's organizational change theory focuses on the change process of business environments and how the status quo impacts organizational transformation (Samuel, 2021). Systems theory is used to comprehend sets of objects, the associations among those objects, and the relationship between sets of objects and their environments and has been extensively applied to the study of organizations (Corlett, 2018). Futures thinking theory focuses on possible, probable, and preferable futures by learning and using new insights to achieve

various ends (Inayatullah, n.d.). Appreciative inquiry theory engages collections of people in self-determined transformation and has an emphasis on what is working instead of what is not working and directs individuals in codesigning their future (Moore, 2019). Finally, continuous improvement theory focuses on the ongoing effort of doing something better and improving it (Porumboiu, 2021).

### *Theories of Organizational Change*

When organizations seek to change, the general purpose of an organizing framework is to create a structure for building the organization (Batras et al., 2016). The purpose of models is to help simplify the stages and support the task of change management, and two more commonly used models are Lewin's 3-step model and Kotter's 8-step model (Watson, n.d.). Both of these models correlate very well because Kotter's 8-step progression aligns with Lewin's foundational model for change (WalkMe Team, 2022).

**Lewin's Change Theory.** Lewin's theory clarifies that people typically struggle with change, settle toward what they are used to, and seek out what is comfortable (Lucidchart, n.d.). The effective application of change needs greater effortlessness, and Lewin simplified the process into three practical stages: unfreeze, change, refreeze (Schein, 1996). The stage of unfreeze includes bringing awareness to individuals of the necessity for change, followed by change that includes the acceptance of doing things differently, and last refreeze is the ultimate phase in which people accept or internalize the new ways of working or change (Schein, 1996).

**Kotter's Change Model.** When compared to Lewin's theory, Kotter's 8-step change model is more intricate with the following steps: (a) creating a sense of urgency,

(b) forming a guiding coalition, (c) creating a strategic vision, (d) intimating change communication, (e) removing barriers of change, (f) generating short-term wins, (g) making change a continuous process, and (h) formally incorporating a change continuous process that inspires individuals to understand the need for change after being persuaded by the company leaders (Watson, n.d.). According to Kotter (1995), the change development process has several stages that usually need a significant length of time to develop. He warns that if companies skip key steps during the process, they create only the perception of progress and never harvest a satisfying result.

### *Systems Theory*

Systems theory studies society as a multifaceted arrangement of fundamentals, including people and their values, as a whole (Gordon, 2022). Teeboom (2018) found that the relationship of change with systems theory focuses on examining the way society acclimates to its environment via adjustments in its structure and meaningful suggestions for consideration of its social order. The concept of systems theory is disconnected from traditional management theory that regarded organizations as machines and takes a more complete view that interprets companies as networks of people, procedures, and activities (B. Gibson, 2023).

### *Social Systems Theories*

Social systems theories arose from general systems theory and hold that people are often viewed as silos; instead, these individuals need to be considered integral members of groups, organizations, and societies as a whole (Bosco-Ruggiero, 2019). Social systems theory was established by Niklas Luhmann who recognized the bond of personal or environmental roles that are a part of a whole community (Bozkuş, 2014).

Moreover, the social system also includes a larger society that works together and functions as a connection between community organizations and larger institutions (Mayrhofer, 2004).

### *Futures Thinking Theory*

A key element of leading organizations involves intertwining the practices of futures thinking and design into planning for the future (Prince, 2020). In a fast-moving world, futures thinking aids to envision a broader array of the possible, plausible, and probable futures in which people will learn and live (Corthell, 2021). Futures thinking is not attempting to foresee the future but rather a way to identify possible inferences of current issues that allow people and organizations to plan wanted futures (McBain & Solomon, 2020). Through these lenses, leaders are able to not only view the world in the current state but also view it as an ideal condition to resolve multifaceted challenges and to produce a more humane and equitable future.

### *Appreciative Inquiry Theory*

Appreciative inquiry includes the skill of questioning to develop a system's collective capacity to capture the strengths and constructive abilities that unite with more significant senses and common goals (Cooperrider & Fry, 2020). Similar to organizational theory, appreciative inquiry theory's framework concentrates in the current core abilities, strengths, and achievements of the members of the organization; it allows them to foresee the probable futures; it develops partnerships to recognize the possibilities, plan projects, and plan events that the associates are eager to obligate to (Stratton-Berkessel, 2022).

### *Continuous Improvement Theory*

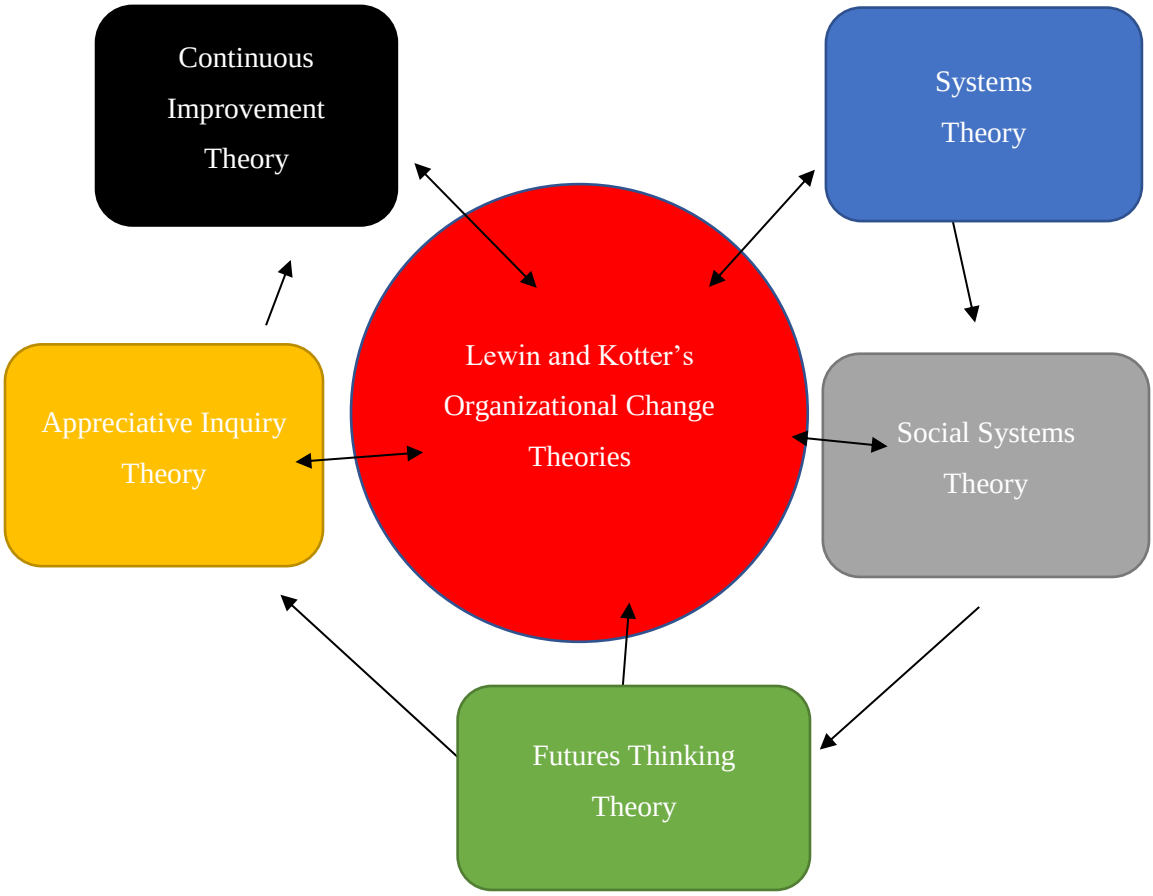
Continuous improvement theory is a system for improving processes and procedures in which tools can be used to support organizational change (Asset Management Advocates, 2019). This theory supports a framework to aid sustainable process developments in an orderly, data-driven approach. It helps to transform the structural developments, guidelines, and practices and needs to be implemented into day-to-day work in a systemized way (Fabillar & Wang, 2019).

## Conceptual Framework

A conceptual framework model describes how the current theories help to inform a specific problem and demonstrates to the individual how different fundamentals become linked to enable the study and to have a strong understanding of what outcomes will be (Jabareen, 2009). Figure 1 shows the conceptual framework I developed. This framework model was used for organizing and collecting the data for this study related to the possibilities of high school education by 2035. Lewin's and Kotter's models for organizational change served as the theoretical foundation as both of these change theories align with each other (WalkMe Team, 2022).

**Figure 1**

*Conceptual Framework of the Possibilities of High School Education in 2035*




In addition, systems theory, social systems theory, futures thinking theory, appreciative inquiry theory, and continuous improvement theory were used to help me understand the types of change that emerged from the study to achieve organizational change. These theoretical models are regarded as applicable and able to facilitate several levels of change for individuals and groups of people, organizations, and systems (Bosco-Ruggiero, 2019; Corthell, n.d.; B. Gibson, 2023; Mayrhofer, 2004). In addition, these models require a focused consideration to critical examination, standards, language, and appropriate processes that are essential for implementing organizational change

(Cooperrider & Fry, 2020; McBain & Solomon, 2020; Stratton-Berkessel, 2022; Teeboom, 2018).

## Statement of the Research Problem

To prepare the nation's students for future success with how the world is changing may require the reinvention of this country's schools and classrooms. The current developments in educational technology (EdTech) are remarkable (Bliss, 2019). The growth that has occurred in this arena empowers educators to develop extraordinary learning experiences for the young minds of today. For example, eLearning or virtual learning models have changed teaching and learning in both schools and professional industries and have allowed students and personnel to adapt at their individual pace in a setting that applies to each individual (Kharod, 2021).

In addition, a modified learning path is a student-centered model, which highlights a student's skill to understand the activity in a student-friendly way. The main purpose of the method is to identify the right approach for students to learn (Brian, 2020). With regard to the future of education, it is evident that eLearning will play an important part in the delivery of learning resources (Bliss, 2019). Last, 39% of learning and development experts believe that virtual reality and augmented reality will meaningfully influence online learning in the future (Kharod, 2021). Similar to a driver learning to drive a vehicle with a simulator, VR and AR tools will allow students to understand different situations as if they are there instead of learning from a book or a classroom activity.

In 2020, high schools were reminded how education, as it was known, can change overnight, sometimes so quickly that the assumptions about the world, its structures, and

even the future can be thrown into disorder (Vander Ark, 2021). As a result, secondary education is exploring new instructional approaches such as student learning spaces that may replace the traditional classroom setting because students may collaborate as partners or cocreators of how they learn in the classroom (Will, 2019). Moreover, secondary education in the coming years will need to explore how technology can be utilized to students' benefit and teach future peers to address problems that arise from the use of technology (Vander Ark, 2021).

The teaching and learning of curriculum has already expanded well outside the classroom, and as education continues to change to respond to the needs of the future, teachers need to also adapt and grow (Mintz et al., 2022). To plan for the future of secondary education, leaders need to know what changes are possible and strategies are needed to achieve these changes, and to prepare all students to be successful may require leaders to essentially reinvent the nation's schools with groundbreaking learning methods that support tailored practices, academic mastery, and constructive student growth (Srinivasan, 2021).

## Purpose Statement

The purpose of this Delphi study was to identify and describe the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In addition, the purpose was to determine the level of desirability of educational changes identified as probable by a panel of experts. Finally, the purpose was to describe the actions necessary to promote the desirable educational changes by 2035 as perceived by a panel of experts.

## Research Questions

1. What are the educational changes perceived by a panel of experts as possible and probable for high schools in California by 2035?
2. What are the educational changes perceived by a panel of experts as desirable for high schools?
3. What are the actions necessary to promote the desirable educational changes perceived by a panel of experts for high schools?

## Significance of the Study

The secondary education sector needs to adapt and reflect the crucial, high-demand skills of the future that may be unlike what has been previously taught (Williams, 2021). Many factors are influencing how secondary education is viewed, including an unexpected global pandemic, unanticipated technologies, paradigm changes in the ways students want to learn, and teachers who want to teach (Thompson, 2021). Secondary education around the world was significantly disrupted by the COVID-19 pandemic, which toppled almost every aspect of school at once (Ali, 2022; Thompson, 2021). The pandemic tested traditional concepts about instruction, attendance, testing, funding, technology's role, and the interpersonal contacts that keep them together (Doumet, 2021).

After a year of remote learning, one aspect that was made clear was that there is no replacing face-to-face, in-person relations among students, teachers, and staff members (Vegas & Winthrop, 2020). However, during the pandemic many districts financed and budgeted for distance-learning infrastructure, which was useful because technology was expected to continue to play a more important role in education (Doumet,

2021). Although the future of secondary education seems uncertain, these uncertain times create opportunities for creativity and restructuring (Srinivasan, 2021).

In addition to implementing project-based teaching models, schools may need to reevaluate their core curriculum framework (Rislov, 2017). Although the original teaching concepts are housed in English, math, social studies, and science, the curricula and courses might need to be redesigned to replicate the skill level required by evolving economies and technologies, such as coding, design sustainability, and monetary literacy (Mintz et al., 2022). Preparing all students for success may require leaders to advocate for better equipped classrooms that provide differentiation in learning strategies, high expectations, and the policies that could support them (Srinivasan, 2021; Vander Ark, 2021).

To envision the possible future of high schools could require individuals who have a high degree of special knowledge, are well-educated in the subject of high school education, and are recognized by other leaders in the field of study (Rowe & Wright, 2001). This may include experts who have a variety of roles and experiences, including practitioners who are district/site level administrators, professors/teachers, curriculum specialists, and those with focused expertise as futurists, researchers, and analysists. As high school leaders and educators are tasked with ensuring that all students have access to educational opportunities to be successful in the unforeseen future, these experts could shed light on ideas that may help develop the foundation and sustainability.

As educational leaders have had to adjust the delivery of education continually because of the pandemic, this Delphi study may provide insight to school district leaders to support strategic planning for the next decade and beyond. The results of this study

may provide high school educational leaders and policy makers with acumen of what experts in the field believe is applicable for the future of high schools. School district leaders may be able to use the results of this study to strategically plan for a more robust educational model and map the sequence backwards to better prepare students to be future ready. School board members may also use this information to better understand the needs of the community and support the district leaders by allocating resources for long-term sustainability.

At the state level, the California Department of Education (CDE) may be able to use this information as a tool to prioritize and establish more sustainable foundations for future-ready high schools and ensure they are adequately protected. In addition, this study could contribute to the development of the foundation of a futurist systemic approach that may help with learning models, teacher support, and leadership. Last, this study may be used by professional organizations that provide professional development and as a key component for evaluating priorities in teacher and administrator preparation programs.

## Definitions

**A Futures Mindset.** The process of imagining, transforming, and mapping ideas across a broad range of possible, plausible, and probable futures with a focus on significant areas of opportunity (Gorbis, 2019; McBain & Solomon, 2020).

**Desirable.** Something seen as advantageous, beneficial, and something most people think should or ought to happen (Cambridge Dictionary, n.d.-a; Merriam-Webster, n.d.-a; Voros, 2017).

**Educational Change.** Refers to large-scale changes that include changes in educational ideas, norms, organizational arrangements, and frameworks involving

multiple levels of involvement and interaction of stakeholders (Fullan, 2007; Waks, 2007).

**High School.** In most school systems in the United States, any 3- to 6-year secondary school serving students about ages 13 through 18 years and 4 years of school in the following ascending order: freshman, sophomore, junior, and senior (Britannica, n.d.). For this study, high school is defined as schools serving Grades 9–12.

**Organizational Structure.** The framework that illustrates how the organization is put together, what unifies its people, and how decisions are made (Baligh, 2006; Freedman, 2023).

**Possible.** A desire, a demand, and a readiness for something different than the status quo based on some future knowledge. It is something that could be true or actually happen (Broderick, 2022; Dictionary.com, n.d.; Merriam-Webster, n.d.-b; Nasir et al., 2021; Voros, 2017).

**Probable.** Something that has a chance or is likely to happen supported by evidence strong enough to establish presumption but not absolute proof (Cambridge Dictionary, n.d.-b; Merriam-Webster, n.d.-c; Voros, 2017).

**Social Systems.** The interconnected relationships between society and the environment, which include individuals, groups, and organizations, with shared actions, patterns, and principles that combine to form a society (Altan, 2020; D. L. Anderson, 2020; Patton, 2015).

## Delimitations

Delimitations specify how the researcher has narrowed and defined the scope of the study (McMillan & Schumacher, 2010). This study was delimited to participants with

expert knowledge about the future of education in high schools with a focus on students in Grades 9–12. The experts included those who have 5 years or more in the field, are recognized for their ideas about future possibilities, and are recognized for innovative thinking. In addition, participants had to meet one of the following criteria:

- They have published and/or led presentations on the future.
- They have conducted future-related research.
- They have implemented future-based changes.
- They have been recognized for educational innovation.

## Organization of the Study

This research study contains five chapters, a reference list, and appendices. Chapter I included the introduction to the study along with the background, research problem, the purpose, research questions, and the significance of the study. Chapter II provides a review of the literature on the historic standpoint of the research topic of secondary education as well as a deeper dive into the theoretical foundations and conceptual framework.

Chapter III outlines the methodology of the study together with the research design, population, sample, instrumentation, and procedures to be used for data collection and analysis. Chapter IV discloses the report of findings as well as the presentation and examination of the data. Chapter V completes the study and issues the most important findings, unforeseen findings, conclusions, implications for action, and recommendations for future research.

# CHAPTER II: REVIEW OF THE LITERATURE

Chapter II literature review is separated into seven sections. The initial section is an overview of the current state of secondary education in regard to COVID-19, funding, school safety, parent involvement, and teacher shortages and how this is influencing the future of high school education. It is followed by a summary of secondary education in the United States, the history of secondary education, and national issues and challenges, such as school safety, parent involvement, poverty, equity, and access and funding. In addition, the evolution of secondary education is examined with a focus on technology in education, project-based learning (PBL), and flexible scheduling, among other areas. Similarly, a comprehensive overview of organizational change is provided as several theoretical foundations are discussed. A synthesis matrix (Appendix A) was used to assist and support my research with the organization of ideas and the writing of the literature review. Last, Chapter II concludes with the conceptual model I developed to examine the opportunities for future educational change in high schools by 2035.

## Current Overview of Secondary Education

### COVID-19 Pandemic

Schools offer framework and routine to students' lives, and after the routine of waking up at a specific time, attending classes, and coming home at a certain time offers them a sense of routine to their existence (Kreitz, n.d.). The certainty of understanding that the traditional daily school schedule of going from class to class enables students' brains to concentrate on academic content. The expectations for student conduct and academic performance were known and familiar; nevertheless, when schools closed because of the pandemic, students lost this structure and routine (Kuhfeld et al., 2022).

The firsthand evidence of the impact of the school closures associated with the pandemic on academic success was only developing.

According to Dorn et al. (2021), the effect of COVID-19 on K–12 student education was substantial because students regressed an average of 5 months in math and 4 months in literacy when the school year ended. In comparison, the typical fall 2021 mathematics test results in Grades 3–8 were 0.20–0.27 *SD* lower relative to the same grade peers in fall 2019, and the reading test scores were 0.09–0.18 *SD* lower (Kuhfeld et al., 2022). When comparing the similarities between large-scale school disruptions and drops in test scores, math drops are noticeably larger than predicted impacts; for example after Hurricane Katrina, the math scores fell 0.17 *SD* within a year (Sacerdote, 2012). Subsequently, it was clear that data learning slowed, particularly among the primary grades, and the achievement gap between Black and Latino students and that of their White and Asian peers expanded through online learning in 2020–2021 (Wright, 2021).

To support K–12 public schools with learning loss because of the pandemic, state, local, and federal funding was provided. However, Fensterwald (2022) stated that 1 year after Congress approved highest funding for pandemic relief, a new study disclosed that California school districts have depleted a minimum amount of the funds on attempts to combat the learning loss produced by the pandemic. In the same way, it was unclear from the statewide information to determine whether school districts used the previous rounds of COVID funding to address the learning setbacks or the funds were applied for staff shortages or students' mental health needs because they have not made the setbacks a funding priority (Dorn et al., 2021). As additional public schools return to full, in-person

instruction in California operations, educators, parents, and state legislators continue to face unparalleled opposition in addressing gaps after a year of remote learning.

**Teacher/Substitute Shortage**

Schools were already understaffed when school districts began in-person instruction in the 2021–2022 school year. Since COVID-19 started, teachers throughout the nation have retired early or transitioned to other professions, intensifying an ongoing substitute and teacher deficiency (Cray, 2022). Subsequently, as the Omicron variant began to spread, there were increased teacher absences, pushing the situation to a breaking point because of insufficient substitutes. There were fewer substitutes because many who were older were hesitant to risk being exposed to COVID-19 in schools, and there was an abundance of other jobs available, many paying better salaries (Paterson, 2021). The teacher shortage increased not only because of the impact of COVID-19 but also because of the achievement gap, which affected students as well as teachers (Bell, 2022). The achievement gap was related to why teachers were feeling underpaid because teachers were paid 2% less in 1994, but by 2020 the wage penalty rose to 19% (Lambert, 2022). The teacher shortage and the fact that not as many college graduates are interested in the teaching profession add to unqualified teachers in the classroom (Cray, 2022).

Another variable is that some substitutes traditionally have been recent graduates who had not yet been hired for a teaching position, and those prospects found jobs or moved away from teaching (Fensterwald, 2022). Prior to the pandemic, the United States tackled a major substitute teacher shortage. According to Frontline Technologies Group (n.d.), schools could not cover some 20% of teacher absences in the 2018–2019 school year. A 2020 study by Liu et al. (2020) reported that Black and Latino students and

students living in poverty were most impacted and expected to have classes without substitutes.

Some school districts are desperately in need of substitutes, and they are trying different alternatives. Several school districts are raising pay and lowering requirements; for example, an 18 year old with a high school diploma can apply to substitute teach, and parents and college students are also being asked to serve in this role (Cray, 2022). In other cases, classroom aides, bus drivers, cafeteria workers, front office staff, and even district administrators are stepping away from their typical responsibilities to provide support (Medlin, 2022). The pandemic wave has encouraged school districts to reassess their bond with and reliance on substitute teachers. Several school districts have hired long-term substitutes to serve as floaters as part of a larger effort to increase the substitute teacher quality and ease a staffing deficit that increased during the Omicron surge in the winter of 2022 (Morton, 2022). This approach has been successful because the floaters can fill in when needed for the short or long term. In addition, this will significantly impact student learning because studies have associated the absence of teachers and less-qualified substitute teachers with a drop in student achievement (Liu, 2020).

## Evolution of Secondary Education

America's initial high schools were constructed throughout major cities in the eastern coastline, and they became an essential factor in the development of free public school systems, allowing a wide variety of students from different social-economic standings (Reese, 1995). Though high schools were frowned upon by opponents as elite establishments of classical learning, to the contrary, they were primarily dedicated to mainly providing middle-class students with a superior education in up-to-date everyday

subjects (Beston, 2017). High schools during the end of the 1800s and early 1900s in the United States had not been intended to prepare students for work in factories regardless of the popularity of that factory model tradition, but to the contrary, these educational institutions mainly serviced academically gifted students from wealthy families who could afford to provide secondary education for their student (Waters, 2018). This meant that only a portion of students attended high school, and an even smaller portion of those students attended university during that time. To help increase the amount of college attendance, the student credit hour was created as an instrument for leveling transitions from K–12 into postsecondary institutions and was strengthened by infrastructures aiming to motivate business models along with opposition and unit-cost analysis in higher education (Shedd, 2003). Furthermore, the credit unit was separated into the following three phases: 1873 to1908 saw the increase of discontent with the college admissions process and the high school-to-college articulation; 1908 to 1910 saw the suggestion and application of a standard high school unit; and lastly, 1910 to the present saw the introduction of the Carnegie unit, its extensive growth, and its impact on secondary and higher education alike (Shedd, 2003).

For the majority of the 20th century, educators and legislators participated in constant dialogue on what must comprise secondary pedagogy as the focus of the secondary curriculum shifted according to state and national goals (Rislov, 2017). These early encounters between educators and policy makers were hard fought, and the educators mostly prevailed at least in their goal of growing the curriculum to include nonacademic or elective subjects (Reese, 1995). Some of the nonacademic subjects, or electives, regularly meant adding commercial courses, such as typing, bookkeeping, and

stenography, and vocational subjects, such as electricity, metals, woodworking, and home economics (Beston, 2017). As a result, the complete and traditional high school took on the form familiar today. Williams (2021) stated that between 1970 and 2020, the percentage of adults in the United States who had no formal education increased 10%–23%; individuals with an incomplete or complete secondary education increased 16%–36%; those with a postsecondary education increased from about 3.3%–10%.

## Secondary Education in the United States

Students in the United States participate in primary and secondary school for a joint total of 13 to 14 years, and these years are known as kindergarten through 12th grades. The secondary school model involves two curricula: the first is junior high school, or middle school, and the second is high school (U.S. Network for Education Information, 2008). The initial secondary model, as it is known today, was initiated in 1892 in answer to many contending academic viewpoints being encouraged at the time; an operating group of educators, known as the Committee of Ten was initiated by the National Education Association (NEA) in 1892 (Weidner, 2022). NEA wanted to establish a committee of experts in secondary education to examine high school curriculum issues and make recommendations about standards and programs (Rislov, 2017). Moreover, the Committee of Ten's purpose was also to address the conflicting views of the American high school, which were divided between two main philosophies: traditional educators saw high school as a college preparatory institution and others saw it as trade preparation (Weidner, 2022). The Committee of Ten rejected the proposals that high schools should split students into working trades groups and college bound from the beginning and in other instances also by ethnic background or race; they unanimously

recommended that “every subject which is taught at all in a secondary school should be taught in the same way and to the same extent to every pupil so long as he pursues it” (Mirel, 2023, p. 2).

Today, the secondary school system is continually evolving and discovering new and more successful ways to teach masses of student’s necessary skills, such as reading, writing, and critical thinking (Fredrick, n.d.). From the early beginnings of secondary education to current models with learning pods and charter schools, American education exemplifies far more than the one-size-fits-all method (Meckler, 2022). The innovation is paying off as success is key to creating a better secondary education model because it permits individuals of all ages to recognize their abilities and potential (Weidner, 2022).

## Traditional Model/Current Model

At the beginning of the 20th century, elementary school programs were typically established until the eighth grade and followed by 4-years for high school. These programs began giving way to junior and middle schools with the goal of isolating students just before and after the start of adolescence (Morin, n.d.). Because adolescent students can be as young as age 11 or as old as age 15, these programs support students as they are working on developing specific skills by the time they reach high school. In the mid-20th century, the primary goal was to help all students reach high-academic standards, and this yielded several innovative programs with the goal of balancing the students’ personal and academic desires (Mintz et al., 2022). One major driver for this initiative came from the Reagan administration. The report *A Nation at Risk* gave voice to those who questioned this educational structure, and it also reintroduced several critical concepts from the report of the Committee of Ten, which concluded that academic

courses possessed more educational value than other courses (Gardner et al., 1983). The report also commissioned states to evaluate the quality of teaching and learning at the elementary, secondary, and higher education levels in both the public and private districts and to differentiate schools and colleges in America with those from other leading nations (Park, 2022).

This shift to improve teaching and learning led to the most substantial changes in student course taking since the early 20th century. Mirel (2023) stated that by 1986, 45 states and the District of Columbia had increased high school graduation requirements, 42 states had raised mathematic requirements, and 34 states increased science requirements. These adjustments decreased the options students could make in their elective course choices and initiated a historic move away from the guidelines of the previous half century. Consequently, by 1994 the number of high school graduates who followed the increase of graduation requirement courses had risen to 74.6%, and remarkably, the percentages for African American (76.7%) and Hispanic (77.5%) graduates were higher than Whites (75.5%; Goldin & Katz, 1999). These developments were encouraging steps away from curricular discrepancy to a move toward greater curricular equality (Park, 2022). Today, the foundational skills of reading and writing garner more focus at the secondary grades in all content area courses (Mintz et al., 2022). Nevertheless, the disagreement between high academic expectations and life skills as the main emphasis of the American high school educational programs was sustained in the past 3 decades of the 20th century and transitioning to the 21st century (Mirel, 2023).

## National Issues and Challenges

As students and teachers headed back to the classroom after the COVID-19 pandemic, they faced several challenges that could impact their school year and learning outcomes. The current education system is overwhelmed by a wide range of challenges, from school safety, parent involvement, poverty, equity and access, funding, technology, and much more (Nowicki, 2022). For secondary schools, these challenges are becoming more difficult to manage (Hong, 2022). Many school districts face falling enrollment, chronic absenteeism, and a shortage of teachers, substitutes, and bus drivers (Meckler, 2022). As a result, secondary education is faced with confronting a crisis different than it has experienced in decades, which can spread into every aspect of schools as a whole, from academic achievement to student disengagement to managing the buildings.

### School Safety

All students and staff need to feel safe and supported in a school environment that is conducive to student learning. A safe school is one that is conducive to teaching and learning where there are no distractions; interruptions are abated; violence, bullying, and fear are not present; and expectations for behavior are clearly communicated (Trade Schools, Colleges and Universities, 2022). School safety is one of the most prevalent concerns troubling educational institutions worldwide, and the effects of violations of school safety resonate across every element of the school system (Ronco, 2022). For example, after 17 people were shot and killed at a high school in Parkland, Florida, 57% of students stated they were concerned about the likelihood of gun violence at school (G. Allen, 2022). Determining how to stop or minimize such attacks and defend students' and school personnel's lives is a problem faced by school leaders across America.

The recent killing at Rob Elementary School in Uvalde, Texas, where two teachers and 19 students, along with a nationwide surge in violent occurrences at schools, brings ongoing attention to school safety challenges (Ronco, 2022). As a result, numerous states are considering legislation concerning carrying firearms on school grounds to increase safety. Former President Trump and other lawmakers had proposed that permitting specially trained school administrators and teachers to carry concealed weapons would help increase school safety (Trade Schools, Colleges and Universities, 2022). The concept was for school volunteers who had previous firearm training to undergo additional focused training to combat an active shooter situation before law enforcement arrives. In the same way, other lawmakers have examined laws related to providing school safety officers, demanding funding for emergency drills, and increasing mental health services to students and staff in schools (Ronco, 2022).

Superintendents, educators, and parents have considered other ways to improve school safety without turning buildings into actual fortresses. Nationwide school districts have increased the use of video surveillance, controlled entryways, and security guards into their schools during the past decade (Perez & Cordero, 2022). This is a critical time to address school safety needs and to increase prevention efforts in all areas of safety directly involving schools.

**Parent Involvement**

Educators have always believed that parents' involvement in their student's academic outcomes has a more significant impact than the type of school or socioeconomic standing they belong to (LaBahn, 1995). Parent involvement refers to attempts by the school district and schools to get the parents' input and to build a

partnership with parents to support their children's education and in decision making (Brooks, 2019). According to Waterford.org (2022), students' success can be predicted if their family or parents encourage learning at home and are actively involved in their children's education. Educational leaders and teachers often see the positive impact on students whose parents are actively involved in their academics. Studies have found that students with parents who are involved in their education are more academically successful (California State PTA, n.d.). These students also join rigorous academic programs and display more vital social skills and better behavior (Gaunt, 2019). In addition, parents' involvement encourages students to learn and leads to better grades (Brooks, 2019).

In addition, the level of parent involvement is crucial in producing a positive impact on the student's performance. In a study conducted by Lara and Saracostti (2019) that involved three levels of parent involvement (high, medium, and low), they found that the increased level of parent involvement leads to a higher effect on the student's academic success. Furthermore, the results showed higher student success from high and medium parent involvement in comparison to students from families with low involvement, reinforcing how vital parent involvement is in their education. Another study found that students of disengaged parents are negatively affected in school, and a lack of parenting is linked with low grades and overall performance (Layton, 2015). A limited number of parents communicate with teachers or attend open houses unless there is a problem (Layton, 2015). Even though schools provide electronic access to grade books and daily assignments, half of the parents rarely use them (Gentry, 2011). School administrators find these instances disheartening when they occur time after time, and the

achievement gap increases because of nonexistent parent involvement (Lara & Saracostti, 2019). The parents of marginalized or low-socioeconomic children are not as involved in their student's education as parents who are not in these disadvantaged communities (Layton, 2015).

M. Chen (2018) stated that if parents of low-socioeconomic students receive adequate training and reassurance, they can be as effective as actively involved parents who contribute to their student's academic achievement. These expectations will remain as the students move on to other grade levels even if parents become less involved. Parents' involvement in their student's school activities appears to impact students' academics substantially. However, home-based parent participation also creates a positive impact (Fraser-Thill, 2020). The more intensively involved the parents are, the more significant the positive impact on academic achievement.

**Poverty**

Secondary schools face many barriers they must attempt to overcome, such as opportunity, achievement, and graduation rate, all associated with poverty (Rueckert, 2019). Unfortunately, poverty directly impacts the children's ability to succeed and the schools' capability to ensure educational opportunities are being provided (American Association of School Administrators, 2017). Providing students with additional educational resources can be essential in ensuring they have a reasonable chance to thrive. At the federal level, there are many opportunities to ensure that school districts receive sufficient and suitable capital. According to the U.S. Department of Education (2004), Title I funds are provided to school districts to ensure that economically disadvantaged children receive a fair, equitable, and high-quality education by helping

to close academic achievement gaps. Unfortunately, a student's poverty level plays a minimum role in determining the amount of service. According to Dynarski and Kainz (2015), if a school provides services to 30% of economically disadvantaged students, the Title I funds are traditionally applied for the whole school as a school-wide program, but it does not specifically target those in most need.

Students living at or below the poverty level tend to have the highest dropout rates (American Association of School Administrators, 2017). Low-income families are less likely to be able to afford proper nutrition and sometimes do not have enough food at home, and studies have shown that students who do not get enough food or sleep are less likely to perform at their full academic potential (G. Chen, 2022). With lack of resources, low-income families might have to send their students to school lacking breakfast or lunch (Rueckert, 2019). A study conducted by Aikens and Barbarin (2008) showed that not eating enough can reduce the brain's capacity to learn, and poor students quickly fall behind their classmates. California was the first state to implement Universal Meals Education Code Section 49501.5, which provides the opportunity for all students to reach their full academic potential by providing two meals free of charge (breakfast and lunch) during each school day to students requesting a meal, regardless of their free or reduced-price meal eligibility (CDE, n.d.-a). In addition, Universal Meals requires public school districts, county offices of education, and charter schools serving students in Grades TK–12 to provide two meals free of charge (breakfast and lunch) during each school day to students requesting a meal, regardless of their free or reduced-price meal eligibility (CDE, n.d.-a).

## Equity and Access

The COVID-19 pandemic interrupted education for all students; nevertheless, it has impacted students from susceptible and ignored populations the hardest (De Leon, 2022). The major shock that impacted the educational system prior to COVID-19 was the Great Recession of 2008, which devastated K–12 funding, damaged 300,000 jobs throughout the U.S. public education system, and plateaued student progress in English and math that had been slowly rising since the 1990s (Parrish, 2022). Subsequently, over a decade later, America's schools were not prepared to confront the unexpected implications and disruptions when the COVID-19 pandemic hit in 2020. For instance, according to the U.S. Census Bureau, during the pandemic school closures of 2020, one in 10 children had little or no technology access for learning (Vegas & Winthrop, 2020). This included computers and internet access needed at home to conduct online learning.

Another factor was the length of school closures. According to Doumet (2021), schools were fully closed for 55 days for prekindergarten, 78 days for primary, 92 days for lower secondary, and more than 100 days for upper secondary and higher education on average between January 2020 and May 2021. This increased concerns with regard to educational equity because students from marginalized populations were more likely to have lost school hours and to have lacked the resources for effective remote learning. Moreover, during the pandemic, students from deprived upbringings were less likely to perform well in school or did not have the tools for digital learning and lacked a quiet place to study at home and parental help with their schoolwork (Organization for Economic Co-operation and Development, n.d.). The 2021–2022 school year was uncertain as across the country, many returned to school and had not been at school for a

year and a half. State and school district leaders were tasked with figuring out, once again, how to keep students safe in classrooms and to instruct learning (The Education Trust, 2021).

Despite the challenges that school districts faced with the pandemic, there were promising areas of action in the new ways that school systems were improving communication, engagement, and support of students and their families. For example, school districts in Northern Indiana were implementing online and blended learning options along with virtual tutoring as full options because some students needed the additional support or thrived in different environments (Mattea, 2022). Other schools in Indianapolis had a model that prioritized self-directed learning prior to the pandemic, so students were accustomed to using technology in self-paced ways and interacting with peers and teachers through Zoom (Eroh, 2020). Moving forward, educational systems will need to pay close attention to prevent increasing digital education from further amplifying existing inequalities in access and quality of learning.

**Funding Challenges**

As students returned to school in 2021–2022, schools in California faced considerable challenges from the COVID-19 pandemic. The high funding distributed through the Local Control Funding Formula (LCFF) was geared to provide the resources that would be essential to a reasonable recovery to help address the disproportionate effects of a pandemic on low-income households and households of color (Lafortune, 2021). School districts and charter networks were required to develop spending plans, the Local Control and Accountability Plan (LCAP), and submit them to the CDE. These proposals included information on plans for safe reopening, evidence-based

interventions, and a description of how the expenditures addressed the needs of underserved students (Jordan, 2022). Moreover, school districts were required to pursue input from the larger community and evaluate their plans every 6 months for probable modifications as needed.

In addition, the state and federal funding guidelines required that all districts file quarterly spending reports for school districts to be able to track the shift in priorities (CDE, n.d.-a). For example, priorities shifted from purchasing cleaning materials and computers at the beginning of the pandemic to COVID testing and school staff support in 2021–2022 once schools reopened to focus on mental health and to loss of learning. According to Fensterwald (2022), school districts were on track to meet spending deadlines as approximately 89% of districts had spent nearly most of the first-round federal funding, which needed to be spent by February 1, 2023. On the other hand, fiscal challenges remained despite record funding levels. California's K–12 student enrollment has been declining, primarily because of decreasing birth rates and net migration. Since the pandemic, decreased enrollments have been greater than anticipated, especially in kindergarten and first grade (Lafortune & Herrera, 2022). Furthermore, increases in health and benefit costs and personnel costs have had an enormous impact on districts' budgets because roughly 80% of spending on K–12 students was for staffing, such as teachers and support staff (Jordan, 2022).

Several school districts experienced difficulties with spending the COVID relief funds. In a recent survey, many superintendents acknowledged that they have had difficulty spending the funds because they had difficulties finding qualified candidates to employ, and filling vacant or new positions was challenging because of obstacles in

spending the money (Fensterwald, 2022). Other challenges were one-time funds, which restricted a school districts' capability to hire permanent staff and the likelihood of dismissing the positions years later as the funding is spent (Hong, 2022).

**Student Wellness**

Student mental health and well-being attracted a tremendous amount of attention during the 2021–2022 school year, and the next school year will likely bring a similar level of attention to those issues. Students who were already coping with mental health conditions have been more susceptible to the adjustments caused by the pandemic, and now school district staff are learning about the extensive effects on students as a result of physical distancing guidelines, schools being closed, isolation, and other unforeseen changes in their lives (National Alliance on Mental Health Illness, n.d.). In response to the student mental health and well-being concerns, COVID-19 relief initiatives were approved in 2022 to support COVID-19-related learning and school reopening programs in California (Kimner, 2021). These initiatives have been significant for high-poverty Title I schools in which the pandemic has most negatively impacted students and families. The one-time nature of federal relief funds allows an excellent fit for investments that respond to direct needs and build the capacity of local education agencies to maximize supportable funding sources for student and staff health (Morales & Puffer, 2022). School districts in California have utilized these one-time funds in a wide range of expanded learning support programs that were enacted using relief aid, including before- and/or after-school programs, summer learning, and expanded instructional days (J. Anderson et al., 2022). On the other hand, the one-time nature of federal funds creates potential challenges because once COVID-19 funds are spent, it

might be challenging to maintain programs and supports without a significant influx of sustainable funding (Kimner, 2021).

California responded to a surge in student anxiety and depression exacerbated by the pandemic. The CDE called for schools to move quickly to provide wellness centers to address mental health needs among K–12 students and their families (C. Jones, 2020). Wellness centers provide inclusive school values and ensure a school is a place where students feel they are welcomed and belong because there is robust evidence supporting these investments at schools (C. Allen, 2022). A newly released comprehensive study of 213 studies of school-based social and emotional learning initiatives and programs found that students who enjoyed enhanced attitudes, behaviors, and social skills recovered faster from trauma and saw historic improvements in academic success because of mental health and school-based social emotional programs (Dewan, 2021). Based on the data, wellness centers could significantly minimize the stigma related to needing mental health support and increase attendance and the likelihood of graduation.

## Innovations in Secondary Education

In the past decades, secondary schools have been implementing creative and student-centered methods to increase student achievement and reduce achievement gaps while focusing on teaching and learning (Parmelee, 2021). Multitiered systems of support helps educators offer academic and behavioral tactics for students with several needs (Harris, 2020). Technology has played a major part in education, and as educational leaders imagine and create future schools, technology should be used to support that vision. Inquiry-based instruction (IBI) is a pedagogy being used as a strategy that allows students to acquire information and support their study (Bauld, 2022). Similarly, PBL is

another teaching technique by which students learn by actively participating in real-life meaningful projects (Marino, 2022). Flexible scheduling allows for a more appropriate learning environment for students and focuses on their needs and being more flexible and creative with the use of time (Conway, 2013). Flipped classroom is another instructive method in which direct instruction changes from individual learning space to group learning space to house the lesson as desired (Werra, 2018).

**Multitiered Systems of Support**

As school districts seek other ways to service all students at the high school level, one current popular model is the multitiered systems of support. This model is a context for how school districts are able to develop the needed systems to confirm that every student receives a high-quality educational experience (Swenson et al., n.d.). Schools widely use this framework to provide targeted support to struggling students. The model is designed to support schools in preemptively pinpointing the strengths and needs of all students by enhancing evidence-based decision making, monitoring progress, and using strategies with cumulative intensity to maintain student growth (Fredrick, n.d.). Another essential point is the emphasis on detailed preparation for careers and college. Most reformed high schools clearly identify that today's economy requires a wide-ranging mix of academic, social-emotional, and practical competencies regardless of the path students pursue after high school (Jerald et al., 2017). These common themes have emerged, and most redesigned high schools incorporate some of these design elements into their framework.

As a result, the implementation of this model requires schools to blend rigorous academic learning, more significant chances, beliefs for earning advanced postsecondary

credits, and credentials with real-life career preparation giving students access to vital career pathways or majors (Cook-Deegan, 2016).

**Technology in Education**

Technology plays an important part in society today because a greater number of students, parents, and teachers use technology regularly (Ganimian et al., n.d.). Moreover, technology provides instant access to information, which is why its existence in the classroom is important because smartphones, computers, and tablets are already omnipresent elements of everyday life for students and teachers alike (Hanimoglu, 2018). When schools use technology to improve the work of educators and to advance the value and quantity of teaching, learners will succeed (Bryant et al., 2020). However, the COVID-19 pandemic revealed that in today's environment where diseases and the impact of climate change are likely to ensue, schools may not always offer in-person education, making a case for investing in education technology (Ganimian et al., n.d.). Undeniably, school closures have forced education systems to quickly devise and apply different modes of remote learning such as cellular phones and tablets and various other types of online tools.

The pandemic brought educational challenges and opportunities into sharper focus. For example, in a survey conducted in May 2020, only 15% of school districts predicted their primary students were receiving live instruction for over 4 hr daily during remote learning although 85% of districts anticipated instructional time to drop under 4 hr, more than an hour per day less than the prepandemic national average of 5 instructional hr per day (Goldberg, 2021). On the one hand, it has given tremendous perceptions into how technology can fundamentally shift to grasp 1.5 billion students

affected by school closures, and rather than just disseminating content, it can also strengthen relationships between students and teachers (Janssen, n.d.). On the other hand, implementing technology in the classroom also generates pathways for differentiated instruction to better service the needs of students as distinct learners. To elaborate, one of the most important ways technology can be used in the classroom to open up learning experiences for students with disabilities is the use of assisted technology (Tarud, 2021). Some of the examples of assisted technology are modified keyboards with larger buttons, speech-to-text technology, and easy-to-read fonts. The digitalization and the use of technology in education is one such change that was already in the works and was brought to the forefront by the pandemic (Walsh, 2020).

**Inquiry-Based Instruction**

IBI is a student-centered method in which the instructor guides the students through posed questions, and the data are learned and interpreted by the students through inquiry (Alper, 2018). In secondary schools that use IBI, in addition to the traditional classroom learning method, a teacher introduces facts and knowledge regarding a topic. Inquiry-based learning (IBL) is an instructional approach in which students follow procedures and practices similar to those of expert researchers to develop knowledge (Bauld, 2022). IBI has been implemented in the following examples:

- in science experiments—encourages students to ask questions and think critically about the outcomes,
- on field trips—allows students to explore real-world problems and identify the relevancy with what is being learned in the classroom, and

- in group projects—helps students to share ideas related to a topic they are studying to better understand the material (Lynch, 2019; Main, n.d.).

IBI more closely resembles how people actually pursue knowledge (Nikolova & Stefanova, 2012). Moreover, IBI can be used across disciplines and multiple skills or knowledge areas, and these learning experiences provide students with the opportunity to learn, develop, and use a range of skills important to become lifelong learners (Main, n.d.). Also, IBL supports students to develop comprehension and skills by working for a lengthy period of time to examine and answer a question or challenge (Lynch, 2019).

**Project-Based Learning**

Over the past years, many different student-centered teaching methods have been introduced to varying degrees of success. One of the student-centered teaching methods that has been shown to benefit students in secondary classrooms positively is PBL. PBL is an active classroom method in which students actively discover real-world problems and oppositions and learn transferable knowledge (Terada, 2021). Creating a highly engaging classroom environment is something that many teachers are hoping to establish. New research has revealed that student collaboration, engagement, and achievement can soar when science, reading, and math come together in rigorous hands-on projects (Marino, 2022). PBL leads students to research and ensures they build their own learning processes (Larmer, 2022).

The PBL method motivates students to connect with content areas while increasing their knowledge of the specific topic, thus allowing the students to engage and giving them ownership over their own learning (Tiwari et al., 2017). In addition, having such autonomy provides students with strong beliefs of individuality, ownership, and

self-efficacy (Terada, 2021). Research has pointed to real-world applicability as another driver of student engagement. Hulleman and Harackiewicz (2009) conducted a study of 262 high school students and found that students who shared their thoughts about the practicality of the course material to their own experiences had more interest in science compared students who only summarized the material. Consequently, this method allows students to take better ownership of their knowledge, increasing engagement.

As the PBL model is being implemented, there is a greater degree of importance that content is not learned or consumed in isolation (Larmer, 2022). Although the practice is used differently from school to school, the motive is still to give students a chance to act on their personal interests and manage their own learning time.

**Flexible Scheduling**

The flexible scheduling model is well suited for PBL, research time, building skills, and student-centered learning, allowing students to choose what their own interests are in learning throughout the day (Superville, 2020). For decades, secondary leaders have been facing the yearly trial of developing hundreds of schedules to meet graduation requirements while assisting each student's personal goals (Conway, 2013). However, the developments in educational technology have saved schedule builders uncountable hours once spent puzzling together schedules by hand (Werra, 2018). As a result, many school districts have considered shaking up the traditional school day and considering alternative scheduling options. For example, the traditional high school schedule has been the standard period schedule, with six to seven periods a day lasting 45 min to 1 hr (Mintz et al., 2022).

School time is usually inflexible, but some schools are adding additional flexibility and personalization into the teaching and learning to better serve students. One example is flexible scheduling because it is a creative use of the time for students in the school day in an attempt to match the instructional time and format to their learning needs (Liebtag, 2017). Flexible school schedules shift from a series of fixed-time instructional periods a day (e.g., 40–50 min) to substantially more extended instructional periods (e.g., 75–150 min) supporting more diverse teaching and learning activities (Liebtag, 2017). In addition, by permitting greater time blocks, flexible scheduling decreases the volume of time that students spend going from class to class.

The flexible scheduling pattern addresses the concern for more suitable learning settings for students and supports their need to be more flexible and creative in their use of time and not for schools to be more organized (Daniel, 2007). Similarly, flexible scheduling allows schools to optimize time and teaching strategies. The growth in instructional time is important for student learning because there is a strong connection between learning and time; increasing learning time in schools can add significantly to improving student success (Farbman, 2015).

**Flipped Classrooms**

Another innovative student-centered model that is being implemented in the secondary level is the flipped classroom. Flipped classroom is an instructional approach that changes activities, as well as assignments that may have been treated conventionally as homework, in the classroom and allows students to finish the instructional portion on their own time at home and focus on problem solving while in class (Chernova, 2022). The developer of this style, Aaron Sams, thought that the use of direct instruction during

class time was not the occasion to apply the model; instead, he affirmed that class time can be of better use when engaging in expressive conversations about concepts and partnering with peers (Florence & Kolski, 2021). Moreover, the flipped classroom approach is a unique learning approach and blended teaching that is shown to improve student achievement, increase students' engagement and critical thinking, and help close the achievement gap (Olmefors & Scheffel, 2021).

In a study conducted by the American Education Research Association (De La Rosa, 2019), the flipped classroom model showed positive impact on student learning and satisfaction. One of the key components of the flipped classroom model is that whereas students in a conventional classroom are taught via a lecture while in class then complete the assignments at home, in the flipped model teachers deploy their lessons or units onto videos that students can view at home (De La Rosa, 2019). In essence, what would have previously been considered homework by which students are applying the new learning is now completed at school where the teacher can support and provide more time for individual student guidance (Chernova, 2022). As a result of implementing the flipped classroom model, some secondary schools have seen an increase in attendance and college acceptance and a drop in failure rate (Låg & Saele, 2019).

## Theoretical Foundations

With the ongoing changes in secondary education, organizational theory can be an essential tool and provides a framework for organizations to use to analyze the efficiency in the workplace and the relationships of the employees and groups within them (Zey, 2001). One of the foundation models for understanding organizational change was established by Kurt Lewin in the 1940s; it is still used today and known as the unfreeze,

change, and refreeze model (Samuel, 2021). Similarly, systems theory focuses on the interactions among administrators, students, teachers, learning goals, and digital content then uses that data to derive a useful construct, a system that creates efficiency and utility for all (Cauthen, 2017).

In addition, futures thinking theory enables educational leaders to explore alternative futures and investigate the worldviews and traditions that underlie possible, probable, and preferred futures (Inayatullah, n.d.). Another essential foundation ideal for enhancing secondary education is appreciative inquiry. Appreciative inquiry is an asset-based approach to social and organizational engagement that uses questions and conversations to support team members in uncovering existing strengths, advantages, or opportunities as educational organizations look into the future (Moore, 2019). Last, continuous improvement theory focuses on the process within an organization that supports focusing on improving the way things are done through regular cumulative improvements or by concentrating on attaining more considerable process improvements moving forward (Porumboiu, 2021). All of these foundational theories are explored in this study, and then I present the conceptual framework incorporating the theories.

**Theory of Organizational Change**

When implementing organizational change, educational leaders should be encouraged to evaluate the value of the social and professional relationships among employees and the structures between the staff and the school leaders that encourage productivity in the workplace (Bonner & Langmeyer, 2004). Organizational change theory can be applied to almost every industry, including secondary education, because it is a people-focused method to management based on the idea that when employees are

motivated, they are more likely to be productive and effective toward stakeholders (Starbuck, 2005). Furthermore, unlike conventional leadership methods, organizational change theory uses action-based and results-based strategies to empower staff to work together toward a common goal (Cuofano, 2023).

The education environment is constantly changing, and school organizations have to adjust to these forces to remain practical and relevant (Ndibalema, 2016). In addition, change in education does not just occur by providing schools a new process, or methods they need to adjust to, because it has to be directed by using the best change management practices (Edney & Baker, 2002). As a result, organizational change theory applies to both the process and the culture in which an institution changes its structure, strategies, operational methods, and technologies and to the organizational values to impact change in the organization (Weedmark, 2019). Administrators, teachers, staff, students, and parents may be influenced by change and must be appraised when they implement change in educational organizations (Ndibalema, 2016). Therefore, the change process will involve unmolding old behaviors, training new practices and actions, and then reinforcing the new way of doing things. The Lewin change management model and Kotter's 8-step process are two well-known and respected theories in change management, and they both help organizations with the uncertainty and resistance associated with change (Cuofano, 2023).

### *Lewin's Change Theory*

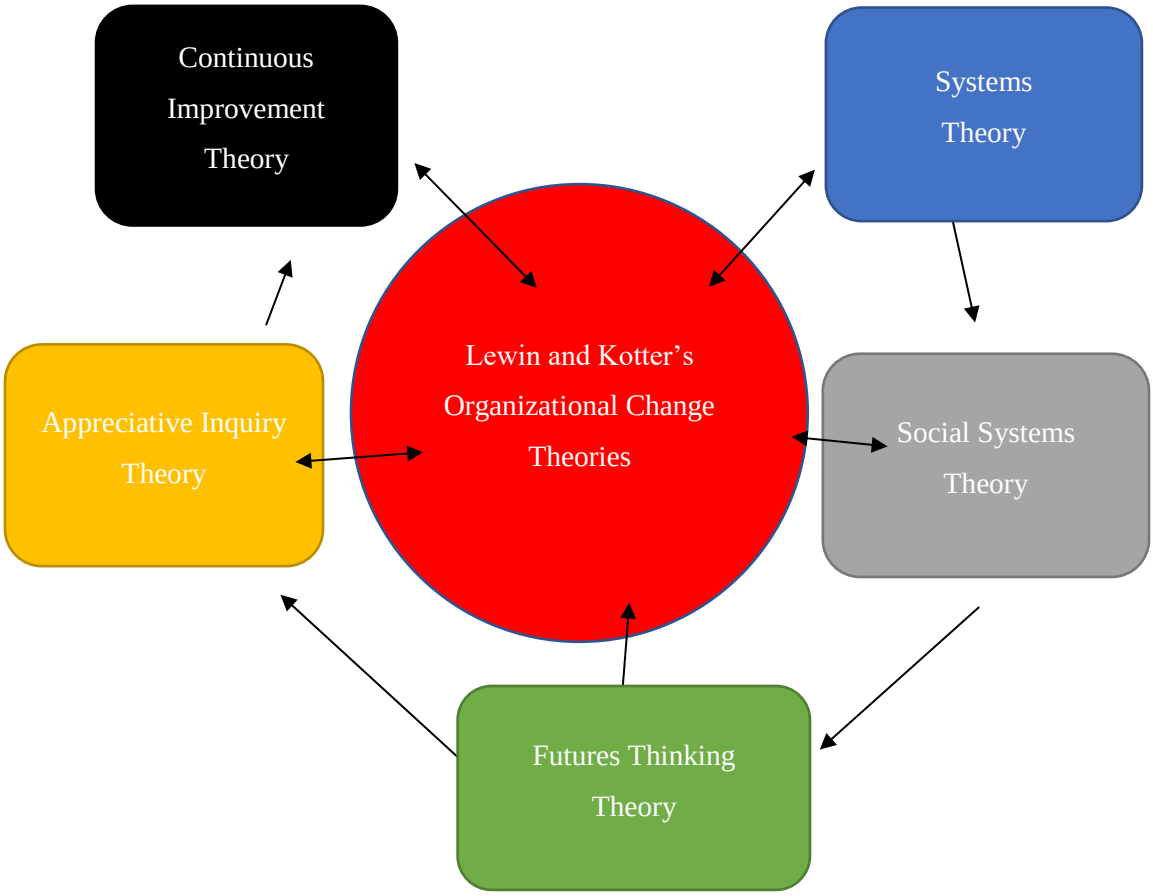
Lewin's change management model helps organizations with balancing, driving, and restraining forces to manage organizational change (Malik, 2022). To begin any change process in secondary education, educational leaders need to begin by

understanding why the change is needed. Lewin's model postulates the idea that motivation for change must be generated before the change occurs; leaders must be helped to reexamine many valued assumptions about themselves and their relations to others (Watson, n.d.). In addition, Lewin identified that restrictive forces influence the actions of both the individuals and the group, ultimately deciding the changing fate (Malik, 2022). Finally, Lewin identified a forthright three-step change process that provides employees' capability to acclimate to change, which he referred to as unfreeze, change/transition, and freeze/refreeze (Schein, 1996). In the first stage, one must melt the ice to make it willing to change (unfreeze), then one must form the iced water into the shape one wants (change), finally, one must solidify the new shape (refreeze; Mulder, 2012).

To elaborate, Kurt Lewin's model describes how people change and proposes that for people to change, they need to move from their current state into one in which they realize that change is both possible and required (Schein, 1996). During this process of realization, knowledge remains frozen until something comes along to unfreeze the person, and that may be new information or experiences, but until that occurs, nothing will alter the change (Watson, n.d.). Lewin's model offers an essential idea of the change progression. It assumes that organizations are freezable, which in the future of education can perhaps be very likely; therefore, Lewin's model is an established way of visualizing the practice of change in an organization (Tran & Gandolfi, 2020). Figure 1 (repeated for ease of reference) explained the whole cycle or process of organizational change by applying Kurt Lewin's three steps models (Malik, 2022).

**Figure 1**

*Conceptual Framework of the Possibilities of High School Education in 2035*




### *Kotter's Change Theory*

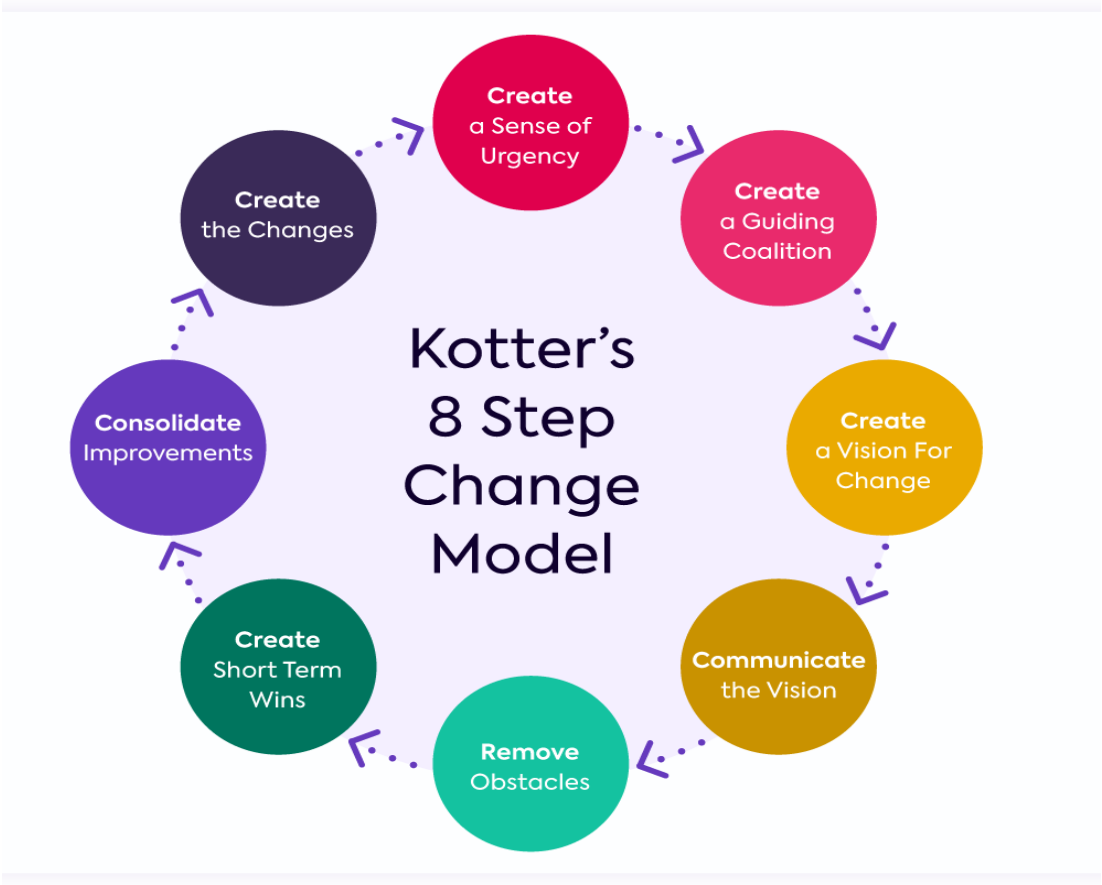
Kotter's 8-step change model differs from Lewin's model in that it addresses the people affected by the change rather than focusing on the change itself (Aktas, 2021). Although laws and specialized standards summarize the how and what of educating all students, unpredictability over the exact process of executing change can make accomplishing real-life results an unsatisfying challenge (Reiling, 2022). Luckily, educational leaders have several effective methods to support their decisions and plans to achieve involvement, and one such evidence-based model is Kotter's 8-step change

process (G. Jones, 2019). Kotter's book *Leading Change* highlights the eight steps organizations should follow to ensure that at the end of the process, the organization will not only be prepared but also be committed to embracing the changes (Reiling, 2022). Moreover, Kotter (1995) contended that 70% of change actions fail and accredits this to many organizations lacking the necessary groundwork to implement a project correctly.

According to Kotter (1995), Step 1 of bringing change is to develop a sense of urgency. Step 2 focuses on forming a coalition by convincing people that change is necessary. Step 3 is to have a clear vision that can help everyone understand why the change is needed. Step 4 is to communicate the vision as often as possible to keep it fresh on everyone's mind. Step 5 is to remove obstacles by putting the structure of change and continually calibrate the structure for weaknesses. Step 6 is to create short-term wins to help motivate team members. Step 7 builds on change and continues to improve on what went right and identify what can be improved. Lastly, Step 8 is to make the change stick by anchoring the changes to be part of the core in the organization/culture (Aktas, 2021; Jain, 2019; G. Jones, 2019). It is human nature to want to remain the same and have some form of reluctance to the new change (G. Jones, 2019). However, a sense of necessity can initiate the early motivation to start the change execution process (Todd, 2022). Kotter (1995) stated that organizations frequently make the same mistakes when trying to bring about change because they allow too much complacency, fail to communicate, and so on. Figure 2 illustrates Kotter's 8-step change model for organizations to increase the ability to change and improve their chances of success (Todd, 2022).

**Figure 2**

*Kotter's 8 Step Change Model*




*Note*. From *How to Successfully Implement Kotter's 8 Step Change Model*, by Lucidity, n.d., What is Kotter's 8 Step Change Model section (https://getlucidity.com/strategy-resources/guide-to-kotters-8-step-change-model/).

### *Appreciative Inquiry Theory*

Appreciative inquiry theory is a strengths-based, collaborative approach to organizational change that focuses on understanding the positive core of an organization and how it can be strengthened (Cooperrider & Whitney, 2006). As a change strategy in organizational development, appreciative inquiry changes social systems by generating collective images of new and better futures through exploring the best of current practices

(Kung et al., 2013). In the same way, appreciative inquiry is about the coevolutionary search for the best in people, their organizations, and the relevant world around them (Stratton-Berkessel, 2022). Appreciative inquiry is an approach for creating change because it leads into the process of collaboratively envisioning the best that an organization can be, and after the discovery and valuing of the best in the present, the process moves toward the search for new possibilities, paradigms, and processes (Yballe & O'Connor, 2000). Moreover, through dialogue, leaders and organization members share different facets of possible realities that have so far resided in their imaginations, and these conversations help to facilitate the appreciation and creation of a shared vision of the ideal organization (Oxendine et al., 2022).

In addition, appreciative inquiry helps engage groups of people in self-determined change while it focuses on what is working rather than what is not working and leads people to codesign their future (Oxendine et al., 2022). In the same way, appreciative inquiry is an approach designed to enhance the work environment by focusing on the good, well-working parts of the organization and expanding upon them (Garrett, 2022). Finally, appreciative inquiry requires that everyone is genuinely involved, which can have positive benefits in an educational setting when implemented correctly, and committed.

### *Systems Theory*

Systems theory is described as a foundation for organizational development that views the organization as an open system that includes interconnected and interdependent parts networking as subsystems (Gordon, 2022). In essence, the basic idea behind systems theory is that the whole is larger than the quantity of its parts (Prince, 2020). In

addition, the critical function of the systems theory in educational change is to cultivate the organizations and spread the knowledge and learning of earlier generations to the younger generation as a process of evolution (Germain, 2015). Systems theory has been applied to school reform in one of two ways: as a problem-solving framework that enhances students' understanding of a subject and as a restructuring tool for creating a more effective educational system (Lannon, n.d.). Moreover, as a mindset, systems theory helps educational leaders to deliver change as it guides school districts to be innovative and manage schools with improved efficiency (Cauthen, 2017).

Systems theory can help educational leaders seeking change to identify the relationships between different parts of the educational system (Bridgen, 2017). In the same way, it supports leaders to understand how changes in one part of the system can impact other parts of the system (Prince, 2020). By understanding the system as a whole, the educational change agent can make more informed decisions that will lead to better outcomes for the system (Bridgen, 2017). The difference between open and closed systems is based by the degree of sensitivity to the exterior environment (Holland, 2016). Closed systems are impervious to environmental deflections, and open systems are receptive to environmental changes (Heil, 2007). Katz and Kahn characterized open systems by equifinality, and this concept suggests that organizations can reach the same change goal by several different paths (Amagoh, 2016). Systems theory allows educational leaders to identify the associations of the diverse components of an educational institution and use them to solve problems when creating future change (Betts, 1992).

### *Social Systems Theory*

Social systems theory is an aspect of systems theory that focuses on the system of relationships that exist between individuals, groups, and institutions (Davies, 2022). Many theories try to explain the nature of the school organizations, and social systems theory has stood as one of the most accurate models for school reform (Bozkuş, 2014). Moreover, the education system can be considered a social system composed of many interdependent components working together and how sound these elements function and interact directing the system's health (Dahiru et al., 2018). According to Lunenburg (2010), schools are also looked at as open systems because they constantly interact with their environments, and social systems theory works on the inside and outside of the organization as a way of understanding and anticipating the consequences of any decision.

Moreover, Norlin (2009) stated that schools are social systems where two or more individuals collaborate together in a synchronized manner to achieve a common goal. This description is useful, for it specifies important features of schools when seeking change as they consist of people who are goal-directed in nature and they attain their goals through coordinated effort (Lunenburg, 2010). The social systems theory approach supports school reform because it highlights how the interactions between education stages, stakeholders, guidelines, and procedures can help or prevent advancement efforts (Hanover Research & ULEAD, 2020). Research has supported that a universal tactic to school improvement confidently impacts the restructuring for better student outcomes whereas a fragmented or secluded approach can hinder improvement (Botha, 2020). Because school organizations are multifaceted, complex institutions with diverse

stakeholders, power structures, guidelines, communication systems, and outside burdens, a systems tactic is required to identify the need of these components that may prevent or encourage effective change (Dahiru et al., 2018). In summary, systems theory, also known as social systems theory, is a branch of social science that studies how societies work as a system made up of elements (including individuals and their beliefs) that interact with one another, and it is an essential component when creating change (Cauthen, 2017).

### *Futures Thinking Theory*

Futures thinking allows for strategic planning that ponders what is probable to change and what is possible to remain as is in the future (Corthell, 2021). Futures thinking theory provides a range of techniques to help educational leaders think about the drivers of change that are shaping the future in education and explore the implications of these for making decisions today (Prince, 2020). When implementing futures thinking theory, there are six foundational concepts or pillars: mapping the future, anticipating the future, timing the future, deepening the future, creating alternatives, and transforming the future (Inayatullah, 2008). The six pillars provide a theory of futures thinking that is connected to systems and tools and established through practice (Corthell, n.d.). In addition, futures thinking theory is a creative and exploratory process that uses divergent thinking, seeking many possible answers and acknowledging uncertainty when creating change (Prosser & Basra, 2019). To develop a better understanding of the long-term projection's in educational reform, educational leaders have analyzed methodological perspectives on futures thinking drawn from the fields of futures studies (Corthell, n.d.). The two main types of futures thinking focus on what the future could be (possible

futures) and what it should be (preferable futures; Prince, 2020). Furthermore, both possible and preferable conditions are based on the ability to imagine alternative possibilities by speculating on experiences and detaching oneself from customs and traditions (Varpanen et al., 2022).

The practice of shaping future views and renewing them is of great importance. According to Hideg (2007), no past experience provides a sufficient basis to improve future shapes and make good or better decisions concerning the future under frequently changing situations, possibilities, and limits. As educational leaders perceive plausible futures, they minimize uncertainty by enabling themselves to consider how they might prepare for best, worst, and mixed outcomes, and having anticipated these outcomes, they are far more prepared about how to respond (Beurle, 2020).

### *Continuous Improvement Theory*

The continuous improvement model has been a segment of the lexicon of school improvement for years as a gradual never-ending change focused on increasing an organization's effectiveness and efficiency to fulfill its goals and objectives (Zangwill & Kantor, 1998). The continuous improvement process employs a steady stream of small changes; however, occasionally a continuous improvement program may take bolder steps to improve the organization's current state (Murray & Chapman, 2003). Continuous improvement theory is also known as one of the pillars of quality management; it has generally included a range of dynamic concepts from high-involvement teamwork and production enablers to other social and technical capabilities such as innovation techniques (Cardenas-Cristancho et al., 2021). The universal components of the constant

improvement sequence focus on assessing, analyzing, adjusting, and repeating and are replicated at different levels of scale throughout the educational system (Elgart, 2017).

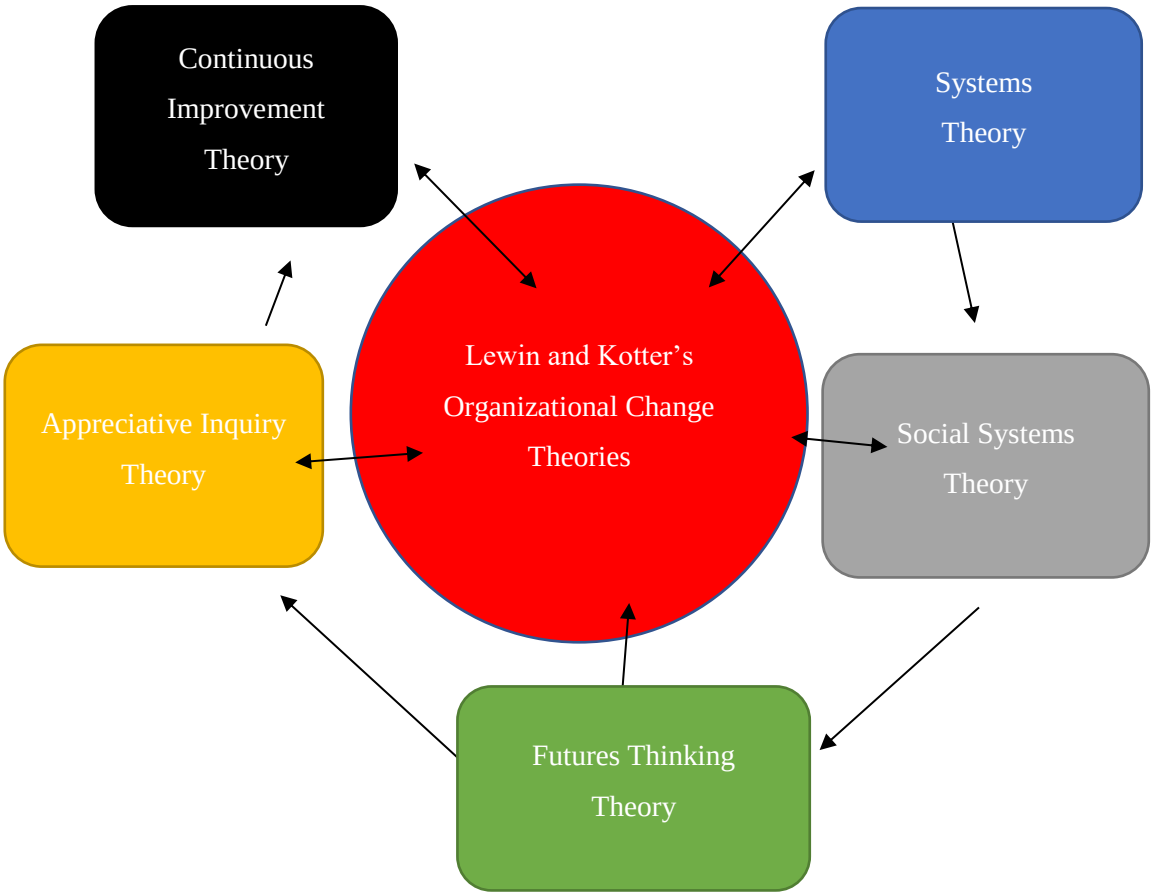
Similarly, several professions, organizations, and corporations have implemented the model as they attempt to resolve the problems from a complete viewpoint along with the premise of continuous improvement; an organization's achievement is connected to its capability to understand these interrelated foundations (Elgart, 2017). Theorists classify educational institutions and schools as "living systems" that are composed of several unified parts inside and outside the institution's classrooms: teachers, students, leaders, and outside stakeholders (Fabillar & Wang, 2019). An efficient and continuous improvement structure in a school system highlights the student's involvement, family engagement, and data gathering and examination to direct and apprise the planning and execution of a school's improvement journey (Murray & Chapman, 2003). For example, some organizations may define continuous improvement as an rooted conduct within the values of an organization that continually emphases on the conditions and practices that will enhance teaching and learning (Fabillar & Wang, 2019).

## Conceptual Framework

A conceptual framework demonstrates the projected relationship among one's variables, and it defines the relevant objectives for one's research development and plans and how they are aligned to draw clear conclusions (Swaen & George, 2022). In the same way, this makes the conceptual framework an analytical tool because it is used to make conceptual dissimilarities and combine different ideas (Jabareen, 2009). Figure 3 shows the conceptual framework I developed. This framework was used to analyze the data collected in this study related to possible and desirable changes in high school education.

**Figure 3**

*Conceptual Framework of the Possibilities of High School Education in 2035*




Lewin's and Kotter's organizational change theories serve as the anchor of this conceptual framework to seek the possibilities for the future high school education. The five additional theories (systems theory, social systems theory, futures theory, appreciative inquiry theory, and continuous improvement theory) serve as models to support the learning process and identify the types of change that may develop from the study related to organizational change. These theoretical models are designed to act as compasses that help one navigate through the difficult transitions and guide the organization toward desirable organizational changes.

## Summary

Secondary education has evolved into teaching more than the basics of learning to read, write, and do math. It has been the mechanism through which people absorb the norms and values that help them become productive Americans, and it happens both in and out of the institutions. Over the past century, a wide concept in the progression of secondary education has been to make access to it more universal (Rislov, 2017). A century of ongoing expansions and improving access to education has essentially reformed America economically and socially (Bump, 2021). More recently, in 2020, the COVID-19 pandemic altered education for nearly all students in the following three ways (Vegas & Winthrop, 2020):

1. It called into question the idea that all students always need to attend school in person.
2. It confirmed that relationships are important for learning.
3. It added a wider educational gap for students of different upbringings.

When COVID-19 struck, school districts scrambled to offer students ways to continue learning from home, including digital resources for distance learning, such as laptops and chrome books (Bump, 2021). In addition, access to these devices and high-speed internet came to be unequal across socioeconomic classes, especially in those communities in rural areas (Gutierrez, 2015).

The fallout from COVID-19 dampened this generation's projections and narrowed its opportunities well into adulthood (Materu, 2020). The continual effects may challenge students' opportunities of going to college and eventually finding a satisfying job that allows them to provide for their family (Srinivasan, 2021). It is estimated that the

effect on the U.S. budget can total between $128 billion and $188 billion each year as this group joins the workforce (Dorn et al., 2021). The deep-rooted challenges in the secondary school systems preexisted the pandemic and have resisted many reform efforts. States and school districts have a critical role to play in organizing sustainable programs that improve student outcomes (Hahnel, 2020). They can confirm rigorous application of evidence-based implementations though also directing and tracking the effect of innovative new methods to better serve students (G. Chen, 2022).

Educational leaders can use this emergency-driven opportunity to press for significant changes in virtually every facet of education: what, where, how, who, and when (Zhao & Watterston, 2021). In other words, education from pedagogy to curriculum, from learner to teacher, from assessment to learning, and from time to location can and should fundamentally transform (G. Chen, 2020). Therefore, schools need to provide complete access and profound subjection to all learning ranges across all years to allow students to make knowledgeable decisions and grow their interests and unique talents (Maqsood et al., 2021). Despite these challenges, there have been innovations and instructional wins over time in secondary education.

To conclude, secondary education will undoubtedly go through substantial adjustments in the next decade as the common result of several major forces, and these changes consist of adjustments in curriculum that control what the learners learn (Hahnel, 2020). In response, educational leaders will need to make future educational approaches that are driven by learners as key to transforming pedagogy and school organizations, and this will allow students to flourish by directing their own education and their learning groups (Mirel, 2023). Furthermore, schools will have an exceptional opportunity to

change, proactively and positively, because of COVID-19 and the need for global connections (Fredrick, n.d.). Moving forward it is likely that schools could reorganize their places of teaching and schedules for students to simultaneously participate in different and more stimulating learning chances despite their actual locations, and they could provide applicable online teaching and learning that will continue to grow in popularity and possibly become a traditional part of everyday practice for students in the future (Swenson et al., n.d.).

# CHAPTER III: METHODOLOGY

## Overview

The methodology chosen for this study was a Delphi approach to identify and describe the educational changes for high schools that are possible and probable by 2035 as perceived by a panel of experts. As the study is described, the term peer researcher is used to define the thematic dissertation group, made up of four researchers as part of UMass Global, exploring the same topic with different educational sectors and the support of the faculty chairs.

## Purpose Statement

The purpose of this Delphi study was to identify and describe the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In addition, the purpose was to determine the level of desirability of educational changes identified as probable by a panel of experts. Finally, the purpose was to describe the actions necessary to promote the desirable educational changes by 2035 as perceived by a panel of experts.

## Research Questions

1. What are the educational changes perceived by a panel of experts as possible and probable for high schools in California by 2035?
2. What are the educational changes perceived by a panel of experts as desirable for high schools?
3. What are the actions necessary to promote the desirable educational changes perceived by a panel of experts for high schools?

## Research Design

The Delphi method was developed by the RAND Corporation in the 1950s, and most of its early practices were in the military and industrial fields as many of the early Delphi studies used the method to make forecasts of future occurrences in these fields (Williamson, 2002). The Delphi method is used for research and forecasting problems for which solutions are not yet determined (Barrett & Heale, 2020). The Delphi method was selected for this study because it solicits expert judgment on questions in a manner that is free from the influence of status and strong personality considerations that often exist in face-to-face meetings (Hanafin, 2004). Moreover, the Delphi method relies on experts who are knowledgeable about a certain topic so they can forecast the outcome of the future scenarios, predict the likelihood of an event, or reach a consensus about a particular topic (Okoli & Pawlowski, 2004). Because this research was geared toward the problem of what the probable and possible educational changes might be by 2035, the method best suited for this study was the Delphi technique. A mixed methods study's most common characteristic is that it combines quantitative and qualitative styles in a single research study (Johnson et al., 2007). The use of mixed methods research allows researchers to use a variety of approaches to answer research questions that cannot be addressed using a single method (McMillan & Schumacher, 2010).

## Population

When conducting research, Bhandari (2022) stated that a population does not only refer to people but it can also refer to a group containing elements of anything a person wants to study, such as objects, events, organizations, countries, species, organisms, and so forth. The population's focus for this study was high schools in California, specifically

those serving students in Grades 9–12. According to data from the CDE 2019–2020 school year, there were a total of 346 unified school districts, 78 high school districts, and 1,322 high schools in California (CDE, n.d.-a). The population for this study included practitioners from California high schools (e.g., administrators, curriculum specialists, policy makers, teachers, and students) and others who had knowledge and expertise about California high schools (e.g., futurists, policy makers, and curriculum specialists schools).

## Sampling Frame

A sampling frame is a list of the actual cases from which a sample will be drawn, and the sampling frame must be representative of the population (Taherdoost, 2016). The sampling frame for this study included practitioners from California school districts who held positions as district-level administrators, curriculum and instruction specialists, and principals and teacher leaders. In addition, the sampling frame included others with expertise and/or knowledge about California high schools, including futurists, policy makers, and educational specialists.

For this study a diverse panel of experts who met the criteria were identified for this sampling frame. Practitioners are those working in or serving high schools. Potential practitioner panel members were identified through professional administrator groups, such as Association of California School Administrators (ACSA) and California Association of Latino Superintendent and Administrators (CALSA). Additional panel members, such as futurists, policy makers, and educational specialists, were identified by recommendations from other district-level administrators, networking and attendance at

conferences and education-based workshops, and by searches through LinkedIn membership.

## Sample

The sample from a research study is the representation of the larger population implied and is selected to meet the specific criteria and features that allow the researcher to streamline the results of the study to the larger population (McMillan & Schumacher, 2010). According to Patton (2015), the value of the sample size may impact the implications made to the sample population. The methods that were designated for this study were purposeful, criterion, and convenience sampling. According to McMillan and Schumacher (2010), purposeful sampling as an asset in qualitative studies permits the researcher to select information-rich experts who can produce deep understanding of the study.

Criterion sampling involves the selection of a sample based on some preestablished criteria, and this kind of sampling helps the researcher study a specific or narrow criteria and understand the implications of it (McMillan & Schumacher, 2010). The required criteria for participants in this study were that they had 5 years or more in the field, they were recognized for their ideas about future possibilities, and they were recognized for innovative thinking.

Furthermore, criterion sampling is when a researcher selects participants based on their knowledge as experts (McMillan & Schumacher, 2010). This study included experts who have knowledge about the future of education in high schools with a focus on students in Grades 9–12 and have 5 years or more in the field. In addition to the initial list of criteria, the participants had to meet one of these criteria:

- They have published and/or led presentations on future.
- They have conducted future-related research.
- They have implemented future-based changes.
- They have been recognized for educational innovation.

Convenience sampling is a kind of nonprobability selection method in which individuals are sampled purely because they are convenient forms of data, making this method applicable for this study because of its feasibility (McMillan & Schumacher, 2010).

The sample for this study was 15 panel members who met the criteria for having expertise related to possible educational changes in California high schools. The sample included district-level administrators, policy makers, site administrators, curriculum specialists, journalists, futurists, research developers, and teachers who were progressive thinkers in the area of high school education. The expert panel members represented a variety of role types and no more than three panel members represented a single role type or organization. When conducting a Delphi study, selecting the panelists with expertise helps maximize the quality of responses as well as build credibility into the results (Hanafin, 2004). Guest et al. (2006) stated that a sample size of six to 12 participants is adequate for data gathering on a theme, without reiterating or diluting the information. Consequently, applying a sample size of 15 expert panelists was adequate and appropriate for this study. The 15 experts identified included practitioners (those working or servicing the high school sector, a union high school district) as well as futurists, policy makers, and curriculum specialists who had knowledge and expertise about California high schools.

## Sample Selection

This study used the online survey tool Google forms and email as methods of collecting data and communicating with the experts. The survey instruments were developed by the team of four peer researchers working as part of a thematic team. This Delphi study used a four-round process with specific survey instruments designed for each round. The instruments developed for each round are described in the next sections.

### Round 1

The first round consisted of the Round 1 letter (Appendix B), which included (a) a short overview to the study, (b) importance of participant's response, (c) the definition of possible (as defined in Chapter I), (d) panelist's anticipated time investment, (e) expected researcher turnaround time, (f) Participant's Bill of Rights (Appendix C) and confidentiality, and (g) consent to participate in the study (Appendix D). In addition, included within the initial letter were instructions for the first round and the link to the Google survey containing demographic questions and open-ended questions in which panel members were asked to identify at least five educational changes they believed possible for high schools by 2035 (Appendix E).

### Round 2

The second round consisted of the Round 2 letter (Appendix F), which included (a) a short overview to the second round, (b) importance of participant's response, (c) the definition of probable (as defined in Chapter I), (d) panelist's anticipated time investment, and (e) expected researcher turnaround time. The ideas that were submitted in Round 1 were analyzed, and similar ideas were combined to develop the list of possible educational changes, which were presented in Round 2. The panelists received

the link to the Google survey for Round 2 with the list of possible educational changes for high schools by 2035. Participants rated these possible changes using a 4-point Likert scale (4 = *highly probable by 2035*, 3 = *somewhat probable by 2035*, 2 = *somewhat improbable by 2035*, and 1 = *not at all probable by 2035*). The panelists were given the opportunity to add additional ideas of other possible changes at the end of the Round 2 survey (Appendix G).

**Round 3**

The third round consisted of the Round 3 letter (Appendix H), which included (a) a short overview to the third round, (b) importance of participant's response, (c) the definition of desirable (as defined in Chapter I), (d) panelist's anticipated time investment, and (e) expected researcher turnaround time. The Round 3 survey (Appendix I) contained the analyzed data and calculated mean ratings for probability from Round 2. One of the goals of a Delphi study is to build consensus by allowing participants to further clarify their judgment (Hsu & Sanford, 2007). Therefore, in this round, the panelists reviewed the mean ratings for probability from Round 2 and rerated these items for probability using the same 4-point Likert scale used in Round 2. New ideas generated in Round 2 were also presented to be rated for probability. Moreover, each item was rated for desirability, identifying how desirable the experts perceived each potential change by using a 4-point Likert scale (4 = *highly desirable by 2035*, 3 = *somewhat desirable by 2035*, 2 = *somewhat undesirable by 2035*, and 1 = *not at all desirable by 2035*).

### Round 4

The fourth round consisted of the Round 4 letter (Appendix J), which included (a) a short overview to the fourth round, (b) importance of participant's response, and (c) panelist's anticipated time investment. In Round 4 (survey; Appendix K), panelists were presented the list of items from Round 3 that met the criteria for consensus identified by the thematic peer researchers. Only the educational changes that were rated as very or somewhat probable and very or somewhat desirable by at least 85% of the panel members were presented. In this final round, panelists were asked to identify and describe the actions necessary to promote these desirable changes. These final comments added depth and clarity to the panelist's perceptions.

## Validity and Reliability of Instruments

### Validity

Validity refers to the degree to which an instrument accurately measures what it intends to measure (Roberts & Hyatt, 2019). It is vital for an instrument to be valid for the results to be accurately applied and interpreted (Salkind & Frey, 2020). According to Roberts and Hyatt (2019), validity seeks to answer the question, "Can you trust that findings from your instrument are true?" (p. 149). The range of qualified experts strengthened the validity of the instruments because of their familiarity and competence on the research topic (Hanafin, 2004). In addition, the instruments were field-tested by the thematic team, and each team member conducted an independent field test, which added to the validity and reliability of the instrument.

## Reliability

Reliability is established when the degree to which an instrument is used gives the same results each time, assuming that the underlying item being measured does not change (McMillan & Schumacher, 2010). Patton (2015) asserted that when a study achieves consistency with data collection, data analysis, and results, it is identified as reliable. The Delphi process helps ensure a level of consistency and consensus of the results via the use of an expert panel (Barrett & Heale, 2020). Prior to the administration of the survey instrument, a field test was conducted to ensure its appropriateness and reliability.

## Field Test

A field test of the Delphi instrument was conducted to ensure its reliability. For this study, the field test consisted of five participants, but one of the participants met the selection criteria but did not participate in the actual study. The four additional participants were two thematic peer researchers and two faculty advisors who also participated in the field test to increase reliability. The field-test participants responded to four rounds of questions, and I analyzed the data from each round to prepare for the next round. The Field Test Participant Feedback Form (Appendix L) and Researcher Self-Reflection Form (Appendix M) were used by each participant to keep records during all rounds to provide feedback to me during the field test. The four thematic peer team members completed the field test separately but shared the results and experiences to refine the instrument along with the feedback forms completed by the field-test participant and the thematic team members. Adjustments were made to the surveys as a

result of the field-test feedback. McMillan and Schumacher (2010) stated that with enough pilot-test participants, an estimate of reliability may be calculated.

## Data Collection

I completed the Collaborative Institutional Training Initiative (CITI; Appendix N) for Social-Behavioral Educational Research Certification in protecting human subjects research participants and obtained approval from the UMass Global Institutional Review Board (UGIRB; Appendix O) before surveying participants and collecting data. Similarly, I followed the process of implementation of the Delphi technique that is based on the multistep process (Hsu & Stanford, 2007). The Delphi method used for this study consisted of four rounds of surveys. After following the sample selection process to ensure the expert criteria were met, I contacted potential participants by phone and email to inquire about their participation in the study. I communicated with potential participants verbally via a phone conversation to explain the purpose of the study. Those who agreed to participate were emailed the synopsis of the study and the hyperlink to the Round 1 survey and the other rounds to follow.

The survey was administered online through Google forms platform because of its ease of use and access. The survey was completed, and I was the only one who knew the participants' identities because they were identified by their name and email when each round was completed. Participation in the study was voluntary. The confidentiality for the Delphi panelists and the formal study was maintained. Moreover, all survey results were maintained in the secured Google drive and protected using an exclusive password only known by me. All data, including survey information collected, were destroyed 3 years after completion of the research.

**Round 1**

The communication letter and the hyperlink to the survey was emailed to the panelists. Once participants had acknowledged receipt of the Bill of Rights and consent to participate in the study, they proceeded to the Round 1 survey. The panelists had 1 week to complete Round 1 of the survey. The Round 1 survey collected the educational changes that the expert panel members believed were possible for Grades 9–12 within the United States by 2035. The responses from Round 1 were consolidated into a list that was used as the foundation for Round 2 of the survey.

**Round 2**

The expert participants were emailed the communication letter that was included in the Google form hyperlink to the Round 2 survey. The responses from Round 1 were combined and consolidated and then listed with a 4-point Likert scale via Google forms for Round 2. In this round, participants were directed to rate the probability of the possible changes using a 4-point scale of *highly probable by 2035* to *not at all probable by 2035*. The 4-point Likert scale was used to determine consensus among experts as to the most probable educational changes that are possible for Grades 9–12 within the United States. The panelists had 1 week to complete Round 2 of the survey. The probability ratings from this round were used as the foundation of the Round 3 survey.

**Round 3**

The third round consisted of the expert panelists receiving the communication letter that included the hyperlink to the Google form with the mean probability rating data from Round 2. There were two parts to the Round 3 survey. First, the expert panel members were given the mean probability ratings from Round 2 and were asked to rerate

each item for probability. Second, the expert panel members were asked to rate each item again using the 4-point Likert scale for desirability. The panelists had 1 week to complete Round 3 of the survey. The results for each item were analyzed for both probability and desirability, and those items that met the 85% threshold for consensus (a 3 or 4 on the 4-point Likert scale for both probability and desirability) were retained. All items that did not meet the threshold were eliminated from the pool. Only those items that met the threshold for consensus for both probability and desirability were moved forward to Round 4.

### Round 4

For the fourth and final round, the expert panelists received the communication letter that included the hyperlink to the Google form for Round 4. This survey included the list of educational changes that met the consensus threshold for probability and desirability from Round 3 (a 3 or 4 on the 4-point Likert scale for both probability and desirability by at least 85% of the participants). The expert panel members were then asked to describe the actions necessary to promote the desired changes and provide their responses in 1 week.

## Data Analysis

The results from each of the four rounds of this Delphi study were collected and stored on the Google form platform. The responses from each round were analyzed, and descriptions of the analysis are discussed in the next sections.

### Qualitative Data Analysis

According to Patton (2015), the qualitative data analysis process involves reading through the data, grouping information according to themes, and making

explanations that lead to the final research findings. The survey questions in Rounds 1 and 4 generated qualitative data. The data from these two rounds were analyzed and similar responses were combined to ensure that all generated ideas were represented without undue duplication. Creswell and Creswell (2018) stated when there is at least 80% agreement between peer researchers, intercoder reliability has been reached. I used the process of intercoder reliability with a peer researcher to separately evaluate the responses. A member of the thematic peer research team was used to serve as the intercoder during this process. This process was used to calibrate the members of the team to increase the intercoder reliability of the analysis and to achieve at least 80% agreement.

**Quantitative Data Analysis**

The data from Round 2 and Round 3 were analyzed with a quantitative lens by using descriptive statistics to identify the mean. According to McMillan and Schumacher (2010), descriptive statistics is the most essential way to recap large amounts of data and is vital in understanding the results. The second and third surveys were developed from the recommendations generated in Round 1. The platform used for Round 2 was via Google forms, and both surveys used a 4-point Likert scale for participants to rate the items for probability (Round 2) and desirability (Round 3). The collected data were analyzed, and the mean rating was calculated for each item.

During Round 3, the expert panelists reviewed the mean ratings from Round 2 and rerated these items for probability to reach consensus. Consensus was identified as 70% of the panel rating an item as highly or somewhat probable (a 3 or 4 on the 4-point Likert scale). Similarly, each item was then evaluated for consensus on desirability.

Consensus was identified as 85% of the panel rating an item as highly and somewhat desirable (a 3 or 4 on the 4-point Likert scale).

## Limitations

Limitations of a study design or instrument is the systematic bias that the researcher did not or could not control, which could inappropriately affect the results (Patton, 2015). Some typical limitations may include the population, sample size, cultural and regional differences, constraints associated with methods design, and response rate (Roberts & Hyatt, 2019).

Several limitations to this study were identified as follows:

1. This study utilized the Delphi design and methods, which required the use of experts in the focus area of high school education. Participants self-reported their experience or expertise related to high school education.
2. The limited number of 15 panelists selected may have been a limitation, and they were required to be from California versus a larger sample size.
3. The four rounds of data collection may have resulted in survey fatigue, and the expert panel members could have become disengaged, affecting the quality of the answers provided.
4. The Delphi technique is based on opinion hence consensus does not mean it is the correct answer compared to the other research perceptions.
5. This study was conducted after school closures as a result of the COVID-19 pandemic, and it may not accurately represent the population under normal circumstances, leading to potential biases in the results.

## Summary

Chapter III defined the context for how the study was conducted and how data were collected and analyzed. First, the chapter started with an overview of the chosen methodology followed by the description of the purpose statement and research questions under study. Second, the research design detailed the Delphi technique as the method to seek consensus on the possibilities for education in high schools by 2035. The chapter continued with an overview of the population, target population, sample, sample selection process, and overview of the electronic survey instrumentation, field test, and data analysis procedures used in Rounds 1 through 4 of the study. The chapter concluded with a discussion of the limitations of the study.

# CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

## Overview

Chapter IV begins with a brief review of the purpose statement, research questions, population, sample population or expert panelists, and the methodology used to conduct this study. The purpose of this Delphi study was to identify and describe the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In addition, it was the purpose to determine the level of desirability of educational changes identified as probable by a panel of experts. Lastly, it was the purpose to describe the actions necessary to promote the desirable educational changes by 2035 as perceived by the expert panel. This study was part of a thematic dissertation with four doctoral candidates studying the same topic with different populations. This chapter provides detailed information regarding the qualitative and quantitative data collected through survey Rounds 1, 2, 3, and 4 administered via Google forms. The qualitative data addressed focused questions from Rounds 1 to 4. The quantitative data gathered in Rounds 2 and 3 provided clarifying information to answer Research Questions 2 and 3. Both the qualitative and quantitative data are discussed in a narrative format, and they are also displayed in tables, figures, and direct quotes to show participants' responses. Chapter IV concludes with a summary of the research findings.

## Purpose Statement

The purpose of this Delphi study was to identify and describe the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In addition, the purpose was to determine the level of desirability of educational changes identified as probable by a panel of experts. Finally,

the purpose was to describe the actions necessary to promote the desirable educational changes by 2035 as perceived by the expert panel.

## Research Questions

The following research questions were explored in this study:

1. What are the educational changes perceived by a panel of experts as possible and probable for high schools in California by 2035?
2. What are the educational changes perceived by a panel of experts as desirable for high schools?
3. What are the actions necessary to promote the desirable educational changes perceived by a panel of experts for high schools?

## Research Methods and Data Collection Procedures

The thematic team selected the Delphi method to gather the perceptions of 15 futures experts on the educational changes for high schools in California that are possible and probable by 2035. According to Okoli and Pawlowski (2004), the Delphi method is widely used and accepted for gathering data from respondents within their domain of expertise. By engaging the futures experts who were practitioners or have had the experience of working in the high school sector, this study helped by gathering their ideas about future possibilities and probabilities for high schools.

The Delphi technique method is repetitive, gathering the anonymous perceptions of the experts in the area of study and collecting the data to generate a complete record of the whole panel's responses via several rounds of data gathering (Hsu & Stanford, 2007). In this study, the first round was open ended, and each round that followed began by presenting the results of the previous round to be considered and brought the expert panel

to consensus. To seek a more comprehensive understanding of the results, I used a mixed methods approach and collected both qualitative and quantitative data points. The use of mixed methods research allows researchers to use a variety of methods, combining inductive and deductive thinking, and offsetting limitations of exclusively quantitative and qualitative design (McMillian & Schumacher, 2010).

This study included four rounds of data collection. The panelists were provided access to the Google surveys via hyperlinks that were included in the communication email for each round and were given a set time to complete each round. However, some of the panelists required more time to complete the rounds as detailed in Table 1.

**Table 1**

*Rounds 1, 2, 3, and 4 Allocated Completion Time Versus Actual Completion Time*

| Round | Allocated time period | Actual time period |
|---|---|---|
| 1 | December 5–December 11 (7 days) | December 5–December 22 (18 days) |
| 2 | January 7–January 13 (7 days) | January 7–January 16 (10 days) |
| 3 | January 16–January 22 (7 days) | January 16–January 22 (7 days) |
| 4 | January 24–January 30 (7 days) | January 24–February 5 (13 days) |

In Round 1, each futures expert panelist was asked to identify and describe five educational changes that are possible for high schools in California by 2035. In Round 2, the expert panelists were asked to rate each of the educational changes identified in Round 1 for probability. Each idea was rated on a 4-point Likert scale with 1 being *not at all probable by 2035* and 4 being *highly probable by 2035*. Panel members also had the opportunity to contribute additional ideas for possible educational changes. In Round 3, the futures expert panelists were asked to review the ratings from Round 2 and rerate

these items for probability. In addition, they were asked to rate these possible changes for desirability. Each idea was rated on a 4-point Likert scale with 1 being *not at all probable/desirable by 2035* and 4 being *highly probable/desirable by 2035*. In Round 4, the futures expert panelists were asked to review the education changes with the highest probability and desirability ratings to describe the actions needed in order for these changes to occur.

## Population

The population for this study included practitioners (e.g., administrators, curriculum specialists, policy makers, and teachers) from California high schools and also others with knowledge and expertise about California high schools (e.g., futurists, policy makers, and curriculum specialists). McMillan and Schumacher (2010) defined a study's population as a "group of elements or cases, whether individuals, objects, or events that conform to specific criteria and to which we intend to generalize the results of the research" (p. 129). The sampling frame for this study was 18 participants, including both practitioners and others.

## Sample

The sample for this study was 15 experts, including practitioners and futurists, policy makers, and curriculum specialists, who had knowledge and expertise about California high schools. All 15 of the expert panelists who began Round 1 completed all four rounds.

For this study, participants were defined as follows:

- They had 5 years' experience or more in field.
- They have been recognized for their ideas about future possibilities.

- They have been recognized for innovative thinking.

In addition, participants were required to meet one of the following additional criteria:

- They have published, presented on future.
- They conducted future-related research.
- They have implemented future-based changes.
- They have been recognized for educational innovation.

## Demographic Data

The 15 expert panelists in this study had a range of knowledge and experience in the high school education sector, and the data described their organization and current professional position. Tables 2–8 present the futurist expert panel members demographic data.

### Participants' Gender

The ratio of the 15 futurist expert participants by gender was nine females to six males as shown in Table 2.

**Table 2**

*Participants' Gender Identification*

| Gender | # of participants | % of participants |
|---|---|---|
| Male | 6 | 40 |
| Female | 9 | 60 |

### Participants' Ethnicity

Table 3 provides data regarding the participants' race/ethnicity. Eight of the 15 expert panel participants identified as Caucasian or White, and five identified as Hispanic or Latino. One participant identified both as Latino and as American Indian or Alaska

Native and was therefore counted in both categories. One participant identified as Asian American or Asian.

**Table 3**

*Participants' Race/Ethnicity*

| Race/ethnicity | # of participants | % of participants |
|---|---|---|
| American Indian or Alaska Native | 1 | 6.7 |
| Asian American or Asian | 1 | 6.7 |
| Hispanic or Latino | 6 | 43.3 |
| White or Caucasian | 8 | 53.3 |

## Participants' Age Range

Table 4 provides the data regarding the participants' ages. More than half (60%) of the futurist expert participants indicated their age range of 45–54, three (20%) an age range of 55–64, two (13.3%) an age range of 35–44, and one (6.7%) an age range of 25–34.

**Table 4**

*Participants' Ages*

| Age range | # of participants | % of participants |
|---|---|---|
| 25–34 | 1 | 6.7 |
| 35–44 | 2 | 13.3 |
| 45–54 | 9 | 60.0 |
| 55–64 | 3 | 20.0 |

## Participants' Highest Level of Education

Table 5 shows the highest level of education reported by the panel members. Seven panel members (46.7%) indicated they had a doctoral degree, six (46.7%)

indicated they had a master's degree, and one (6.7%) indicated having a bachelor's degree.

**Table 5**

*Participants' Highest Level of Education*

| Highest level of education | # of participants | % of participants |
|---|---|---|
| Bachelor's degree | 1 | 6.7 |
| Master's degree (MA, MS, MEd) | 7 | 46.7 |
| Doctoral degree (PhD, EdD) | 7 | 46.7 |

## Participants' Professional Position

Table 6 shows the current professional positions of the futurist expert panel members. Several of the expert panel members indicated more than one category because of serving in different roles; therefore, the total count of participants is greater than the actual number of participants. The percentages reflect the percentage of the 15 participants who indicated each position; therefore, the percentages add up to greater than 100%. At the time of the study, six (40%) participants indicated working as district level administrators, five (33.3%) as consultants, five (33.3%) as education futurists, two (13.3%) as site level administrators, three (20%) as researchers, three (20%) as design and development of curriculum, two (13.3%) teacher/professor, one (6.7%) as an analyst, one (6.7%) as a curriculum specialist, and one (6.7%) as a county level administrator. Table 7 shows all professional positions held by the expert panelists based on how they self-identified.

**Table 6**

*Participants' Current Professional Position*

| Current professional position | # of participants | % of participants in each professional position |
|---|---|---|
| Design & development | 3 | 20.0 |
| Education futurist | 5 | 33.3 |
| School administrator (district level) | 6 | 40.0 |
| School administrator (site level) | 2 | 13.3 |
| Teacher/professor | 2 | 13.3 |
| Curriculum specialist | 1 | 6.7 |
| Analyst | 1 | 6.7 |
| Consultant | 5 | 33.3 |
| Researcher | 3 | 20.0 |
| Administrator (county level) | 1 | 6.7 |

**Table 7**

*Participants' Professional Positions*

| Position | Panel member number | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Design & development | X | | | | | | | | X | | | | | X | X |
| Education futurist | | X | | | X | | | | X | X | | | | | |
| District administrator | X | | | | | | X | | X | | X | | X | | |
| School site administrator | | | X | | X | | | | | | | X | | | |
| Teacher/professor | | | | | | X | | | | | | | | X | |
| Curriculum specialist | | | | | | X | | | | | | X | | | |
| Analyst | | | | | | X | | | | | | | | | X |
| Consultant | X | X | | | | | | | | X | | | X | X | X |
| Researcher | | X | | X | | | | | | | | | | | X |
| Administrator (county level) | | | | | | | | X | | | | | | | |

### Participants' Type of Organization

Table 8 identifies the organizations where the futurist expert panel members worked at the time the survey was completed. Most of the expert panelists indicated working in a unified school district. The data showed that eight (53.3%) of the participants worked in a unified school district, two (13.3%) worked in a consulting firm, two (13.3%) worked in a union high school district, one (6.7%) worked in a university or college, two (13.3%) worked in a professional organization, and one (6.7%) worked at the county or state level. One of the expert panelists conducted work or held other positions in consulting firms in addition to their current position.

**Table 8**

*Participants' Current Type of Organization*

| Current organization | # of participants | % of participants |
|---|---|---|
| Unified school district | 8 | 53.3 |
| Union high school district | 2 | 13.3 |
| University/college | 1 | 6.7 |
| Consulting firm | 2 | 13.3 |
| Professional organization | 2 | 13.3 |
| County/state level | 1 | 6.7 |

## Presentation and Analysis of Data

The data were collected in four iterative Delphi survey rounds, and the details of the research questions, data collection, and analysis are described in this section. Tables have been included to demonstrate the data collected. The data are presented in the order as outlined by the research methodology.

**Round 1**

Round 1 of the Delphi study was an online survey in which each expert panelist was asked to identify and provide a short description of at least five educational changes in high schools in California they believed are possible by 2035. I initiated the study by developing an online survey using Google forms, which asked the following open-ended question: "Please identify and provide a short description of at least five educational changes in high schools in California they believed are possible by 2035." The purpose of the initial round was to produce a list of possible educational changes by 2035. The survey was sent to 18 participants.

Fifteen futurist expert participants responded to this question. Once the responses were received, I placed the responses into a Google spreadsheet to analyze for similar ideas. All 15 participants provided five possible educational changes, and three provided more than the five responses. The initial open-ended survey used for Round 1 produced 85 identified possible changes for high schools. The majority of the responses were detailed, such as increasing college-going culture including dual enrollment at comprehensive schools, which mirrors current middle college high schools, and other responses were simple such as redesigning of grading the system.

I examined the responses to find similar ideas and worked with a coresearcher to combine them into a list of 19 possible educational changes before developing the survey for Round 2. Table 9 lists the 19 possible educational changes that emerged from Round 1 listed in order of frequency. The table also includes the frequency for each of the identified educational changes, which is the number of the panel members who contributed an idea that was combined into the possible change.

**Table 9**

*Identified Possible Educational Changes for High Schools in California by 2035*

| | Description of possible change | Frequency |
|---|---|---|
| 1. | Shift from traditional grading practices to mastery-based evaluations of student learning that includes student self-assessment. | 9 |
| 2. | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 7 |
| 3. | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. | 7 |
| 4. | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 6 |
| 5. | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 6 |
| 6. | Increased mental health and wellness services integrated into the high school experience. | 4 |
| 7. | Shift in teacher role to facilitator/coach to support more personalized and self-directed learning opportunities for students. | 4 |
| 8. | Increase in teacher/counselor accountability based on student performance and the elimination of tenure/unions. | 4 |
| 9. | Increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning. | 4 |
| 10. | Increased integration of technology to provide a more engaged learning environment using virtual and augmented technology and requiring students to become tech proficient. | 3 |
| 11. | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | 3 |
| 12. | All schools will routinely use an equity lens to evaluate services, including resources provided to students and how the master schedule is developed. | 3 |
| 13. | Increased communication and collaboration between district office and school sites resulting in a flattening the organizational chart. | 2 |
| 14. | Teacher pay will increase and be based on individual's education and training. | 2 |
| 15. | Foreign language programs will promote high levels of bilingualism for all students to be able to compete in a global economy. | 2 |
| 16. | All high schools will incorporate project-based learning in their core subjects. | 2 |

Table 9 (*continued*)

| Description of possible change | Frequency |
|---|---|
| 17. General education teachers will have training/skills to support inclusion of special education and English learner students. | 1 |
| 18. Alternative diploma options will be available for students receiving special education services. | 1 |
| 19. Community members will serve as mentors in local high schools. | 1 |

**Analysis of Round 1**Fifteen of the 18 futurist expert panel members completed this first round. Three panelists were removed from the remainder of this study because they did not respond after several attempts were made to encourage their continued participation. As noted in Table 9, only one educational change had a frequency of nine. Two had a frequency of seven, two had a frequency of six, four had a frequency of four, three had a frequency of three, four had a frequency of two, and three had a frequency of one.

**Round 2**

The futures expert panelists were asked to rate the possible educational changes using a 4-point Likert scale for probability, and they were given the opportunity to add additional ideas of other possible changes at the end of the Round 2 survey. However, no additional ideas were provided by the panelists. During this round, I arranged the second online survey through Google forms for the future expert panelists to rate for probability for each one of the 19 educational change ideas generated in Round 1. The survey contained the following 4-point Likert scale rating for probability: 4 = *highly probable by 2035*, 3 = *somewhat probable by 2035*, 2 = *somewhat improbable by 2035*, and 1 = *not at all probable by 2035*. All 15 expert panelists participated in this round. The goal for this round was to identify the educational changes that are most probable based on the panel members' rating for each idea. Table 10 presents the results from Round 2 with the 19

possible changes listed in order of the mean probability rating and the most probable (highest mean) presented first. The item numbers provided are from Round 1.

**Analysis of Round 2** The futurist expert panelists were asked to rate the possible changes by using a 4-point Likert scale and to determine consensus as to most probable changes. Each point on the Likert scale was issued a value ranging from 4 (*highly probable by 2035*) to 1 (*not at all probable by 2035*). The consensus with the use of the 85% threshold and rating of 3 or 4 helped to identify the highest rated educational changes ranging from 3.9 to 2.4 with a mean of 3.3. Table 11 lists the possible changes by mean rating with the number of panel members rating the item a 4 (*highly probable*).

**Round 3**

The futurist expert panelists were asked to review the Round 2 average ratings and rerate the ideas for probability. In addition, the panelists were tasked to rate each educational change for desirability. In this round, the futurist expert panelists were provided with the mean probability ratings from Round 2 and were tasked to rerate each change for probability. Also, the expert panelists were asked to rate each item again using the 4-point Likert scale for desirability to identify how desirable they would perceive each change to be.

**Table 10**

*Mean Rating of Educational Changes*

| Item # | Possible educational change | *M* | Frequency rating 3 or 4 | % Rating 3 or 4 |
|---|---|---|---|---|
| 5 | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 3.9 | 15 | 100.0 |
| 3 | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success | 3.8 | 14 | 93.4 |
| 10 | Increased integration of technology to provide a more engaged learning environment using virtual and augmented technology and requiring students to become tech proficient. | 3.7 | 14 | 93.3 |
| 6 | Increased mental health and wellness services integrated into the high school experience. | 3.7 | 15 | 100.0 |
| 2 | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 3.6 | 13 | 86.6 |
| 4 | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 3.6 | 14 | 86.6 |
| 9 | Increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning. | 3.5 | 14 | 93.3 |
| 11 | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | 3.5 | 13 | 86.7 |
| 1 | Shift from traditional grading practices to mastery-based evaluations of student learning that includes student self-assessment. | 3.4 | 12 | 80.0 |
| 12 | All schools will routinely use an equity lens to evaluate services including resources provided to students and how the master schedule is developed. | 3.4 | 13 | 86.6 |

Table 10 (*continued*)

| Item # | Possible educational change | *M* | Frequency rating 3 or 4 | % Rating 3 or 4 |
|---|---|---|---|---|
| 15 | Foreign language programs will promote high levels of bilingualism for all students to be able to compete in a global economy. | 3.3 | 12 | 80.0 |
| 18 | Alternative diploma options will be available for students receiving special education services. | 3.3 | 12 | 80.0 |
| 7 | Shift in teacher role to facilitator/coach to support more personalized and self-directed learning opportunities for students. | 3.1 | 10 | 66.7 |
| 17 | General education teachers will have training/skills to support inclusion of special education and English learner students. | 3.1 | 12 | 80.0 |
| 16 | All high schools will incorporate project-based learning in their core subjects. | 3.1 | 11 | 73.3 |
| 13 | Increased communication and collaboration between district office staff and school sites resulting in a flattening the organizational chart. | 3.0 | 10 | 66.7 |
| 19 | Community members will serve as mentors in local high schools. | 2.9 | 11 | 73.4 |
| 14 | Teacher pay will increase and be based on individual's education and training. | 2.9 | 9 | 60.0 |
| 8 | Increase in teacher/counselor accountability based on student performance and the elimination of tenure/unions. | 2.4 | 8 | 46.6 |

**Table 11**

*Possible Changes With Mean Rating and Highest Point Score of 4*

| Rank | Possible educational change | # of panelists rating the change a 4 (highly possible) | *M rating* |
|---|---|---|---|
| 1 | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 13 | 3.9 |
| 2 | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. | 13 | 3.8 |
| 3 | Increased integration of technology to provide a more engaged learning environment using virtual and augmented technology and requiring students to become tech proficient. | 11 | 3.7 |
| | Increased mental health and wellness services integrated into the high school experience. | | |
| 4 | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 11 | 3.6 |
| | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | | |
| 5 | Increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning. | 9 | 3.5 |
| | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | | |
| 6 | Shift from traditional grading practices to mastery-based evaluations of student learning that includes student self-assessment. | 8 | 3.4 |
| | All schools will routinely use an equity lens to evaluate services including resources provided to students and how the master schedule is developed. | | |

Table 11 (*continued*)

| Rank | Possible educational change | # of panelists rating the change a 4 (highly possible) | *M rating* |
|---|---|---|---|
| 7 | Foreign language programs will promote high levels of bilingualism for all students to be able to compete in a global economy.<br>Alternative diploma options will be available for students receiving special education services. | 9 | 3.3 |

The Round 3 survey was completed by all 15 expert panelists. The purpose for this round was to identify the highest rated educational change ideas by analyzing both probability and desirability. The educational change ideas that met the 85% threshold for consensus (3 or 4 on the 4-point Likert scale for both probability and desirability) were then moved forward to Round 4. Tables 12 and 13 show the rerated results of 4, 3, and 1-2, including mean and percentage of rating for probability. Possible changes are numbered to match the order in which they were presented in Round 2.

Table 14 shows the combined results of the highest rated changes for probability based on data from Rounds 2 and 3. These are the possible educational changes that met the threshold to proceed to Round 4. The data for the mean ratings and the percentage of expert panelists rating a 3 *(somewhat probable)* and 4 *(highly probable)* from each round are presented.

**Table 12**

*Results of Rerating for Probability Including Mean and Percentage of Rating*

| | Possible educational change ideas | # of panelists | # of 4 rating | # of 3 rating | # of 1-2 rating | Probable rating | % of 3 or 4 rating |
|---|---|---|---|---|---|---|---|
| 1. | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 15 | 10 | 3 | 2 | 3.5 | 86.7 |
| 2. | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success | 15 | 13 | 2 | 0 | 3.9 | 100.0 |
| 3. | Increased integration of technology to provide a more engaged learning environment using virtual and augmented technology and requiring students to become tech proficient. | 15 | 12 | 3 | 1 | 3.7 | 93.3 |
| 4. | Increased mental health and wellness services integrated into the high school experience. | 15 | 8 | 5 | 2 | 3.4 | 86.6 |
| 5. | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 15 | 13 | 2 | 0 | 3.9 | 100.0 |
| 6. | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 15 | 9 | 3 | 2 | 3.5 | 86.7 |
| 7. | Increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning. | 15 | 7 | 3 | 5 | 3.1 | 66.7 |
| 8. | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g. entrepreneurship and real estate). | 15 | 8 | 5 | 2 | 3.4 | 86.6 |

Table 12 (*continued*)

| | Possible educational change ideas | # of panelists | # of 4 rating | # of 3 rating | # of 1-2 rating | Probable rating | % of 3 or 4 rating |
|---|---|---|---|---|---|---|---|
| 9. | Shift from traditional grading practices to mastery-based evaluations of student learning that includes student self-assessment. | 15 | 6 | 6 | 3 | 3.2 | 80.0 |
| 10. | All schools will routinely use an equity lens to evaluate services including resources provided to students and how the master schedule is developed. | 15 | 4 | 8 | 3 | 3.1 | 80.0 |
| 11. | Foreign language programs will promote high levels of bilingualism for all students to be able to compete in a global economy. | 15 | 4 | 7 | 4 | 2.9 | 73.4 |
| 12. | Alternative diploma options will be available for students receiving special education services. | 15 | 8 | 5 | 2 | 3.4 | 86.6 |
| 13. | Shift in teacher role to facilitator/coach to support more personalized and self-directed learning opportunities for students. | 15 | 4 | 8 | 5 | 2.8 | 66.6 |
| 14. | General education teachers will have training/skills to support inclusion of special education and English learner students. | 15 | 4 | 7 | 4 | 2.9 | 72.4 |
| 15. | All high schools will incorporate project-based learning in their core subjects. | 15 | 5 | 5 | 5 | 3.0 | 72.4 |
| 16. | Increased communication and collaboration between district office staff and school sites resulting in a flattening the organizational chart. | 15 | 3 | 5 | 7 | 2.6 | 53.3 |
| 17. | Community members will serve as mentors in local high schools. | 15 | 4 | 7 | 4 | 2.9 | 72.4 |
| 18. | Teacher pay will increase and be based on individual's education and training. | 15 | 3 | 4 | 8 | 2.5 | 46.7 |

Table 12 (*continued*)

| | Possible educational change ideas | # of panelists | # of 4 rating | # of 3 rating | # of 1-2 rating | Probable rating | % of 3 or 4 rating |
|---|---|---|---|---|---|---|---|
| 19. | Increase in teacher/counselor accountability based on student performance and the elimination of tenure/unions. | 15 | 0 | 5 | 10 | 2.2 | 33.3 |

**Table 13**

*Results of Desirability Including Mean and Percentage of Rating*

| | Possible educational change ideas | # of panelists | # of 4 rating | # of 3 rating | # of 1-2 rating | Desirable rating | % of rating |
|---|---|---|---|---|---|---|---|
| 1. | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 15 | 12 | 3 | 1 | 3.7 | 93.3 |
| 2. | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success | 15 | 14 | 0 | 1 | 3.9 | 93.3 |
| 3. | Increased integration of technology to provide a more engaged learning environment using virtual and augmented technology and requiring students to become tech proficient. | 15 | 10 | 2 | 3 | 3.5 | 80.0 |
| 4. | Increased mental health and wellness services integrated into the high school experience. | 15 | 12 | 1 | 2 | 3.7 | 86.7 |
| 5. | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 15 | 12 | 3 | 0 | 3.9 | 100.0 |

Table 13 (continued)

| | Possible educational change ideas | # of panelists | # of 4 rating | # of 3 rating | # of 1-2 rating | Desirable rating | % of rating |
|---|---|---|---|---|---|---|---|
| 6. | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 15 | 12 | 2 | 1 | 3.7 | 93.3 |
| 7. | Increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning. | 15 | 8 | 5 | 2 | 3.4 | 86.6 |
| 8. | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g. entrepreneurship and real estate). | 15 | 11 | 3 | 1 | 3.7 | 93.3 |
| 9. | Shift from traditional grading practices to mastery-based evaluations of student learning that includes student self-assessment. | 15 | 8 | 5 | 2 | 3.4 | 86.6 |
| 10. | All schools will routinely use an equity lens to evaluate services including resources provided to students and how the master schedule is developed. | 15 | 10 | 4 | 1 | 3.5 | 93.4 |
| 11. | Foreign language programs will promote high levels of bilingualism for all students to be able to compete in a global economy. | 15 | 9 | 4 | 2 | 3.4 | 86.7 |
| 12. | Alternative diploma options will be available for students receiving special education services. | 15 | 9 | 5 | 1 | 3.5 | 93.3 |
| 13. | Shift in teacher role to facilitator/coach to support more personalized and self-directed learning opportunities for students. | 15 | 9 | 3 | 3 | 3.3 | 80.0 |
| 14. | General education teachers will have training/skills to support inclusion of special education and English learner students. | 15 | 11 | 2 | 2 | 3.5 | 86.6 |

Table 13 (*continued*)

| Possible educational change ideas | # of panelists | # of 4 rating | # of 3 rating | # of 1-2 rating | Desirable rating | % of rating |
|---|---|---|---|---|---|---|
| 15. All high schools will incorporate project-based learning in their core subjects. | 15 | 7 | 6 | 2 | 3.3 | 86.7 |
| 16. Increased communication and collaboration between district office staff and school sites resulting in a flattening the organizational chart. | 15 | 10 | 3 | 2 | 3.5 | 86.7 |
| 17. Community members will serve as mentors in local high schools. | 15 | 6 | 5 | 4 | 3.1 | 73.3 |
| 18. Teacher pay will increase and be based on individual's education and training. | 15 | 9 | 3 | 3 | 3.3 | 80 |
| 19. Increase in teacher/counselor accountability based on student performance and the elimination of tenure/unions. | 15 | 6 | 3 | 6 | 2.9 | 60 |

**Table 14**

*Highest Rated Probable Educational Changes With 3 and 4 Ratings*

| Item # | Possible educational change ideas | *M* rating Round 2 | % of 3 & 4 ratings Round 2 | *M* rating Round 3 | % of 3 & 4 ratings Round 3 |
|---|---|---|---|---|---|
| 5 | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 3.6 | 86.6 | 3.9 | 100.0 |
| 2 | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. | 3.8 | 93.4 | 3.9 | 100.0 |
| 6 | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 3.6 | 86.6 | 3.5 | 86.7 |
| 1 | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 3.9 | 100.0 | 3.5 | 86.7 |
| 4 | Increased mental health and wellness services integrated into the high school experience. | 3.7 | 100.0 | 3.4 | 86.6 |
| 8 | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | 3.5 | 86.7 | 3.4 | 86.6 |
| 12 | Alternative diploma options will be available for students receiving special education services. | 3.3 | 80.0 | 3.4 | 86.6 |

The highest rated desirable educational changes by the expert panelists with a rating or 3.9 were

- Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success.
- More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth.

Next, for the data indicating a desirable rating of 3.7, the educational changes were

- All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school.
- Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area.
- Increased mental health and wellness services integrated into the high school experience.
- Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate).

Finally, for the data identified with a desirable rating of 3.5, the following educational change idea was

- Alternative diploma options will be available for students receiving special education services.

Table 15 displays the highest rated changes for desirability based on data from Round 3. These are the possible educational changes that met the threshold to proceed to Round 4.

The table provides the mean ratings and percentages of expert panelists rating 3 (*somewhat desirable*) and 4 (*highly desirable*).

**Table 15**

*Highest Rated Desirable Educational Changes With 3 and 4 Ratings*

| Item # | Possible educational change ideas | *M* rating | % of rating 3 or 4 |
|---|---|---|---|
| 5 | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 3.8 | 100.0 |
| 2 | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. | 3.9 | 93.3 |
| 6 | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 3.7 | 93.3 |
| 1 | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 3.7 | 93.3 |
| 4 | Increased mental health and wellness services integrated into the high school experience. | 3.7 | 86.7 |
| 8 | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | 3.7 | 93.3 |
| 12 | Alternative diploma options will be available for students receiving special education services. | 3.5 | 93.3 |

Table 16 displays the highest rated proposed educational changes that met the threshold of 85% and above for both probability and desirability based on the Round 3 ratings. The percentage is the panel members who rated the item 3 or 4 on the 4-point Likert scale (somewhat or highly probable; somewhat or highly desirable).

**Table 16**

*Highest Rated Proposed Educational Changes for Probability and Desirability*

| Item # | Possible educational change ideas | % rating a 3 or 4 for probability | % rating a 3 or 4 for desirability |
|---|---|---|---|
| 5 | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 100.0 | 100.0 |
| 2 | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. | 100.0 | 93.3 |
| 6 | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 86.7 | 93.3 |
| 1 | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 86.7 | 93.3 |
| 4 | Increased mental health and wellness services integrated into the high school experience. | 86.6 | 86.7 |
| 8 | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | 86.6 | 93.3 |
| 12 | Alternative diploma options will be available for students receiving special education services. | 86.6 | 93.3 |

**Analysis of Round 3** The Round 3 survey was completed by all 15 futurist expert panelists who participated since Round 1. In this round the expert panelists were asked to rerate each educational idea for probability, and they were also asked to rate for desirability by using a 4-point Likert scale. The results from both of the probable and desirable ratings that met the 85% and above threshold for consensus of 3 or 4 on the Likert scale were then added and presented in Round 4 as final educational changes.

The expert panelists rerated the following educational change ideas for probability with the mean of 3.9 and a rating of 100%:

- Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success.
- More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth.

The expert panelists rerated the next highest educational change idea for probability with a mean of 3.7 and a rating of 93.3%:

- Increased integration of technology to provide a more engaged learning environment using virtual and augmented technology and requiring students to become tech proficient.

The expert panelists rerated the next highest educational change ideas for probability with a mean of 3.5 and a rating of 86.7%.

- Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area.
- All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school.

Last, the expert panelists rerated the next highest educational change ideas for probability with a mean of 3.4 and a rating of 86.6%.

- Increased mental health and wellness services integrated into the high school experience.
- Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate).

The expert panelists rated the following educational change idea for desirability with the mean of 3.9 and a rating of 100%:

- More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth.

The expert panelists rerated the next highest educational change idea for desirability with a mean of 3.5 and a rating at 93.4%.

- All schools will routinely use an equity lens to evaluate services including resources provided to students and how the master schedule is developed.

The expert panelists rerated the next highest educational change ideas for desirability with means of 3.5, 3.7, and 3.9 and all rating at 93.3%.

- Alternative diploma options will be available for students receiving special education services.
- Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate).
- All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school.
- Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success.
- Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area.

The expert panelists rerated the next highest educational change ideas for desirability with means of 3.3, 3.4, 3.5, and 3.7 and all rating at 86.7%:

- All high schools will incorporate project-based learning in their core subjects.
- Foreign language programs will promote high levels of bilingualism for all students to be able to compete in a global economy.
- Increased communication and collaboration between district office staff and school sites resulting in a flattening the organizational chart.
- Increased mental health and wellness services integrated into the high school experience.

The expert panelists rerated the next highest educational change ideas for desirability with means of 3.4 and 3.5 and all rating at 86.6%.

- Increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning.
- Shift from traditional grading practices to mastery-based evaluations of student learning that includes student self-assessment.
- General education teachers will have training/skills to support inclusion of special education and English learner students.

The following educational change ideas were rated for both probability and desirability by the 15 expert panelists, met the threshold for consensus, and moved forward to Round 4:

- More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth.

- Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success.
- Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area.
- All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school.
- Increased mental health and wellness services integrated into the high school experience.
- Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate).
- Alternative diploma options will be available for students receiving special education services.

**Round 4**

The futurist expert panelists were asked to describe the actions necessary to promote the desired changes for the items that met the criteria of consensus for both probability and desirability at a threshold of 85%.

**Round 4 Analysis**

In this last and final round, the futurist expert panelists were given the opportunity to review the seven education changes that met the threshold of 85% for both probability and desirability and to describe the actions needed to be taken for these desired changes to occur. Fifteen expert panelists provided a description of the action needed to be taken for the educational changes. The data analysis process for this round included the review

and collaboration with a peer thematic researcher for consistency and validity of identified ideas, key words, or themes.

In analyzing the data from the descriptions of the actions needed for each change, three ideas or themes surfaced from the expert panelists across the seven probable and desirable changes. These themes were

- Collaboration or partnering with educational institutions, and other agencies related to the idea.
- Ensuring that changes support student learning and motivation.
- Ensuring that there is implementation of strategic planning and ongoing monitoring of the idea.

The first educational change idea of more flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth had the following response from Panelist 3 in the area of collaboration and partnering:

> School districts will have to work toward a collective understanding of the why that can be shared and widely accepted across the community. Parents, businesses/employers, etc. will have to understand the benefits and how these changes in time will benefit the community as a whole in order to get them onboard with the changes that will be necessary to support schools.

The second educational change idea of increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success had the following response from Panelist 4 in the area for ensuring that changes support student learning and motivation:

"Interest drives engagement and both enhance a young person's motivation. In this way, education takes on aspects of joy and not the drudgery that many students experience, especially in the junior and senior years." The idea that all students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school had the following response from Panelist 10 in the area for strategic planning and ongoing monitoring of this idea: "There needs to be a concerted effort to align resources and establish protocols. Absent that coordination, school districts may flounder."

The fourth idea of increased mental health and wellness services integrated into the high school experience had the following response from Panelist 13 in the area of partnering with educational institutions or other agencies to support this idea: "Freshmen course would include a civics course where students would learn about the community resources for health and wellness."

The fifth educational change idea to provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate) had the following response from Panelist 15 in the area of strategic planning and ongoing monitoring of this idea: "The need for financial literacy programs is undeniable, with many states now requiring personal finance courses to graduate from high school."

The change idea of students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area had the following response from Panelist 2 in the area of collaboration and partnering with educational institutions and community agencies: "In K–12, we'd have to work closely

with postsecondary to ensure that a shift like this does not impede students from continuing on a 4-year university."

The final educational change idea of alternative diploma options will be available for students receiving special education services had the following response from Panelist 1 in the area of strategic planning and ongoing monitoring of this idea: "By considering a progressive approach to education that includes all of the above we also, then, ensure that our students who learn differently have many options to certificates, trades, etc. that will ensure a high-quality life [well beyond the idea of simply different diploma options]." Table 17 shows how the recommendations of necessary actions from the participants for each educational change idea were categorized into the three major themes. Some participants gave more than one possible action per change idea; therefore, the sum of the count in the three theme columns exceeds the number of actual panel members.

**Table 17**

*The Most Frequent General Ideas or Themes for Actions Necessary to Promote Change*

| Item # | Possible educational change ideas | # of panelists | Collaboration and partnering | Educational, interventional and motivational | Strategic planning and monitoring |
|---|---|---|---|---|---|
| 5 | More flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. | 15 | 7 | 4 | 5 |
| 2 | Increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. | 15 | 9 | 4 | 7 |
| 6 | All students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. | 15 | 8 | 10 | 7 |
| 2 | Students will have access to microcertifications/trade certificates for which they have demonstrated mastery in a particular area. | 15 | 7 | 7 | 11 |
| 4 | Increased mental health and wellness services integrated into the high school experience. | 15 | 7 | 8 | 11 |
| 8 | Provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). | 15 | 8 | 8 | 10 |
| 12 | Alternative diploma options will be available for students receiving special education services. | 15 | 4 | 6 | 11 |

## Summary

Chapter IV included a summary of the research design and methods used for data collection and analysis and offered the research findings of this Delphi study. This study

aimed to identify and describe the educational changes for high schools in California that are possible, probable, and desirable by 2035 as perceived by a panel of experts. Fifteen futurist expert panelists participated in this study, and a consensus was reached regarding the future educational change ideas that led to the expert panelists describing the actions necessary to promote the desired changes.

Round 1 was a qualitative round that consisted of one open-ended question. The purpose for Round 1 was to collect the educational changes that the expert panel members believed were possible for high schools in California by 2035. The results revealed 19 possible educational changes. The results from Round 1 were used to develop the quantitative Round 2 survey. In Round 2, the expert panel members were asked to rate the educational change ideas for probability using a 4-point Likert scale ranging from *highly probable* to *not at all probable*. The probability ratings from Round 2 were used in Round 3. The Round 3 survey was also quantitative and included two parts. First, each educational change idea was rerated for probability, and second, the expert panelists were asked to rate each idea using the 4-point Likert scale for desirability. The results for each idea were then analyzed for both probability and desirability, and the ideas that met the 85% threshold were moved forward to Round 4. The 15 expert panel members reached a consensus during Round 3, and seven educational change ideas were moved forward to Round 4 in which panel members were asked to describe the actions necessary to promote the desired changes.

In the final Round 4, three findings surfaced from the descriptions provided by the expert panelists across the seven probable and desirable changes. By combining like ideas and overarching themes the following findings surfaced:

- Collaboration or partnering with educational institutions and other agencies related to the idea.
- Ensuring that changes support student learning and motivation.
- Ensuring that there is implementation of strategic planning and ongoing monitoring of the idea.

Chapter IV presented the comprehensive data collection that was both qualitative and quantitative related to this Delphi study to identify the probable and desirable educational changes for high schools in California by 2035. Chapter V includes the major findings, conclusions, implications for actions, comments, and recommendations for future studies.

# CHAPTER V: FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V provides a review of this Delphi study's purpose statement, research questions, and methodology and includes the study's population and sample. Furthermore, Chapter V provides the study's findings, conclusions, implications for action, and recommendations for future research. This chapter concludes with remarks and reflections of this study.

## Purpose Statement

The purpose of this Delphi study was to identify and describe the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In addition, the purpose was to determine the level of desirability of educational changes identified as probable by a panel of experts. Finally, the purpose was to describe the actions necessary to promote the desirable educational changes by 2035 as perceived by the expert panel.

## Research Questions

The following research questions were explored in this study:

1. What are the educational changes perceived by a panel of experts as possible and probable for high schools in California by 2035?
2. What are the educational changes perceived by a panel of experts as desirable for high schools?
3. What are the actions necessary to promote the desirable educational changes perceived by a panel of experts for high schools?

## Methodology

The study was part of a thematic dissertation involving four doctoral candidates who studied the same topic with different populations. The methodology chosen for this study was the Delphi technique. I collected data from practitioners from California high schools and also others with knowledge and expertise about California high schools. The Delphi technique method aided me in identifying and describing the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts. In this study, quantitative and qualitative data were collected through four rounds of surveys. The study's iterative and multiple-round progression permitted the futurist expert panelists to reevaluate their opinions and then adjust ratings based on their assessment and evaluation of responses from other panelists (Hsu & Sandford, 2007).

Round 1 allowed the expert panelists to identify and describe five educational changes they believed were possible and probable for California high schools by 2035. Once the ideas and keywords were analyzed, their responses were used to develop the Round 2 survey. In Round 2, the expert panelists rated each educational change on a 4-point Likert scale that was identified in Round 1. The ratings on the Likert scale were 4 (*highly probable by 2035*), 3 (*somewhat probable by 2035*), 2 (*somewhat improbable by 2035*), and 1 (*not at all probable by 2035*). The ratings for each educational change idea were calculated to find the mean, and these results were then used to develop the Round 3 survey instrument. In Round 3, the expert panelists were asked to rerate each educational change for probability and to rate for desirability using the same 4-point Likert scale used in Round 2. In the Round 4, the expert panelists were presented with the list of

educational changes that met the consensus for probability and desirability from Round 3. The expert panel members were then tasked to describe the actions necessary to promote these desired educational changes.

## Population

The population for this study included practitioners (e.g., administrators, curriculum specialists, policy makers, and teachers) from California high schools and also others with knowledge and expertise about California high schools (e.g., futurists, policy makers, and curriculum specialists). McMillan and Schumacher (2010) defined a study's population as a "group or elements or cases, whether individuals, objects, or events that conform to specific criteria and to which we intend to generalize the results of the research" (p. 129). The sampling frame for this study was 15 participants, including both practitioners and others.

## Sample

For this study 18 expert panelists were identified, including practitioners (those working or servicing the high school sector, a union high school district) and futurists, policy makers, and curriculum specialists with knowledge and expertise about California high schools. Of the 18 identified panelists, 15 completed all four rounds.

For this study, experts were defined as follows:

- They had 5 years' experience or more in field.
- They have been recognized for their ideas about future possibilities.
- They have been recognized for innovative thinking.

In addition, participants were required to meet one of the following additional criteria:

- They have published, presented on future.

- They conducted future-related research.
- They have implemented future-based changes.
- They have been recognized for educational innovation.

## Key and Major Findings

Chapter V presents the major findings of the Delphi study with respect to each research question. The first two research questions resulted in seven key findings related to probable and desirable changes for high schools, and the third research question generated three major findings related to actions necessary to support these changes.

### Key Findings for Research Questions 1 and 2

**Research Question 1:** What are the educational changes perceived by a panel of experts as possible and probable for high schools in California by 2035?

**Research Question 2:** What are the educational changes perceived by a panel of experts as desirable for high schools?

The key findings for Research Questions 1 and 2 are the summary of the data presented in Chapter 4 and serve as the foundation for the major findings resulting from Research Question 3. In Round 1, the major finding was the production of 85 ideas for possible changes that were generated by panel members. These ideas were consolidated from the list of 19 possible educational changes for high schools as described in Chapter IV. In Round 2, panel members rated the 19 items for probability. I then sorted the mean score ratings from high (3.9) to low (2.4) as described in Chapter IV. In Round 3 panel members rerated the 19 items for probability and then rated the same items for desirability.

Seven educational change ideas met the threshold for consensus for both probability and desirability for high schools by 2035. These seven probable and desirable changes for high schools are discussed in the next section in terms of the relevant theory based on the conceptual framework related to this study described in Chapter II. The conceptual framework used included Lewin's and Kotter's organizational change theories, which served as the foundation for this study. In addition, five other theories (systems theory, social systems theory, futures theory, appreciative inquiry, and continuous improvement theory) were used as models and described to serve for convenience as a reference for the findings of the study. Not all components of the conceptual framework were specifically represented in the key findings but were represented conceptually across all the changes (e.g., futures theory and appreciative inquiry).

### *Key Finding 1*

The first educational change that panel members identified as both probable and desirable for high schools by 2035 was more flexible scheduling (e.g., 4-day week or instructional blocks) to allow time for intervention, collaboration, real-world application, cocurricular activities, and so forth. This change aligned with the systems theory component of the conceptual framework developed for this study described in Chapter II. Systems theory includes the efforts to understand and improve complex systems, examine systems as a whole, and focus on the way that a system's essential parts interconnect (Prince, 2020). By taking a systems perspective, high schools can develop schedules that meet the needs of all stakeholders and ensure that students are able to receive a high-quality education and participate in meaningful extracurricular activities while taking into

considerations how the change impacts other parts of the system/aspects of the high school.

***Key Finding 2***

The second educational change that panel members identified as both probable and desirable for high schools by 2035 was the increase in career and technical education or career pathways for students to learn the academic, technical, and employability skills needed for postsecondary and workplace success. This change also aligned with the systems theory component as described in Chapter II in the conceptual framework developed for this study. According to Cauthen (2021), systems theory provides a means that can enable district and school leaders to develop learning-focused schools in the current era of complexity and accountability. By adopting a systems perspective, educators, policy makers, and industry leaders can work together to identify what changes are needed in the site, district, or state level to create effective career and technical education and career pathways that help prepare students for successful careers in a rapidly changing job market.

***Key Finding 3***

The third educational change that panel members identified as both probable and desirable for high schools by 2035 was students will have access to microcertifications/and trade certificates for which they have demonstrated mastery in a particular area. This change aligned with the continuous improvement theory component of the conceptual framework developed for this study found in Chapter II. At the high school level, continuous improvement theory has been implemented to achieve substantial gains, ranging from improved performance goals to increased college and

career readiness to decreased failure rates (Murray & Chapman, 2003). Providing access to microcertifications/trade certificates with a continuous improvement theory's perspective can be a valuable strategy for adapting to the constantly changing demands of the workforce and supporting long-term student success and workforce development.

***Key Finding 4***

The fourth educational change that panel members identified as both probable and desirable for high schools by 2035 was all students will have the opportunity for dual enrollment in which they can take college courses and earn college credit or a degree while they are in high school. This change also aligned with the systems theory component of the conceptual framework developed for this study described in Chapter II. Systems theory can be implemented to enhance student learning and academic results because it is an approach to a comprehensive way to advance the entire structure of the school organization (Lannon, n.d.). To ensure that students have access to dual enrollment from a systems perspective, high schools and colleges need to work together to create partnerships and develop programs that help students navigate the dual enrollment process and ensure they are prepared for college-level coursework. This work will require that staff at both high schools and colleges consider how such a change will impact other aspects of their systems.

***Key Finding 5***

The fifth educational change that panel members identified as both probable and desirable for high schools by 2035 was increased mental health and wellness services integrated into the high school experience. This change aligned with the social systems theory component conceptual framework developed for this study described in

Chapter II. Norlin (2009) stated that when viewing schools as a social system, the school's aim is to prepare the students to occupy social roles according to their capacities and to subsequently leave the school to play important functions in society. By growing the mental health and wellness supports at the high school level with a social systems approach, schools can better focus on what needs to be done to support and increase the culture of acceptance and care and ensure that students are equipped with the health and wellness knowledge and skills to be successful after high school.

***Key Finding 6***

The sixth educational change that panel members identified as both probable and desirable for high schools by 2035 was to provide financial literacy for students to learn about budgeting, debt management, and business practices (e.g., entrepreneurship and real estate). This change aligned with the continuous improvement theory component of the conceptual framework developed for this study described in Chapter II. The continuous improvement theory grants individuals to reflect on their work, identify problem areas, test possible solutions, evaluate interventions, and adapt interventions based on data collected (Hanover Research & ULEAD, 2020). Financial literacy is an essential life skill that will significantly benefit students. By continually improving curriculum and course design, schools can ensure students have up-to-date financial literacy skills and support with a solid foundation for their fiscal future.

***Key Finding 7***

The final educational change that panel members identified as both probable and desirable for high schools by 2035 was alternative diploma options will be available for students receiving special education services. This change also aligned with the

continuous improvement theory component of the conceptual framework developed for this study described in Chapter II. The continuous improvement model can refer to a school district's, or other organizations, ongoing commitment to quality improvement efforts that are evidence-based, are integrated into the daily work of individuals, and are calibrated within the system (Elgart, 2017). For students receiving special education services, providing alternative diploma options that are designed with a continuous improvement perspective would allow for changes that focus on the changing needs of students to acquire the skills and knowledge to succeed in life after high school.

## Major Findings for Research Question 3

**Research Question 3:** What are the actions necessary to promote the desirable educational changes perceived by a panel of experts for high schools?

The major findings of this study are associated with Research Question 3 and came from the Round 4 data. Three ideas or themes surfaced from the description of actions that the panel members identified as necessary to promote the educational changes from the key findings. The major findings are discussed next along with the pertinent theory from the conceptual framework described in Chapter II to provide more context.

### *Major Finding 1: Collaboration and Partnership With Other Educational Institutions Is Necessary to Promote Future Educational Change*

By working together, high schools and educational institutions can share resources, knowledge, and expertise to improve student outcomes and access vocational programs or advanced coursework. Panelist 13 described, "Partner with institute of higher learning to allow for dual enrollment for career pathway capstones and/or certifications while still in high school."

Panelist 9 had a similar description related to this major finding: “Build partnerships with local businesses and industry leaders to provide students with real-world learning experiences and to help inform curriculum development.” This major finding is associated with social systems theory from the conceptual framework developed for this study. When social systems theory is applied in an educational organization, it empowers education leaders to collaborate with other similar organizations to align educational initiatives, improve instruction, increase efficiency, and strengthen student outcomes (Davies, 2022). Several of these changes identified as probable and desirable in this study will require that organizations collaborate in order to implement the change. Only through collaboration can high schools implement these changes and ensure that schools in 2035 prepare students with a comprehensive and equitable education.

### *Major Finding 2: Prioritizing Support for Student Learning and Motivation Is Necessary to Promote Future Educational Change*

High schools must prioritize student-centered approaches to education, providing opportunities for choice, autonomy, and meaningful learning experiences that connect with students’ learning goals and interests. Panelist 9 suggested, “Provide support services for students, such as counseling, mentoring, and peer-support programs to help them navigate the alternative diploma option and plan for their future.” Panelist 7 wrote, “Teaching individuals to be social emotionally aware of themselves and supports available to them should they find themselves in need is critical to their ability to navigate adversities they are faced with [in a healthy manner].” Systems theory can help leaders identify and adapt to changes (technological advances and policy reforms), coordinate with other parts of the system, monitor student data, and provide the

instructional materials they need most (Bridgen, 2017). From a systems theory perspective, panel members were clear that high schools must ensure that any changes they make support student learning and motivation. Because education is a complex system that involves various connected components, including students, teachers, curriculum, and the school environment, any changes to one component can have a ripple effect on other components. Therefore, when looking at potential changes, high school leaders need to consider how that change will impact student learning and motivation and take steps to ensure that there is a positive impact and/or mitigate any potential negative impact. This includes providing adult learning opportunities to ensure that the adults are up to date with instructional strategies and pedagogy to better meet the needs of students in the classroom.

### *Major Finding 3: Implementation of Strategic Planning and Ongoing Monitoring Is Necessary to Promote and Ensure Future Educational Change*

By implementing strategic planning and ongoing monitoring, high schools can identify areas of improvement, allocate resources effectively, and ensure that all stakeholders are working toward common goals. Panelist 15 responded, “Provide support services for students, such as counseling, mentoring, and peer-support programs to help them navigate the certification process and plan for their future. Evaluate the effectiveness of the microcertifications/trade certificates program and making improvements as needed.” In addition, Panelist 6 had a similar description:

> Create a funding source, perhaps through grants, and establish the perimeters for implementing the funds. Create an end goal, collect supporting data, identify what

drives desired outcomes, map your intermediate outcomes, decide on the optimal outputs, and complete step-by-step process to implement changes.

This change also aligns with Kotter's change theory component of the conceptual framework developed for this study described in Chapter II (Aktas, 2021). Kotter's change model is a framework for managing and implementing successful change. In the context of high school education, this model can help guide educational leaders in implementing significant and sustainable change in their schools (Reiling, 2022). Implementing Kotter's change model consists of eight stages, starting with establishing a sense of urgency and ending with anchoring the new approaches in the organizations culture. By following this model, educational leaders can plan and execute effective and lasting change in their schools while avoiding common pitfalls that can derail efforts to innovate and improve.

## Unexpected Findings

The data from this study provided two unexpected findings regarding the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts.

### Unexpected Finding 1

The educational change idea of all high schools will incorporate project-based learning in their core subjects from the Round 1 data described in Chapter II in the literature review section as a new implementation in the high school sector and pedagogical approach. However, in Round 3 of the survey, despite this educational idea making the 85% threshold in desirability with 86.7%, it did not meet the threshold for probability because it only achieved 66.6% of panel members rating as *somewhat* or

*highly probable*. Based on the results, information from the literature, I expected this educational idea to meet consensus because it was identified in the literature as a promising practice that provides students with an immersive and interactive learning experience and encourages critical thinking, problem solving, and collaboration skills (Terada, 2021). However, it did not meet the consensus in both probability and desirability and did not move forward to Round 4.

**Unexpected Finding 2**

The educational change idea of increase of virtual and hybrid learning opportunities, including both synchronous and asynchronous learning, was described in the literature review section of Chapter II as an instructional delivery model that would likely continue to be expanded at the high school level moving forward. In Round 3 of the survey, the idea made the 85% threshold for desirability with 86.6%, but it did not meet the threshold for probability with 66.70%. I expected this idea to meet consensus based on the literature that predicted continuing and expanding use of these models that allow for greater flexibility in accessing education and accommodating different learning styles and schedules (Mattea, 2022). However, it did not move to Round 4.

## Conclusions

Based on the findings of this study and the input from the futurist expert panelists, high schools of the future need to adapt to the changing needs of students and the demands of the workforce to provide the best education possible. A greater emphasis needs to be placed on developing vital, in-demand skills that may be different from traditional instructional ways to prepare students for the workforce. Also, a focus on creating a more inclusive and equitable learning environment is needed to promote

social-emotional learning and mental health and to provide instruction that is engaging and motivating for students.

### Conclusion 1: For High Schools to Implement Desired and Probable Change By 2035, School Districts Must Work With Educational Institutions and Other Relevant Agencies to Develop and Implement Innovative Programs That Better Prepare Students for College or the Workforce

Based on the findings and literature review, it is concluded that school districts must establish partnerships with various types of organizations, from educational to local business, to provide the best education and work-based learning for students. Cox-Petersen (2011) defined the purpose for partnerships as being created for a variety of reasons that include enhancing public relations, seeking additional funding, and working to better meet the needs of students now and in the future. Furthermore, the futurist expert panelists highlighted that school districts need to work more closely with local business and view them as partners to determine overall goals and identify which area or areas of the curriculum would benefit most from a partnership. Panelist 7 outlined partnering as "creating pathways that are responsive to local businesses for internships, as well as local colleges for educational advancement is critical for the success of students to have true opportunity for advancement."

### Conclusion 2: For High Schools to Implement Desired and Probable Change By 2035, School Districts Must View Their Schools as Learning Systems for Both Adults and Students

Based on the findings and the literature review, for school districts to create sustainable change and achieve a vision for student success, it is concluded that leaders

need to ensure that the school and district is focused on learning both for students and for all staff. Adult learning theory should be used to support professional development to acquire new skills, enhance existing ones, and adapt to societal needs. The motive to initiate any change must be based on positive student outcomes on the conditions of learning that teachers and leaders want to change for students (Meyer-Looze et al., 2019). Panelist 1 highlighted the method to support adult learning outcomes:

> Additionally, teachers and leaders will need extensive PL to ensure that the time created by new scheduling is used effectively. Districts should ask how do we use this time to improve Tier 1 instruction in order to lessen the need for Tier 2 and 3 supports? This is an opportunity for districts/schools to evaluate how, if at all, they are using a common theory of learning across classrooms as a means to, again, raise student learning and decrease the need for additional supports.

**Conclusion 3: For High Schools to Implement Desired and Probable Change By 2035, School Districts Must Make Sure That a Clearly Articulated Strategic Plan Is Executed and Continually Monitored to Ensure Ongoing Improvement**

The final conclusion of this study is that consistent implementation of strategic planning and continual monitoring are crucial for high schools to ensure ongoing improvement for ideas and sustained progress. The panel members emphasized that school district leaders need to focus on the purpose of any proposed change initiative in order to make progress toward the desired goal. For school districts to achieve the desired outcomes, they need to establish a clear purpose and goals because this is critical for creating a shared vision, guiding decision making, and driving progress toward improved student outcomes. Successful strategic plan implementation entails appropriate

management of fiscal and time resources, the creation of high-output teams, and the consistent monitoring of all progress (Ong, 2016). A combination of effective planning and communication will ensure that all stakeholders, including parents, teachers, administrators, principals, board members, and the community are all striving for the same goals. Panelist 3 shared, "Strategic planning involves the development of long-term goals, assessing current resources, identifying potential challenges, and creating actionable steps to improve student learning outcomes and educational experiences."

## Implications for Action

The implications for action were developed from reviewing the data findings, conclusions, futurist expert panel member ideas, and new learnings from this study. The implications for action that follow must be prioritized and are aimed for federal and state policy makers and for local county and school district educational leaders along with school board members.

### Implication for Action 1: Establish Partnerships With Local Colleges That Allow for Dual Enrollment of High School Students

From the findings of this study, school district and local college and university leaders need to develop partnerships and should include all stakeholders. These partnerships should include more prominent groups and a broader educational community including local corporations to supplement school learning and encourage lifelong learning among students and families. First, school districts need to identify local community colleges and universities they can partner with based on the distance and accessibility to students. Second, the point of contact or liaison in both the school district and the identified partners need to be identified. Their role of developing and maintaining

partnerships must be clear and concise to collaborate with the educational institutions, parents, and community members. Last, as part of the partnership development process, the allocation of funding agreements and marketing and outreach needs to be implemented. To strengthen this process, the framework of a theory of change can assist with explaining the how and why of the desired change and link various activities and outcomes to this vision. As discussed in Chapter II, Lewin's change model suggests a 3-stage model of unfreeze, change, and refreeze: unfreeze preparing for the desired change, change implementing the desired change, and refreeze solidifying the desired change to achieve the desired change (Lucidchart, n.d.). Implementing a theory-based approach will help guide the process of planning, implementing, or evaluating change at an individual, organizational, or community level.

**Implication for Action 2: Develop Partnerships With Local Businesses or Agencies to Develop Work-Based Learning**

Based on Conclusion 1, school district leaders need to develop partnerships with the broader educational community including local corporations to supplement school learning and encourage lifelong learning among students and families. School districts need to identify local organizations that align with existing career and technical education pathways being taught to discuss partnership opportunities. CDE should prioritize grant programs for school districts and businesses that have developed partnerships that align with the goals and objectives of the program. By partnering with local companies, school districts will provide the opportunity for mentorships and internships to inspire the next generation of professionals. Creating a clear agreement outlining the goals and responsibilities of each partner will be essential for the success of the initiative. In

addition, school district leaders will have to work toward a collective understanding of the "why" with parents, businesses, and community organizations to understand the benefits and how the changes in time will benefit the community as a whole to get them on board with the changes that will be necessary to support schools. Lewin's change model discussed in Chapter II supports the process and longevity of the partnership because this model is a three-step process for managing change in organizations, which involves unfreezing the current state, moving to a new state, and refreezing to make the change permanent (Malik, 2022). Overall, Lewin's change model provides a structured approach to managing change and can be applied to various scenarios in the workplace or other settings.

**Implication for Action 3: School Districts Leaders Need to Develop and Implement Individualized Learning Plans for All Instructional Staff**

The third implication of action to be presented is that to create sustainable change and achieve a vision for student success, school district leaders must develop and implement ongoing professional development for adults to stay current with the latest trends, technologies, and teaching methodologies enabling them to provide a more engaging and effective learning experience for students. Professional development should not only be data driven but also be based on student outcomes on the learning conditions that teachers and leaders want to change for their students. In addition, teachers and leaders will need to implement an extensive professional learning plan to ensure the change or other implementation initiative is executed effectively and with fidelity. School district leaders need to view this as an opportunity to evaluate for strengths and weaknesses of their current model of learning across all schools as a means to, again,

raise student learning and calibrate the need for additional adult support. The appreciative inquiry theory model emphasized in Chapter II provides the framework to support this change. Stratton-Berkessel (2022) described the appreciative inquiry model as a means to initiate questions and dialogue to help organizations uncover existing assets, strengths, advantages, or opportunities in their schools, or teams, and then collectively work toward developing and implementing strategies for improvement. Organizations must allocate resources of time, funds, and people to train staff in the continuous improvement process and embed those resources into daily work.

### Implication for Action 4: School Districts Need to Adopt a Framework for Change and Strategic Planning

The last implication for action to be presented is that school districts must have a strategic plan with clear and measurable goals, data analysis, and stakeholder involvement to provide a framework with a sense of direction and purpose, ensuring that it is used effectively and efficiently to achieve the desired outcomes. School districts need to adopt a framework for change such as Kotter's change model defined in Chapter II because it can support organizations successfully manage change (Aktas, 2021). Implementing Kotter's change model in school districts can help leaders effectively navigate the complexities of change management. Such a plan will help ensure that the strategies and initiatives in the plan are evidence based, aligned with the district's vision and mission, and effectively implemented to achieve desired outcomes. Moreover, school districts also need to seek professional support from agencies, such as Hanover Research, who can advise on developing or refining a new plan. Finally, as the desired changes are

implemented with fidelity and calibrated for sustainability, student outcomes will improve because interest drives engagement, and the student's motivation will flourish.

## Recommendations for Further Research

Based on the research and findings of the study, I have identified several recommendations to support the educational changes for high schools in California that are possible and probable by 2035 as perceived by a panel of experts.

### Recommendation 1

Conduct a replication study on a larger scale with a population across the United States. A study with a larger sample size would increase the reliability of the data and may reveal additional recommendations for educational changes for high schools.

### Recommendation 2

Conduct a replication study to include middle and high school Grades 6 through 12. A study that includes all secondary grades will provide more robust data and more well-rounded and vertically aligned outlook to the educational changes needed.

### Recommendation 3

Conduct a qualitative study of high school districts that are implementing virtual or hybrid learning options in the United States. While panel members in this study saw virtual learning as desirable, they did not rate it as highly probable. A study focusing on virtual and hybrid learning options at the high school level could identify barriers to implementation and how school districts that have successfully implemented these models overcame these barriers.

**Recommendation 4**

Conduct a case study of unified school districts that have established and sustained successful partnerships with educational institutions for dual enrollment. Based on the findings, a study focusing on the results of partnerships between educational organizations will provide a blueprint for other school districts to consider implementing the dual-enrollment model.

**Recommendation 5**

Replicate this study to seek input from community college and university professors and administrators on the educational changes needed for high schools. A study with expert panel members from higher education institutions will help provide additional data based on their experience with entry-level college courses and areas of academic standings that might need to be improved for students to be better prepared for college.

**Recommendation 6**

Conduct a qualitative study of school districts that are implementing project-based learning in their high schools in the United States. While panel members in this study saw project-based learning as desirable, they did not rate it as highly probable. The findings could provide insight into what process was followed to implement this model successfully, what barriers were experienced for school districts to implement the project-based model successfully, how those barriers were overcome, and whether the outcomes were successfully achieved.

**Recommendation 7**

Replicate this study to seek input from only educational futurists on the educational changes needed for high schools. A study with foremost futurists' expert panel members might provide more creative ideas for possible changes. This study had a greater percentage of practitioners, which might account for the more pragmatic results. Getting the perspective of a group of futurists could provide crucial insight for educational leaders and policy makers to develop effective strategies and curricula that will help prepare students for success in the future.

## Concluding Remarks and Reflections

My interest in conducting this research was partly due to high school education's significant transformation in response to social, economic, and technological changes. Moreover, my personal experiences as an at-risk first-generation student, having made many wrong choices growing up, have allowed me not only to be humble but also to appreciate my journey even more as an educational leader. I have experienced this first hand, having served as an administrator in low- and middle-socioeconomic performing school districts, and at the time of this study, I served in a high-socioeconomic, high-performing school district. Some of the findings from this study and possible changes have included new instructional models, focusing on improvement of student learning, the need for strategic planning, and partnership with educational institutions. For example, with the advent of technology driven by the COVID-19 pandemic, schools have incorporated it into their curriculum to engage students better and enhance learning. This included using personalized learning tools and adaptive software to help students learn at their own pace and in their preferred style. In terms of strategic planning, school districts

are seeking to incorporate career readiness programs and partnerships with local businesses to help students prepare for the workforce. This may include internships, job shadowing opportunities, and apprenticeships to provide students with practical experience and real-world skills.

This study described that for years, high schools have been moving away from traditional models of instruction toward more student-centered approaches that emphasize active learning and collaboration, even before the pandemic. This includes flexible scheduling and project-based learning, which allows students to work on real-world problems and develop critical thinking skills, and competency-based education, which will enable students to progress at their own pace based on mastery of specific skills and knowledge. More recently, while I was serving in the capacity of high school principal during the pandemic, I saw the need to provide academic and social-emotional support to students to help them succeed academically and personally.

Through my professional career and experience as an educational leader, partnering with educational institutions, such as community colleges and universities, has been essential to student success. However, this study found that these partnerships must be more vital than ever. The partnership provides opportunities for students to earn college credits while still in high school, allowing them to get a head start on their college education and potentially reduce the cost of their higher education. In addition, by partnering with these institutions, high schools can provide students with a more comprehensive education and better prepare them for the future and the workforce. A clear outcome from this study is that to achieve the desired future changes in high school education, the expert panelists recommended that school districts engage in more

strategic planning to ensure that they meet their student's needs and prepare them for the future. This can include developing clear goals and objectives, implementing effective assessment and evaluation systems for sustainability, and collaborating with community partners to provide students with more opportunities for real-world learning experiences.

This study has allowed me to learn that with the rapid advances in technology and globalization, traditional classroom models may not be adequate enough to prepare students for the demands of the 21st-century workforce and beyond. This study's major findings will allow educational leaders and policy makers to focus on developing new instructional models, strategic plans, and partnerships to improve student learning and outcomes. The future of high school education will require a shift toward personalized learning, career readiness, incremental improvements and adjustments to existing curriculum and teaching methods, and partnerships with educational institutions. My research intended to identify the educational changes needed for high schools in California. I sincerely appreciate the 15 futurist expert panelists who participated in this study. They were articulate and thoughtful and provided a wealth of information based on their expertise in high school education.

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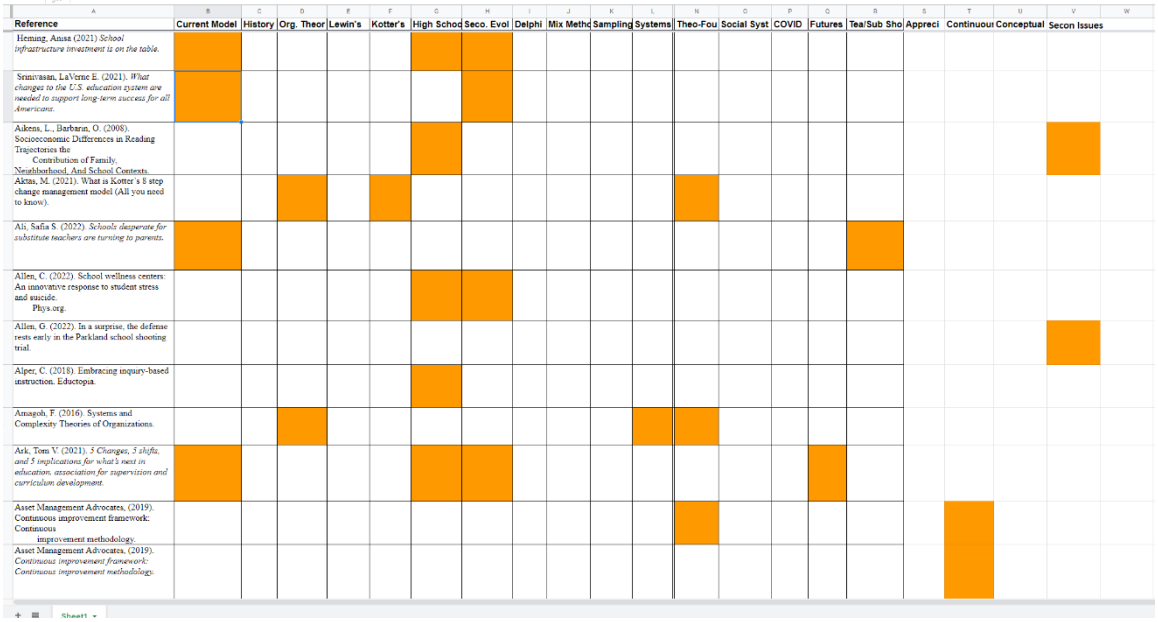
# APPENDICES

APPENDIX A

## Synthesis Matrix



| Reference | Current Model | History | Org. Theor | Lewin's | Kotter's | High Schoo | Seco. Evol | Delphi | Mix Metho | Sampling | Systems | Theo-Fou | Social Syst | COVID | Futures | Tea/Sub Sho | Appreci | Continuou | Conceptual | Secon Issues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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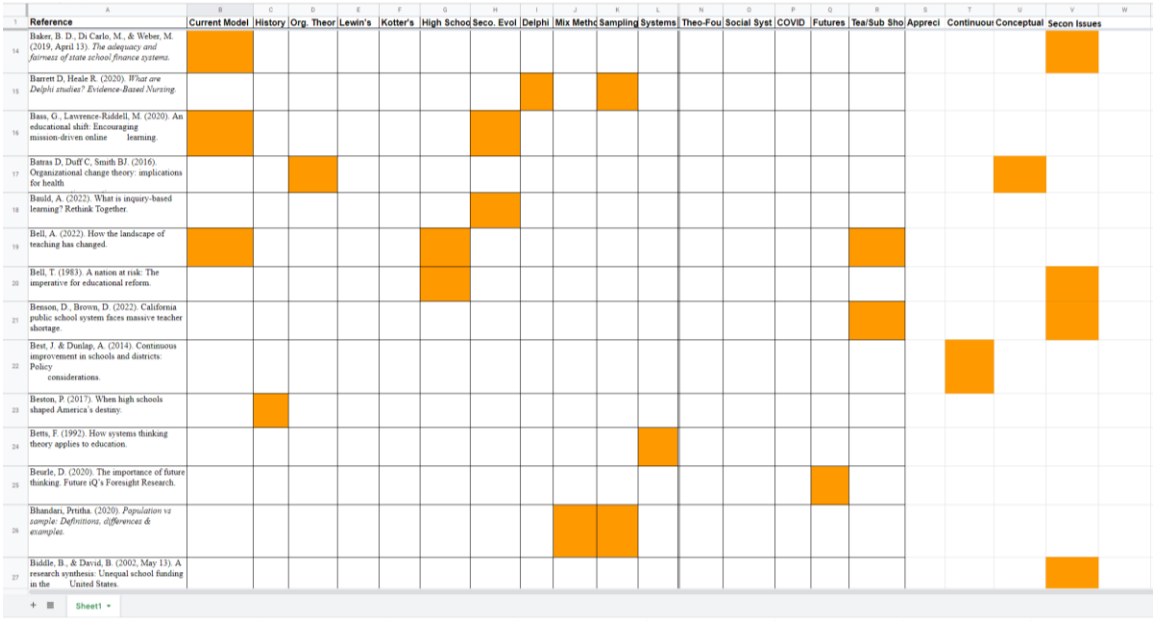

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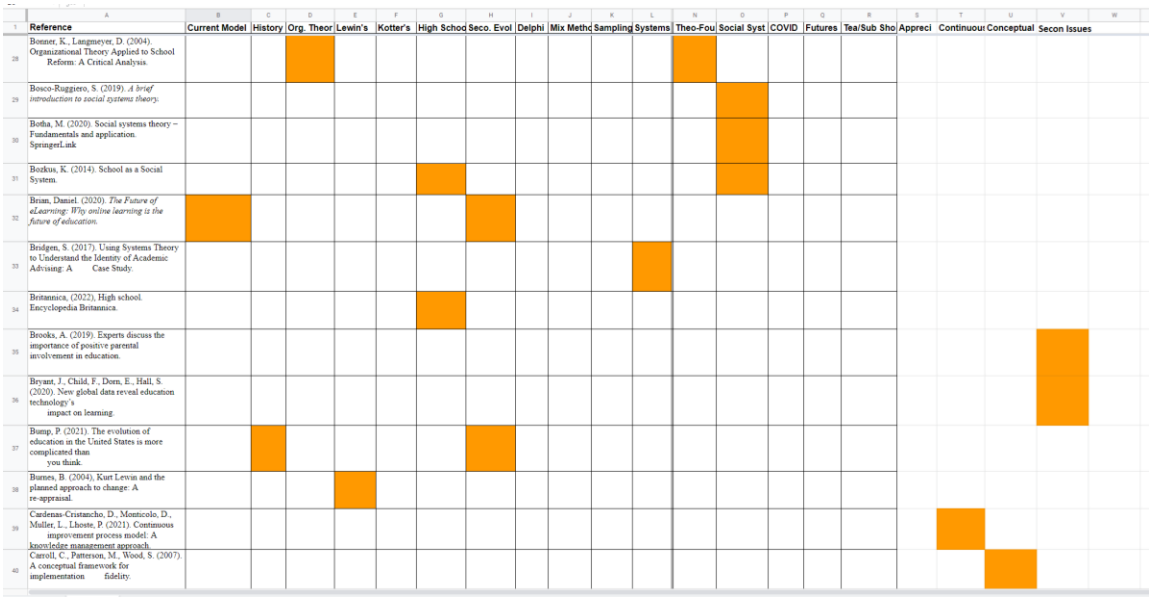

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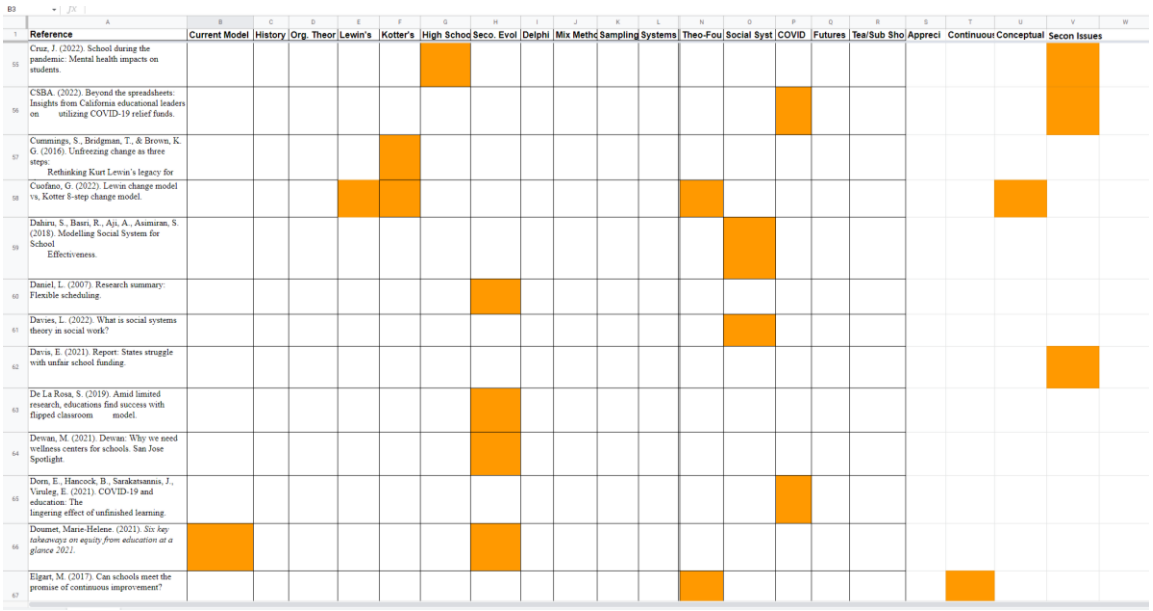

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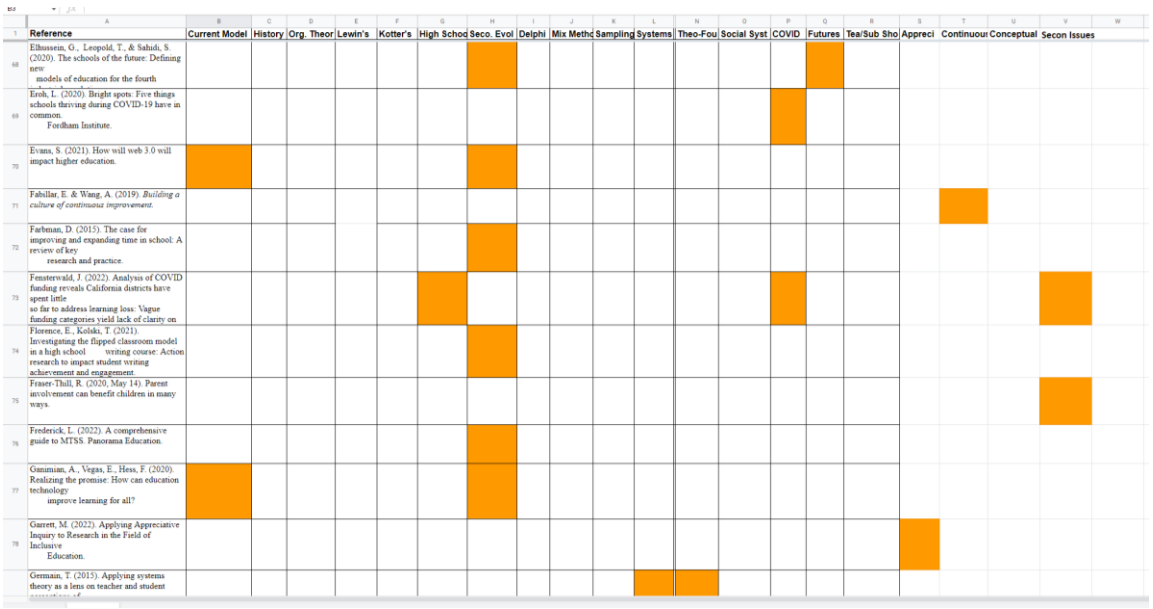

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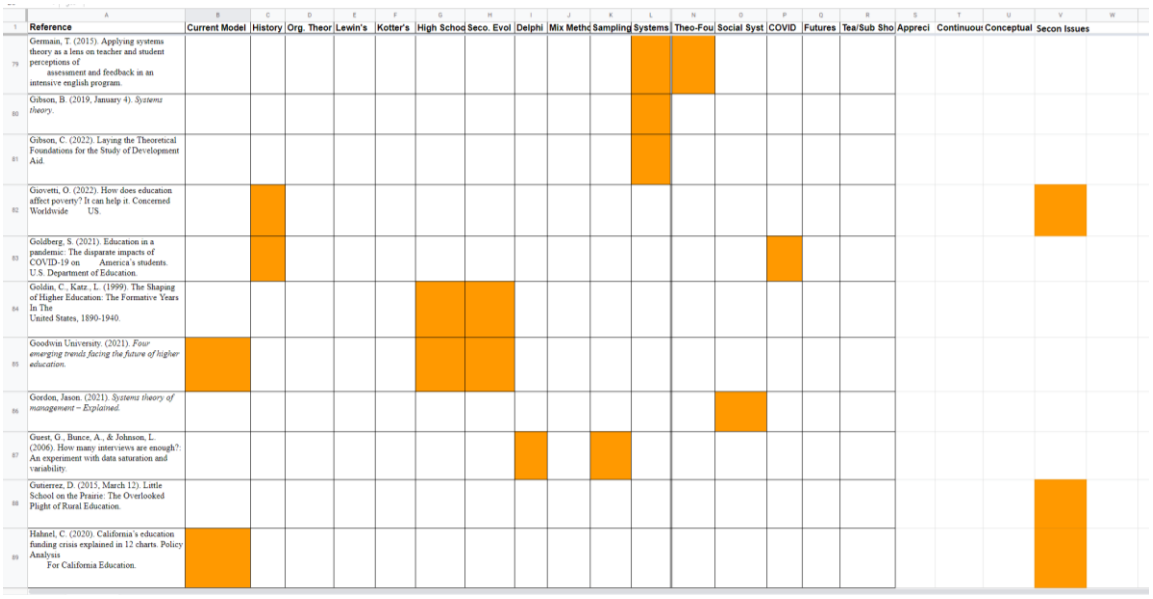

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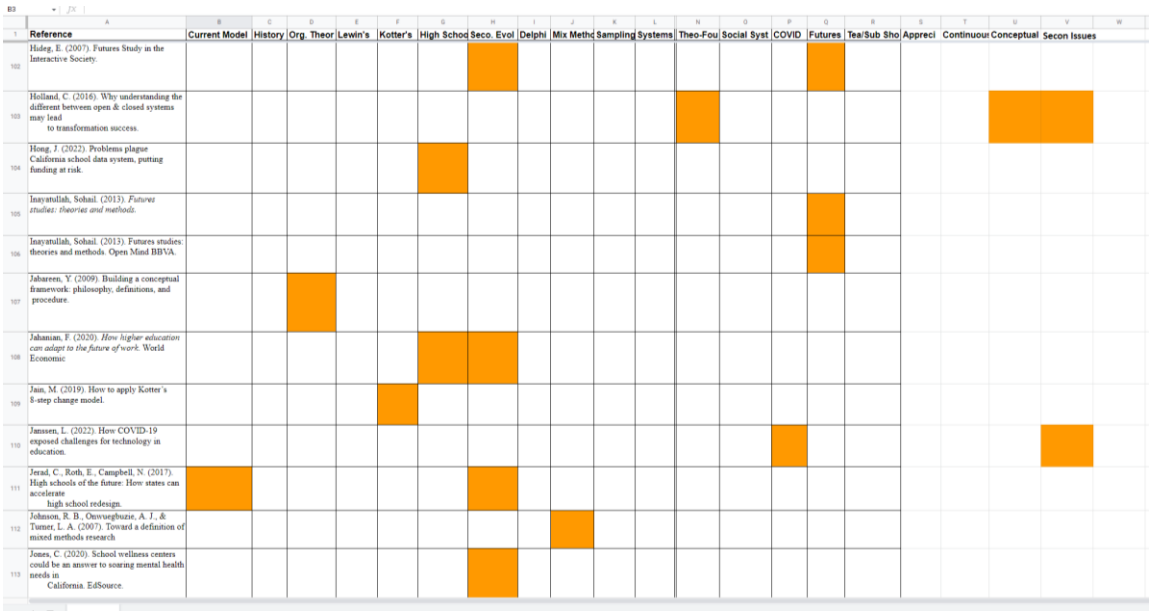

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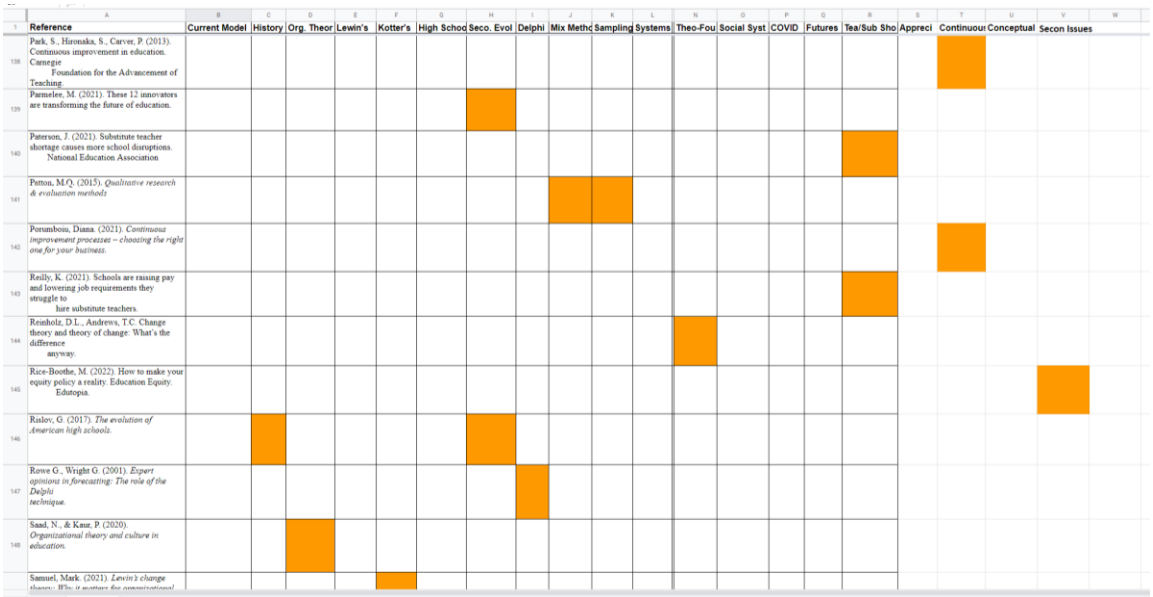

| Reference | Current Model | History | Org. Theor | Lewin's | Kotter's | High Schoo | Seco. Evol | Delphi | Mix Metho | Sampling | Systems | Theo-Fou | Social Syst | COVID | Futures | Tea/Sub Sho | Appreci | Continuou | Conceptual | Secon Issues |
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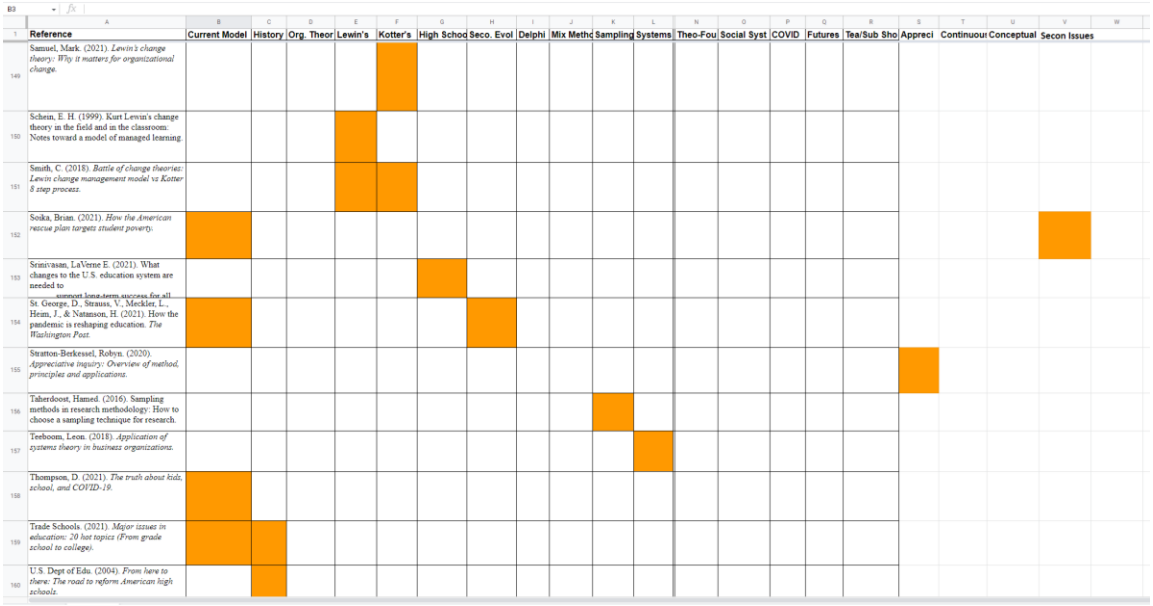

| Reference | Current Model | History | Org. Theor | Lewin's | Kotter's | High Schoo | Seco. Evol | Delphi | Mix Metho | Sampling | Systems | Theo-Fou | Social Syst | COVID | Futures | Tea/Sub Sho | Appreci | Continuou | Conceptual | Secon Issues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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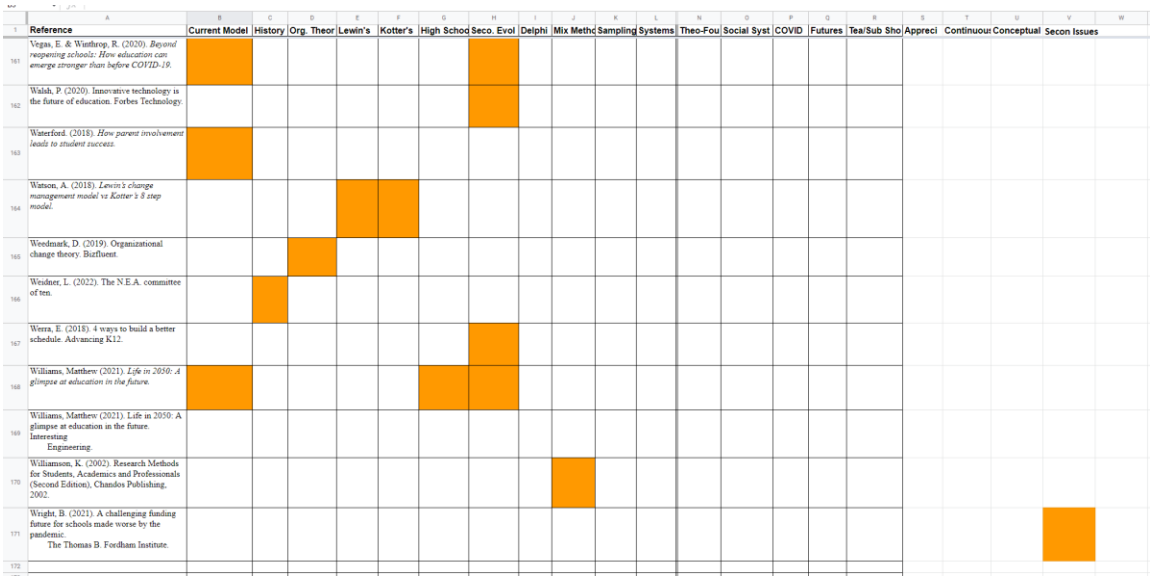

| Reference | Current Model | History | Org. Theor | Lewin's | Kotter's | High Schoo | Seco. Evol | Delphi | Mix Metho | Sampling | Systems | Theo-Fou | Social Syst | COVID | Futures | Tea/Sub Sho | Appreci | Continuou | Conceptual | Secon Issues |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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APPENDIX B

## Round 1 Letter

Guillermo Lopez
530 Sandlewood Street
Menlo Park, California 94025
Glopez10@mail.umassglobal.edu
(805) 469-9437

7/30/22

Dear Education Futures Expert,

Welcome to Round 1 of my Classical Delphi Study! I would like to sincerely thank you for your time, expert opinions, and support of this study: A Delphi Study of Possibilities of Learning in 2035: Identify and Describe The Educational Changes for High Schools with a Focus on Students in 9-12 Grade that are Possible and Probable in 2035 as Perceived by a Panel of Experts.

The focus of this study is:

- To identify and describe the educational changes that are possible for 4-year institutions of higher education within the United States by 2035 (Round 1)
- To rate the probability of the possible changes identified. (Round 2)
- To rate the level of desirability of the changes identified as probable (Round 3)
- To identify and describe the actions necessary to promote the desired changes by 2035 (Round 4).

As an experienced expert, your perspective of the possible futures of education will strengthen this study. In Round 1, you will participate with 15 other multidisciplinary education experts and futurists to **identify a minimum of 5 educational changes that are possible by 2035. Please provide a short description for each possibility**. Round 1 will also include a short demographic survey.

***Possible*** means a desire, a demand, and a readiness for something different than the status quo based on some future knowledge. It something that could be true or actually happen. (Broderick, 2022; Nasir, Bang & Yoshikawa, 2021; dictionary.com, n.d.; merriam-webster.com, n.d.; Voros, J, 2017)

In future rounds, you will be asked to determine which of these changes are probable, desirable, and provide your opinions on what actions will be needed to make the changes identified as desirable a reality.

Attached to this email are the Participants Bill of Rights and the Informed Consent. The following link will direct you to the Google Form survey that will begin Round I. In the survey, you will be asked to confirm that you have received and understand these documents.

Link to Survey: Round 1: A Delphi Study For Possibilities for Learning High School

There will be a one-week window to complete and return the questionnaire; please contact me should you need to extend this deadline. Please feel free to contact me with any questions or concerns.

Sincerely,

Guillermo Lopez, Doctoral Candidate,
University of Massachusetts Global
Dr. Carol Anderson-Woo, Chair

APPENDIX C

## Participant's Bill of Rights

UMASS GLOBAL
A nonprofit affiliate of the University of Massachusetts

### UMASS GLOBAL 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 UMASS GLOBAL Institutional Review Board, which is concerned with the protection of volunteers in research projects. The UMass Global 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, UMASS GLOBAL, 16355 Laguna Canyon Road, Irvine, CA, 92618.

UMass Global IRB Adopted 2021

APPENDIX D

**Consent to Participate**

# A Delphi Study of Possibilities For Learning at High Schools Grades 9-12 in 2035.

Form description

Email *

Valid email

This form is collecting emails. Change settings

RESPONSIBLE INVESTIGATOR: Guillermo Lopez

You are being asked to participate in a research study conducted by Guillermo Lopez, a doctoral candidate from the School of Education at UMASS GLOBAL. The title of this study is: A Delphi Study for Possibilities for Learning at High Schools with a Focus on 9-12 Grade for 2035.

The purpose of this Delphi study is to identify and describe the educational changes that are possible and probable for high school grades 9-12 that are possible and probable in 2035 as perceived by a panel of experts. In addition, it is the purpose to determine the level of desirability of the educational changes identified as probable by the panel of experts. Finally, it is the purpose to describe the actions necessary to promote the desirable educational changes in 2035 as perceived by the panel of experts.

Your participation in this survey is voluntary. You may choose not to participate. If you decide to participate in this electronic survey, you can withdraw at any time.

The survey will take approximately 20 minutes to complete. Your responses will be confidential. The survey questions will pertain to the educational changes you perceive to be possible, probable, and desirable by 2035, and the actions necessary to promote the desired changes.

There will be be 4 rounds of surveys. Rounds 1 and 4 are expected to take approximately 15-20 minutes each. Rounds 2 and 3 are expected to take approximately 5-10 minutes each. The total time for all for all four rounds are expected to be approximately 40-60 minutes in total. Your responses will be confidential. The survey questions will pertain to the educational changes you perceive to be possible, probable, and desirable by 2035, and the actions necessary to promote the desired changes.

Your participation in these electronic surveys is voluntary. You may choose not to participate. If you decide to participate, you can withdraw at any time.

_____

As a study participant, I understand that:

a) No information that identifies me will be released without my separate consent and that all identifiable information will be protected to the limits allowed by law. If the study design or the use of the data is to be changed, I will be informed and my consent re-obtained. There are no foreseeable risks or discomforts associated with participating in this research. I understand that the Investigator will protect my confidentiality by keeping identifying responses and research materials in a password locked computer that is available only to the researcher. All information will be identifier-redacted and my confidentiality will be maintained. All data and consents will be securely stored for three years after completion of data collection and confidentially shredded or fully deleted.

b) I understand that I may refuse to participate in or I may withdraw from this study at any time without any negative consequences. Also, the investigator may stop the study at any time. I understand that if I have any questions, comments, or concerns about the study or the informed consent process, I may write or call the Office of the Vice Chancellor of Academic Affairs, University of Massachusetts Global, at 16355 Laguna Canyon Road, Irvine, CA 92618, (949) 341-7641.

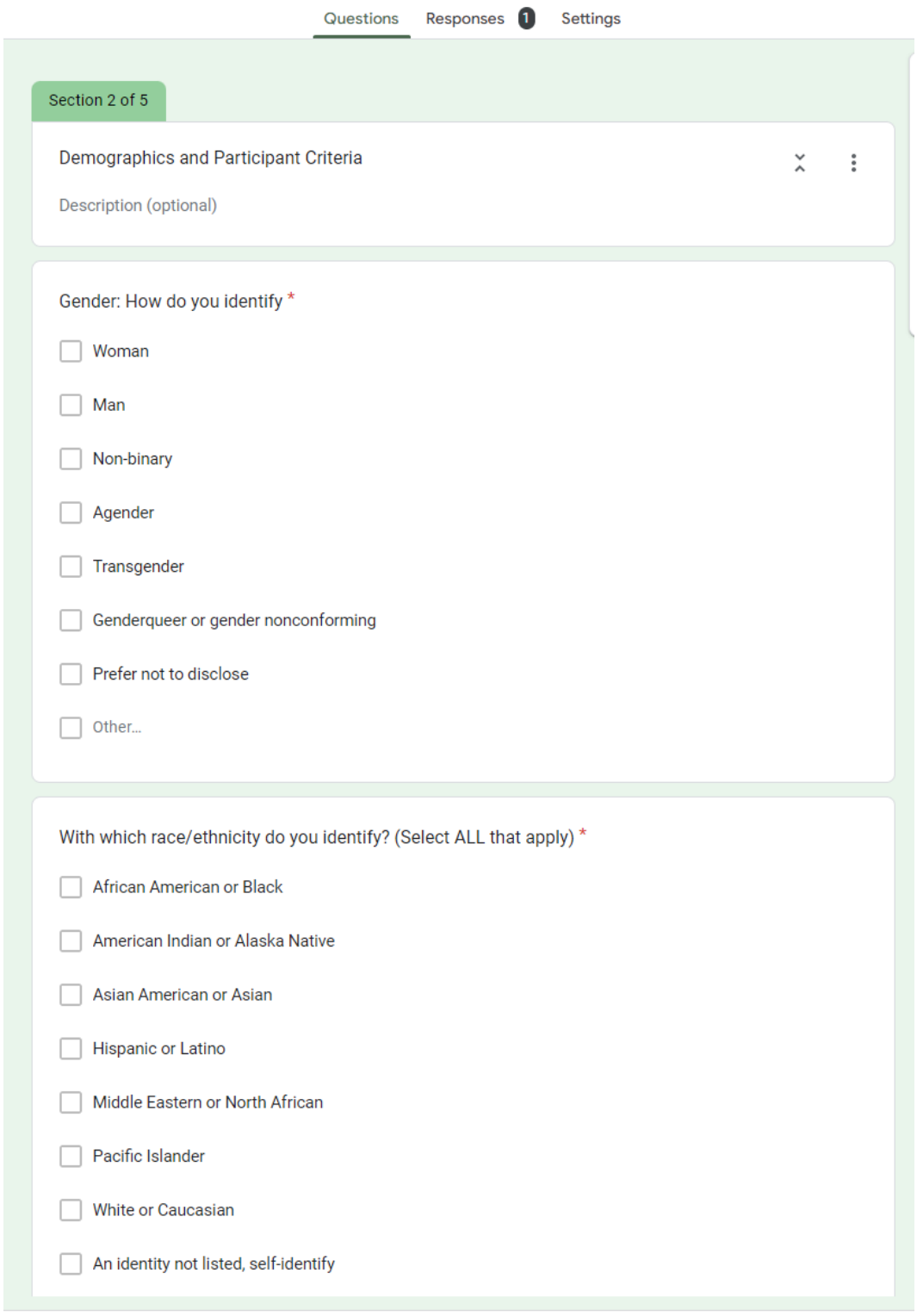
If you have any questions about completing this survey or any aspects of this research, please contact Guillermo Lopez at glopez10@mail.umassglobal.edu or by phone at (805) 469-9437; or Dr. Carol Anderson-Woo, Dissertation Chair, at caanders@umassglobal.edu.

The survey will not open for responses unless you agree to participate. *

- ○ AGREE: I acknowledge receipt of the complete Informed Consent packet and "Bill of Rights." I have read t...
- ○ DISAGREE: I do not wish to participate in this electronic survey

APPENDIX E

## Round 1 Survey



Questions Responses 1 Settings

Please indicate your age range *

- [ ] 18-24
- [ ] 25-34
- [ ] 35-44
- [ ] 45-54
- [ ] 55-64
- [ ] 65-74
- [ ] 75+
- [ ] Prefer not to disclose

Please indicate your highest level of education completed *

- [ ] HS diploma
- [ ] Some college
- [ ] Associates degree (AA, AS)
- [ ] Bachelor's degree (BA, BS)
- [ ] Master's degree (MA, MS, MEd, MEng, etc)
- [ ] Professional degree (MD, DDS, JD, etc)
- [ ] Doctorate degree (PhD, EdD)
- [ ] Prefer not to disclose

I would describe my current professional position as (please check ALL that apply): *

- [ ] Design & Development
- [ ] Education Futurist

Questions Responses 1 Settings

- [ ] School administrator (Site level)
- [ ] Administrator (County level)
- [ ] Teacher/Professor
- [ ] Curriculum specialist
- [ ] Analyst
- [ ] Consultant
- [ ] Author
- [ ] Journalist
- [ ] Marketing
- [ ] Researcher
- [ ] Policy maker

I would describe my current organization type as (check ALL that apply): *

- [ ] Unified School District
- [ ] Union High School District
- [ ] Association
- [ ] University/College
- [ ] Consulting Firm
- [ ] Journal
- [ ] Foundation
- [ ] Professional Organization
- [ ] Private/Charter School

After section 2 Continue to next section

Section 3 of 5

Delphi Study Round 1

In this first round, you will **identify** at least **5 educational changes** in **High Schools** in the United States **you believe are possible by 2035**. Please provide a short description for each possibility. You *may* choose to provide more than 5 possibilities, should you have them.

1st educational change in U.S High Schools you believe is possible by 2035. Please include a short description. *

Long answer text

2nd educational change in U.S High Schools you believe is possible by 2035. Please include a short description. *

Long answer text

3rd educational change in U.S High Schools you believe is possible by 2035. Please include a short description. *

Long answer text

4th educational change in U.S High Schools you believe is possible by 2035. Please include a short description. *

Long answer text

5th educational change in U.S High Schools you believe is possible by 2035. Please include a short description. *

Long answer text

Questions Responses 1 Settings

Section 4 of 5

This study requires a minimum of 5 educational changes. Additional ideas are not required, however if you have additional ideas, please use the space below. Once you have entered all your ideas, scroll to the bottom of this form and select "Next."

Description (optional)

6th educational change in U.S High Schools you believe is possible by 2035. Please include a short description.

Long answer text

7th educational change in U.S High Schools you believe is possible by 2035. Please include a short description.

Long answer text

8th educational change in U.S High Schools you believe is possible by 2035. Please include a short description.

Long answer text

9th educational change in U.S High Schools you believe is possible by 2035. Please include a short description.

Long answer text

10th educational change in U.S High Schools you believe is possible by 2035. Please include a short description.

Long answer text

Are there any other educational change in U.S High Schools you believe is possible by 2035?

Long answer text

After section 4 Continue to next section

Section 5 of 5

Thank you for your participation in Round 1. Your time, ideas, and effort are invaluable to this study. I look forward to reading your feedback.

Description (optional)

APPENDIX F

## Round 2 Letter

Guillermo Lopez
530 Sandlewood Street
Menlo Park, California 94025
Glopez10@mail.umassglobal.edu
(805) 469-9437

8/10/2022

Dear Education Futures Expert,

Welcome to round 2!Thank you for completing your round 1 responses to the Delphi Study of Possibilities For Education in 2035.

**Just a reminder of the study focus:** To identify and describe the educational changes that are possible and probable for High Schools with a Focus on Students in 9-12 Grade, the level of desirability of the changes identified as probable, and the actions necessary to promote the desired changes by 2035.

The data collected from round 1 have been analyzed, and a summary of the ideas generated by the group is presented. In this round, you will be asked to **rate each** item **for probability.** Also, you will have an opportunity to **share ideas for possible educational changes.**

***Probable*** is something that has a chance or is likely to happen supported by evidence strong enough to establish presumption but not absolute proof (Cambridge Dictionary, n.d.; Merriam Webster, n.d.; Voros, J, 2017)

The following link will direct you to the google.com survey that will begin Round II. Link: Delphi Round II Survey

There will be a four (4) day window to complete and return the questionnaire. Thank you in advance for your continued commitment to completing all four rounds of this important study.

Please don't hesitate to contact me with any questions or concerns.

Sincerely,

Guillermo Lopez
Guillermo Lopez, Doctoral Candidate,
University of Massachusetts Global
Dr. Carol Anderson-Woo, Chair

APPENDIX G

**Round 2 Survey**

# Delphi Round II: A Delphi Study of Possibilities For Learning in High Schools Grades 9-12 in 2035.

In the last round (Round 1), you were asked to identify a minimum of 5 educational changes in high schools you believe are possible by 2035. The data from Round 1 has been analyzed and is presented below with common ideas combined.

In this round, you will be asked to rate each of the following ideas for probability. In addition, you will have an opportunity to contribute additional ideas for possible educational changes. They are presented here in a random order.

Each idea will be rated on a 4 point Likert-scale. 1 is not at all probable by 2035, while 4 is highly probable by 2035.

**glopez10@mail.umassglobal.edu** Switch account

* Required

Email *

Your email

Teaching and learning through mixed-realities (physical, virtual, augmented)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Advisors or learning coaches will be available for every learner and family to help navigate all the learning options, create postsecondary plans, and make connections to youth and family services.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Flexible funding to support a variety of educational programs and weighting means that low income families will have more to spend on rich learning experiences.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Project-based learning will be provided by way of virtual reality by a variety of different people and organizations that represent experts in the various fields.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Access to broadband will be universal even in rural and urban environments for all students.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Multiple service providers such as charter/private schools will be available as options for high school students via online or in-person.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Learning hubs will replacing factory-like buildings with big open spaces that point students to community, virtual, and collaborative environments.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Learning hubs will replacing factory-like buildings with big open spaces that point students to community, virtual, and collaborative environments.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Smart assistants will make learning and experience recommendations, make connections, schedule events, and help collect artifacts of learning

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Improved alignment in grading practices the emphasis skill and content attainment.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Are there any other educational changes in U.S High Schools you believe is probable by 2035?
If not, please click NEXT/SUBMIT

Your answer

Submit Clear form

APPENDIX H

## Round 3 Letter

Guillermo Lopez
530 Sandlewood Street
Menlo Park, California 94025
Glopez10@mail.umassglobal.edu
(805) 469-9437

8/21/2022

Dear Education Futures Expert,

Welcome to round 3! Thank you for completing your round 2 responses to the Delphi Study of Possibilities For Education in 2035.

**Just a reminder of the study focus:** To identify and describe the educational changes that are possible and probable for High Schools with a Focus on Students in 9-12 Grade, the level of desirability of the changes identified as probable, and the actions necessary to promote the desired changes by 2035.

The data collected from round 2 has been analyzed, and a summary of the ideas generated by the group is presented. In this round, you will be asked to review the rating from **round 2 and re-rate these items for probability**. In addition, **you will rate these probable changes for desirability**.

***Desirable*** is something seen as advantageous, beneficial and something most people think should or ought to happen. (Cambridge Learner's Dictionary, n.d., Meriam-Webster, n.d.; Voros, J, 2017).

The following link will direct you to the google.com survey that will begin Round III. Link: Delphi Round 3 Survey

There will be a four (4) day window to complete and return the questionnaire. Thank you in advance for your continued commitment to completing all four rounds of this important study.

Please don't hesitate to contact me with any questions or concerns.

Sincerely,

Guillermo Lopez
Guillermo Lopez, Doctoral Candidate,
University of Massachusetts Global
Dr. Carol Anderson-Woo, Chair

APPENDIX I

**Round 3 Survey**

# Delphi Round III: A Delphi Study of Possibilities For Learning in High Schools Grades 9-12 in 2035.

Welcome to round 3 of this Delphi study. In Round 2, you were asked to the educational changes for high schools grades 9-12 you believe are possible by 2035. The data from Round 2 has been analyzed and is presented below with the mean results provided for each item.

In this round, you will be asked to rate each of the following ideas for probability. In addition, you will have an opportunity to contribute additional ideas for possible educational changes. They are presented here in a random order.

Each idea will be rated on a 4 point Likert-scale. 1 is not at all probable by 2035, while 4 is highly probable by 2035.

**glopez10@mail.umassglobal.edu** Switch account

* Required

Email *

Your email

Teaching and learning through mixed-realities (physical, virtual, augmented). (Mean=3.6)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Students will have more opportunities to take classes for college credits while in high school. (Recommended from Round 2)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Students will have more opportunities to take classes for college credits while in high school. (Recommended from Round 2)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Project-based learning will be provided by way of virtual reality by a variety of different people and organizations that represent experts in the various fields. (Mean=3.6)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Access to broadband will be universal even in rural and urban environments for all students. (Mean=3.6)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Multiple service providers such as charter/private schools will be available as options for high school students via online or in-person. (Mean=3.8)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Learning hubs will replacing factory-like buildings with big open spaces that point students to community, virtual, and collaborative environments. (Mean=3)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Smart assistants will make learning and experience recommendations, make connections, schedule events, and help collect artifacts of learning. (Mean=3.4)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Improved alignment in grading practices the emphasis skill and content attainment. (Mean=3)

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all probable by 2035 | ○ | ○ | ○ | ○ | Highly probable by 2035 |

Next Clear form

Section 2 of 3

Desirability

For the second part of the survey, each idea will be rated for desirability on a 4 point Likert-scale. 1 is not at all desirable, 2 is somewhat undesirable, 3 is somewhat desirable, while 4 is highly desirable by 2035.

Teaching and learning through mixed-realities (physical, virtual, augmented).

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Students will have more opportunities to take classes for college credits while in high school.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Project-based learning will be provided by way of virtual reality by a variety of different people and organizations that represent experts in the various fields.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Access to broadband will be universal even in rural and urban environments for all students.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Multiple service providers such as charter/private schools will be available as options for high school students via online or in-person.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Learning hubs will replacing factory-like buildings with big open spaces that point students to community, virtual, and collaborative environments.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Smart assistants will make learning and experience recommendations, make connections, schedule events, and help collect artifacts of learning.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

Improved alignment in grading practices the emphasis skill and content attainment.

| | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| Not at all desirable | ○ | ○ | ○ | ○ | Highly desirable |

After section 2 Continue to next section

Section 3 of 3

This concludes Round 3.

Thank you for participating in round 3 of this Delphi study. Once these results are analyzed and the final round 4 is prepared, you will receive a new survey to identify the steps necessary to reach each of the items deemed probable and desirable.

APPENDIX J

## Round 4 Letter

Guillermo Lopez
530 Sandlewood Street
Menlo Park, California 94025
Glopez10@mail.umassglobal.edu
(805) 469-9437

8/28/2022

Dear Futures Expert,

Welcome to Round IV, the final round of this Classical Delphi Study: Possibilities for Learning 2035 for High Schools with a Focus on Students in 9-12 Grade. Thank you for completing and returning your Round III responses. I truly appreciate your time and effort as you have completed each round of this study. Once you have returned this final round, you will have completed the Delphi process for this study.

To summarize:

In Round I, you and 15 other Futures Experts identified at least five education changes that are possible in 2035.

In Round II, the possible changes were summarized, and you rated the probability of those possible changes.

In Round III, you reviewed the rating from Round II and re-rated those items for probability. Then, rated these probable changes for desirability.

In this final round, you will now have the opportunity to review the education changes with the highest desirability ratings and are now asked to **describe the actions that will need to be taken in order for these desired changes to occur.**

Your final comments will add depth and clarity to your perceptions. Please allow approximately 15 to 20 minutes to complete Round IV.

In order to complete Round IV, please use the following link to access the survey: Delphi Round VI Survey

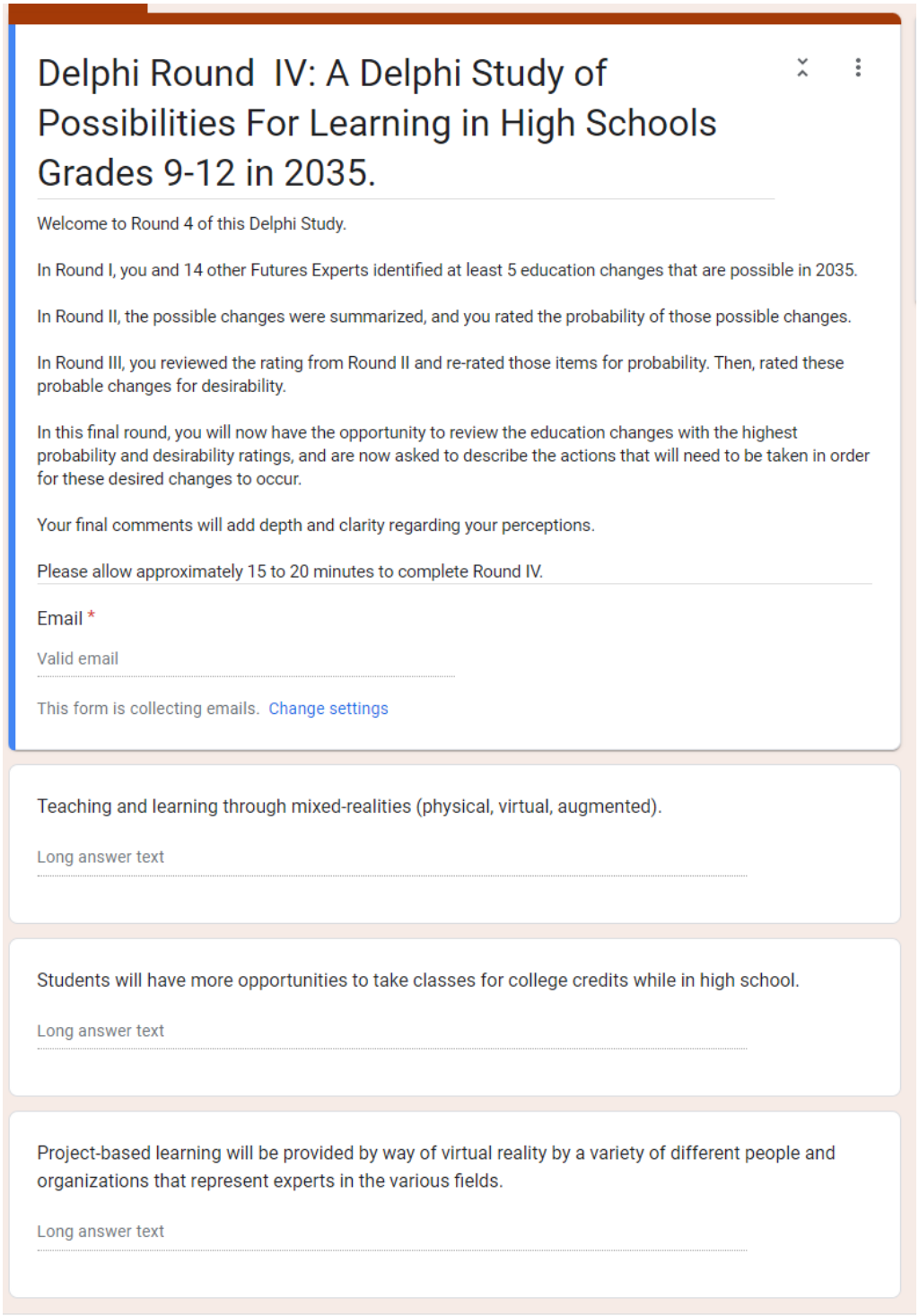
Thank you for your time, expert perceptions, and support of this study. Please feel free to contact me should you have questions or concerns.

Sincerely,

Guillermo Lopez
Guillermo Lopez, Doctoral Candidate,
University of Massachusetts Global
Dr. Carol Anderson-Woo, Chair

APPENDIX K

**Round 4 Survey**



# Delphi Round IV: A Delphi Study of Possibilities For Learning in High Schools Grades 9-12 in 2035.

Welcome to Round 4 of this Delphi Study.

In Round I, you and 14 other Futures Experts identified at least 5 education changes that are possible in 2035.

In Round II, the possible changes were summarized, and you rated the probability of those possible changes.

In Round III, you reviewed the rating from Round II and re-rated those items for probability. Then, rated these probable changes for desirability.

In this final round, you will now have the opportunity to review the education changes with the highest probability and desirability ratings, and are now asked to describe the actions that will need to be taken in order for these desired changes to occur.

Your final comments will add depth and clarity regarding your perceptions.

Please allow approximately 15 to 20 minutes to complete Round IV.

Email *

Valid email

This form is collecting emails. Change settings

Teaching and learning through mixed-realities (physical, virtual, augmented).

Long answer text

Students will have more opportunities to take classes for college credits while in high school.

Long answer text

Project-based learning will be provided by way of virtual reality by a variety of different people and organizations that represent experts in the various fields.

Long answer text

Access to broadband will be universal even in rural and urban environments for all students.

Long answer text

Multiple service providers such as charter/private schools will be available as options for high school students via online or in-person.

Long answer text

Learning hubs will replacing factory-like buildings with big open spaces that point students to community, virtual, and collaborative environments.

Long answer text

Smart assistants will make learning and experience recommendations, make connections, schedule events, and help collect artifacts of learning.

Long answer text

Improved alignment in grading practices the emphasis skill and content attainment.

Long answer text

After section 1 Continue to next section

Section 2 of 2

This concludes Round 4.

Thank you for participating in this Delphi study.

Your time and effort are truly appreciated.

Guillermo

APPENDIX L

## Participant Feedback Form

### Participant Feedback of Delphi Field Test

As a doctoral candidate at the University of Massachusetts Global, I appreciate your help in designing the best Delphi experience possible. Your participation is crucial to this effort.

Below are some questions that I would appreciate you answering as you complete the four rounds of the Delphi field test. I will ask you to send me the completed feedback form after you complete Round 4. Your answers will assist me in refining both the directions and prompts for each round. This will allow me to make edits to improve the Delphi process prior to administering to the actual study participants.
Thank you!

Approximately how many minutes did it take you to complete each round of the Delphi, from the moment you opened it on the computer until the time you completed that round?
Round 1_____
Round 2_____
Round 3_____
Round 4_____

Was the Introduction sufficiently clear (and not too long) to inform you what the research was about? YES NO
If not, what would you recommend that would make it better?
_____
_____

Were the directions to each round clear, and did you understood what to do?
Round 1: YES NO
Round 2: YES NO
Round 3: YES NO
Round 4: YES NO

If not, would you briefly describe the problem and indicate which round(s) you are commenting on: _____
_____

Was the data presented in Rounds 2-4 clear and easy to understand?
Round 2: YES NO
Round 3: YES NO
Round 4: YES NO
If not, briefly describe the problem and indicate which round(s) you are commenting on:
_____
_____

As you progressed through the 4 rounds of the Delphi, were there any points where you were not sure what to do or what something meant?

Round 1:

_____ Everything was clear

_____ I was not sure what was meant by (describe): _____

_____

_____

Round 2:

_____ Everything was clear

_____ I was not sure what was meant by (describe): _____

_____

_____

Round 3:

_____ Everything was clear

_____ I was not sure what was meant by (describe): _____

_____

_____

Round 4:

_____ Everything was clear

_____ I was not sure what was meant by (describe): _____

_____

_____

Do you have any final comments about your experience in this Delphi field test that might help me improve the process? _____

_____

APPENDIX M

## Researcher Self-Evaluation Form

### Researcher Self-Evaluation of Delphi Field Test

Conducting a Delphi is a learned skill set/experience. Gaining valuable insight about the process through the field test will support your data gathering when conducting the Delphi with the actual participants. As the researcher you should reflect on the questions below after completing the Delphi field test. The questions are written from your prospective as the researcher.

How long did each round take for the participant(s) to respond?
Round 1: ____ days.

Round 2: ____ days

Round 3: ____ days

Round 4: ____ days

How long did it take you to analyze the data from each round and prepare the survey for the next round?
Round 1: _____ hours/days
Round 2: _____ hours/days
Round 3: _____ hours/days
Round 4: _____ hours/days

What parts of the Delphi process went the most smoothly and why do you think that was the case?

With what parts of the Delphi process did you struggle and why do you think that was the case?

What suggestions do you have for improving the overall process?

APPENDIX N

**CITI Certification**

Completion Date 20-May-2021
Expiration Date N/A
Record ID 42603587

This is to certify that:

**Guillermo Lopez**

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

**Human Subjects Research**
(Curriculum Group)
**Social-Behavioral-Educational Researchers**
(Course Learner Group)
**1 - Basic**
(Stage)

Under requirements set by:

**Brandman University**

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wbdf8b3be-aac9-4510-876a-a12a8370b949-42603587

APPENDIX O

## IRB Application Approval

IRB Application Approved: Guillermo Lopez Inbox x

**Institutional Review Board** <my@umassglobal.edu>
to me, ddevore, caanders, irb ▾

Dear Guillermo Lopez,

Congratulations! Your IRB application to conduct research has been approved by the UMass Global Institutional Review Board. Please keep this email for your records, as it will need to be included in your research appendix.

If you need to modify your IRB application for any reason, please fill out the "Application Modification Form" before proceeding with your research. The Modification form can be found at IRB.umassglobal.edu

Best wishes for a successful completion of your study.

Thank You,

IRB
Academic Affairs
**UMass Global**
16355 Laguna Canyon Road
Irvine, CA 92618
irb@umassglobal.edu
www.umassglobal.edu

This email is an automated notification. If you have questions please email us at irb@umassglobal.edu.