Spring 5-13-2022

Barriers to Student Success in Deaf/Hard-of-hearing Mainstream Programs

Sabine Castro
Gallaudet University

THE HONORS PROGRAM

Barriers to Student Success in Deaf/Hard-of-hearing Mainstream Programs

An Honors Capstone Submitted in Partial Fulfillment of the Requirements for Graduation with University Honors

By: Sabine Castro

Committee Chair: Dr. Kirk VanGilder

Reader: Dr. Maribel Gárate-Estes
Reader: Dr. Oscar Ocuto
Reader: Pamela Wright, MA, MEd

Honors Director: Dr. Jennifer L. Nelson

Date: May 13th, 2022

Acknowledgments

I would like to thank my family and friends for supporting my mental and emotional health during the last year. A series of personal events made proceeding with my capstone work exceedingly daunting, and its completion would not have been possible without your consistent love and support.

I also extend my immense gratitude particularly to Dr. Kirk VanGilder for the myriad of roles he has played not only in the development of my capstone project as instructor, guide and advisor but also in the development of my person as an ongoing student of life continually supporting my growth along the way.

Special thanks to Dr. Kirk VanGilder and Dr. Nelson for believing in me and pushing me to continue when I no longer thought I could. And a tremendous thank you to my incredible committee: Pamela Wright, MA, MEd, Dr. Maribel Gárate-Estes, and Dr. Oscar Ocuto. Without whose expertise and insight this project would not be what it is today. Thank you to Amy Stevens and Lisa Parker for your support in the development and execution of the visual-informative aspect of this capstone project.

Finally, I would like to extend a very special thank you to Professor Liisa Mendoza. Thank you for your expert input regarding deaf education in the Imperial Valley. But most importantly, I'd like to thank you for the foundational role you've played in my life as my first ASL teacher, introducing me to Deaf culture and supporting me throughout this incredible journey that has brought me to Gallaudet. None of this would have been possible without your constant support, challenging nature and encouraging spirit. Thank you all!

Abstract

This capstone evaluates the barriers to quality education that exist in deaf/hard-of-hearing mainstream programs by evaluating three key factors. First, the presence of manually coded English systems (MCEs) in mainstream programs will be discussed along with the history that led up to their creation. Second, IEPs (Individualized Education Programs), 504 plans, and language policies enforced by school districts are treated as one factor. They will be discussed in the same section because of their overlapping natures as they are inextricably related to the classroom environment and acquiring the right accommodations in school. Lastly, the home language environment and the vital nature of language acquisition in the home will be discussed. A review of pre-existing research and data in the field of deaf education in the United States was used to explore the impact of these barriers in the broad sense. With a more focused scope, the Imperial Valley School district in California will be used as an illustrative example of how problems not only manifest, but may also be resolved, along with the appropriate resources and contact information. Solutions and resources specific to this district will be provided in examples of infographics that demonstrate the practical use of the data synthesized in this capstone. The resulting model infographics will outline the best ways for parents of deaf/hard-of-hearing children to advocate for their student in the Imperial Valley school district as well as how they can support the lifelong growth and development of their child at home.

Table of Contents

Introduction

The aim of this capstone project is to review three critical factors that impact the quality of education deaf/hard-of-hearing children receive in mainstream programs and the barriers to high quality deaf/hard-of-hearing education in mainstream programs. Specifically, this capstone will cover the polemic presence of manually coded English in the classroom, the complex legal aspect of acquiring the right accommodations, and the impact of home language environment and language acquisition on deaf/hard-of-hearing student success. Deaf schools that provide accessible language rich environments and instruction in ASL are often a better fit for deaf/hard-of-hearing children because of the complete access there is to incidental learning and direct teaching without the mediation of interpreters. However, not all parents of deaf/hard-of-hearing children have the means of matriculating their children in language rich educational settings.

A variety of reasons may prevent parents from being able to have their deaf/hard-of-hearing children attend a school for the deaf. Geographically, families might live too far away from these schools to have their deaf/hard-of-hearing children attend and they may not have the financial means to move within that school's district. In some cases, the distance between a student's home and the nearest Deaf school would require overnight residence in the school and such a requirement would be in conflict with their cultural values. Culturally, some parents may not be willing to send their children to a Deaf school when distance would require their children overnight residence as it may be a core value of their culture to keep the family together. Even supposing the family lived too far away but were willing to allow their deaf/hard-of-hearing children to live on-campus, many school districts rule against that child leaving their district for reasons that will be explained in depth later in this capstone. About ninety percent of deaf/hard-of-hearing children do not attend schools for the Deaf, which means improving deaf/hard-of-

hearing education in mainstream programs is crucial for elevating and empowering deaf/hard-of-hearing children across the country (Mitchell & Karchmer, 2004).

Investigating how critical factors impact deaf/hard-of-hearing education will serve to better understand what approaches would be most appropriate to employ in advocacy work to improve mainstream deaf/hard-of-hearing education especially for deaf/hard-of/hearing children who don't have the option to attend schools for the deaf. Considering the complexity of education itself, as well as external factors that might also affect the quality of education received, this project will focus on the impact of the presence of manually coded English systems (MCEs), IEPs (Individualized Education Program), 504 Plans, and language policies in school districts, and the home language environment.

Using the information collected from preexisting research and laws relating to the issues of mainstream deaf/hard-of-hearing education, this capstone will use the school district of Imperial Valley as a practical illustration of how this review of issues can serve parents with the information, they need to best support their deaf/hard-of-hearing child's education. The results of this in-depth investigation will be used to create three model infographics for parents who have deaf/hard-of-hearing children attending a mainstream program outlining their rights as parents, actionable steps parents can take to support their child's education at school and at home, as well as contact information for important resources.

My career goal as a future Gallaudet graduate and an Imperial Valley native is to work with members of the ASL community (here I say ASL community versus Deaf community to include the hearing people who sign, who are actively a part of Deaf people's lives, and who take part in advocacy work where appropriate: some examples are interpreters, codas, ASL teachers, IEP specialists, et cetera) there to improve the quality of education deaf/hard-of-hearing children

receive. However, while my studies have prepared me well, being effective in advocacy work requires much more specialized knowledge and preparation. Therefore, this capstone is intended to give me the tools and knowledge I need to be a useful member of advocacy work in the ASL community of Imperial Valley, California. It is also hoped that this is written in a way that allows parents and other readers to learn more about these barriers as well.

The scope of this capstone is to evaluate general barriers to quality deaf/hard-of-hearing education in mainstream programs to develop a model of guiding information for parents. The barriers will be reviewed with consideration of issues most deaf/hard-of-hearing students may face. However, it is acknowledged that deafblind, deaf/disabled, and deaf/plus students may experience more or less barriers in different areas and in distinct ways. However, this capstone will not be exploring these as they include highly nuanced situations that vary greatly from case to case. Especially since deaf/disabled includes any kind of disability, of which there are hundreds in existence, and are each completely different with their own factors to consider. Therefore, this capstone recognizes its limitation in not discussing deafblind, deaf/disabled, and deaf/plus in spite of its relevance for the sake of adequately understanding barriers that apply to most deaf/hard-of-hearing students in mainstream programs and identifying meaningful ways in which parents can promote quality education for their deaf/hard-of-hearing children.

Also, this capstone is limited in terms of what encompasses the discussion regarding the home language environment. The section on the home language environment does not delve into what specific languages are or are not used in the home. Rather, this section only focuses on the presence or lack of language accessibility that would allow for first language acquisition as preliminary research has demonstrated the major role first language acquisition has on student success for deaf/hard-of-hearing children in mainstream programs. Therefore, there is not any

discussion on the particular language children use at home. Especially since, for many children the issue is the lack of accessibility to any language, instead there will be a review of accessible language conditions at home or the lack thereof.

Lastly, because of complications for distribution due to the pandemic and the lack of any Deaf advocacy networks or platforms in the Imperial Valley (the desired audience) where the infographics could be distributed for parents to view, these resulting infographics will only serve as a model and be displayed at the poster session in Spring 2022 but will not be distributed to the public.

In this capstone project, I will be delving into three significant factors that impact the quality of education deaf/hard-of-hearing students receive in mainstream schools: the presence of manually coded English mainstream programs, navigating the system of laws and regulations necessary to acquire the appropriate accommodations, and providing language access in the home. As an evaluation of the problem and its history, I will first review the history of Deaf education and the shift in teaching pedagogy that came after the Milan Conference. The same section will segue into the development, nature of, and polemic presence of manually coded English in deaf/hard-of-hearing mainstream classrooms. Solutions to existing barriers are important both at school and in the classroom, so the second section covers working with the school system while the last section discusses barriers and possible solutions in the home. In the second section, I will be unpacking the laws and rights that exist through which parents can acquire the right accommodations for their children along with the common problems and barriers encountered while navigating the often-complex system. Lastly, I will demonstrate how language accessibility in the home greatly impacts deaf/hard-of-hearing children's success by creating an environment for language acquisition to occur. Each of the three sections will end

with a summary of the practical knowledge and tools parents in the Imperial Valley School District and beyond can use to promote their children's academic success; the appendix will contain model infographics displaying the way some of these points could be easily shared on a social media platform.

Terms

This list is not exhaustive nor a comprehensive description of the terms specific to the field(s) covered in this capstone. However, this is meant to provide a brief overview of terms that may have multiple definitions depending on the context. The purpose of this list is to establish basic definitions of potentially ambiguous terms to make for a clear reading experience of the discussions shared in this capstone.

- Deaf (capital 'D' is intentional); refers to a person who participates in Deaf culture and uses American Sign Language (or the sign language of their Deaf community). A person who is Deaf is usually also deaf, and there are also people who are not deaf but are Deaf.
- deaf (lowercase 'd' is intentional): refers to a person who processes sound differently than hearing people do. A person who is deaf may or may not also be Deaf.
- coda: hearing child of a d/Deaf adult, which refers to the physical hearing status of the person's parents and not the person's age.
- Deaf mainstream program (also known as inclusive setting): an educational program within a hearing school that is meant to provide deaf/hard-of-hearing students with the accommodations they need. Within the context of the Imperial Valley School District, this program is usually lumped with the overall special education programs, so deaf/hard-of-hearing students in these programs tend to be in a classroom with peers who have very different learning capabilities, needs, and accommodations than themselves.
- Schools for the Deaf: public schools for deaf/hard-of-hearing students that children can either board to or attend as a regular public school (almost every state has at least one).

- MCE (Manually Coded English): an umbrella term that refers to invented communication systems that use spoken English as the basis for a system that uses signs to manually encode English.
- Independently functioning: able to conduct basic living activities, such as, but not limited to: eating, going to the restroom, and walking without the consistent need for assistance from other people.
- IEP (Individualized Education Program): A legal document that provides an individualized plan for special education to meet the unique needs of a qualified student at no cost to the families (according to the Individuals with Disabilities Education Act).
- 504 Section plan: provides special education services to meet the unique needs of students that do not qualify for an IEP but still need accommodations at no cost to the families (according to Section 504 of the Rehabilitation of 1973).
- Language policy: refers to the language(s) and/or communication system(s) that are used in a classroom based on the policies stipulated by the school district. Specifically, in the Imperial Valley, these policies are embedded in the job descriptions of "sign language aides" as defined by the Imperial County Office of Education.
- EIPA (Educational Interpreter Performance Assessment): a tool designed to evaluate the interpreting skills of educational interpreters in a classroom setting not specific to any language or communication system.
- Language acquisition: the natural process by which a person acquires a language (note that this is not the same as language learning).
- Home language environment: the language(s) and/or communication system(s) that are used in the home.

The Presence of Manually Coded English

This section will review the history that has shaped and continues to affect deaf education today. Also, in this section I will discuss how the presence of manually coded English in mainstream programs creates a polemic environment for quality deaf education. A key factor in the evaluation of mainstream education of the deaf and hard of hearing is the complex history of communication systems utilized for instructional purposes and how they impact student success. Over the years, many communication systems have and continue to be used with a wide range of results, both positive and negative, regarding student success. The term communication systems will be used heavily in this section to refer to manually coded systems of English because they are precisely that, only systems, and not natural languages such as American Sign Language, English or Spanish (Johnson, Liddell, & Erting, 1989). Communication systems are not natural languages as they do not meet the linguistic criteria that natural languages do, and were also not naturally developed within a people but instead artificially invented. These communication systems include some elements of American Sign Language as they were made by taking ASL signs, sometimes altering them, and using invented rules for putting them together (rules vary greatly across the different systems which will be discussed in more detail later in this section). Although invented with the intention of improving deaf education, they have created a complex and confusing environment in deaf education.

The means of communication in mainstream deaf/hard-of-hearing education have changed significantly over the past two hundred years. During the mid-1800s, Deaf education in the United States was thriving through the visual-manual approach using American Sign Language and written English until the Second International Congress on Education of the Deaf in 1880 (Moores, 2010). Also known as the Milan Conference, this Conference triggered many

of the changes regarding language policy and the means of communication used in deaf/hard-of-hearing education that were rooted in audism and linguicism as is evident by their first declaration: "Given the incontestable superiority of speech over signs in restoring deaf-mutes to society, and in giving them more perfect knowledge of language that the oral method ought to be preferred to signs," (as cited in Moores, 2010, pg. 309). The prejudice against deafness and sign language was the core principle of the declarations the Milan Conference upheld, which has had a long-standing impact on deaf education to this day.

Although internationally recognized, the Milan Conference was not a real discussion amongst educators of the deaf about what methods would best serve deaf/hard-of-hearing students (Lane, 1989; Winefield, 1987). Instead, it was an echo chamber of oralists proclaiming the superiority of speech, demonstrating their "success" (much of which was rehearsed), and denouncing the presumed defects and inadequacies of sign language (Lane, 1989; Winefield, 1987). From the people who were invited to the president elected for the conference to the agenda, everything was planned to favor oralism (Lane, 1989; Winefield, 1987): "The officers of the Milan congress-like the location, organizers, exhibitions, and membership - were chosen to ensure the oralist outcome" (Lane, 1989, pg. 391). Therefore, when it came time to vote on the resolutions, manualists were grossly outnumbered, all according to the oralists' agenda (Lane, 1989). Being aware of the set-up of the Milan conference is important to recognize that it was not a genuine contribution to the development of deaf education, but a critically successful event of oralist propaganda that impacted deaf education for years to come thereafter.

The Milan conference's international impact made it possible for the narrative that signing is inferior to speech, even the narrative that signing is not a language at all, to be heavily propagated and perpetuated for generations of deaf people all over the world. Deaf people

became saturated by the narrative that their signing was nothing more than gestures and mimicry inadequate for providing an education. This resulted in a deep and massive case of linguistic and educational colonization as well as a vicious cycle of internalized oppression that worked in conjunction with the external forces of audism at play (Lane, Pillard, & Hedberg, 2011; McDonald, 2004). Externally, the language policies of deaf education around the world were being changed to strict oral education if they were not already enforcing an oral curriculum (Moores, 2010). The first declaration of the Milan Conference justified the expulsion of sign language from deaf education by deeming it inferior to spoken language, while the second and last declaration put it into action (Lane, 1989). It was after the Milan Conference and its declarations that what had been a successful system of deaf education which graduated literate students with employable skills became a confusing and inadequate "failure" to its students as many papers researching mainstream deaf education today describe (Simms & Thumann, 2007).

Audism was perpetuated by the declarations made by the Milan Conference regarding the "incontestable superiority of speech" (Lane, 1989, pg. 394). After 1880, the enforcement of the oral method in deaf education led to a significant decline in the quality of deaf education since instruction was almost exclusively given through spoken English thereafter. The Milan conference proliferated the narrative that sign language was inadequate by putting on their show of "successes" and putting on an international meeting to feign their credibility. Their performance achieved its goal and all over the world, the oral method was displacing sign language in deaf education. In the United States, English was displacing American Sign Language instead of co-existing with it. Oralist ideology and the Milan conference coupled to catalyze the progress of their linguistic and educational conquest on sign language. The result was a rapidly declining quality in deaf education as sign language was banned from deaf

education and spoken English, an inaccessible channel of language to deaf people, infiltrated the classrooms.

As educators of the deaf observed the continual challenge of educating children without an effective and accessible means of communication, signing (in some capacity) began to be re-incorporated into deaf education to improve student literacy in English (Stewart, 1997). Prominent Deaf educators began to figure out ways to facilitate the education of deaf children in an oral environment in which students were not given access to the language (Stewart, 1997). A philosophy toward education known as total communication was developed at a school for the Deaf by Roy Holcomb, and later introduced the idea into mainstream deaf/hard-of-hearing programs that any combination of communication systems or language that works best for the student, including the use of signs, should be used to educate deaf/hard-of-hearing children (Luetke, Stryker & Zawolkow, 2019; Stewart, 1997). However, at the time, American Sign Language was not considered adequate for academic instruction. As a result, teachers of the deaf began to develop signed systems that manually encoded English to facilitate teaching English to deaf children. Amongst these systems of manually coded English (MCEs) are Seeing Essential English, Linguistics of Visual English, Signing Exact English, and Signed English (Stewart, 1997).

The first of these systems was Seeing Essential English, also known as SEE I, published by David Anthony in 1971. David Anthony was a Deaf [1] man from England born to Deaf parents who moved to the United States and became an educator of the deaf. SEE I was developed by David Anthony in response to concerns he came across as he taught deaf children English

[1] The use of capital 'D' in Deaf will be used throughout this capstone to distinguish from people who were not only deaf physically but also culturally and 'd' deaf will be used when referring to physical deafness or when it is unknown if the people in question were also culturally Deaf.

(Luetke-Stahlman & Milburn, 1996). Some of the key obstacles that triggered the development of SEE I were that many English words did not have corresponding signs, some English words could be signed many ways depending on the idiomatic meaning of the word such as the word 'run', and the lack of an ASL equivalent for the English word 'be' and its many conjugations (Luetke-Stahlman & Milburn, 1996). The beginning of SEE I was directly triggered by Anthony's students when they explicitly asked him to give them signs to differentiate the different forms of 'be', which also stipulated the first rule of SEE I, that is the initialization of signs (Luetke-Stahlman & Milburn, 1996). The 'two out of three' rule, a rule that is maintained in most manually coded English systems, began in SEE I and stipulates that if two out of the three characteristics between the spelling of a word, the meaning of a word, and the sound of the word are the same then they are signed in the same manner, in which case what is most often left out is meaning (Luetke-Stahlman & Milburn, 1996). After having recognized his concerns and received requests from his students to create signs for certain English words that American Sign Language did not use, he began to meet weekly with many deaf people between the ages of 15-67 who were born deaf to create such signs (Luetke-Stahlman & Milburn, 1996). The development of SEE I in 1971 led to the creation of three more manually coded English systems thereafter. Although these systems differed in a variety of ways there are a couple of features they have in common: they were all developed with the intention of teaching deaf children English more effectively (whether or not they succeeded in their goal will be discussed later in this section) and they were all developed by members of the deaf community.

In 1972, two separate systems emerged, Seeing Exact English (also known as SEE II) and Linguistics of Visual English (L.O.V.E.) (Baker-Shenk & Cokely, 2002; Luetke-Stahlman & Milburn, 1996; Stryker, Nielsen, & Luetke, 2015). L.O.V.E. was developed by Dennis Wampler,

one of the members of David Anthony's group who helped develop the signs for SEE I. However, Dennis Wampler disagreed on the way signs were drawn out on paper for SEE I (Baker-Shenk & Cokely, 2002). He argued that they could not be accurately represented that way and instead broke off from the SEE I group and developed Linguistics of Visual English using William Stokoe's notation method (Baker-Shenk & Cokely, 2002). The main distinction between L.O.V.E. and SEE 1 are their notation systems. During the same year of 1972, Seeing Exact English (SEE II) was developed which had yet another approach to manually encode English.

Seeing Exact English (SEE II) was developed during the same year by Gerilee Gustason, a deaf professor and researcher; Donna Pfetzing, an educational interpreter and mother of a deaf child; and Esther Zawolkow, also an interpreter and a coda (a hearing child of deaf adults) (Rendel, Bargones, Luetke-Stahlman & Milburn, & Stryker et al., 2018). Very much like SEE I, one of the main concerns was to be able to represent aspects or particular words of English that American Sign Language does not have, as it has distinct morphological structures from English, to facilitate teaching English to deaf children (Stryker et al., 2015). Gustason, Pfetzing, and Zawolkow further point out the relevancy of being able to sign such parts of English to have "through the air" access through which instructors could teach and discuss about such aspects of English since they also happen to be parts of English that are more difficult to hear (Stryker et al., 2015).

Signed English was developed in 1973 by Dr. Harry Bornstein (director of the Gallaudet Signed English Project), Karen Luczak Saulnier, and Lillian B. Hamilton (Bornstein, Saulnier & Hamilton, 1980). SEE I, SEE II, and L.O.V.E. are somewhat separate from Signed English in that they function rather differently. While SEE I, SEE II, and L.O.V.E. employ the 'two out of three' rule to maintain one invented sign per English word, which most often resulted in meaning

being disregarded considering the heavy idiomatic nature of English, Signed English prioritized meaning (Bornstein et al., 1980). For example, the English word "run" alone has several different meanings depending on the context. The word "run" can mean physically running, to function properly, to participate as a candidate in a campaign, to flow (as in a runny nose), et cetera, and yet Signed English would use one sign for all these distinct meanings, completely ignoring conceptual accuracy (Bornstein et al., 1980). Within the first three years of the early 1970s, from 1971 to 1973, four systems of manually coded English were developed by members of the deaf community to facilitate the process of teaching deaf children English. Of these four systems, Signing Exact English (SEE II) is the system that is more widespread and commonly used in mainstream deaf/hard-of-hearing programs (Rendel et al., 2018).

Evaluating communication/language policies in deaf/hard-of-hearing programs is a critical factor to consider because of the impact they may have on student success, and school districts vary in the way they apply the need for interpreters. Some school districts implement a stronger focus on utilizing manually coded English systems, such as SEE II, while others may incorporate more American Sign Language (Commerson, 2020). There is compelling research on both sides suggesting that one or the other is much better for student success (Akamatsu, Stewart & Becker, 2000; Stewart, 1997; LaSasso & Metzger, 1998; Keck & Wolgemuth, 2020; Stacey, Donald, & Flexer, 2018). Therefore, because communication/language policy in the classroom have an empirically proven impact on deaf/hard-of-hearing students' success, communication/language policy in the classroom must be evaluated.

In terms of student success and literacy levels, there is some research that supports the use of manually coded English systems in the classroom (Nielsen, Luetke, McLean, & Stryker, 2016; Stacey et al., 2018). Programs that choose to utilize manually coded English systems, do

so from the same philosophy and intentions as those who developed the system, that is to facilitate the process of learning English by providing visual access to English morphemes that are not audible nor present in American Sign Language (Rendel et al., 2018). One study which supports the use of manually coded English in deaf/hard-of-hearing education was conducted on a group of students who are deaf/hard-of-hearing in terms of their reading level and English proficiency relative to their hearing peers (Nielsen et al., 2016). Resulting from the evaluation done, it was evident that the students, for the most part, were doing well and performing either at or above grade-level (Nielsen et al., 2016). The findings of the Nielsen study were used to claim that manually coded English systems not only are beneficial, but even favorable to the use of American Sign Language for student success (Nielsen et al., 2016). However, the study lacked much of the work and data that would have been necessary to reach the conclusion that manually coded English systems were favorable for student success in comparison to American Sign Language (Green-woods, Luetke, Nielsen, & Stryker, 2020). They did not have a proper control group and they did not consider other factors which could have very well been the cause of their success before attributing it to the use of Seeing Exact English such as: "access to one-on-one instruction, full access to communication at home and at school, access to grade-level content, and access to peers with similar linguistic needs" (Green-woods et al., 2020, pg. 459). These shortcomings in the research methodologies of studies that support the use of manually coded English question the reliability of their conclusions.

Other evidence in support of the use of manually coded English systems show similar weaknesses even as they address major issues. For instance, in "The Option of Signing Exact English", the responses to the many concerns tend to dismiss the concern as either invalid or unimportant, claim there is not enough research to support said concern, or make claims with

insufficient evidence (Rendel et al., 2018). One major concern is that manually coded English systems are not languages, they are invented systems that encode parts of English. According to the list of fundamental features necessary to all natural languages developed by the linguist Charles Hockett, manually coded English systems lack the features of consistency and limitlessness that are required to meet the definition of a natural language (Tserdanelis, & Wong, 2004; Valli, Lucas, Mulrooney, & Villanueva, 2011; Wright, 2022). Rendel's response to such inadequacies is insufficient, lacking substance and ultimately dismissing such concerns as invalid or unimportant. Rendel's two-part response consists of claiming that invented systems are no less functional than natural languages (Mitchell, 1982). Rendel also claims that manually coded English systems have no limitations in terms of the level of complexity of the concepts they can express (Rendel et al., 2018). Both claims are refuted by theoretical and empirical evidence as explained by LaSasso and Metzger in 1998.

Linguistically, manually coded English systems are not as functional as natural languages and are limited in the complexity of concepts they can be used to express. LaSasso and Metzger (1998) provide an in-depth explanation to the theoretical evidence regarding the degraded input hypothesis as well as the structural limitation hypothesis which are outlined below and demonstrate how systems of communication are less functional than natural languages for the purpose of communication. Said evidence defeats the very goal Rendel means to achieve by using manually coded English systems. Providing equal language input for deaf/hard-of-hearing students as their hearing peers is not possible if one group is receiving language and the other an invented system. The evidence also highlights the polemic environment manually coded English systems create for language acquisition. The significant impact language acquisition and home language environment has on the success of mainstreamed deaf/hard-of-hearing children will be

covered later in this capstone in section three. The degraded input hypothesis argued that too much of English linguistic features would be lost or deleted during the encoding process because of the excessive complexity of manually coded English systems (LaSasso & Metzger, 1998). The structural limitation hypothesis addresses the lack of complete linguistic features that occur in natural languages (LaSasso & Metzger, 1998). Manually coded English can only represent the morphological level of English, only the semantic intent of the signer is present, and does not serve as an accurate representation of English nor of the form of a natural language (LaSasso & Metzger, 1998). The structural limitation hypothesis is supported by the evidence demonstrating the lack of English learning in deaf/hard-of-hearing programs that use only manually coded English. Recent studies demonstrate the low average reading level (signifying the median of a wide range of high, mid-level, and low scores) of deaf/hard-of-hearing high school graduates of mainstream programs (Green-woods, et al. 2020; Trezek & Mayer, 2019).

The Deaf educators who created these signing systems hoped they would be more successful in teaching deaf children English. Given the linguistic and educational colonialism that was happening in deaf education, they had to find a way to bring in signs to an environment that was extremely hostile to American Sign Language. Therefore, creating these systems was their best effort to find a middle ground that would facilitate and improve the quality of deaf education. However, over the years, many studies have been done on a variety of programs using one or a combination of manually coded English and simultaneous communication, while the systems are constantly changing, there is still little improvement in deaf children's learning (Green-woods, et.al, 2020; McCann, 2018; Simms & Thumann, 2007; Trezek & Mayer, 2019). Within the last approximately fifty years that manually coded English systems have been used,

the state of deaf/hard-of-hearing education has yet to improve significantly during that time (Green-woods et al., 2020; Simms & Thumann, 2007; Trezek & Mayer, 2019).

This evaluation of studies which support the use of manually coded English systems shows they do not provide clear enough evidence to claim that its use is improving the quality deaf/hard-of-hearing education especially when the overall condition of deaf/hard-of-hearing mainstream education continues to remain the same (Green-woods et al., 2020). Furthermore, the lack of adequate responses to the problems that come with using manually coded English systems make MCEs not an option that supports deaf/hard-of-hearing student success. Nevertheless, many school districts continue to utilize and even promote the use of manually coded English systems in their programs as an integral part of their language/communication policies.

Understanding the inadequacy and prevalence of manually coded English systems in deaf education is essential for parents when evaluating the options of communication to use in the home as well as in school (Greene-woods, et al. 2020; LaSasso & Metzger, 1998; Mitchell, 1982; Rendel et al., 2018; Trezek & Mayer, 2019). Manually coded English systems are inadequate for providing the linguistic stimuli that is necessary for first language acquisition, which is indispensable for the linguistic, social, and cognitive development of children (Allen, Letteri, Choi & Dang, 2014; DeLana, Gentry, & Andrews, 2007; Hall, 2017; Henner, Novogrodsky, Caldwell-Harris, & Hoffmeister, 2019; Hoffmeister, 2000; Mayberry & Lock, 2003; Mayberry, 2007; Murray, Hall, & Snoddon, 2019; LaSasso & Metzger, 1998; Singleton & Morgan, 2006; Wilbur, 2000). The importance of first language acquisition, the home language environment, and how it impacts deaf/hard-of-hearing student success will be explored further in its own section of this capstone in Enabling Access at Home. Parents are advised to use an

accessible language, that is, American Sign Language, with each other and with their deaf/hard-of-hearing children to support their child's overall development and to promote their academic success (Allen et al., 2014; Chamberlain & Mayberry, 2008; Courtin & Melot, 2005; Hall, 2017; Harris, de Rosnay, & Pons, 2005; Hoffmeister, 2000; Henner et al., 2019; Keck & Wolgemuth, 2020; Lu, Jones, & Morgan, 2016; Mayberry & Lock, 2003; Mayberry, 2007; Mayer, 2007; Mitchell & Karchmer, 2004; Morford & Mayberry, 2000; Murray et al., 2019; Peterson, 2004; Singleton & Morgan, 2006; Skotara, Salden, Kügow, Hänel-Faulhaber, & Röder, 2012; Wilbur, 2000). Connecting with early intervention programs can provide parents with access to American Sign Language, Deaf mentors (cultural and linguistic role models), and access to the rich knowledge and culture of the Deaf community to support their deaf/hard-of-hearing child's growth and development in the home from a young age (Lu et al., 2016; Nyugen, 2008). In terms of formal education through mainstream programs, parents have the right to review their communication policies and require the provision of qualified American Sign Language interpreters for their deaf/hard-of-hearing children through the Individualized Education Plan, which will be discussed in-depth in the next section of this capstone (Commerson, 2020; Lee, 2021; Whitney, 2020).

Navigating the System

The challenges that often arise from the widespread use of MCEs create a need for supportive services and educational plans to ensure that deaf/hard-of-hearing students have an accessible educational environment. Navigating the system of said supportive services, educational plans, and legal processes can be difficult, especially when the system may be flawed. This section will discuss the Individualized Education Program (IEP) and 504 Plans that are the vital facilitators in deaf/hard-of-hearing mainstream programs and are necessary to set up the appropriate structure of instruction and accommodation. Individualized Education Plans (IEPs) and 504 Plans are two of the federal laws that establish avenues to provide services to every child with a disability to ensure that they have access to their academic environment. Both IEPs and 504 plans have similar goals, which is to outline how to provide accommodations to students with disabilities (Lee, 2021). IEPs differ in that they go further than simply ensuring that a child's educational environment is accessible by saying that every child is entitled to access to a "free appropriate public education" (Cowin, 2018). "Student with disabilities" in terms of IEPs refers to students who are not independently functioning and who are at least two grade levels behind in essential skill areas, English being one of them (Whitney, 2020). Most deaf students are independently functioning, and this makes acquiring the right accommodations difficult since these laws were not developed with deaf students in mind (Whitney, 2020). 504 plans are applied from the Section 504 of the Rehabilitation Act of 1973 to students with any disability which tend to be students who did not qualify for IEPs and can be successful in a regular classroom with minimal support. IEPs are applied from the 1975 Individuals with Disabilities Education Act (IDEA) to students that have at least one of the thirteen specific disabilities enumerated in IDEA, one of which is deafness (Lee, 2021). The purpose of IEPs is to

provide individualized special education and related services to meet a child's unique needs at no cost to families (Lee, 2021). IEPs also create ways for students to receive instruction differently than their peers, be it through accommodations, modified curricula, or with direct instructional support. 504 plans tend to be the last resort for parents and their deaf/hard-of-hearing children as they provide fewer resources and accommodations, while IEPs are the last resort for schools as they require a higher investment of time and resources on the school's part (Commerson, 2020).

One of the most significant components of IEPs is the prioritization of creating what is considered as the "Least Restrictive Environment" (LRE) according to the Individuals with Disabilities Education Act of 1975:

> To the maximum extent appropriate, children with disabilities . . . are educated with children who are nondisabled; and . . . special classes, separate schooling or other removal of children with disabilities from the regular educational environment occurs only if the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily [§300.114(a)(2)(i)]

Although intended to optimize the learning experience of children with disabilities, the way the law interprets "Least Restrictive Environment" to mean the minimal deviation from the traditional classroom environment is actually detrimental to deaf/hard-of-hearing children (Hayer, 2017). The goal, according to the law's interpretation, is to offer the traditional classroom experience to children with disabilities while maintaining the traditional classroom model the same as much as possible (Hayer, 2017). Therefore, the more supportive services are provided, the further the classroom structure deviates from the LRE and schools perceive such accommodations as steps away from their goal to incorporate children with disabilities into

classrooms with nondisabled children (Hayer, 2017). The implications for deaf/hard-of-hearing children are that school districts will take a variety of ultimately unhelpful measures before they agree to such a "restrictive" environment as the provision of an ASL interpreter or other accommodations such as access to open captioning and transcriptions, which are in fact, exactly the kinds of accommodations that would most benefit deaf/hard-of-hearing children (Hayer, 2017). By viewing the traditional classroom as indubitably optimal and prioritizing the preservation of "normal" in children, the interpretation of IDEA has resulted in a complicated situation that often makes learning exceedingly inaccessible and hinders the academic, linguistic, and social development of deaf/hard-of-hearing children (Hayer, 2017).

The requirements for legally acquiring the accommodations deaf/hard-of-hearing children need are structured in such a way that is severely damaging to their academic achievement and overall development. Because school districts require students to be at least two grade levels behind to be considered for an IEP, deaf students who are not "behind enough" or may be testing near grade level would have to turn to 504 plans to get important services such as an interpreter, which often does not result in the appropriate accommodations (Commerson, 2020). This is problematic as there are no preventative measures to protect students from falling behind. Catching up to where they should be academically, particularly two entire grade levels, becomes an incredibly difficult task to achieve that most are never able to fully accomplish (Nyugen, 2008). It is exasperating to see deaf/hard-of-hearing students fall so far behind (often never recovering) especially since, in most cases, the provision of a qualified American Sign Language interpreter would have made a major impact in the deaf/hard-of-hearing student's academic achievement. (Commerson, 2020). Therefore, it is critical to ensure the proper accommodations are being required on IEPs.

IEPs are developed by teams whose members are constrained by strict legal requirements about who is to be involved, including five essential people: the child's parent or caregiver, at least one of the child's general education teachers, at least one special education teacher, school psychologist or other specialist who can interpret evaluation results, and a district representative with authority over special education services (Lee, 2021). Parents also have a right to invite someone who has important information about the child such as a healthcare provider, a friend, or an advocate to IEP meetings (Lee, 2021). However, the members of the IEP team all have different goals in mind. Both IEP and 504 plans are set by the federal government and only hold schools legally responsible for providing students with the bare minimum of support (Commerson, 2020). While parents and advocates in the meetings are trying to figure out how to maximize the child's potential, school faculty and staff are working out how to minimize their own costs without prioritizing the child's potential (Commerson, 2020).

In 1982, the Deaf parents of a Deaf child in a mainstream program sued the Hendrick Hudson Central School District as the school district refused to make it a part of their child's IEP to be provided with an interpreter on the basis that their child was performing above the average (Osborne, 1992). The court case, *The Board of Education of Hendrick Hudson Central School District v. Rowley,* ruled in the favor of the parents in the district court (Osborne, 1992). The reason given was that the IEP the school district had provided was not considered appropriate according to what the student was capable of accomplishing (Osborne, 1992). The Supreme Court ruled that the sign language interpreter was not required as the student was performing above the average. This ruling resulted in a direct demonstration of the level of services that IEPs are meant to satisfy according to the law (that is to prioritize minimizing the school district's expenses over maximizing the child's potential) (102 S.Ct. 3034). Ultimately, the ruling of the

Supreme Court case established a precedent for providing disabled students with only a basic floor of opportunity rather than a level of services that would allow them to receive an equal educational opportunity (Osborne, 1992). Up until 2017, after the ruling in *Endrew F. vs. Douglas County School District,* the legal precedence of rulings regarding the interpretation of what an "appropriate" education constitutes has been in the favor of minimizing school costs at the expense of the quality of education that disabled and deaf/hard-of-hearing children receive (Finister, 2019).

Endrew F. vs. Douglas County School District established a major change in legal precedent regarding school responsibility and education standards for students with IEPs and 504 plans (Finister, 2019). The case of Endrew F. was of a fifth-grade boy with autism and attention-deficit/hyperactivity disorder who was not deaf but was under an IEP to scaffold his education appropriately (Cowin, 2018). However, the IEP he was given was not meeting his needs and parents transferred him to a private school where he received an IEP that resulted in measurable progress in his academic and behavioral goals (Finister, 2019). When the Endrew's previous school district was unable to provide an equitable IEP like the one from the private school, the parents requested a reimbursement for the tuition they had paid at the private school (Finister, 2019). The lawsuit against Douglas County School District was filed by Endrew's parents after the school district denied their request for a reimbursement (Finister, 2019). The rulings of *Endrew F. vs. Douglas County School District* did outline an elevated standard for IEPs; however, the court still left the definition of "appropriate progress" up to school authorities, leaving the standard up to the interpretations of individual school districts (Finister, 2019).

The decision to allow schools to interpret the meaning of "appropriate progress" creates an environment in which the school faculty, who outnumber members of IEP meetings, not only

have the power to make changes to the student's IEP, but they are also bestowed with power to interpret what their obligations to the student consist of (Brigham, Claude, & McKenna, 2021). Therefore, since school districts hold both the power and the numbers when it comes to IEPs and 504s, and they hold the least interest in promoting deaf/hard-of-hearing student success, the parents are significantly disadvantaged in the process of creating a conducive learning environment at mainstream deaf/hard-of-hearing programs. Parent input and the application thereof has been demonstrated to result in decision making and interventions that are more in line with the student's needs which in turn promote the success of their child's education (Chen & Gregory, 2011). Although parent input is part of the requirements of the IEP process, parents often remark that not only do schools not solicit their input but are often resistant to considering the practical implementation of what parents ask for (Johnston et al., 2019). Even when parents are present during IEP meetings, research shows that parents are outnumbered, out-argued, and ultimately disempowered by school professionals in IEP meetings when it comes down to making important decisions that significantly impact their student's education (Johnston et al., 2019; McDonnell, 2014).

The people who are required to be present at IEP meetings greatly outnumber parents and leave them in a disadvantageous position. Because four of the five people who are required to attend IEP meetings are school professionals, in most cases parents find themselves in a situation where they are a minority in a group that's meant to set up the best conditions possible for their children's education while being surrounded by people who not only have the knowledge and power to make changes, but are also operating from the leading motivation of reducing the cost to the school as much as possible without prioritizing the student's success (Johnston et al., 2019; McDonnell, 2014). Being outnumbered then creates a dynamic in which parents are given

less time to contribute to the discussion and are often dismissed as they may not be as "qualified" as the professionals are to make decisions about their child's education (Johnston et al., 2019). However, it has been demonstrated that "when parents are equitable team members, their opportunities to provide valuable information about their child's strengths and needs improve" which results in overall positive outcomes for the deaf/hard-of-hearing student (Tucker & Schwartz, 2013). Therefore, regardless of the obstacles and pressures that exist for parents within IEP meetings and working with school faculty and staff is a major part of ensuring their children receive the accommodations they need as well as promoting their child's student success (Johnston, 2019).

Accommodations deaf/hard-of-hearing students need tend to differ greatly from what IEPs and 504 plans typically stipulate since IEPs and 504 plans were initially created to accommodate students who are not independently functioning (Commerson, 2020). Recognizing that there are deaf/hard-of-hearing students who have disabilities that would require different kinds of accommodations, this capstone, for the sake of clarity, will only be focusing on students who are only deaf/hard-of-hearing, not deafblind, deaf/disabled nor deaf/plus. Therefore, when the accommodations for deaf/hard-of-hearing students are referred to, there is a limitation in scope, referring only to students who are only deaf/hard-of-hearing. One major difference between the kinds of accommodations deaf/hard-of-hearing students need is the fact that unlike the disabilities IEPs and 504s were made to address, the accommodations deaf/hard-of-hearing students need relate entirely to language accessibility (Commerson, 2020). Accommodations deaf/hard-of-hearing students may require include: interpreters, speech-to-text services, assistive listening systems, note-takers, captioned media, testing accommodations, and remote services (Ivanko & Garberoglio, 2021). Of these accommodations, the most unique is that of interpreters

because deaf/hard-of-hearing students are the only students addressed by the IEPs and 504 plans whose accommodations include language-based needs such as language accessibility (Schick, Williams, & Kupermintz, 2005).

The effectiveness of interpreters in providing equitable access to education and student social life is an essential factor contributing to deaf/hard-of-hearing student success. However, research shows that in an evaluation of 2,100 working educational interpreters across the United States, sixty percent were evaluated to have inadequate skills to provide full access (Schick et al., 2005). The group of interpreters that barely made the requirements were generally those who had both a BA degree and completed an Interpreter Training Program (ITP) (Schick et al., 2005). Therefore, parents may be able to expect a more competent interpreter if they request that the interpreter their child will be provided have both a BA degree and have completed an ITP, although education and training does not seem to be the most impactful factor contributing to deaf/hard-of-hearing students' success regarding the interpreter (Schick et al., 2005).

The language/communication system used by the interpreter is critical as it is the difference between the use of a language such as ASL or a communication system such as PSE or MCE. According to Schick, "there are both good and poor interpreters at both grade levels and using all languages although MCE interpreters as a group have the weakest skill" (Schick et al., 2005, pg.13). In an overview, variation in skill level could be observed within each category (ASL, PSE, or MCE). However, interpreters who used MCE demonstrated the lowest skill level in most accounts relative to ASL and PSE (PSE scored lower than ASL, but it was much more similar to the scores ASL interpreters had than to those MCE interpreters had) (Schick et al., 2005). Therefore, language policies that call for ASL interpreters and qualification requirements that stipulate the interpreters have a BA degree and completion of an ITP are currently the best

guiding points in finding an interpreter that could provide equitable access to communication to deaf/hard-of-hearing students. In cases where the school district has different language policies and qualification requirements, it is in the student's best interest that their parents advocate for them by requesting an interpreter that meets these requirements as part of their IEP.

In the mainstream setting, parents of deaf/hard-of-hearing children can best support their deaf/hard-of-hearing child's student success by being attentive and actively involved in their child's IEP meetings and request third-party evaluations of their child's IEP as deemed necessary by the parents (Commerson, 2020; Lee, 2021). Parents have a right to bring someone to the IEP meetings, such as an advocate of Deaf rights, a mentor, a friend, or anyone knowledgeable in the needs of their deaf/hard-of-hearing child, which is a strategy that parents can use to ensure that their child's IEP is adequately developed and implemented especially since parents are usually outnumbered by school representatives at IEP meetings (Commerson, 2020; Lee, 2021). Hearing parents would benefit from participating in an early invention program for support in this legal area of promoting their child's education quality as well since they are likely to meet and relate to other people who would be willing and able to adequately support them through IEP meetings (Nyugen, 2008). Parents are also advised to pay particular attention to the qualifications of the interpreters that schools hire for their deaf/hard-of-hearing children (Schick et al., 2005).

Parents have the right to ask for the interpreter's qualification specifications as far as what communication system or language they use, their education level, any interpreter training they have received, as well as any certifications they may or may not have (Schick, 2005). Specifically, parents are advised to advocate for their children to be provided with interpreters that use American Sign Language and have an EIPA rating of at least a four to ensure that their child is being educated through an accessible language and that the interpreters are adequately

qualified to interpret in the educational environment (Schick et al., 2005). In cases that school districts are not providing adequate accommodations, such as interpreters that are unqualified or denying the provision of interpreters entirely, parents have the right of asking for third-party evaluations at public expense according to section §300.502 of the Individuals with Disabilities Education Act (IDEA) (Ochoa de Anzar, 2021). Referring to the legal precedence that exists upholding the implementation of parent input in IEPs and in classroom practice, requesting their right as parents to a third-party evaluation at public expense can be exercised at any time by expressing, most effectively in writing, that they disagree with their child's IEP (no reason for disagreement is required) to the District Special Education Director (Commerson, 2020; Finister, 2019; Lee, 2021; Ochoa de Anzar, 2021; Osborne, 1992). Parents' refusal to give a reason for their disagreement cannot be used by a school district to delay their response (Ochoa de Anzar, 2021).

In the case of parents in the Imperial Valley, they would be writing an email out to Araceli B. Garcia (specific contact information such as email addresses will be outlined in the infographic) who is the senior director of special education in the Imperial Valley school district (Imperial County Office of Education, 2022). The district is then responsible for responding to the request "without unnecessary delay", which is not numerically defined and varies from case to case, but a general rule of thumb is about fifteen school days (Ochoa de Anzar, 2021). Within that time, one of two things should occur, the school district should proceed to fund the third-party evaluation also known as an independent education evaluation (IEE) and parents work with the district to select the independent evaluator or the school district files for due process (Ochoa de Anzar, 2021). If the school district files for due process, then parents must be prepared to

explain to the judge why they disagreed with the school district's evaluation and why they believe the IEP is inappropriate (Ochoa de Anzar, 2021).

If neither of those two scenarios occur within approximately fifteen school days, and parents do not receive a response or are denied their request without due process, then parents should tell the school district that they have violated their rights under 34 C.F.R. Section 300.502(b) of federal special education regulation (Ochoa de Anzar, 2021). If there is still a lack of response from the school district, then parents should tell the school district that they are taking the school district's inaction to mean that they agree to fund the IEE and will either reimburse the parent's expenses or pay the independent evaluator selected by the parents directly (Ochoa de Anzar, 2021). Parents need to ensure that the independent evaluator they select meets the school district's criteria and guidelines if they chose to proceed with the IEE without a response from the school district (Ochoa de Anzar, 2021). Although parents are not required to choose from the list the school district provides, schools districts are responsible for providing parents with information about IEEs such as a list of potential providers, pricing guidelines, and the school districts requirements for IEEs (Ochoa de Anzar, 2021).

Cases in which parents cannot or do not want to pay an independent evaluator and wait for a reimbursement, the school district is responsible for setting up other arrangements, such as paying the independent evaluator directly (Ochoa de Anzar, 2021). However, if the school district continues to delay their response without filing for due process, and parents cannot or do not want to pay an independent evaluator, then they should file for a compliance complaint with the California Department of Education (CDE) (Ochoa de Anzar, 2021). The complaint should state that the school district has violated the parents' procedural rights under 34 C.F.R. section

300.502(b) and request that the CDE order the school district to provide an IEE immediately (Ochoa de Anzar, 2021).

Regardless of the barriers that deaf/hard-of-hearing students and their parents face, there are many ways parents can support their children not only academically, but in the home as well. While ensuring that their children have language access in school is vital for a child's academic achievement, language access in the home is debatably of equal, if not more, importance. Language access in the home from an early age is critical for creating an environment that facilitates the linguistic, cognitive and social development of the child. Therefore, in order for parents to provide the best support for their deaf/hard-of-hearing children, it's vital that parents take great care in establishing a language environment in their home that is fully accessible to their deaf/hard-of-hearing children.

Enabling Access at Home

When evaluating deaf/hard-of-hearing education, an analysis of the educational system itself and practices in the classroom are not enough. There is plenty of research that demonstrates the vital importance of the language environment in the deaf/hard-of-hearing child's home as there is a direct impact on their student success (Allen, et al., 2014; Hall, 2017; Henner, et al., 2019; Hoffmeister, 2000; Mayberry & Lock, 2003; Mayberry, 2007; Murray et al., 2019; Singleton & Morgan, 2006; Wilbur, 2000). Language environment refers to the language(s) used in a particular place or group (Hirsh-Pasek & Golinkoff, 1999). When discussing the home language environment of deaf children, the discussion refers to what language(s) and what modalities are used in their home. Evaluating the home language environment of deaf children has a direct impact on their student success because of the role the home language environment plays in facilitating first language acquisition (Hirsh-Pasek & Golinkoff, 1999).

First language acquisition during the critical period of development (which is approximately from birth to puberty though some research suggests it may be only the first five years of life) is necessary for the brain to develop certain cognitive abilities that are necessary for language learning and metacognition tasks (Hirsh-Pasek & Golinkoff, 1999; Morford & Mayberry, 2000). First language acquisition happens naturally as a part of the child's development if there is accessible exposure to language during the critical period (Hirsh-Pasek & Golinkoff, 1999). Most hearing children acquire their first language in the home from the language exposure they receive from their parents or caretakers (Lu et al, 2016). However, most deaf children are born into families that do not already use an accessible channel of language since approximately ninety percent of deaf children are born to hearing parents who do not use a sign language before their child is diagnosed (Mitchell & Karchmer, 2004; Spencer &

Marschark, 2006). Only about ten percent of deaf children are born to deaf parents who sign (Mitchell & Karchmer, 2004). Those children who are exposed to native sign language users experience first language acquisition and develop both linguistically and cognitively at the same rate as their hearing peers (Lu et al., 2016).

In terms of student success, one long term study tracking the literacy developments of preschool deaf children coming from varying home language environments found that even at the age of three years old, children who came from signing families had better rudimentary writing skills and were significantly more socially adaptable than their peers who came from non-signing families (Allen et al., 2014). Not only does the home language of deaf children impact their writing skills and social adaptability in school, but a home language environment that facilitates and supports first language acquisition has also been demonstrated to positively impact second language learning, which is important for deaf children since they learn English as a second language in school (Hoffmeister, 2000).

Language delays in first language acquisition during the critical period also "affect the development of neurolinguistic structures in the brain, especially those that are related to developing grammar and second language acquisition," which are both indispensable capacities necessary for academic success (Hall, 2017, pg.962; Mayberry & Lock, 2003; Skotara et al., 2012). If language acquisition is delayed in the home, causing permanent effects to the brain's capacity to process grammar and acquire a second language, then deaf children trying to learn English as a second language in school face challenges that have their roots in their home language environment (Mayberry, 2007).

These challenges that arise as a result of an inadequate home language environment often have long term effects that become exceedingly more difficult to overcome the longer they go

without full access to language. Another study evaluated the analogical reasoning skills of signing deaf children because children's capacity to "use their knowledge of how objects and ideas relate and extend that to understand new experiences and make inferences," is a vital skill in school life and deaf children generally demonstrate a low average of analogical reasoning skills (Henner et al., 2019). Henner's research found that previous studies were inconsistent in the identification of home language environment and found that, once accounted for, signing deaf children were shown to demonstrate language-based analogical reasoning skills consistent with their hearing peers of the same age (Henner et al., 2019). The home language environment is where first language acquisition is cultivated, which is necessary for the proper development of metacognition, literacy, and second language learning skills, all of which are indispensable for deaf/hard-of-hearing student success.

Of the ninety percent of deaf children are born to hearing parents, only about ten percent of their hearing parents choose to learn sign language and use it in the home (Mitchell & Karchmer, 2004). As a result, many deaf children are raised in a home language environment in which the language input is auditory and inaccessible (Mitchell & Karchmer, 2004). Accessible language input is indispensable for first language acquisition to occur (Hirsh-Pasek & Golinkoff, 1999). Accessible language input refers to the modality of a language; language can be produced and perceived either through the aural/oral channel, visual/manual or tactile/manual (Allen et al., 2014). Therefore, for deaf children any channel of accessible language will be either visual/manual or tactile/manual since they do not process sound the same way as hearing people do; the aural/oral channel would not be an accessible channel of language input (Allen et al., 2014). However, because only about ten percent of hearing parents with deaf children choose to learn sign language and use it consistently in the home, many deaf children grow up without

accessible language and miss the critical period for language acquisition resulting in both temporary and permanent effects to their cognitive and language learning capacities (Mayberry, 2007).

Language deprivation has temporary and permanent effects that are detrimental to deaf/hard-of-hearing students' success (Hall, 2017). When deaf/hard-of-hearing children do not have access to language in the home, they miss the critical period for early exposure during which there is a high degree of neuroplasticity (Hall, 2017). Research shows that the time at which deaf/hard-of-hearing children acquires American Sign Language (an accessible language input) is vital for facilitating language development in the brain that cannot happen later in life: "a fundamental and irreversible biological impact-on the brain and on healthy development-appears to occur when an accessible language is not provided by a certain *early* time period in brain development" (Hall, 2017, pg. 962). The time frame for early language exposure varies across different researchers; however, early language exposure tends to fall somewhere within the time frames of the first year of life and the first five years of life (Hall, 2017, pg.962; Mayberry & Lock, 2003; Mayberry, 2007; Morford & Mayberry, 2000; Skotara et al., 2012). Brain-imaging of Deaf adults who were fluent signers but were exposed at different ages (birth to 3, 4-7, and 8-14) showed that those who were exposed later were processing more of the language input as visual information while those who were exposed earlier were processing the language input as linguistic information (Hall, 2017). The time of exposure has a direct impact on the linguistic processing capacities that the person develops: "later exposure meant that linguistic information was more likely to be processed as visual information, a far less efficient means of language processing" (Hall, 2017, pg. 962).

Even in situations in which deaf children have cochlear implants, being exposed early to sign language in the home had a direct impact on their student success: "a study of implanted children-who sign from birth-suggest that they can demonstrate comparable scores on standardized language testing (including speech skills) to their hearing peers" (Davidson, Lillo-Martin, & Chen, 2014). According to Hall, "language deprivation through the exclusion of a fully accessible visual language such as sign language, appears to be a more likely cause of poor language outcomes in deaf people" (Hall, 2017, pg. 963). Regardless of audiological interventions such as hearing aids or cochlear implants, the research shows that children who sign from birth score at age-appropriate levels on standardized language tests. The evidence demonstrates that having full access to sign language from an early age is a major contributing factor to promoting the healthy linguistic development of deaf/hard-of-hearing children.

Metacognitive skills, especially the function of theory of mind, are also significantly delayed in development when accessible language exposure is delayed (Courtin & Melot, 2005; Harris et al., 2005; Henner et al., 2019; Mayberry & Lock, 2003; Morgan & Kegl, 2006; Peterson, 2004). The function theory of mind refers to a person's ability to understand that other people can and do have thoughts, feelings, and beliefs about the same thing that are different than one's own (Morgan & Kegl, 2006). It is an important metacognitive skill that is correlated to developing social adaptability and fundamental for understanding false beliefs (which are both necessary skills for succeeding in the academic environment) (Morgan & Kegl, 2006). Results in several research studies, conducted with deaf/hard-of-hearing children evaluating how language deprivation and late language exposure affect the development of metacognitive skills, specifically the function of theory of mind, corroborate that late language exposure hinders the development of these metacognitive skills (Courtin & Melot, 2005; Harris et al., 2005; Henner et

al., 2019; Mayberry & Lock, 2003; Morgan & Kegl, 2006; Peterson, 2004). Normally, children develop the function of theory of mind through conversation with parents and caretakers about the mental states during the critical period of first language acquisition (Harris et al., 2005). The more children are exposed to language about mental states through accessible language input, the more developed children's metacognitive skills tend to be: "not only do children's own language abilities predict their rate of progress in understanding the mind, but their access to conversation, especially conversation rich in mentalistic words and concepts, is an equally potent and independent predictor" (Harris et al., 2005, pg. 71). Deaf/hard-of-hearing children who have an accessible home language environment through American Sign Language demonstrate the function of theory of mind skills that are appropriate for their age group and at the same level as their hearing peers (Courtin & Melot, 2005; Harris et al., 2005; Henner et al., 2019; Mayberry & Lock, 2003; Morgan & Kegl, 2006; Peterson, 2004). Accessible home language environments are not only essential for a child's linguistic development, but also their metacognitive development that allows them to become empathetic members of society, which is a vital piece of not only academic success, but a skill that they will need throughout their entire lives.

The accessibility to language in the home environment also has a direct impact on deaf/hard-of-hearing children's development of literacy (Allen et al., 2014; Chamberlain & Mayberry, 2008; Keck & Wolgemuth, 2020; Mayer, 2007). Having access to language and developing a strong linguistic foundation are vital for developing literacy: "a fundamental premise, at least in the case of hearing learners, is that there is an intimate connection between language acquisition and subsequent literacy development, such that children who begin schooling with stronger abilities have a relatively easier time making the move to text-based literacy" (Mayer, 2007, pg. 412). Currently, fifty percent of deaf/hard-of-hearing children in

secondary school read at a fourth grade reading level or lower, and thirty percent of these students graduate functionally illiterate (Mayer, 2007). The low achievement in literacy amongst deaf/hard-of-hearing children is directly caused by delays of the exposure of accessible language in the home environment: "many deaf children have delays in their face-to-face language development which can negatively affect literacy learning [...] in part, due to the discrepancy between their incomplete spoken language system" (Chamberlain & Mayberry, 2008, pg. 412). There is not an expansive pool of research studying the process of the development of literacy in deaf people (Chamberlain & Mayberry, 2008; Mayer, 2007). However, the studies that do exist show strong evidence that the use of American Sign Language in the home language environment is necessary for fully developing literacy and skilled reading: "ASL syntactic proficiency plays a crucial role in the development of skilled reading in deaf signers. Skilled readers are proficient in the syntax of their primary language, even when it is a natural sign language" (Chamberlain & Mayberry, 2008, pg. 382).

Delays in exposure to accessible language also have a significant impact on second language learning (that is learning English as a second language in school) in deaf/hard-of-hearing students (Keck & Wolgemuth, 2020). "A delay in ASL exposure and development has been found to have a negative impact on syntactical development in both ASL and English, thus confirming that delayed acquisition of first language will typically result in delayed second language acquisition," which is essential for deaf/hard-of-hearing student success as they must learn English as a second language in school (Keck & Wolgemuth, 2020). Second language acquisition is not always a skill that is indispensably necessary for academic success. However, in the case of deaf/hard-of-hearing children, most of whom do not acquire spoken English as a first language considering its inaccessibility, learning written English at school requires a strong

basis for second language learning skills to promote student success (Mayberry, 2007). The age at which deaf/hard-of-hearing children were exposed to accessible language (in this case American Sign Language) has a direct impact on the development of second language learning skills (Mayberry, 2007; Morford & Mayberry, 2000). Late-exposure to accessible language (generally referring to exposure after the first five years of life, which tends to be because sign language was not a part of the home language environment) is shown to negatively impact deaf/hard-of-hearing children's second language learning abilities (Mayberry, 2007; Morford & Mayberry, 2000). According to findings in a study by Morford and Mayberry in 2000, deaf/hard-of-hearing children who experienced an absence of accessible language exposure in early life and came from home language environments where speech was the only language modality used demonstrated poor second language learning skills that were far behind those of both hearing peers and deaf/hard-of-hearing peers who did have accessible language (sign language) exposure from birth (Morford & Mayberry, 2000). Mayberry notes:

> We observe that their performance on the English grammatical judgment task is significantly below that of the L2 learner groups [i.e., hearing peers of the same age and deaf/hard-of-hearing peers of the same age who were exposed to American Sign Language from birth]. Their performance is at near-chance level for the more complex syntactic structures of wh-questions and relative clause structures (2007, pg. 543).

Furthermore, their findings are corroborated by research conducted by Mayberry in 2007: "late first-language learners (i.e., deaf individuals who acquired scant language, signed or spoken, in early childhood) who were first exposed to ASL and written English between the ages of 5 and 9 performed much worse than hearing second language learners of English on a grammatical processing task" (Morford & Mayberry, 2000, pg. 115). In contrast, deaf/hard of hearing children

who were exposed to American Sign Language from birth, demonstrated second language learning skills that were on par with their hearing counterparts. (Mayberry, 2007; Morford & Mayberry, 2000):

> Native ASL signers, who acquired ASL from birth and English as a second language between the ages of 5 and 9 performed just like hearing participants, who had learned English as a second language at the same ages, on the grammatical processing task. These findings demonstrate that early exposure to a first language facilitates, and perhaps is necessary for, later language learning at older ages, as in second language learning. (Morford & Mayberry, 2000, pg. 115)

Therefore, home language environments in which the parents/caretakers use American Sign Language from birth may promote their deaf/hard-of-hearing children's student success by providing them with a strong foundation for second language learning which they will need to succeed in their academic lives (Mayberry, 2007; Morford & Mayberry, 2000).

Various fronts, such as social adaptability, metacognition, literacy, second language learning, and the home language environment, are shown to have a significant impact on the quality and degree of development that deaf/hard-of-hearing children can achieve (Murray et al., 2019; Singleton & Morgan, 2006; Wilbur, 2000). However, most deaf/hard-of-hearing children are not raised in home language environments that support their development since approximately ninety-five percent of deaf children are born to hearing parents who do not sign and many of them do not learn to sign when they find out that their child is deaf/hard-of-hearing (Singleton & Morgan, 2006). However, even for those whose hearing parents do chose to learn American Sign Language, deaf children are exposed to non-native language input which can also cause certain temporary delays in language development: "Deaf children thus are often faced

with language learning environments that few hearing children would ever encounter: For many deaf children, most of their early language models are not fluent users of the language the children are learning" (Lu et al., 2016; Singleton & Morgan, 2006, pg.12). Nevertheless, early exposure to American Sign Language is critical for deaf/hard-of-hearing children's development (Wilbur, 2000). Any level of fluency that parents can achieve should be pursued, and parents/caretakers of deaf/hard-of-hearing children should also seek out early intervention programs that can create help them cultivate a home language environment that is accessible for their child through improving their own skill and partnering with Deaf role models that can serve as both linguistic and cultural models for their children:

> The critical factor is that the child must be placed in an appropriate language learning environment. If the parents never become fluent in ASL and can only just manage in signed English, so be it. The focus should not be on what the parents can or cannot do. Rather, the focus should be on the child's education, which requires communication in a natural language, on which all advanced learning is built. Early knowledge of ASL is a critical part of the solution, not part of the problem. (Wilbur, 2000, pg. 100)

Therefore, it is vital for parents/caretakers to be proactive about creating a home language environment that supports the deaf/hard-of-hearing child's first language acquisition by providing early accessible language exposure (Murray, 2019). Early exposure to American Sign Language has been demonstrated to be effective in establishing first language acquisition and promoting the healthy development of social adaptability, metacognition, literacy, and second language acquisition at the same rate as hearing peers of the same age (Allen et al., 2014; Chamberlain & Mayberry, 2008; Courtin & Melot, 2005; Hall, 2017; Harris et al., 2005; Hoffmeister, 2000; Henner et al., 2019; Keck & Wolgemuth, 2020; Lu et al., 2016; Mayberry &

Lock, 2003; Mayberry, 2007; Mayer, 2007; Mitchell & Karchmer, 2004; Morford & Mayberry, 2000; Murray et al., 2019; Peterson, 2004; Singleton & Morgan, 2006; Skotara et al., 2012; Wilbur, 2000). The empirical evidence available demonstrates that children with early exposure to American Sign Language have a significant advantage compared to their non-signing deaf/hard-of-hearing peers: "Signing children [...] have timely development language development similar to their non-deaf peers that also exceeds their non-signing peers with cochlear-implants. Natural signed languages have been shown to have the same neurocognitive benefits as natural spoken language while being fully accessible to deaf children" (Murray et al., 2019, pg. 1). Considering the importance of early exposure, parents of deaf/hard-of-hearing children have a great opportunity to support their children's development by using American Sign Language in the home as early as possible.

Even before entering formal education, parents of deaf/hard-of-hearing children can begin to support their child's student success by providing them with accessible language through American Sign Language as a strong basis for first language acquisition (Allen et al., 2014; Hall, 2017; Henner et al., 2019; Hoffmeister, 2000; Mayberry & Lock, 2003; Mayberry, 2007; Murray et al., 2019; Singleton & Morgan, 2006; Wilbur, 2000). By using American Sign Language in the home as early as possible and communicating in American Sign Language not only with their deaf/hard-of-hearing child, but with each other as well, parents create a rich home language environment that stimulates their child's development of social adaptability, metacognition, literacy, and second language learning skills which are all essential for student success (Allen et al., 2014; Chamberlain & Mayberry, 2008; Courtin & Melot, 2005; Hall, 2017; Harris et al., 2005; Hoffmeister, 2000; Henner et al., 2019; Keck & Wolgemuth, 2020; Lu et al., 2016; Mayberry & Lock, 2003; Mayberry, 2007; Mayer, 2007; Mitchell & Karchmer, 2004;

Morford & Mayberry, 2000; Murray et al., 2019; Peterson, 2004; Singleton & Morgan, 2006; Skotara et al., 2012; Wilbur, 2000). Signing with each other is particularly important as it provides their deaf/hard-of-hearing children with vital incidental learning which has been evidenced to play a major role in children's overall development (Lu et al., 2016). There are many free resources for parents to learn American Sign Language, such as Gallaudet University's ASL Connect, and even early intervention programs that also connect them with Deaf mentors (cultural and linguistic role models) and opportunities for their deaf/hard-of-hearing children to participate in the Deaf community from a young age like the Deaf Community Services' Early Intervention Mentorship Program (ASL Connect, 2022; Ellis, n.d.; Nyugen, 2008). Taking advantage of free resources, signing up for American Sign Language classes, and connecting with the Deaf community (through an early intervention program if possible) as early as possible are the best ways that parents of deaf/hard-of-hearing children can support their student success in the long-term (Lu et al., 2016; Nyugen, 2008).

Conclusion

This capstone has evaluated three main factors that impact the student success of deaf/hard-of-hearing students in mainstream programs: the inadequacy and prevalence of manually coded English systems, the complexities of IEPs, 504 plans, and language policies in the classroom, and the vital importance of having a rich home language environment. Through a general evaluation of the literature that is available regarding these topics, several conclusions were drawn for the way each factor impacts deaf/hard-of-hearing student success and the subsequent strategies parents can use to support their deaf/hard-of-hearing children. Manually coded English systems are a prevalent means of communication in deaf/hard-of-hearing programs although a vast body of research has shown that in the past fifty years that they've been used, they have done little to improve the quality of deaf/hard-of-hearing student success (Green-woods, et.al, 2020; McCann, 2018; Simms & Thumann, 2007; Trezek & Mayer, 2019). Even research supporting the use of manually coded English in deaf/hard-of-hearing education does not provide adequate responses for the shortcomings of manually coded English as a mode of communication. Instead, the problems are dismissed as irrelevant or unimportant without providing substantial evidence to demonstrate that manually coded English is a viable option for deaf/hard-of-hearing education. Manually coded English systems are not languages; they cannot fully represent grammatically accurate English; they are unnecessarily complex, and they cannot support the development of grammatically accurate English skills nor the acquisition of literacy. Therefore, to support their deaf/hard-of-hearing child's academic success, parents should pay close attention to the language policies and practices of their child's schools' program and of the interpreters they hire. Asking for this information tends to happen during IEP meetings, and if parents find that the school does not use American Sign Language, parents have the right to

make the use of American Sign Language and the provision of qualified American Sign Language interpreters a part of their deaf/hard-of-hearing child's IEP (Commerson, 2020; Lee, 2021; Whitney, 2020). Parents also have the right to request a third-party evaluation of the school's implementation of the IEP if standards are not met even after an IEP is finalized (Commerson, 2020; Lee, 2021; Whitney, 2020).

Understanding and being proactively involved in their deaf/hard-of-hearing child's Individualized Education Plan and IEP meetings is vital for navigating the often-complex and difficult school system of IEPs and 504 plans. IEPs and 504 plans are the only means through which deaf/hard-of-hearing children can be provided the appropriate accommodations they need (Commerson, 2020). However, because neither were established with deaf/hard-of-hearing children in mind, instead designed mainly for students who are not independently functioning, it can be difficult to qualify a deaf/hard-of-hearing student for an IEP or 504 to get the proper accommodations such as an American Sign Language interpreter, an accommodation that is essential for deaf/hard-of-hearing student success (Commerson, 2020). IEPs and 504 plans have a required level of delayed academic performance to qualify i.e., two grade-levels behind (Lee, 2021). Therefore, it can be particularly difficult for deaf/hard-of-hearing students to get the accommodations they need to stay on track (Commerson, 2020). Being pushed so far behind further deteriorates the quality of education deaf/hard-of-hearing children receive as they are so far behind by the time that they can technically "qualify" for the provision of an American Sign Language interpreter that they often get stuck in remedial courses that do not provide them with age-appropriate content that meets their potential and maintains them at a level of education below that of their hearing peers (Commerson, 2020).

In terms of the Imperial Valley school district, parents should be proactive in requesting the use of American Sign Language in the classroom as well as a qualified American Sign Language interpreter with the appropriate EIPA qualifications. As per the Imperial County Office of Education, schools are not required to hire qualified interpreters; instead the job title consists of : "communication aide with sign skills" with a wide range of what can be classified as "sign skills", "provide sign to voice/voice to sign interpreting which may include American Sign Language, a form of manually coded English, and/or oral interpreting and/or PSE (Pidgin Signed English) depending on the needs of the students" (Ewing & Company, McNeece, & Montoya, 2015). This wide range of linguistic policy is exactly the same for both the job titles of "communication aide with sign skills" and "educational sign language interpreter" (Ewing & Company et al., 2015). The job description does not require any communication mode in particular, but instead lists the various options and states that any of the above can and should be used depending on the needs of the students, which not only means that the school may hire personnel that do not meet the required qualifications, but also that parents can refer to the "depending on the needs of the students" clause to back their request for interpreters with high qualifications in American Sign Language skill and EIPA qualifications (Ewing & Company et al., 2015). Because the Imperial County Office of Education's job description and requirements for interpreters does not align with the qualifications that favor deaf/hard-of-hearing student success, parents of deaf/hard-of-hearing children in the Imperial Valley school district are advised to make it a priority to evaluate their child's interpreter's qualifications and advocate for the appropriate accommodations and qualifications as early as possible to ensure their child has equitable access to education.

Even before deaf/hard-of-hearing children enter the public school system, the language environment parents create in the home heavily impacts their child's student success. The kind of home language environment a child grows up in, has been demonstrated to be vital in the development of social adaptability, metacognition, literacy, and second language learning (Murray et al., 2019; Singleton & Morgan, 2006; Wilbur, 2000). Having consistent and early exposure (that is within the first year of life) to a rich home language environment that is accessible to deaf/hard-of-hearing children is essential for first language acquisition to occur, which is indispensable for the healthy development of their social, cognitive, and linguistic capacities (Murray et al., 2019). Therefore, to best support their children's healthy development of social adaptability, metacognition, literacy, and second language learning skills, parents are advised to use American Sign Language with their deaf/hard-of-hearing child and with each other as soon as is possible from the time of their child's diagnosis (Allen et al., 2014; Chamberlain & Mayberry, 2008; Courtin & Melot, 2005; Hall, 2017; Harris et al., 2005; Hoffmeister, 2000; Henner et al., 2019; Keck & Wolgemuth, 2020; Lu et al., 2016; Mayberry & Lock, 2003; Mayberry, 2007; Mayer, 2007; Mitchell & Karchmer, 2004; Morford & Mayberry, 2000; Murray et al., 2019; Peterson, 2004; Singleton & Morgan, 2006; Skotara et al., 2012; Wilbur, 2000).

It is in the parents' best interest to participate in an early intervention program that can not only provide them with vital information about how and where to learn American Sign Language, but also with invaluable connections to the Deaf community, Deaf mentors, and a rich knowledge bank of resources that will guide and support them in the development of their child's identity as a Deaf person (Lu et al., 2016; Nyugen, 2008). In the case of the Imperial Valley, there are no physical early intervention programs currently in existence. Therefore, hearing

parents of deaf children in the Imperial Valley can find support through online early intervention programs (whose links and contact info will be presented in the infographic) and may choose to take American Sign Language classes through the early intervention program of their choice or at the community college, Imperial Valley College, which offers American Sign Language courses 1-4 as well as several other classes pertaining to American Sign Language and Deaf Culture that may behoove parents to take as well (Krimm, 2013). By having a knowledge of what their rights as parents as well as what to advocate for their deaf/hard-of-hearing children in terms of accommodations, implementing the appropriate language policies, being active in their child's IEP process, and providing them with a rich home language environment in the home, the hearing parents of deaf/hard-of-hearing children can effectively promote the student success of their deaf/hard-of-hearing children in mainstream programs in the Imperial Valley, California.

As a model of how this information could be easily disseminated in a digestible format, three infographics of what could be a social media carousel post (meaning a single post with several images/pages) can be found in the appendix. There is one post representing each of the three sections of this capstone with one practical piece of information or resources that would be helpful for parents of deaf/hard-of-hearing children. Also, as the Imperial Valley is a highly bilingual community in which both English and Spanish are equally used, all infographics will be made in both English and Spanish. For the sake of bilingual access, a possibility for future development of this capstone would be to translate this capstone to Spanish and disseminate the translated version as well so that it becomes more easily accessible to more people, including those who might only be fluent in Spanish. Since these infographics are only meant to be models, they by no means cover all of the strategies, tools and resources discussed in the capstone and only serve as examples of how said information could be used practically.

By providing me with a better understanding of the problem as well as some potential solutions, this capstone has prepared me for future advocacy work in Imperial Valley, California, where I will be working after graduation. Currently, in Imperial Valley, California, there are no advocacy groups or networks for deaf people nor the hearing parents of deaf children in existence. The research and model infographics compiled in this capstone may serve as the foundation for the future creation of an advocacy group that provides the parents of deaf/hard-of-hearing children in the Imperial Valley with valuable information to guide them in their journey with their deaf/hard-of-hearing child. Advocacy and easily accessible information is the key for parents with busy lives to be able to adequately support their children. A platform where resources are available, and a team of well-informed and culturally competent people are present that parents can go to for guidance and support is something that is much needed in the Imperial Valley. Therefore, the development of an advocacy group that not only disseminates important information in a digestible format (like the model infographics displayed in the appendix) but also has a team of people that can serve as cultural models to families or advocates at IEP meetings would be one of the services that this capstone could be a foundation for. Ideally, such an advocacy group would be led by a Deaf person with a team of people who could serve in different capacities who may or may not be deaf as long as they are also Deaf in terms of their ASL and cultural competency. Though this outcome(s) cannot be foreseen nor with certainty, the development of such an advocacy group would be an all-encompassing result of the intention behind the completion of this capstone, which is to promote the student success of deaf/hard-of-hearing student who, for any reason, have no other option but to be mainstreamed.

Bibliography

Akamatsu, C. T., Stewart, D. A., & Becker, B. J. (2000). Documenting English syntactic development in face-to-face signed communication. American Annals of the Deaf, 145(5), 452-63.

Allen, T. E., Letteri, A., Choi, S. H., Dang, D. (2014). Early Visual Language Exposure and Emergent Literacy in Preschool Deaf Children: Findings from a National Longitudinal Study. American Annals of the Deaf, 159(4), 346-358. http://dx.doi.org/10.1353/aad.2014.0030

ASL Connect. Gallaudet University. (2022, March 16). Retrieved March 24, 2022, from https://www.gallaudet.edu/asl-connect/

Baker-Shenk, C., & Cokely, D. (2002). English in the Deaf Community. In *American sign language: A teacher's resource text on grammar and culture* (pp. 63–77). essay, Clerc Books.

Board of Education of Hendrick Hudson Central School District v. Rowley, 458, U.S. 176, 102 S.Ct. 3034, 73 L.Ed.2d 690. 5 Ed. Law Rep. 34 (1982).

Bornstein, H., Saulnier, K. L., & Hamilton, L. B. (1980). Signed English: A First Evaluation. *American Annals of the Deaf*, *125*(4), 467–481. https://doi.org/https://www.jstor.org/stable/44404422

Brigham, F. J., Claude, C. M., & McKenna, J. W. (2021). Triennial Evaluations: Divorcing the Means from the Ends. Education Sciences, 11(7), 314. http://dx.doi.org/10.3390/educsci11070314

Chamberlain, C., Mayberry, R. I. (2008). American Sign Language syntactic and narrative comprehension in skilled and less skilled readers: Bilingual and bimodal evidence for the linguistic basis of reading. Applied Psycholinguistics, 29(3), 367-388. http://dx.doi.org/10.1017/S014271640808017X

Chen, W. B., & Gregory, A. (2011). Parental involvement in the prereferral process: Implications for schools. Remedial and Special Education, 33, 447–457. doi:10.1177/ 0741932510362490

Commerson, R., & Wright, P. (2020). Interview: Pamela Wright on IEP Challenges. Retrieved April 08, 2021, from https://www.youtube.com/watch?v=voDLUJ0uPNw

Courtin, C., & Melot, A. (2005). Metacognitive development of deaf children: lessons from the appearance–reality and false belief tasks. Developmental Science, 8(1), 16–25. https://doi.org/10.1111/j.1467-7687.2005.00389.x

Cowin, J. (2018). Is that Appropriate? Clarifying the IDEA'S Free Appropriate Public Education Standard Post-Endrew F. *Northwestern University Law Review, 113*(3), 587-628. https://proxyga.wrlc.org/login?url=https://www.proquest.com/scholarly-journals/is-that-appropriate-clarifying-ideas-free-public/docview/2137390255/se-2?accountid=27346

Davidson, K., Lillo-Martin, D., & Chen Pichler, D. (2014). Spoken English Language Development Among Native Signing Children with Cochlear Implants. Journal of Deaf Studies and Deaf Education, 19(2), 238–250. https://doi.org/10.1093/deafed/ent045

DeLana, M., Gentry, M. A., & Andrews, J. (2007). The efficacy of ASL/English bilingual education: Considering public schools. American Annals of the Deaf, 152(1), 73-87.

Retrieved from https://proxyga.wrlc.org/login?url=https://www.proquest.com/scholarly-journals/efficacy-asl-english-bilingual-education/docview/85668514/se-2?accountid=27346

Educational Programs for Deaf Students. (2018). American Annals of the Deaf (Washington, D.C. 1886), 163(2), 116–208. https://doi.org/10.1353/aad.2018.0015

Edwards, S. G. (2013). Considering the sociolinguistic impact of instability of educational philosophy on reading achievement of students who are deaf and hard of hearing (AAI3527724). Retrieved from https://proxyga.wrlc.org/login?url=https://www.proquest.com/dissertations-theses/considering-sociolinguistic-impact-instability/docview/1530415450/se-2?accountid=27346

Ellis, M. (n.d.). *Early intervention mentorship program for families with DHH children*. Deaf Community Services of San Diego. Retrieved March 24, 2022, from https://deafcommunityservices.org/yfs/early-intervention/

Endrew F. v. Douglas County. Sch. Dist. RE-1, 137 S. Ct. 988 (2017).

Ewing & Company, McNeece, A., Montoya, D. (2015). Imperial County Office of Education. Communication Aide with Sign Skills. In *Imperial County Office of Education's Class Title.*

Ewing & Company, McNeece, A., Montoya, D. (2015). Imperial County Office of Education. Educational Sign Language Interpreter. In *Imperial County Office of Education's Class Title.*

Finister, C. S. (2019). The Impact of Endrew F.V. Douglas County and Judicial Ideology on Individuals with Disabilities Education Act FAPE Determinations in United States

District Courts (27629446). Available from ProQuest Central; ProQuest Dissertations & Theses Global. (2314265782). https://proxyga.wrlc.org/login?url=https://www.proquest.com/dissertations-theses/impact-endrew-f-v-douglas-county-judicial/docview/2314265782/se-2?accountid=27346

Gannon, Butler, J., & Gilbert, L.-J. (2012). Deaf heritage: a narrative history of deaf America. Gallaudet University Press.

Green-woods, A., Luetke, B., Nielsen, D.C., & Stryker, D. S. (2020). The Efficacy of Signing Standard English for Increasing Reading Achievement: An Article Critique/Response. American Annals of the Deaf, 165(4), 456-471.

Hall, W. C. (2017). What You Don't Know Can Hurt You: The Risk of Language Deprivation by Impairing Sign Language Development in Deaf Children. Maternal and Child Health Journal, 21(5), 961–965. https://doi.org/10.1007/s10995-017-2287-y

Harris, P. L., de Rosnay, M., & Pons, F. (2005). Language and Children's Understanding of Mental States. Current Directions in Psychological Science: A Journal of the American Psychological Society, 14(2), 69–73. https://doi.org/10.1111/j.0963-7214.2005.00337.x

Hayer, C. (2017). *Placement, short-and-sweet*. Center for Parent Information and Resources. Retrieved April 7, 2022, from https://www.parentcenterhub.org/placement-overview/

Hayer, C. (2021). *Right to obtain an independent educational evaluation*. Center for Parent Information and Resources. Retrieved January 11, 2022, from https://www.parentcenterhub.org/iee/

Hoffmeister, R. J. (2000). A piece of the puzzle: ASL and reading comprehension in deaf children. In C. Chamberlain, J. P. Morford, & R. I. Mayberry (Eds.), Language acquisition by eye (pp. 143– 163). Mahwah, NJ: Erlbaum.

Henner, J., Novogrodsky, R., Caldwell-Harris, C., & Hoffmeister, R. (2019). The Development of American Sign Language–Based Analogical Reasoning in Signing Deaf Children. Journal of Speech, Language and Hearing Research (Online), 62(1), 93-105. http://dx.doi.org/10.1044/2018_JSLHR-L-18-0062

Hirsh-Pasek, D., Golinkoff, R.M. (1999). How Babies Talk: The Magic and Mystery of Language in the First Three Years of Life.

IES-NCES. (2019). *Digest of Education Statistics, 2018* (NCES 2020-009). Washington, DC: US Department of Education, National Center for Education Statistics.

Imperial County Office of Education. (2022). *Staff directory*. Staff Directory | Imperial County Office of Education. Retrieved January 26, 2022, from https://www.icoe.org/services/student-services/special-education/staff-directory

Individuals With Disabilities Education Act, 20 U.S.C. § 1400 (2004).

Ivanko, T., & Garberoglio, C. L. (2021). *Accommodations 101*. National Deaf Center. Retrieved October 31, 2021, from https://www.nationaldeafcenter.org/accommodations-101.

Johnson, Liddell, S. K., & Erting, C. (1989). Unlocking the curriculum: principles for achieving access in deaf education. Gallaudet University.

Johnston, R., Kurth, J. A., McCabe, K. M., McQueston, J. A., Ruppar, A. L. & Toews, S. G. (2019). A Description of Parent Input in IEP Development Through Analysis IEP Documents. Intellectual and Developmental Disabilities, 57(6), 485-498.

Jordan, Gustason, G., & Rosen, R. (1979). An Update on Communication Trends at Programs for the Deaf. American Annals of the Deaf (Washington, D.C. 1886), 124(3), 350–357.

Keck, T., & Wolgemuth, K. (2020). American Sign Language Phonological Awareness and English Reading Abilities: Continuing to Explore New Relationships. Sign Language Studies, 20(2), 334-354.

Krimm, D. (2013). *American sign language - AMSL - imperial valley college*. Imperial Valley College. Retrieved December 15, 2021, from https://www.imperial.edu/docs/committees/planning-committees/student-learning-outcomes/documents-6/course-slos-by-discipline/3848-american-sign-language-amsl

Lane, H. (1989). *When the mind hears: A history of the deaf.* Vintage Books.

Lane, Pillard, R., & Hedberg, U. (2011). The people of the eye: deaf ethnicity and ancestry. Oxford University Press.

LaSasso, C. J., & Metzger, M. A. (1998). An Alternate Route for Preparing Children for BiBi Programs: The Home Language L1 and Cued Speech for Conveying Traditionally Spoken Languages.

Lee, A. M., JD. (2021). The difference between IEPs and 504 plans. Retrieved April 07, 2021, from https://www.understood.org/en/school-learning/special-services/504-plan/the-difference-between-ieps-and-504-plans

Lee, A. M., JD. (2021). The 13 disability categories under IDEA. Retrieved April 07, 2021, from https://www.understood.org/en/school-learning/special-services/special-education-basics/conditions-covered-under-idea

Lu, J. Jones, A., & Morgan, G. (2016). The impact of input quality on early sign development in native and non-native language learners. Journal of Child Language, 43(3), 537–552. https://doi.org/10.1017/S0305000915000835

Luetke-Stahlman, B., & Milburn, W. O. (1996). A history of seeing essential English (see I). *American Annals of the Deaf*, *141*(1), 29–33. https://doi.org/10.1353/aad.2012.0001

Luetke, B., Stryker, D., & Zawolkow, E. (2019). Gerilee Gustason. American Annals of the Deaf (Washington, D.C. 1886), 164(1), 162–166. https://doi.org/10.1353/aad.2019.0014

Mayberry, R. I., & Lock, E. (2003). Age constraints on first versus second language acquisition: Evidence for linguistic plasticity and epigenesis. Brain and Language, 87(3), 369–384. https://doi.org/10.1016/S0093-934X(03)00137-8

Mayberry. R. I. (2007). When timing is everything: Age of first-language acquisition effects on second-language learning. Applied Psycholinguistics, 28(3), 537–549. https://doi.org/10.1017/S0142716407070294

Mayer, C. (2007). What Really Matters in the Early Literacy Development of Deaf Children. Journal of Deaf Studies and Deaf Education, 12(4), 411–431. https://doi.org/10.1093/deafed/enm020

McCann, J. P. (2018). The contribution of American sign language comprehension on measures of early literacy in deaf and hard-of-hearing children: A longitudinal study of four-, five-, and six-year-olds through early elementary school (10840784). Retrieved from https://proxyga.wrlc.org/login?url=https://www.proquest.com/dissertations-theses/contribution-american-sign-language-comprehension/docview/2085918920/se-2?accountid=27346

McDonald. (2004). Understanding deaf culture: in search of deafhood. Paddy Ladd, Multilingual Matters, Clevedon, 2003, 502pp, ISBN 1 85359 545 4. Deafness & Education International, 6(3), 174–175. https://doi.org/10.1002/dei.181

McDonnell, L. (2014). Barriers that prevent the alignment of individual education plans with inclusion classroom practice (3648806). Available from ProQuest Central; ProQuest Dissertations & Theses Global. (1652837000).

Mitchell, G. (1982). Can deaf children acquire English? An evaluation of manually coded English systems in terms of the principles of language acquisition. American Annals of the Deaf, 127, 331–336.

Mitchell, R. E., & Karchmer, M. A. (2004). Chasing the Mythical Ten Percent: Parental Hearing Status of Deaf and Hard of Hearing Students in the United States. Sign Language Studies, 4(2), 138–163. https://doi.org/10.1353/sls.2004.0005

Moores, D. F. (2010). Partners in Progress: The 21st International Congress on Education of the Deaf and the Repudiation of the 1880 Congress of Milan. *American Annals of the Deaf, 155 (3).* pages 309-10. http://dx.doi.org/10.1353/aad.2010.0016

Morford, J. P., & Mayberry, R. I. (2000). "A Reexamination of "Early Exposure" and Its Implications for Language Acquisition by Eye." In Language Acquisition by Eye, edited by Charlene Chamberlain, Jill P. Morford, and Rachel I. Mayberry, 111–28. Mahwah, NJ: Lawrence Erlbaum Associates.

Morgan, G., & Kegl, J. (2006). Nicaraguan Sign Language and Theory of Mind: the issue of critical periods and abilities. Journal of Child Psychology and Psychiatry, 47(8), 811–819. https://doi.org/10.1111/j.1469-7610.2006.01621.x

Murray, J. J., Hall, W. C., & Snoddon, K. (2019). Education and health of children with hearing loss: the necessity of signed languages. World Health Organization. Bulletin of the World Health Organization, 97(10), 711-716.

Nielsen, D. C., Luetke, B., McLean, M., & Stryker, D. (2016). The English-Language and Reading Achievement of a Cohort of Deaf Students Speaking and Signing Standard English: A Preliminary Study. *American Annals of the Deaf, 161*(3), 342-368. https://proxyga.wrlc.org/login?url=https://www.proquest.com/scholarly-journals/english-language-reading-achievement-cohort-deaf/docview/1826444911/se-2?accountid=27346

Nyugen, L. T. (2008). Born into a Hearing Family: A Guide for Hearing Parents with Deaf Children. *California State University, Sacramento*.

Ochoa de Anzar, M. (2021). *How to obtain an independent educational evaluation at public expense*. How To Obtain an Independent Educational Evaluation At Public Expense Disability Rights California. Retrieved January 11, 2022, from https://www.disabilityrightsca.org/publications/how-to-obtain-an-independent-educational-evaluation-at-public-expense

Osborne, A. G., Jr. (1992). Legal Standards for an Appropriate Education in the Post-Rowley Era. Exceptional Children, 58(6), 488. https://proxyga.wrlc.org/login?url=https://www.proquest.com/scholarly-journals/legal-standards-appropriate-education-post-rowley/docview/201211874/se-2?accountid=27346

Peterson, C. C. (2004). Theory-of-mind development in oral deaf children with cochlear implants or conventional hearing aids. Journal of Child Psychology and Psychiatry, 45(6), 1096–1106. https://doi.org/10.1111/j.1469-7610.2004.t01-1-00302.x

Rendel, K., Bargones, J., Luetke, B., & Stryker, D. S. (2018). Signing Exact English: A Simultaneously Spoken and Signed Communication Option in Deaf Education. *The Journal of Early Hearing Detection and Intervention,* 3(2), 18-29.

Schick, B., Williams, K., & Kupermintz, H. (2005). Look who's being left behind: Educational interpreters and access to education for deaf and hard-of-hearing students. *Journal of Deaf Studies and Deaf Education*, *11*(1), 3–20. https://doi.org/10.1093/deafed/enj007

SEIS. (n.d.). https://seis.org/.

Simms, L., & Thumann, H. (2007). In Search of a New, Linguistically and Culturally Sensitive Paradigm in Deaf Education. American Annals of the Deaf, 152(3), 302-11.

Singleton, J., & Morgan D. (2006). Understanding Sign Language Development of Deaf Children. In B. Schick, M. Marschark, & P. Spencer (Eds.), *Advances in the Sign Language Development of Deaf Children* (pp. 3-19). New York: Oxford University Press.

SJCOE, C. S. | www.codestack.org. (n.d.). *Teacher - deaf/hard of hearing - special Education 2021-2022 SY (Req. 21-011) at Imperial County office of education*. EDJOIN. https://www.edjoin.org/Home/DistrictJobPosting/1368151.

Skotara, N., Salden, U., Kügow, M., Hänel-Faulhaber, B., & Röder, B. (2012). The influence of language deprivation in early childhood on L2 processing: An ERP comparison of deaf native signers and deaf signers with a delayed language acquisition. BMC Neuroscience, 13(1), 44–44. https://doi.org/10.1186/1471-2202-13-44

Spencer, P. E., & Marschark, M. (2006). Advances in the spoken language development of deaf and hard-of-hearing children. Oxford University Press.

Stacey, R. L., Donald, M. G., & Flexer, C. (2018). Auditory-Verbal Graduates-25 Years Later: Outcome Survey of the Clinical Effectiveness of the Listening and Spoken Language Approach for Young Children with Hearing Loss. The Volta Review, 118(1), 5-40.

Stewart, D. A. (1997). Bi-bi to MCE? American Annals of the Deaf, 142(3), 106-112.

Stryker, D., Nielsen, D., & Luetke, B. (2015). Signing Exact English: Providing a Complete Model of English for Literacy Growth. Connecticut. Retrieved 2021.

Trezek, B., & Mayer, C. (2019). Reading and Deafness: State of the Evidence and Implications for Research and Practice. Education Sciences, 9(3).

Tserdanelis, & Wong, W. Y. P. (2004). Language files: materials for an introduction to language and linguistics (9th ed.). Department of Linguistics, Ohio State University.

Tucker, V., & Schwartz, I. (2013). Parents' perspectives of collaboration with school professionals: Barriers and facilitators to successful partnerships in planning for students with ASD. School Mental Health, 5, 3–14. doi: 10.1007/s12310-012-9102-0

Valli, C., Lucas, C., Mulrooney, K. J., & Villanueva, M. (2011). Defining Language. *Linguistics of American Sign Language, 5th Ed.: An Introduction: Vol. 5th ed.* Gallaudet University Press.

Whitney, K. S., & Whitney, K. J. (2020). A Comprehensive Starting Point. American Annals of the Deaf, 165(3), 393-396. https://proxyga.wrlc.org/login?url=https://www.proquest.com/scholarly-journals/comprehensive-starting-point/docview/2470677191/se-2?accountid=27346

Wilbur, R. B. (2000). The Use of ASL to Support the Development of English and Literacy. Journal of Deaf Studies and Deaf Education, 5(1), 81–104. https://doi.org/10.1093/deafed/5.1.81

Winefield, R. (1987). *Never the Twain Shall Meet: Bell, Gallaudet, and the Communications Debate*. Gallaudet University Press.

Wright, P. (2022). *The Definition of Natural Languages: Charles Hockett's List.* Linguistics 101 Lecture, Gallaudet University.

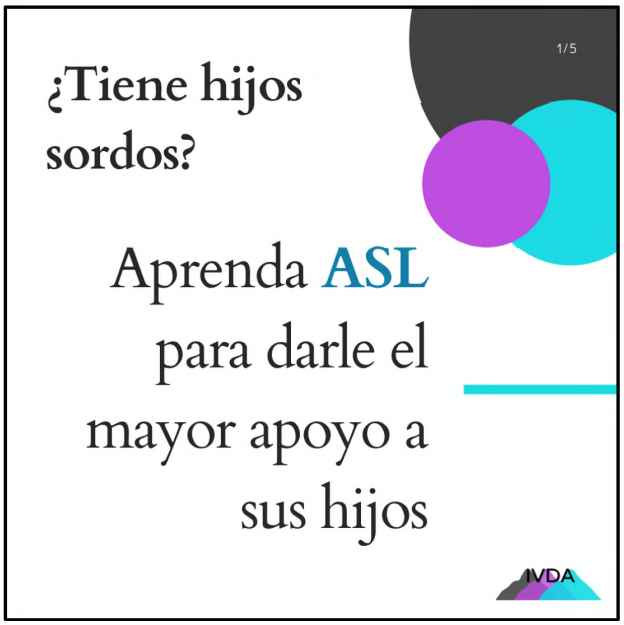
Appendix 1: Social media infographics to disseminate strategies for parents

Infographics

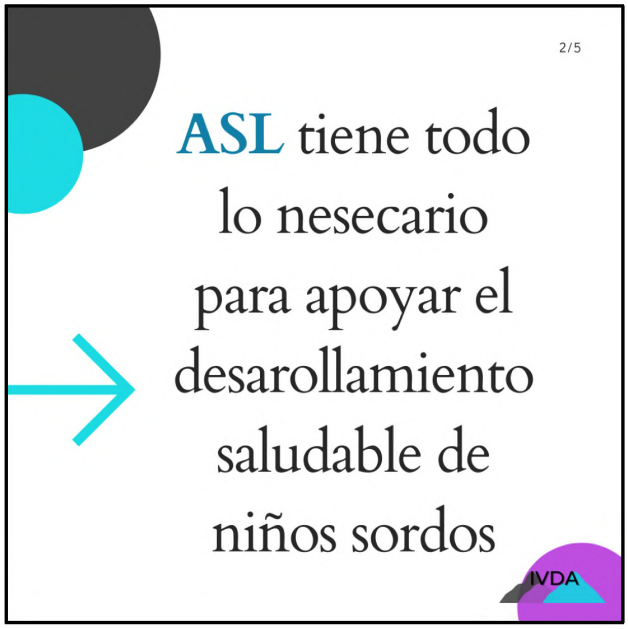
This logo is representative of the Imperial Valley advocacy group that could be developed from the initial research found in this capstone project. IVDA stands for the fictitious name of Imperial Valley Deaf Advocacy. The use of mountains in the design were inspired by Mt. Signal, which is one of the most iconic landmarks in the Imperial Valley. The presence of three mountains has a twofold significance. First, the three mountains represent the mountain range that can be seen from almost any point on the horizon in the Imperial Valley. Second, each mountain and its corresponding color is meant to represent the triple focus of providing assistance navigating the legal aspect of mainstream education (gray being a rather neutral color to represent the law), enabling language access at home (purple representing the foundation for independence that the use of ASL provides in the home), and ensuring there is language access at school (blue representing the tranquility that there is language at home and at school).

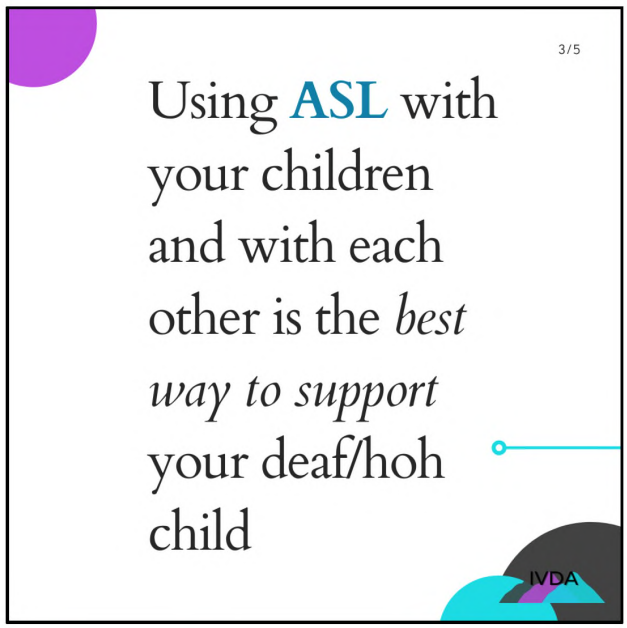
Item 1

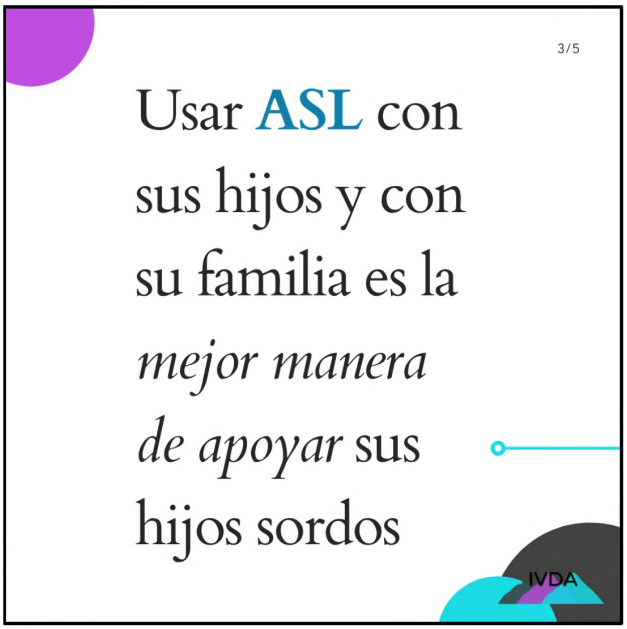

Are you the parent of a deaf or hard-of-hearing child?
1/5
Learn ASL to best support your children
IVDA


¿Tiene hijos sordos?
1/5
Aprenda ASL para darle el mayor apoyo a sus hijos
IVDA

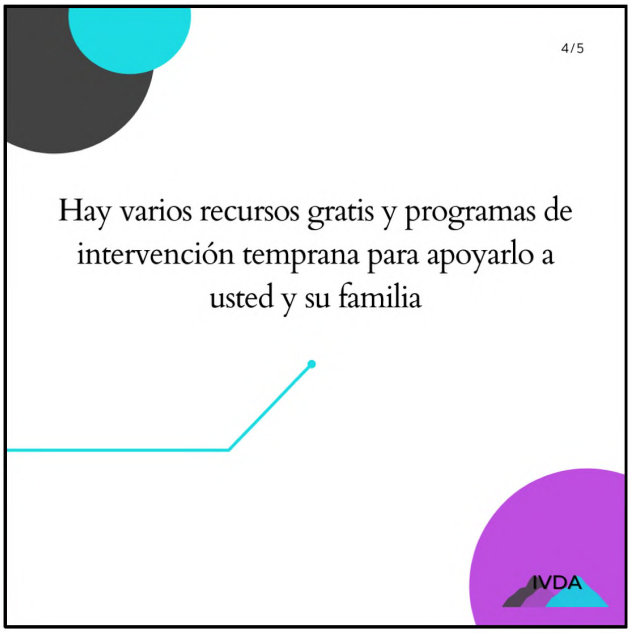

2/5
ASL provides everything deaf/hoh children need for healthy development
IVDA


2/5
ASL tiene todo lo nesecario para apoyar el desarollamiento saludable de niños sordos
IVDA

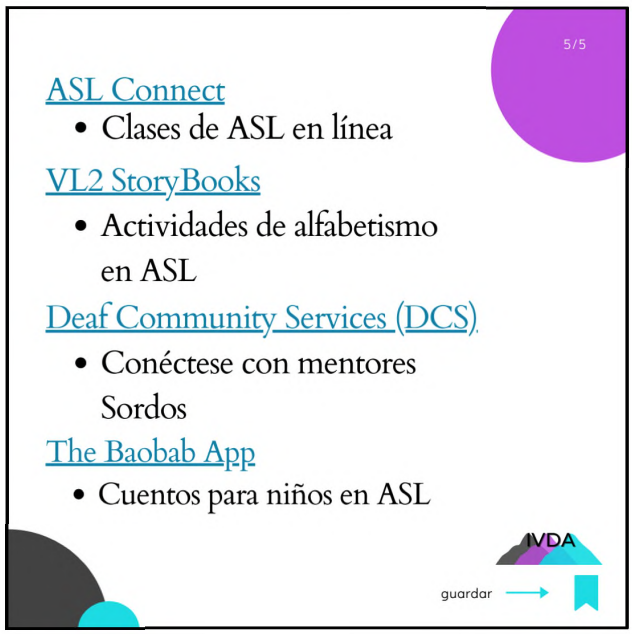

3/5
Using ASL with your children and with each other is the best way to support your deaf/hoh child
IVDA


3/5
Usar ASL con sus hijos y con su familia es la mejor manera de apoyar sus hijos sordos
IVDA


4/5
There are many free courses and early intervention programs to help support you and your family
IVDA

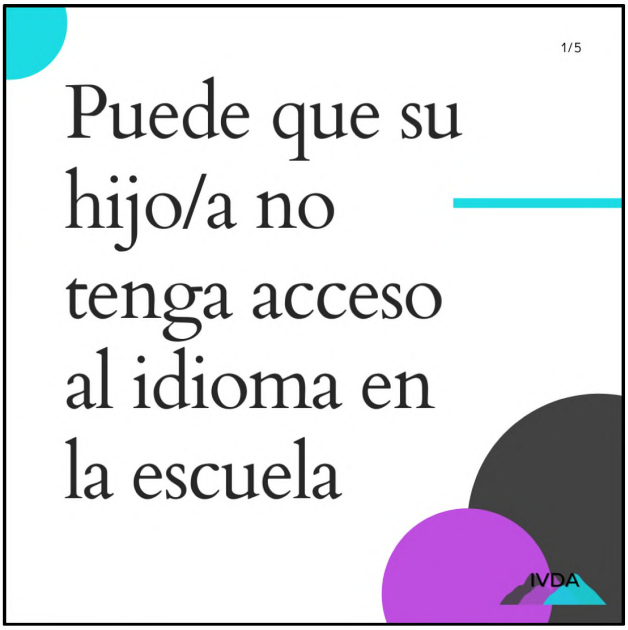

4/5
Hay varios recursos gratis y programas de intervención temprana para apoyarlo a usted y su familia
IVDA

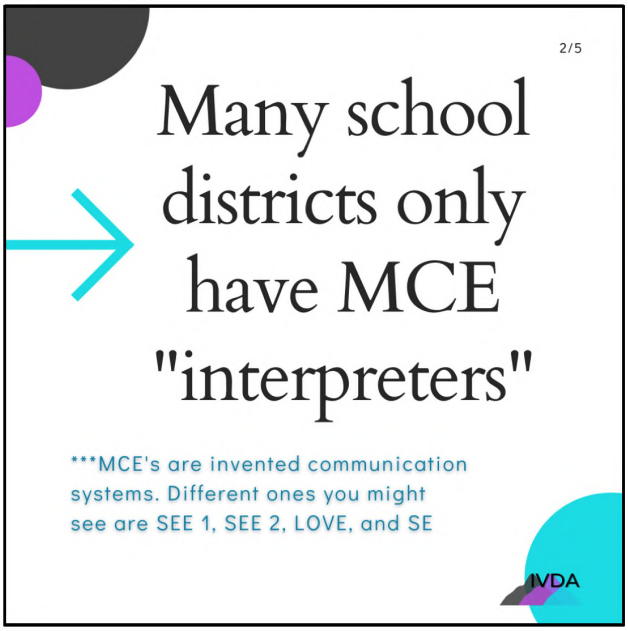

5/5
ASL Connect
• Free ASL classes online
VL2 StoryBooks
• Free ASL literacy activities
Deaf Community Services (DCS)
• Connect with Deaf mentors
The Baobab App
• Children's stories in ASL
IVDA
save for later


5/5
ASL Connect
• Clases de ASL en línea
VL2 StoryBooks
• Actividades de alfabetismo en ASL
Deaf Community Services (DCS)
• Conéctese con mentores Sordos
The Baobab App
• Cuentos para niños en ASL
IVDA
guardar

Item 2

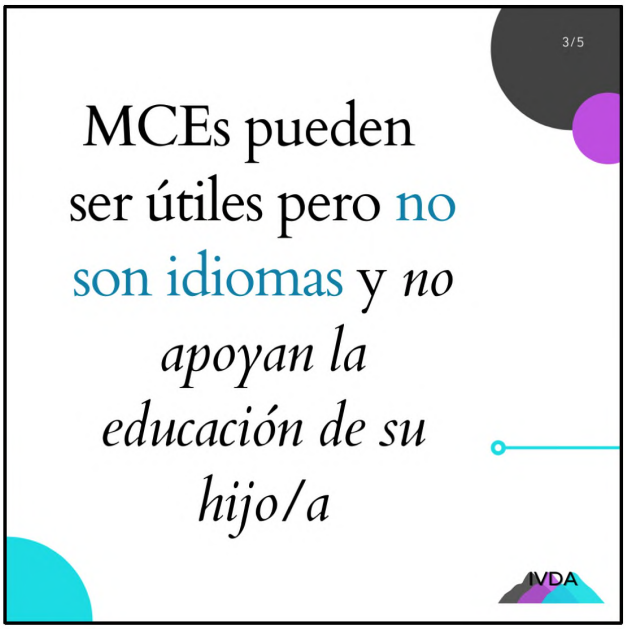

1/5
Your child might not have access to language at school
IVDA

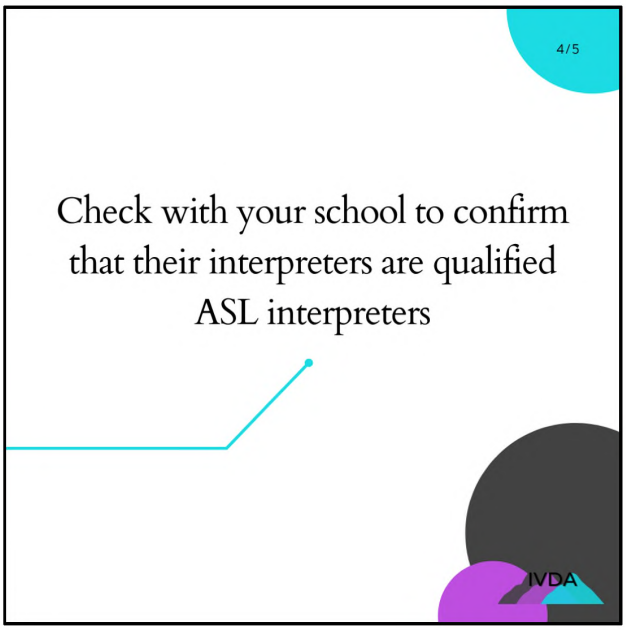

1/5
Puede que su hijo/a no tenga acceso al idioma en la escuela
IVDA


2/5
Many school districts only have MCE "interpreters"
***MCE's are invented communication systems. Different ones you might see are SEE 1, SEE 2, LOVE, and SE
IVDA

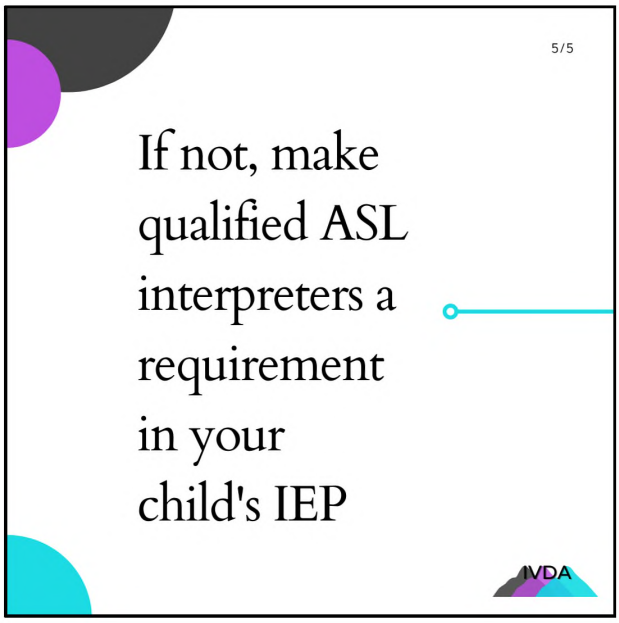

2/5
Varios distritos escolares solo tienen "interpretes" de MCE
***MCE's son sistemas de comunicación inventados. Algunos son SEE 1, SEE 2, LOVE y SE
IVDA

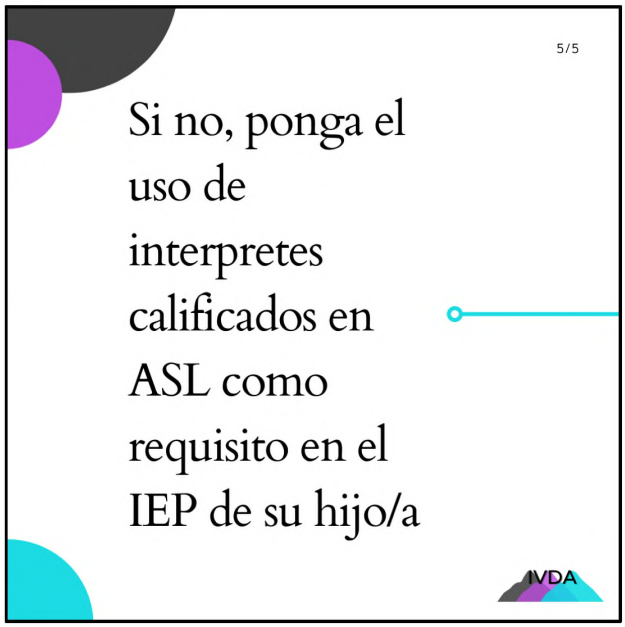

3/5
MCEs can be a good tool but they are not a language and do not support your child's learning
IVDA


3/5
MCEs pueden ser útiles pero no son idiomas y no apoyan la educación de su hijo/a
IVDA

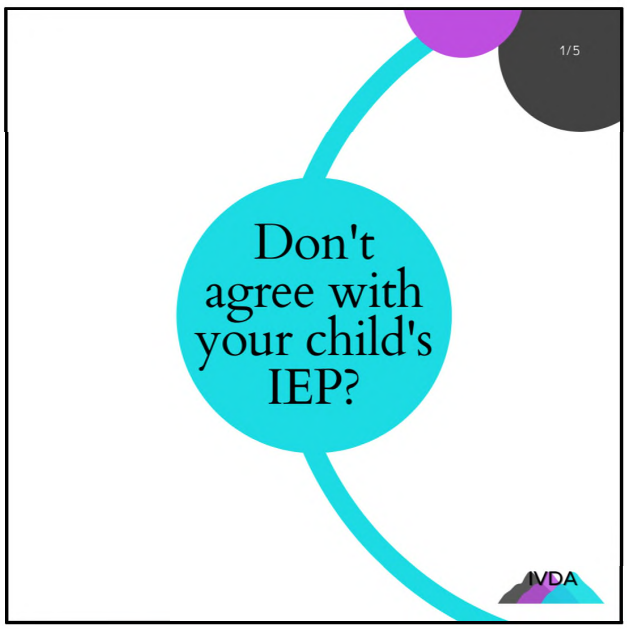

4/5
Check with your school to confirm that their interpreters are qualified ASL interpreters
IVDA


4/5
Revise con su escuela que los interpretes sean interpretes calificados en Lenguaje de Señas Americanas (ASL)
IVDA

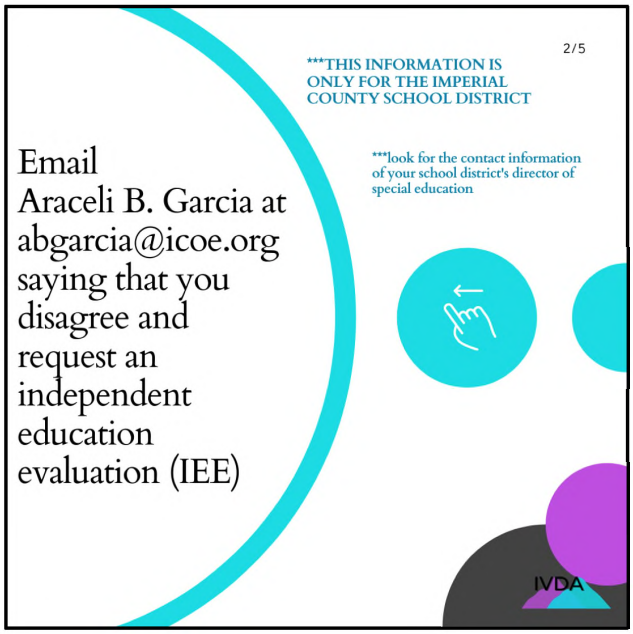

5/5
If not, make qualified ASL interpreters a requirement in your child's IEP
IVDA

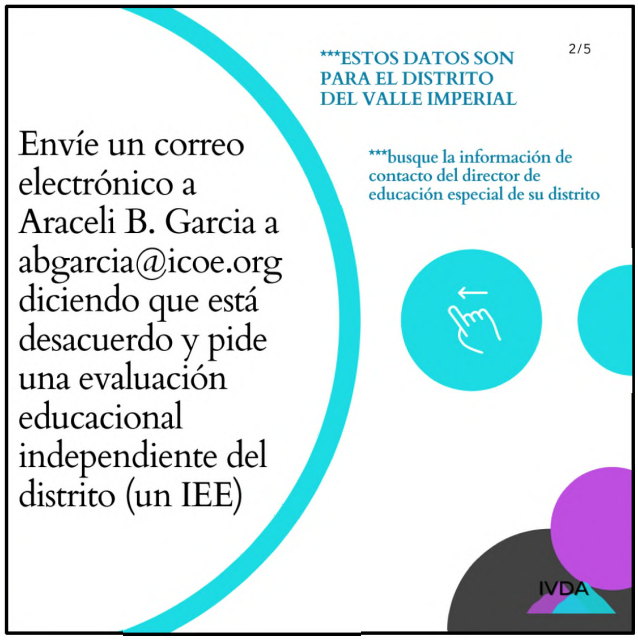

5/5
Si no, ponga el uso de interpretes calificados en ASL como requisito en el IEP de su hijo/a
IVDA

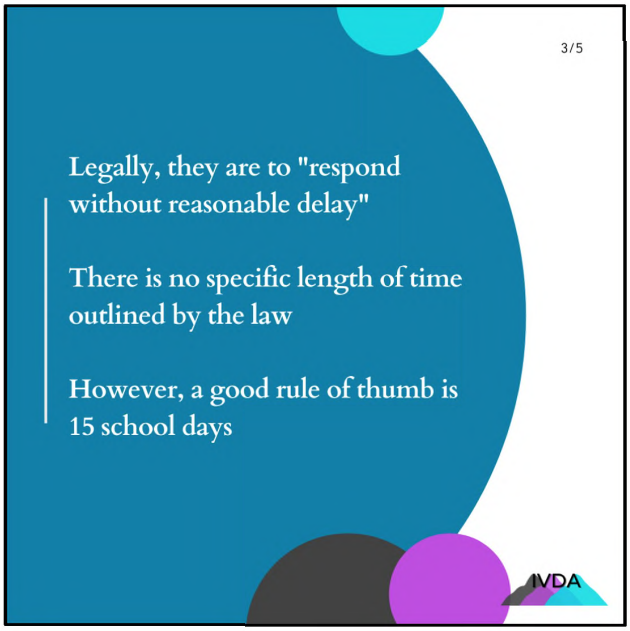
Item 3

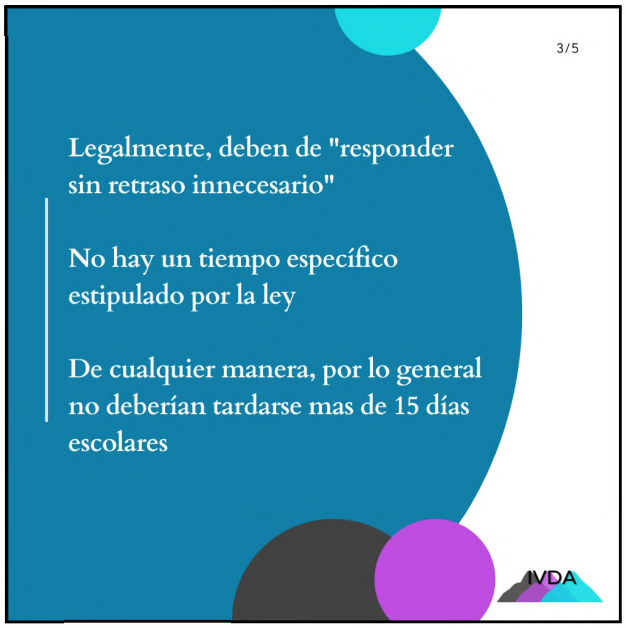

1/5
Don't agree with your child's IEP?
IVDA

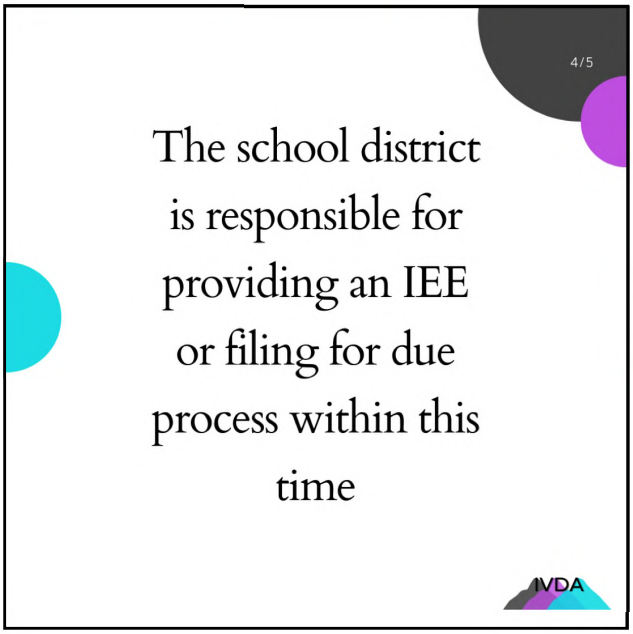

1/5
¿Desacuerdo con el IEP de su hijo/a?
IVDA

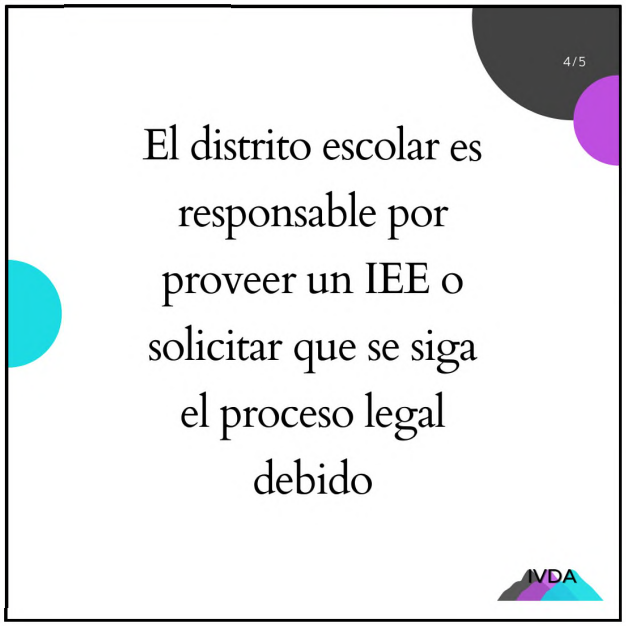

2/5
***THIS INFORMATION IS ONLY FOR THE IMPERIAL COUNTY SCHOOL DISTRICT
***look for the contact information of your school district's director of special education
Email Araceli B. Garcia at abgarcia@icoe.org saying that you disagree and request an independent education evaluation (IEE)
IVDA

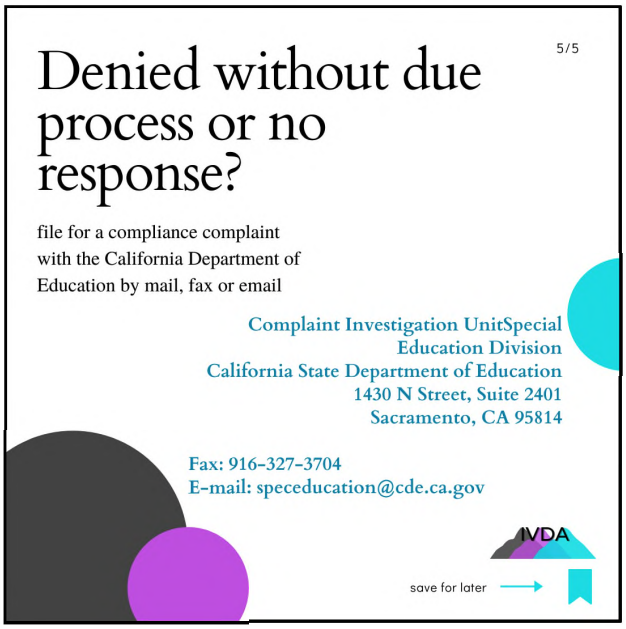

2/5
***ESTOS DATOS SON PARA EL DISTRITO DEL VALLE IMPERIAL
***busque la información de contacto del director de educación especial de su distrito
Envíe un correo electrónico a Araceli B. Garcia a abgarcia@icoe.org diciendo que está desacuerdo y pide una evaluación educacional independiente del distrito (un IEE)
IVDA

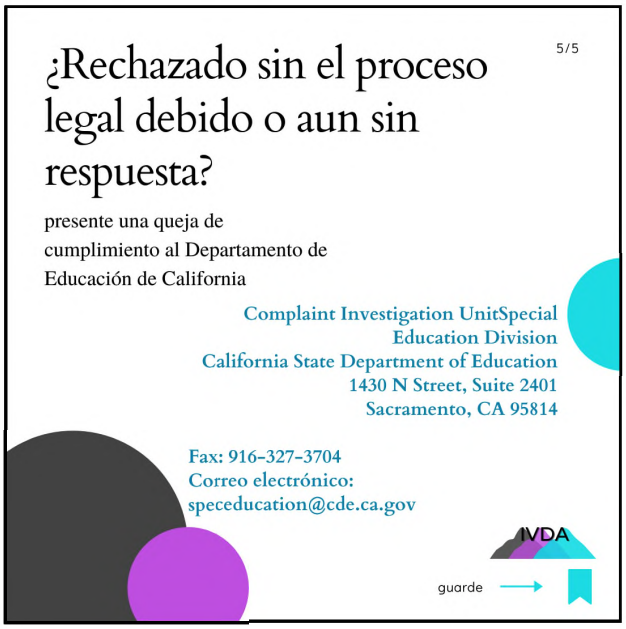

3/5
Legally, they are to "respond without reasonable delay"
There is no specific length of time outlined by the law
However, a good rule of thumb is 15 school days
IVDA


3/5
Legalmente, deben de "responder sin retraso innecesario"
No hay un tiempo específico estipulado por la ley
De cualquier manera, por lo general no deberían tardarse mas de 15 días escolares
IVDA


4/5
The school district is responsible for providing an IEE or filing for due process within this time
IVDA


4/5
El distrito escolar es responsable por proveer un IEE o solicitar que se siga el proceso legal debido
IVDA


5/5
Denied without due process or no response?
file for a compliance complaint with the California Department of Education by mail, fax or email
Complaint Investigation UnitSpecial Education Division
California State Department of Education
1430 N Street, Suite 2401
Sacramento, CA 95814
Fax: 916-327-3704
E-mail: speceducation@cde.ca.gov
IVDA
save for later


5/5
¿Rechazado sin el proceso legal debido o aun sin respuesta?
presente una queja de cumplimiento al Departamento de Educación de California
Complaint Investigation UnitSpecial Education Division
California State Department of Education
1430 N Street, Suite 2401
Sacramento, CA 95814
Fax: 916-327-3704
Correo electrónico:
speceducation@cde.ca.gov
IVDA
guarde