Improving Service to Students with Low-Incidence Sensory Disabilities in Ohio:

A Mixed-methods Study to Examine National Context and District Experience

Craig B. Howley

Aimee Howley

WordFarmers Associates, Albany OH

with support from the Ohio Vision Project

November 2016

Executive Summary

This executive summary overviews a recently completed Ohio study relevant to serving students with hearing impairments (HI), visual impairments (VI), and deafblindness (DB)—simultaneous vision and hearing impairments. The summary highlights key findings and recommendations. The full text, by contrast, provides complete descriptions and explanations.

Description of Study

In order for schools to identify students as having HI or VI, they must establish that the impairment is a threat to learning; such a threat is presumed in the case of DB. Students with such conditions *must* receive appropriate services as defined by federal law. Nationwide, however, many do not.

For the consideration of Ohio policy makers, the Ohio Vision Project sponsored a study that investigated two domains related to enhancing state and district capacity to serve students with HI, VI, and DB. *The first phase of the study* examined arrangements for preparing and licensing education professionals (teachers and orientation and mobility specialists) to serve these students in the 50 states. *The second phase* surveyed all Ohio districts (traditional and charter) about their experiences serving students with HI, VI, or DB. Survey response rates were sufficient for the survey findings to apply statewide.

Relevant Literature

Review of the national research literature (presented in detail in the full report) demonstrates that, nationwide, delivery of appropriate educational services to students

with sensory impairments (VI, HI, or DB) in the least restrictive environment is compromised by the mediocre capacity of states and school districts to provide staffing, resources, and training adequate to the task. Lack of sufficient capacity, in fact, is longstanding. The lack of capacity has recently been recognized by members of Congress who have, since September 2015, been gathering sponsors for new legislation (H.R. 3535) to address the problem.

Findings

The first phase of the study—which involved reviewing official state documents for all 50 states and conducting interviews with education officials in all 50 states—showed that some states have a higher *ratio of programs to population* (program intensity): in other words, they do better than others in developing a pool of qualified professionals. *Program intensity* across the nation varies from 0 (for the 12 states that offer no programs at all for VI, HI, and/or DB professionals) to about 3.0. Across the country, the average program intensity for those states with programs is 0.64; Ohio's program intensity is .35. To reach the average PI, Ohio would need to offer seven programs instead of its current four. The availability of the licensure provision allowing for add-on endorsements (licensed teachers adding additional teaching fields to an initial license), in contrast to a strict licensure provision under which all licenses require separate, lengthy coursework, is also significant. Strict licensure narrows the teacher-supply pipeline. Ohio is a licensure state.

The second phase of the study showed that, on average, qualified staff are *unpredictably accessible statewide*. Statewide, moreover, the average level of

districts' confidence in offering an appropriate program is nearly 1.5 standard deviations below full confidence. Indeed, about 20% of districts report that their level of confidence is *no better than low*. Similar findings characterize access to training and access to relevant resources. In addition, the content analysis of open-ended comments offered by survey respondents affirms and deepens the quantitative findings.

Conclusions and Recommendations

On average, Ohio districts are struggling to provide the quality of services they are expected to provide for students with HI, VI, or DB. The national research, including the present study, suggests that the Ohio situation is not unusual, but researchers strongly advise states (and the federal government) to do much more. Recommendations for Ohio policy actors are organized around two foci:

1. establishing an additional 3 to 6 programs to prepare and license qualified professional staff; and

2. ensuring the evolution of a multilevel system (state, region, district, school, classroom) of support for serving students with HI, VI, and DB.

The most important recommendation, though, was actually offered by a survey respondent: "Make sure that all students have equal access. It is the right of the child." It's durable advice that remains because fulfillment has eluded American schooling for decades.

Improving Service to Students with Low-Incidence Sensory Disabilities in Ohio:

A Mixed-methods Study to Examine National Context and District Experience

Sensory impairments include (1) visual impairments (VI), (2) hearing impairments (HI), and (3) deafblindness (DB)—simultaneous visual and hearing impairment. This report adopts the term "low-incidence sensory disabilities" (LISD) to refer to the three "low-incidence" conditions of sensory impairment: (1) blindness, (2) deafness, and (3) deafblindness, because the incidence of sensory disabilities is low overall. According to one authoritative source, estimated from parental reports, students with sensory impairments constitute an estimated 3.3% of the American school-aged population (Pastor, Reuben, & Loeb, 2009). According to the same source, about 88% of that 3.3% (i.e., 2.9% of those with sensory impairments) exhibit visual impairments. Pastor and colleagues (2009) use medical definitions, and *not* the definitions (see next paragraph) of the U.S. Department of Education, which are more restrictive. The medical statistics, however, begin to illustrate the concept of "low incidence."

Federal education regulations specify that *schools* should identify a student as having sensory disabilities (including mild VI and mild HI) *only when* the condition "adversely affects a child's educational performance" (CFR, 2016, at 34 CFR § 300.8). The point of identification by schools is to bring educational resources to bear on students with sensory disabilities because their learning will suffer otherwise. Medical

definitions include students with impaired vision who, for instance, can function

normally with glasses.

This identification principle in education reduces prevalence because many

children with VI or HI, or even both, experience corrections (e.g., lenses or hearing

aids) sufficient that the condition does not (i.e., is judged by local IEP teams not to)

adversely affect performance. When correction is not adequate, children may be

judged as having VI or HI, and when the correction leaves a child with a moderate to

severe degree of impairment, attribution of blindness, deafness, or

deafblindness—LISD conditions—is likely (i.e., per CFR, 2016).

Among those experiencing deafness, blindness, and deafblindness

(simultaneous visual and hearing impairment), only a minority experience *total loss* of

sensory capacity (see, e.g., Riggio, McLetchie, McGinnity, Gompels, & Toney, 1997).

Although deafness and blindness represent substantial levels of sensory loss, they

should not be understood to indicate total loss of sensory capacity (see, e.g., 34 CFR §

300.8(2)2, 3, 13). Total loss is comparatively rare among those with these three

conditions. Public and professional ignorance on this point contributes to the

difficulties students with LISD and their families experience (see, e.g., Wall-Emerson

& Anderson, 2014).

Predictably and for many decades, the observed rarity and the serious nature

of LISD—plus public misunderstanding—has, across the nation, posed systemic

challenges for serving children with HI, VI, and DB even approximately well (Clarke,

1985; Johnson, 2013; Mason, 2000; Smith & Wild, 2006).

The accumulated research clearly shows a national system that is inadequate, inconsistently funded, and haphazardly sustained. Indeed, the number of relevant teacher preparation programs is reportedly declining nationwide (Johnson, 2013; Ludlow, Conner, & Schechter, 2005). The major difficulty identified in national studies is systemic. For example, provisions for preparation and licensure reportedly remain a key bottleneck nationwide (Bruce, 2007; Johnson, 2013).

To help characterize this issue more fully for Ohio decision makers, this report offers information from a two-phase study: (1) a 50-state investigation into the provisions for preparation and licensure and (2) a survey of all Ohio educators in the role of special education director about their experiences attempting to serve students with LISD. The Ohio Vision Project, coordinated through the University of Dayton School of Education and Health Sciences Grant Center with support from the Ohio Department of Education, Office for Exceptional Children, commissioned the study. WordFarmers Associates (WFA), a private education research and evaluation firm in Albany, Ohio, conducted the study with direction from the Vision Project principals, Dr. Tom Stephens and Dr. Deborah Telfer, and with substantial counsel from two groups of LISD stakeholders. The methods section provides full details of study inception, design, and execution.

This introduction is devoted, next and at some length, to (1) describing low-incidence sensory disabilities (a consideration of definitions related to adults and children) and (2) documenting the prevalence among both adults and children, both nationally and in Ohio. These introductory considerations necessarily summarize a

portion of the professional literature, but the subsequent section of the

report—"Relevant Literature"—details the research literature specifically relevant to

licensure and preparation programming, the particular concern of the 50-state policy

phase of the study and a concern particularly relevant to findings from the within-state

phase of the study.

Describing Low-Incidence Sensory Disabilities

Before reporting the relevant research about licensure and preparation

programming, it seems prudent to document the definitions and the prevalence[1] of

sensory impairments among Americans, both children and adults. The figures for

adults provide a sort of societal baseline, whereas the figures for children describe the

population relevant to school provisions—but the variable estimates that have been

made also demonstrate the difficulties of producing reliable calculations of prevalent

and incidence for these comparatively rare conditions.

The common, medical, and educational definitions of "blindness" and

"deafness" provide relevant background information. The legal and regulatory

definitions for education are surely the most pertinent, but they naturally depend on

other, historically prior, senses of the words. We begin with common (dictionary)

definitions, proceed to medical definitions, and then, in the section on children, to

educational ones.

---

[1] Prevalence is different from incidence. The former term, footnoted here, refers to the proportions of a phenomenon among a population *already existing at a given point in time*. The latter term (incidence) refers to the *number of new cases* (e.g., in 1,000) appearing in a given time frame. In common usage, the distinction is often too subtle to be useful. For rare conditions subject to variable local idiosyncrasies of practice, actual incidence figures can be astonishingly imprecise. (See the discussion of deafblindness further on in this section.) But this fact also implies that prevalence figures are problematic.

General definitions (dictionary and medical). One much-used North American dictionary, the *Merriam-Webster Collegiate Dictionary* (Mish, 2002) provides definitions as follows; note the difference in specificity associated with blindness:

> *Blind:* having less than 1/10 of normal vision in the more efficient eye when refractive defects are fully corrected by lenses (p. 122)
>
> *Deaf:* lacking or deficient in the sense of hearing (p. 295)

Merriam-Webster provides no definition for deafblindness. The online version of the *Oxford English Dictionary* (OED, 2015), however, offers this definition[2]:

> *Deaf-blind:* Having a severe impairment of both hearing and vision (as a congenital or acquired condition).

In the United States, the American Medical Association defined "legally blind" authoritatively, in a definition still used, in 1934 (Jackson, Snell, & Gradle, 1934):

> Central visual acuity of 20/200 or less in the better eye with corrective glasses or central visual acuity of more than 20/200 if there is a visual field defect in which the peripheral field is contracted to such an extent that the widest diameter of the visual field subtends an angular distance no greater than 20 degrees in the better eye. (p. 1446)

In other words, blindness is severe vision loss, but it is by no means synonymous with complete vision loss. More to the point, total blindness is *uncommon* among the

---

[2] The OED gives the first use of "deaf-blind" as occurring in 1841, in the *North American Review*—the first literary magazine in the U.S., founded in 1815. The OED entry was created, however, only in 2003 and therefore did not appear in the classic 1928 edition: even though the word was clearly in long use by then.

legally blind (American Foundation for the Blind, 2016; Riggio et al., 1997). The general definitions focus on impairment of function, with definitions for blindness and deafblindness implying severity but the definition for "deafness" is far less specific.

Similar medical standards exist for hearing loss as for blindness, but "deaf" is widely regarded as a colloquial term (Smith, Shearer, Hildebrand, & Van Camp, 2014). The common usage therefore prevails: deafness is partial or complete inability to hear. Nonetheless, the extent of hearing loss is indeed measured and is commonly estimated as a percentage loss. Issues implicated by the severity of loss (what degrees of severity indicate about loss, what is to be done about various degrees of loss, and who is to do it) remain for both VI and HI.

Internationally, however, the World Health Organization (WHO) defines "disabling hearing loss" in a way that parallels the AMA's definition of blindness:

> Disabling hearing loss refers to hearing loss greater than 40 decibels (dB) in the better hearing ear in adults and a hearing loss greater than 30 dB in the better hearing ear in children.... 'Deaf' people mostly have profound hearing loss, which implies very little or no hearing. They often use sign language for communication. (WHO, 2015, para. 2, 6)

Measures of degree of hearing loss are well-established, as well, in North America. Smith, Shearer, Hildebrand, and Van Camp (2014) provide the applicable details: for instance, a severity of impairment from mild to profound measured as "hearing threshold in decibels" (varying from 26-40 dB for mild to 90 dB for profound).

Educational definitions. For students in schools—that is, the population to which the Individuals with Disabilities Education Improvement Act (IDEA, 2004) applies—"deafness" and "blindness" are defined with respect to presenting conditions judged of sufficient severity to interfere with learning. The judgments, moreover, are made locally, in view of whatever assessment data may or may not be obtained and considered by committees of educators that usually include the child's parents. Such committees, working with the information provided and making such judgments, are essential parts of the federally mandated process of establishing and revising Individualized Education Programs (IEPs) for all students with disabilities. Not surprisingly, the appropriateness of such decision making has long been a subject of much controversy, and the controversy includes the IEP process for students with LISD (e.g., Smith & Wild, 2006).

Federal regulations for the Individuals with Disabilities Education Act (IDEA, 2004) do not define blindness per se, but "visual impairment including blindness," as follows:

> *Visual impairment including blindness* means an impairment in vision that,
> even with correction, adversely affects a child's educational performance. The
> term includes both partial sight and blindness. (34 CFR § 300.8(c)13)

Partial sightedness, low vision, and blindness represent a continuum. The World Health Organization (2015) defines three levels of blindness, with the first two levels exhibiting a degree of light sensitivity. Again, only a minority of students identified as blind exhibit no light sensitivity at all, and functionality can be sharply enhanced by a

range of affordable technologies (American Foundation for the Blind, 2016). The IDEA regulations offer no separate definition for "blindness."

By contrast with blindness, the applicable IDEA regulations (IDEA, 2004), define "deafness" and "hearing impairment" as follows:

> *Deafness* means a hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, that adversely affects a child's educational performance. (34 CFR § 300.8(c)3)
>
> *Hearing impairment* means an impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but that is not included under the definition of deafness in this section. (34 CFR § 300.8(c)5)

Both regulatory definitions include partial functionality, but deafness, in contrast to HI, is described in 34CFR as an impairment of sufficient severity to "adversely affect" *the student's capacity to process speech* ("linguistic information"). Language development, and all that it entails for social interaction and intellectual development, is the "educational performance" at risk with deafness defined in this way. Early identification and intervention has been understood as so critical, in the case of deafness, that universal newborn screening for hearing loss has finally been mandated in the United States, a nation which, according to Lenihan (2010) among others, has been robustly resistant to universal health care.

The acknowledgment of partial functionality is again notable and it applies as well to deafblindness, such that the image of Helen Keller (totally without vision and totally without hearing) is *totally inapt*. The federal IDEA regulations provide the definition:

> *Deafblindness* means concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational needs that they cannot be accommodated in special education programs solely for children with deafness or children with blindness. (34 CFR § 300.8(c)2)

In the case of deafblindness, an additional CFR provision must be noted—because of the tendency in local IEP decision making to misclassify students with deafblindness as exhibiting multiple disabilities (NCDB, 2015): "Multiple disabilities does not include deafblindness" (34 CFR § 800.89(c)7). This *clear direction* appears to be ignored widely in actual practice, including in Ohio (NCDB, 2015; WFA, 2014).[3] If students exhibit dual sensory impairment—simultaneous visual and hearing impairments—they *must* be identified as deafblind and not as having "multiple disabilities."

Prevalence of "Low-Incidence" Sensory Disabilities

Given the variety of definitions and of applications of them, prevalence statistics for HI, VI, and DB are at best estimates of true prevalence. For this report,

---

[3] The 2013 Ohio Deafblind Census data, analyzed in the latter of the two cited reports, showed that nearly 50% of Ohio's 421 deafblind students had been misidentified with the IDEA Part B category code "multiple disabilities." Others had simply not been reported as having DB, perhaps because a different primary disability had been applied; see Table 1.

however, we accept the estimates of the Centers for Disease Control, the U.S.

Department of Education (OSEP), the National Center on Deaf-Blindness (NCDB),

the American Foundation for the Blind, the American Printing House for the Blind,

and Gallaudet University (for deafness) as authoritative.

Readers should remember, nonetheless, that the definitions in play—of

whatever sort and in whatever application—are social creations and that reporting

remains imprecise for a variety of reasons even beyond the choices embedded in the

definitions. Even a simple, universal, screening of the entire U.S. population in accord

with the medical definitions of sensory impairment has apparently not ever been

conducted.[4]

Adults. We begin again with the adult population, to provide the general

social context. Among adults, sensory impairment increases with age, so the adult

prevalence figures (even when age-adjusted) are higher than the prevalence figures

for children. But the lesson of the prevalence of sensory impairment among adults is

nonetheless striking: from an overall societal vantage, sensory impairments are not an

unusual experience. Note, again, that CFR definitions for children require an effect on

learning ("educational performance") not present in definitions for adult. The lower

prevalence figures for sensory impairment among school children nonetheless exist

within this overall societal context. What seems rare among children is much more

---

[4]   In 1997 the federal Walsh Act mandated screening for *newborns*, increasing the screening rate
       from 3% in 1993 to 95% in 2010 (Lenihan, 2010), thereby demonstrating the feasibility of
       universal screening in a relevant subpopulation.

common among adults—compare the following adult prevalence   figures (e.g., as given in Table 1) with those for children.

The Centers for Disease Control (National Center for Health Statistics, 2012, Table 55) report that approximately 14.9% of adult Americans (aged 18 and older; age-adjusted estimate) experience visual impairment ("any trouble seeing even with glasses, or blind": NCHS, 2012, Table 55), and an age-adjusted 2.1% experience hearing impairment ("a lot of trouble or deaf without a hearing aid": NCHS, 2012, Table 55).[5] CDC provides no estimates for the incidence of deafblindness among adults, but the incidence must logically be lower than that for hearing impairment (i.e., a fraction of those adults with HI of the sort defined by the CDC would also exhibit VI of the CDC sort—that is, a proportion logically smaller than the 2.1% for HI alone).

Blanchfield, Dunbar, Feldman, and Gardner (1999) offered estimates of the prevalence of *severe and profound* hearing loss among American adults based on analyses of three federal data sets from the early to mid-1990s. On this basis they estimated conservatively that about 464,000 adult Americans were deaf, of whom about 250,560 were 65 and older. (Their "more relaxed" estimate [p. 185] would enlarge the conservative estimates by 60%). For the number of *adults* with deafblindness, Watson (1992) provided an estimate of 35,000 to 40,000 based on three different contemporary estimates.

---

[5] Age adjustment averages prevalence figures across the entire 18+ population, providing an average that belies the meaningful variability by age. For hearing and visual impairment, of course, the distribution is highly negatively skewed, so that prevalence for adults aged 45+ is 11.6% and 1.9% for "blindness" and "deafness" respectively defined in this way, and 13.9% and 7.6% for those aged 65+ (i.e., "blindness" and "deafness," respectively).

Children. The CDC reports the overall prevalence of sensory impairment among children aged 5-17 based on surveys of parents: 3.3% (Pastor et al., 2009). Of this 3.3%, 88% (i.e., about 2.9% of the total 5-17 population) reportedly exhibit visual impairment, 11% (i.e., about 0.4% of the total 5-17 population) hearing impairment, and just .03% (i.e., .1% of total 5-17 population) dual sensory impairment (deafblindness). These estimates appear to include some unspecified number of children whom the educational proviso of "adverse effect on educational performance" would ostensibly eliminate.

The American Printing House for the Blind (APH) conducts an annual unduplicated count of students (of any age, including adults) with blindness in order to determine its Congressional funding allocation. The APH provides a sufficiently detailed report to yield a figure based on a well-articulated set of characteristics (APH, 2016). The census is disaggregated by grade level and includes students outside the typically reported school-age range (in the APH report "students" can be any age). So, if one excludes early childhood (infancy through Kindergarten) and adult (18 and older) and "other" students, one can approximate the typical 5-17 or 5-18 cohort commonly used by the U.S. Census Bureau. On this basis for 2015, the APH census yields 33,863 students with blindness (grades 1-12) in the United States (or about 1/10th of one percent of all students enrolled in these grades).

Blanchfield and colleagues (1999), in a study based on federal data, estimated prevalence of severe-to-profound hearing loss among children 3-17 at about 37,000. This figure represents 8% of all 464,000 Americans with this degree of hearing loss.

Blanchfield and colleagues also estimated that the population of profound hearing

impairments for children under 3 years of age was 5,600 "at a minimum" (p. 185).

For deafness among school-aged children, the Gallaudet University Research

Institute (GURI) also analyzes federal data and publishes the results in annual reports.

The most recent such report available in January 2016 was, however, for the

2009-2010 school year (GURI, 2010). On this basis, 25,617 students (aged 6-17) were

identified nationally as "deaf."[6] Another Gallaudet researcher (Allen, 2011) provided

useful detail on a subset of students with deafness; we present it here as suggestive of

realities behind the prevalence figures for all three LISD conditions. Allen reports that

among 12,295 school-aged children aged 5-11 with severe-to-profound hearing loss:

1. as to severity, 66.8% had a profound hearing loss and 33.2% a severe

    loss.

2. to communicate, 95.9% of these children used speech alone or a

    combination of speech and sign (i.e., a very small minority used only

    sign or cued speech); and

3. for placement, 66.7% were in their local school and 33.3% in a special

    school.

Such detail demonstrates that LISD conditions, even if severe to profound in degree,

nonetheless manifest as a continuum that exhibits competencies (for instance, the

prevalence of speaking among the deaf), such that (3) their presence in local schools

is *typical.* That is, even under the present inadequate provisions, most LISD students

_____

[6] Dolman (2010) reported that the number of identified children (in the Gallaudet surveys) has been declining for 35 years (from about 55,000 in 1982 to about 40,000 in 2006).

with severe to profound conditions attend their local schools; consult the literature review for a full account of the well-documented inadequacies with respect to providing a free and appropriate public education (FAPE) in the least restrictive environment (LRE) to these students.

The prevalence of deafblindness may actually be better estimated than for either impairment separately: The National Center on Deaf-Blindness conducts and reports a detailed annual census, which records a great deal of information for each identified student. The latest available report is based on the 2014 count: 9,384 individuals, of whom 8,729 were aged 3-21 (NCDB, 2015). If this count is accurate, what might one make of the estimates (noted previously) for blindness (n=33,863) and deafness (n=25,617), based on the observed prevalence ratios? One might conclude they are underestimates (see Table 1 for the ratios to apply).[7]

Next, the discussion considers categorical counts provided to Congress by the Office of Special Education Programs (OSEP) of the federal Department of Education. These reports are required to count each child once, much as are the APH reports to Congress. For the OSEP data, however, this requirement makes using the reported statistics of questionable value for other purposes—for instance, for accurately estimating the number of children with a particular condition.

The problem for OSEP is that many children exhibit more than one disability, but they must be classified under only one category so that each child is counted just

---

[7] One may as well "do the math." If, as per proportions in Table 1, students with HI are about five times more prevalent than the approximately 10,000 DB students, the resulting estimate of students with HI would be 50,000 and not 25,000 as reported by GURI. This is a back-of-the-envelope exercise, of course, which may depend more on socially created definitional matters than on statistical accuracy. The point, though, is that a combination of errors may result in substantial underestimation. This tendency is documented by the need for the NCDB census. A parallel national effort would appear appropriate for identifying students with VI and HI.

once. The reports about this categorization come from local education agencies, which determine the category under which a child will be reported. The emphasis is on counting children uniquely. In this sense, the OSEP figures should *never* be misread as prevalence reports. Nonetheless, they provide an additional perspective on the actual prevalence estimates supplied above.

First, OSEP (2015b) reports an unduplicated count of all children receiving special education services nationwide: 5,944,241 (aged 6-21). Using rounded figures from the OSEP reporting, one can then approximate national prevalence proportions for the three LISD categories. The estimates would again (see note 7) be more back-of-the-envelope calculations than exact figures; but they exhibit some warrant in the absence of better data.

Second, one can contextualize blindness and deafness within overall figures for visual and hearing impairment for children aged 6-17. OSEP (2015b) reports 25,567 students with visual impairments (including blindness) and 67,884 with hearing impairments (perhaps not including deafness).[8]

Third, the OSEP counts—especially in the case of deafblindness—seem to present an overlap with the "multiple disabilities" category, since blindness and deafness are frequently associated with developmental delays and other serious conditions. For deafblindness, at any rate, one can compare the 2015 OSEP count (1,243—aged 6-21) with the most recent NCDB school-aged count (8,729—aged 3-21), which yields a ratio of about 9:1.

---

[8] The cited report (OSEP, 2015b) disaggregates counts by category to which a student is uniquely assigned, but these categories do not include deafness. The omission is puzzling because deafness is a defined category in the applicable federal regulations (i.e., 34 CFR § 300.8(c)3); see the link provided for this citation in the reference list.

Prevalence figures for the Ohio school-age population. Some of the sources

cited for national prevalence estimates also report statistics for Ohio. Interpreted

loosely, these disparate statistics hint at the prevalence of children with VI, HI, and

DB in Ohio. Additional child-find activities would be likely to augment whatever the

current censuses yield. The Ohio Center for Deafblind Education has demonstrated

this likelihood in analyses of the annual counts that it supplies (for Ohio) to the

NCDB (WFA, 2014).

Again, the figures reported by OSEP are not appropriately used as prevalence

measures. That count is not one of students who have specific conditions, but a count

of students who happen to be categorized in just one way, whatever categories may

actually apply. Many students with LISD are reported to OSEP (and by OSEP to the

nation) as exhibiting some other *primary* condition than HI, VI, or DB—including,

erroneously in the case of DB, "multiple disabilities" (OSEP, 2015a). The presence of

several disabilities, under only one of which the child is to be reported by local

education agencies (that judge a condition as "primary"), obscures the prevalence of

conditions among children, especially for LISD (i.e., since deafness and/or blindness

are linked with many other disabilities).

Table 1 presents estimated prevalence figures for Ohio students. It contrasts

OSEP statistics and other counts and refrains from judgments about which counts are

best. In all cases, however, these counts must be interpreted circumspectly, and as an

ensemble: The dates of the sources vary, the terms of the definitions are not

comparable, the purposes of the counts vary, and the age ranges involved differ across

sources.

Table 1 also posts the number of all reported Ohio students and the Ohio students with IEPs. These figures help to demonstrate at a glance how very low the prevalence of low-incidence sensory disabilities actually are in Ohio. If we simply add the numbers for all the LISD categories listed in columns one and two, the sum is 5,452: about 0.3% (three tenths of one percent) of the total Ohio student population and about 2.3% of the special education student population.

The sum just described includes redundancies, but in view of the underestimates, it provides a ballpark figure. Five thousand students with VI, HI, and DB is not, on the basis of available data, an unreasonable estimate for the Ohio population of students with LISD.

Logic can extend this reasoning to the typical, small Ohio district, as follows, resulting in an important insight relevant to serving the LISD population in Ohio. On average, regular Ohio public school districts enroll about 3,000 students (i.e., 1,810,577 students/614 districts[9]), and across the state about 13% of students have IEPs. If, on this basis, the average district identified about 400 special education students, 9 students (2.3% of 400) would, on average, exhibit LISD conditions Even a district enrolling as few as 500 students would *typically* enroll one such child.

_____

[9] Note that this estimation accounts for all PK-12 students in the state. Arguably, for the purposes of this discussion, the actual district enrollment average of 2,612 (Ohio Department of Education, 2016) represents an underestimate because it does not account for students in community and private schools. Moreover counting Ohio's community schools as if they were districts would inappropriately lower the figure characterizing average district enrollment.

Table 1

Prevalence of students with LISD, Ohio (varied estimates)

Ohio Student Group	N Students	Age Range	Source[a]	Percent (All Students)	Percent (Students with IEPs)
All students PK-12	1,810,577	PK-12	ODE (2015b)	100%	
Students with IEPs	231,776	6-21	OSEP (2015b)	12.8%	100%
Students with VI[b]	866	6-21	OSEP (2015b)	0.049%	0.37%
Students with blindness[c]	1,772	Pre-college	APH (2013)	0.098%	0.76%
Students with HI[d]	1,933	6-17	OSEP (2015b)	0.107%	0.83%
Students with deafness	505	6-17	GURI (2010)	0.028%	0.22%
Students with DB[e]	334	0-21	NCDB (2015)	0.018%	0.14%
DB as "primary"[f]	42	6-17	OSEP (2015b)	0.002%	0.018%

[a] Sources, with year given, appear fully described in the reference list (ODE = Ohio Department of Education; OSEP = Office of Special Education Programs; APH = American Printing House for the Blind; GURI = Gallaudet University Research Institute; NCDB = National Center on Deaf-Blindness

[b] APH counts students with blindness who, by reason of blindness, qualify to receive materials with federal support: regardless of whether blindness is their "primary" disability. The APH figure seems the best available proxy for prevalence.

[c] As noted in the narrative, OSEP requires that students be reported uniquely by "primary" condition. This count does not include students with VI whose "primary" condition is not VI.

[d] As with the OSEP count for VI, this too is a probable undercount of all students with HI. Moreover, the cited OSEP report (OSEP, 2015b) does not include a count for deafness, even though deafness is defined separately from HI.

[e] This figure represents the number of students identified and actively receiving services on December 1, 2014 as reported by the National Center on Deaf-blindness. Across all of 2014, 427 students (birth-21) with deafblindness were served in Ohio.

f. This low figure—not really a legitimate "estimate"—is the number of students reported to OSEP with DB as a "primary disability": contrary to the specifications of 34 CFR § 800.89(c)7.

Relevant Literature

The professional research literature most relevant to this study concerns (1) certification regimes in the states and (2) program preparation for teachers of students with LISD (which is best contextualized within the wider literature on program preparation for teachers generally). The following account is based principally, but not exclusively, on peer-reviewed studies that describe the policy landscape; background reading also included policy documents, program descriptions, reputable conference papers, and scholarly syntheses (e.g., historical essays, literature reviews).

Another realm of relevant literature—about districts' experience providing service to students with HI, VI, and DB—simply does not exist. To our knowledge, the present study is the very first to be conducted. The researchers searched the ERIC database and the Wilson database (Education Research Complete) with the relevant subject terms, and after repeated and nuanced searches discovered not a single study. For instance, the search using "hearing impairments" (or "visual impairments" or "deafblindness" as subject terms for the period since 1996 (i.e., the past 20 years) crossed with the subject term "school districts" yielded six documents for HI, eight documents for VI, and 3 documents for DB. The studies focused strongly on issues or practices, with implications for school districts—what any district might do or concern itself with (e.g., Stremel, 2002). None described school district experiences statewide. A plurality constituted newspaper articles about legal matters (e.g., Slater, 2014).

This section first provides a policy background, then considers the literature on certification and licensure, then preparation programming, and finally derives lessons for the study that emerge from the relevant literature. These lessons informed the study design, particularly its two-phase structure: (1) a review of preparation and licensure provisions in the 50 states, including Ohio among the 50, and (2) a survey of district experiences serving students with LISD from the perspective of those in Ohio districts and charter schools serving in the role of special education director.

Finally, throughout the review the discussion continually ties problems and dilemmas to U.S. practices of teacher preparation and certification generally, since policy provisions for the preparation and certification in LISD fields are features of that influential context. As the review shows, however, the LISD fields confront daunting problems and dilemmas: alarmingly inadequate production and spread of teachers (often characterized as the rural issue), extreme centralization of the existing preparation programs (typically urban-based), elimination of programs, implications of inclusion (80% of students with LISD are placed in general education), and meager capacity in higher education to produce university faculty to staff teacher preparation programs (for all these generalities see, e.g., Dolman, 2010; Johnson, 2013; Ludlow et al., 2005; Müller, 2005; Pogrund & Wubbenmeyer, 2008; WFA, 2014; Winzer, 2012). Cultivating and sustaining a statewide capacity to serve these students well remains a struggle in every state: even among states whose capacity is better than average.

Policy Background for Programs and Licensure

Teacher preparation programs of whatever sort (traditional or

alternative--terms that will be defined shortly) lead candidates to the point of

certification (or licensure). Licensure (which is called "certification" in some states)

awards documents that authorize public-sector education employers (school districts)

to hire applicants to teach in public schools.

In the United States, provisions for both preparation programming and

licensure are all matters of state education *policy*, and the key authorities for

determining policy include State Education Agencies (SEAs), Professional Standards

Boards, Boards of Regents (analogous to SEAs, but for higher education), and state

legislatures (see, e.g., Bales, 2006; Ernst, 1990). State-level influence is also strongly

exerted by professional organizations, and, historically, in special education, parent

and child advocacy organizations (Winzer, 2012). The influence of the profession has

traditionally been determining (Angus, 2001), but this influence, though still very

strong, weakened in the last quarter of the 20th century, partly due to the perception

that traditional programming excluded talented people from classrooms (Angus, 2001;

Feistritzer, 2009; Labaree, 2008).

National authorities—including the federal Department of Education

(especially OSEP) and relevant professional associations (e.g., the Council for

Exceptional Children)—exert substantially increasing influence on state policy

decisions as well (Bales, 2006). A wide range of state and national nonprofit advocacy

and service organizations (e.g., the American Foundation for the Blind) also exert

very strong policy influence in special education (Winzer, 2012). In short, the profession is by no means the only policy actor. Indeed, sober observers suggest the profession is no longer the strongest policy actor (e.g., Browne & Reid, 2012; Gallagher, 2006; Mintrom & Vergari, 1996; Speece, 2015). The profession has a strong voice still, but state authorities must negotiate policy determination and change among a variety of stakeholders, often with conflicting interests (see, e.g., Angus, 2001; Labaree, 2008).

The making of public policy—principles and guidance directed toward cultivating a valued public end, as with teacher preparation and licensure—is therefore a notably political enterprise (see the entry for "policy" in OED, 2015). It could not, as a public matter, be otherwise: the key authorities are governmental and non-governmental, and not all of the non-governmental entities are non-profit organizations that claim to cultivate the public good.

From the perspective of this study, the "valued public end" of interest is a high quality of educational support from qualified teachers for all students with LISD. The overarching lesson from the peer-reviewed literature is, unfortunately, that this valued public end has proven widely elusive for a long time.

On the basis of the national literature as reported below, then, one would not predict that a dramatically better situation applies in Ohio. The data gathered for the empirical part of this study will, however, address the situation in Ohio in rare detail, contextualized to an assessment of current LISD policy arrangements in all 50 states.

The discussion of the relevant literature first considers certification regimes (i.e., traditional and alternative pathways). Certification (or, as in Ohio, *licensure*), in essence, is the end of the preparation path. Those preparing in whatever way (traditionally or alternatively) to teach in public schools do so in part to obtain official authorization to teach (licensure or certification). We begin examination of the literature, then, with what the study calls *certification regimes*. The study uses the term "certification" as inclusive of licensure (Ohio's term for the phenomenon).

Certification Regimes

Use of the term *regimes* is meant to suggest durable *organizing systems* that are designed, established, and applied to award licenses or certificates to practice. Such regimes undergo regular revision, but once revised, in whatever manner, they again constitute established authoritative practice.[10] According to the National Association of State Directors of Teacher Education and Certification (NASDTEC, 2016b), Ohio offers 11 teaching license types, across 97 teaching fields, which potentially are awarded to completers of about 2,000 separately approved programs. According to the Ohio Department of Higher Education (2016), these programs are delivered in 76 community colleges and universities, some of which are located in states other than Ohio. These numbers provide a sense of the "regime" in play in the state (see Kaye, 2013, for fully and consistently presented details on programs in all 50 states). The Ohio regime governs the activities and thinking of many students and higher education professors and staff.

---

[10] For a rather typical approach to revision, see Louisiana's Teacher Quality Initiative, 2005. For an attempted, but failed, regime-change effort in California circa 1954-64, see Angus, 2001, pp. 28-31.

Angus (2001), in a rare account of certification regimes overall, observes that the design of these regimes turns on answers to four questions:

1. Should the State or the profession determine certification? (*The traditional answer is the former.*)

2. Should the award of teaching certificates depend on program completion or examination? (*The traditional answer is the former; but in fact, both are now required.*)

3. What should a preparation program include? (*The traditional answer is a series of general and professional courses and student teaching.*)

4. How detailed should the certification regime be? (*The traditional answer has been "very detailed."*)

The fourth point is most relevant in the present study, but the second and third are also relevant to program design: and not only to the requirements of certification regimes.

Angus (2001) notes that throughout the 19th century citizens were, in effect, in charge of certification, and that teaching was regarded as something any adult could do, though some exhibited greater native talent for it than others. In the era of the full sway of the "traditional" program (to be defined shortly), roughly from 1930 to 1970, that 19th- and early 20th-century regime was overthrown in a professional revolution. The early profession, largely produced by elite graduate schools of education, controlled state departments of education and institutions of higher education across the country (Angus, 2001; Labaree, 2008). In this way the "revolution" was assured; the State and the profession were joined at the hip at this time.

In the present era the ethos may be shifting more toward the earlier view, namely that most adults do some teaching and some are better at it than others. Teach for America (TFA), which is more a teacher-recruitment program than an alternative pathway to preparation or certification, illustrates the contemporary shift.[11]

So between 1900 and 1930 the certification regime changed radically, as both SEAs and colleges of education organized under the same leadership. As a result, by 1930 a "vast multiplication of the number, types, and specificity of the certificates issued" had occurred. In 1898 just three states issued all teaching certificates within their boundaries (i.e., instead of counties doing so largely by administration of a literacy exam given by superintendents), but by 1937, 41 states did so (Angus, 2001). Across the nation, nearly 600 specializations were being awarded through certification program, averaging, at that time, about 20 per state (Angus, 2001). Further, as Angus (2001) demonstrates, attempts at reducing the bewildering complexity tended instead to enlarge it, expanding the number of certificates issued and then required for teaching specific subjects, development levels, and/or types of students (see pp. 30-31). As noted above, for instance, Ohio reportedly maintains 97 specializations (Ohio Department of Higher Education, 2016; NASDTEC, 2016b).

---

[11] TFA was the largest recipient of philanthropic support for teaching and teachers in 2003-2008 (DeMarrais, Horne, Watkins, Suggs, Kronley, & Swett, 2011). TFA participants who wish, after the end of their two-year participation, to remain in teaching must, however, secure certification, and TFA works diligently to assist its participants in so doing. The point here is that large philanthropic support enabled TFA to sidestep not just university pre-service preparation but also the authoritative state certification regimes. As a result, TFA appears to be the largest and best-sustained "alternative pathway to teaching"—though it provides little training and no certification. Regime change in the profession takes place over lengthy timespans, and initiatives like TFA exert substantial influence by existing and growing.

By 1950, not only were all states issuing all certificates within their borders, but the SEAs had adopted the "approved program" approach to certification, which remains the default pattern whether a pathway is traditional (*definition: programs that prepare 18-year-olds to become teachers in a four-year degree program in a college of education*) or alternative (*definition: preparing adults with baccalaureate or other higher education degrees to become teachers*).

One notable variation in the traditional regime is the concept of *endorsement*. Endorsement means (see Kaye, 2013) that certified teachers must or may add at least one additional field to their certificate (or license). That is, some states require that a second field be added at the time of the initial certification, but others do not. In both cases, teachers can qualify for endorsements later on.

The endorsement model notably means that teachers adding such an additional field or fields need not complete a full preparation program from the beginning in such "endorsement" fields. Instead, they take a reduced program approved as an addition ("endorsement") to a regular license or certificate. Endorsement regimes tend to increase the availability of teachers across fields approved by the state's overall certification regime. States that require two fields on an initial license are thus providing increased availability as they authorize newly minted teachers ready for employment.

Information reported by Kaye (2013), indicates that 19 states sustained the endorsement model as the overall certification regime at the time of the report; Ohio

is not evidently among them.[12] In some of these states, already experienced and

certified teachers add additional endorsements (i.e., via a program designed for them

and not for pre-service undergraduate students) to their initial licenses and become

qualified for assignments in the additional fields (e.g., VI or HI).

Even as late as 1950, of course, most certification regimes did not require

baccalaureate degrees: after all, many teachers practicing in those years had been

prepared in two-year "normal schools" (Angus, 2001; Labaree, 2008). Today, one

state (Georgia) *still* does not require a baccalaureate degree (NASDTEC, 2016a).[13]

More significantly, five states (Arizona, Delaware, Florida, Maryland, and

New York[14]) do not now require recommendation of an approved teacher preparation

program (NASDTEC, 2016a). And Florida does not even require applicants to

complete pedagogical studies (NASDTEC, 2016a).

These surprising facts show how the policy environment has changed in recent

decades, as compared to the decades from about 1930 to about 1970. Kaye's (2013)

report shows that some states now name exactly the alternative programs with which

they work (e.g., American Board Certificate for Teacher Excellence [MS]; Northern

---

[12] Based on our review of Kaye (2013), the endorsement states are as follows: AZ, CO, GA, IL, IA, KS, KY (gifted only), ME, NE, NJ, RI (elementary or secondary certificates may be "extended" to middle-level), SD, TN, UT, VT (extensive list; initial certificates must have at least one endorsement), VA, WA, WV (called "grade level options"), and WY. As elsewhere, specificities vary widely from state to state. The principle, though, is clear: already certified teachers can more readily add endorsements than they can add fields that require complete approved programs from the beginning.

[13] Nearly all Georgia teachers actually will possess a BA or BS degree—illustrating the fact that requirements and norms are very different matters.

[14] New York *does* require approved-program recommendation from traditional pathway applicants, but not from alternative pathway applicants.

Plains Transition to Teaching [WY], Teach Mississippi Institute [MS]; Troops to

Teachers [WY], and even Teach for America [OK]).[15]

Changing a certification regime to this degree (e.g., in the five states that

abandoned the approved-program model of certification) is difficult and involves the

state authority in extended negotiations: decades-long, in this case. The entrenchment

of "traditional" teacher education programs secured in the period from 1950 to 1970

has meant that subsequent changes to state regimes, even minor changes to programs,

for instance, in a prominent university with a large program, could seem threatening

to key stakeholders. The traditional defense against such changes is that in disturbing

the status quo, proposed changes threaten quality. Indeed, even seemingly sensible

changes could be challenged as eroding quality (see, e.g., Angus, 2001).

In reality, though, research about the quality of preparation programs linked to

student outcomes has been remarkably meager (see, e.g., Feistritzer, 2009). Other

comparisons of graduates of traditional and alternative pathways (e.g., assessment of

principals' on-the-job performance)[16] suggest no statistically significant differences

overall (Blazer, 2012; Feistritzer, 2009; Rosenberg & Sindelar, 2005; but cf.

Darling-Hammond, Holtzman, Gatlin, & Vasquez, 2005). In particular, though, one

needs to be very skeptical about applying such a generality to LISD fields: the

technical (e.g., assistive devices) and organizational features (e.g., the dynamics of

---

[15] Since TFA is a recruitment program and not a preparation program, the precise mention in the Oklahoma certification provisions is unique in this volume: it reads as follows: "This is a national corps of outstanding recent college graduates and professionals of all academic major and career interests who commit 2 years to teach in urban and rural public schools and become leaders in the effort to expand educational opportunity" (Kaye, 2013, p. 218).

[16] The review considers quality differences in traditionally and alternatively prepared teachers more specifically below, in the discussion of preparation programming.

inclusive practice in general education) of teaching students with hearing and vision

impairments suggest that formal preparation is needed, perhaps more so than in many

specializations (see, e.g., Rosenberg & Sindelar, 2005).

Since about 1970, alternative certification programs, despite substantial

professional resistance, have, with political support and private advocacy, found ways

around the traditional certification regime. State certification regimes now often

clearly define one or more alternative pathways; such policy change has had the

robust effect of institutionalizing a nontraditional certification pathway nationwide

(Feistritzer, 2009). In essence, provision for state authorization has established

durable alternative certification regimes.

The states that sustain the most long-established and durable alternative

certification regimes—New Jersey, Texas, and California—annually grant nearly half

the approximately 60,000 alternative certifications awarded in the nation (Feistritzer,

2009). But most states now have some form of alternative certification pathways,

though many arrangements dubbed "alternative" are simply emergency certification

arrangements (see the full list by state: NASDTEC, 2016c). *Alternative* is a

misleading term, as the discussion of preparation programs will demonstrate.

Many alternative certification provisions, as NASDTEC (2016c) suggests,

have been operated as temporary adjustments to the traditional regime. According to

Feistritzer (2009, p. 9), "Most alternate route programs are established to meet market

demand for *specific teachers* in *specific subject areas* in *specific schools*" [emphasis

added]. Specificity this pointed suggests that the utility of such alternatives is

temporary, so that if a candidate lives in a state without a durable alternative certification regime (i.e., unlike the ones that prevail in New Jersey, Texas, and California), the disappearance of the program logically involves disappearance of the certification waivers or adjustments created for the program, though available empirical literature does not appear to address this issue. According to Feistritzer (2009), the durability of alternative programs is a major issue. Durability is arguably even more important in LISD fields, where the sustainability of even long-established traditional preparation programs is threatened (see, e.g., Johnson, 2013).

Discussion now turns to a detailed consideration of preparation programming, which again first sets a broad context for research about preparation programming in the LISD fields. The discussion introduces the topic by relating certification provisions to programming generally. Next, the discussion considers the dynamics of traditional and alternative pathways, and then concludes with an examination of the quality of alternatively prepared teachers.

Preparation Programming

An accepted principle of supplying teachers to American public schools is that they be "properly" prepared.[17] Propriety in this case consists, traditionally and most fundamentally, of completing a training program approved by the relevant state authority (State Education Agency or Standards Board), after completion of which, a

---

[17] The recent updates to the Elementary and Secondary Education Acts (e.g., NCLB, 2008), in particular, have specified that all teachers be "highly qualified." That term, however, devolves simply to proper preparation—to full qualification ordinarily understood. The modifier is deceptive: the phrase indicates no more than qualification per se.

graduate is eligible for certification or licensure (the official approval which permits the graduate to be hired to teach) issued by such an authority.

The approval of preparation programs and the establishment of certification provisions notably interact, however, and both evolve dynamically over time. The emergence of advocacy coalitions and policy entrepreneurs increases the odds of substantial education policy change (see, e.g., Mintrom & Vergri, 1996; Sabatier, 1988). Most coalitions, because of their broader concern and the wider conversations they provoke, make use of the emerging research literature to support the changes they desire. Advocacy usage of the literature tends to be selective: advocates select and promote the literature that supports their positions.

The account of the research literature that follows here, however, is not a selective one; it aims to describe the literature broadly and representatively. The first consideration, below, deals with the dynamics of traditional and alternative preparation pathways. Why "dynamics"? The distinction between the two is not as sharp as the terms seem to suggest. Some alternatives have become so well-established that they now represent a tradition. And most traditional programs have adopted features once characteristic of alternative pathways. The two pathways have a long history of influencing one another: a dynamic relationship exists.

The dynamics of traditional and alternative pathways. The pathways to preparation and licensure (certification) include "traditional" and "alternative" programs, which typically encompass specified sequences of courses and field-based experiences. For the most part, both types of program operate within the purview of

colleges and universities (see, e.g., Labaree, 2008; Ludlow, et al., 2005). These

programs recommend to the State that graduates be officially sanctioned to teach.

Such sanction, depending on the state, is known as certification (based on completing

an approved program) or licensure (based on qualifications set by a board composed

of members of the profession). In practice, certification and licensure are increasingly

tied to national professional standards, most often those defined by the applicable

professional associations (see, e.g., Easterbrooks, 2008, for teachers of students with

hearing impairments).[18]

So when the quality of programming is debated within the profession itself,

the tendency now is to use national standards as a touchstone, viewing them as

applicable to all programs and in all states. Program content, in other words, is

defensible (on this basis) to the extent that it cultivates in students the spirit and

practicalities embedded in the applicable, usually national, standards. Needless to say,

the design of programs that cultivate students (on this basis) might reasonably vary

quite a bit from one program to another. In fact, such variability is precisely what one

observes from state-to-state, from program-to-program within states, and across

pathways (see, e.g., Boyd, Grossman, Hamilton, & Wyckoff, 2006; Huebner &

Strumwasser, 1987; Ludlow et al., 2005 Rosenberg & Sindelar, 2005).

Rosenberg and Sindelar (2005) aptly observe that "teacher preparation may

best be represented as a continuum along which *the point where alternative ends and*

_____

[18] The American wrinkle is that because education is a function reserved to the separate states in the U.S.
Constitution and noted in states' own Constitutions, the highest authority behind credentialing or licensing is
always the authority of the individual states. Increasingly, national perspectives nonetheless prevail within the
profession.

standard begins is uncertain" (p. 118; emphasis added). In other words, program

design on the basis of the professional standards that define quality (broadly

characterized above) form a continuum in which the use of varied, but approved,

arrangements often renders the distinction between "traditional" and "alternative"

problematic.

Rather than exact content or quality, the difference between traditional and

alternative arrangements devolves to a combination of three oft-cited features

(National Center to Inform Policy, 2010; Rosenberg & Sindelar, 2005): (1) length of

program (i.e., shorter and longer; more or less field-based); (2) attendance on a

university's main campus (i.e., required by the program; or with instruction occurring

in K-12 schools, community colleges, or online); and (3) the sorts of students

recruited or admitted (i.e., students who are mostly white 18-year-olds fresh from

high school; or students who are rural, older, more ethnically diverse, or even with

undergraduate degrees outside education).

But one important feature peculiar to alternative certification pathways is

mentioned less often (see Feistritzer, 2009, for the exception): a typically more

temporary existence. This overlooked characteristic is arguably what renders

alternative certification programs nontraditional: they do not exist long enough to

warrant the sobriquet of "traditional."

Why is a temporary existence characteristic of alternative pathways?

Professional preparation is the purview of institutions of higher education (IHEs). The

tacit understanding in education programs on IHE campuses is that experimental

alternatives may usefully help change tradition incrementally, but they cannot be

permitted to threaten tradition (Angus, 2001; Labaree, 2008). Why? Institutional and

program existence is at stake; the now defunct Holmes Partnership (2016) effort

illustrates this principle: it sought with little success to *lengthen* traditional programs

(Labaree, 1992). Alternative program agreements (which usually include temporary

agreements about the award of certification or licensure) ordinarily have existed

outside the weight, momentum, and presumptive legitimacy of tradition (Angus,

2001). This diminished status contributes to reduced odds of survival. Despite the

challenges, a number of alternative arrangements have nonetheless persisted across

decades, and perhaps half a million teachers have been *certified* via alternate

pathways since 1985 (Feistritzer, 2009). The range of programming alternatives that

may be incorporated even into "standard" or "traditional" programs is substantial;

experimentation arguably helps tradition adapt.

Unfortunately, the sustainability of *traditional* LISD programs has proven

remarkably difficult (Ambrose-Zaken & Bozeman, 2010; Dolman, 2010; Johnson,

2013; Linehan, 2000). In a sense, traditional LISD programs are themselves much like

alternative programs. They deal with a "low-incidence" population and prepare

relatively few teachers. And even in the face of long-unmet need and a federal

mandate to provide appropriate services to students, they are not being sustained

(Ambrose-Zaken & Bozeman, 2010; Dolman, 2010; Johnson, 2013; Linehan, 2000).

Adequate funding—not the evident need of students, families, or society itself—is the

oft-argued cause of program stability (Ambrose-Zaken & Bozeman, 2010; Dolman,

2010; Johnson, 2013; Linehan, 2000; Ludlow et al., 2005. Funding reductions cause instability.

The discussion next considers the three "alternative" features in turn. None of the three alternative features (i.e., candidates, venue, differences in length of program) is the least bit odd or adventurous as the third decade of the 21st century approaches.

Candidates. Traditional students (called candidates, once they are admitted to teacher preparation programs) arrive as 18-year-olds on college campuses, but older undergraduates have been familiar on the main campuses at least since the 1944 passage of the Serviceman's Readjustment Act (better known as the "GI Bill"). This alternative is indeed a three-generation-old, well-established tradition at present. A clear strength of the American system of higher education is that access is open across all ages, from 10-year-olds to 80-year-olds: 40% of higher-education students are indeed older than 25 (Eckel & King, 2004). These students are neither neophytes to the academy nor to adult life (Feistritzer, 2009).

Venue. The emergence of branch campuses is even older than the GI Bill. Columbia University, the University of Pennsylvania, and Pennsylvania State University established branch locations before 1935 (see, e.g., Penn State, 2016), though branch locations emerged more widely later on (see, e.g., University of Minnesota Duluth, 2016). New ones are still being established (Fonseca & Bird, 2007).

Delivery of early coursework in undergraduate programs is now frequently delivered on branch campuses, and sometimes entire programs are organized and

administered on branch campuses (Fonseca & Bird, 2007).[19] Early coursework in a

program is also often coordinated with community colleges, and coursework in

education has routinely been offered in classrooms of K-12 schools and in libraries

(see, e.g., Lorain County Community College, 2016). And, of course, online delivery

platforms also emerged in teacher education since before the turn of the 21st century

(Faulk, 2010). Fonseca and Bird (2007) argue that online delivery is strongly

integrated with, and facilitative of, the operation and growth of branch campuses.

Clearly, alternate arrangements for coursework delivery are a well-established

tradition in teacher education, too.

Course work. This leaves the final, more hotly disputed legacy of tradition: the

large number of education courses traditionally required of education students,

especially undergraduate students in colleges of education (Sass, 2011). This feature

receives a more extended discussion than venue or type of student because it involves

debates about the *quality* of teacher education overall, notably involving the "turf" of

universities (e.g., regional, state, national) and university departments (programs,

certificates, degrees, status) as well as the historically evolved divergence of special

and general teacher education. As Angus (2001, p. 2) observes, program content is

"among the most contentious in the development of teacher certification."

Within this difficult discussion, Pugach, Blanton, and Correa (2011) note that

the troubled attempts to blend teacher preparation in special and general education

---

[19] As Fonseca and Bird (2007) note, some branch campuses—like the one at Duluth MN—are less subsidiary than others. The University of Minnesota in fact began as a normal school, then became Duluth State Teachers College, and then (in 1947) became a "branch" of the state's land-grant university. This "branch" evidently sustains a separate identity given its historic roots, and about a fifth of graduates come from its College of Education and Human Service Professions. The CEHSP awards most of the doctorates at the branch: 13 in 2013 (see http://www.d.umn.edu/about/student-profile.html).

ignore low-incidence disabilities almost completely (p. 193). Blending teacher

education in such fashion, however, looms as a large issue for serving students with

LISD because the emerging role of TVIs, HVIs and DBIs is to facilitate inclusion in

general education as the least restrictiveenvironment. The shortage of teachers for

these fields (e.g., Johnson, 2013) magnifies this challenge. Even in existing programs

this feature of programming reportedly receives short shrift (Easterbrooks, 2001;

Johnson, 2013; Kamenopoulu, 2012; MacGlaughlin & Mertens, 2014; Silvia-Maria &

Howell, 2004).

Claims of poor quality, not surprisingly, have also extended to the quality of

students (Angus, 2001; Labaree, 2008): the issue of selectivity among applicants.

Major research universities tend to be more selective than others. Regional

universities, serving a local clientele (especially in teacher education) are seldom as

selective (see, e.g., Kelly & Northrup, 2015). The claims of poor student quality,

however, are confounded by the fact that as many as 50% of students attend IHEs less

selective than those for which their academic records qualify them (Belasco &

Trivette, 2015). Many observers seem oddly unaware that the employment market for

teaching is largely confined to states, and within states to localities (Reininger, 2012).

Apart from length, another feature of alternative programs that implicates

quality is that they *usually* enroll students who *already* have undergraduate degrees or

even graduate degrees (Sass, 2011).[20] The fact that these students possess

baccalaureate (or even master's) degrees does not, however, remove objections about

---

[20] Depending on the program, alternative programs may require that such prior degrees be in education (see, e.g., Ludlow et al., 2005; Rosenberg & Sindelar, 2005). A few documented programs have been designed for paraprofessionals with AA degrees (see, e.g., Rosenberg & Sindelar, 2005).

student quality or selectivity, and the degrees held by such students come from institutions with a wide range of status pedigrees. The ultimate defense of any program, though, is its endorsement (and that of the IHE unit) by national accrediting bodies.

At any rate, the mere presence of "non-traditional students" on campuses suggests to faculty the suitability of alternative program arrangements, and, second, sometimes suggests the delivery of graduate rather than undergraduate level coursework (Bowen & Stearns, 1992). Initial teacher preparation for those who *already* hold undergraduate degrees is thus an alternative to the durable tradition of training students fresh from high school. Further, most LISD alternatives not only target students with undergraduate degrees, but those who already hold *education* degrees of some sort (Rosenberg & Sindelar, 2005). In other words, numerous participants in LISD programs are likely already to be experienced educators.

A reasonable question, then, that suggests itself in the case of professionally experienced and more mature cadres is: "Should they still complete the full sequence of courses required of neophyte pre-service undergraduate teacher education students?" The traditional institutional answer to isolated individuals has been "Yes, they should": required programs are *required* (see Feistritzer, 2009). Requirements cannot, indeed should not, be waived. Such waivers are easily argued, in the case of isolated individuals, as compromises to quality. Exceptions threaten program integrity.

But a quite reasonable institutional response to *entire cadres*, in recent decades, has been "No, they need not." Programs *can be redesigned reputably* (see previous

41

discussion) to suit cadres (Feistritzer, 2009; National Center to Inform Policy, 2010).

Such is the logic behind most "alternative" programs (Feistritzer, 2009). Approved

programs exhibit warranted integrity.

Nevertheless, deep dissatisfaction exists—not only outside the profession, but

within it—over the traditional pathway, *undergraduate* teacher preparation (Labaree,

2008). After all, schooling arrangements in the United States *do not* enroll

18-years-olds in law schools or medical schools: why should the arrangement be

permitted in education?[21] The elite schools, as the discussion has shown, established

graduate schools of education, parallel to arrangements for their law schools and

medical schools (Labaree, 2008). But these graduate schools nonetheless still retain a

lower status even on those elite campuses, no doubt reflecting the pecking-order of

professional vanity (e.g., doctor, lawyer, school teacher, plumber).

Undergraduate pre-service teacher education nonetheless remains an

institution. Its arrangements are *institutionalized*, and this status has tended to put

traditional arrangements beyond challenge (Scott & Davis, 2007). That is, from the

vantage of vested interests in traditional arrangements, questions that would otherwise

seem reasonable appear as *unreasonable*. Hence the long furor over "alternatives."

This insight explains the meager success of some initiatives, especially those

that sought to increase the quality of traditional programs within elite institutions. By

contrast, alternative programs (of a great many sorts) have been wildly successful in

recent decades: at least 30% of new teachers have pursued the alternative pathway

---

[21] The answer is perhaps simple: the nation needs millions of teachers to staff the public schools, and lengthy, expensive preparation for public service would sharply diminish the supply of teachers and produce a less diverse teaching force.

(see, e.g., Boyd et al., 2006; Feistritzer, 2009; National Center to Inform Policy, 2010).

Alternative *certification*, by contrast to mere difference in program *arrangement*, is intended to address (or redress) the claimed "hold on entry to teaching" exercised by the "educational establishment" (Rosenberg & Sindelar, 2005, p. 119; see also Angus, 2001; Feistritzer, 2009). Organizations raising this claim assert that capable people want to teach in schools and colleges: and that universities stand unfairly in their way (see, e.g., DeMarrais et al., 2011; Feistritzer, 2009).

Teach for America (TFA) is perhaps the boldest alternative to take this view and to foster the rapid employment of such "capable people." TFA dispenses almost completely with both preparation programming and certification in providing access to teaching (DeMarrais et al., 2011). Although the TFA alternative is not an alternative pathway to qualification for permanent employment, it is surely a pathway to *teaching experience* for its participants. Discussion turns next to the quality of teachers produced by alternative pathways—an issue raised most forcefully by the TFA effort.

Do "reputable" alternative pathways produce deficient teachers? The answer is easily given. The typical complaint against alternative programs concerns assertions of low quality (Rosenberg & Sindelar, 2005).[22] Most comparisons of *reputable* alternative pathways to traditional pathways, however, show non-significant differences between the two, including when the student achievement of graduating

---

[22] Observe, as well, the long-standing critiques, from inside and outside colleges of teacher education, that teacher education in general provides an inadequate undergraduate experience (see, e.g., Hawley, 1986; Mitchell, 1979; Reininger, 2012). This view is related to the historical addition of school teachers to the pool of higher-status students who had been the traditional pool for universities though the mid-20th century (see, e.g., Labaree 2008).

teachers is the basis of comparison (see, e.g., Boe, Shin, & Cook, 2007; Boyd et al., 2006; National Center to Inform Policy, 2010; Rosenberg & Sindelar, 2005; Sass. 2011). Even including *disreputable* alternative programs, the research and evaluation literature demonstrates conflicting results (see, e.g., Sass, 2011), and these findings are true as well for preparation programs in special education (e.g., Rosenberg & Sindelar, 2005; Sindelar & Rosenberg, 2000). Boyd and colleagues (2006) and Feistritzer (2009) conclude that, with respect to outcomes for K-12 students taught by traditionally or alternatively prepared teachers, differences *within* pathways are much larger and more practically significant than differences *between* pathways.

Having considered distinctions between traditional and alternative pathways overall, the discussion next turns to (1) traditional LISD pathways and (2) alternative LISD pathways. These two subsections will conclude the discussion of preparation, and the review will then close with a synthesis of findings relevant to the present study.

Traditional LISD Pathways

Graduates of "traditional" LISD programs have been about evenly divided between graduate-level and undergraduate-level program completers (Bowen & Stearns, 1992), with graduate degrees most common in VI (80%) as compared to HI (47%); not surprisingly, perhaps, 100% of DB degrees were delivered at the graduate level. The total number of graduates in this 1992 study for all three fields was 1,342 (HI = 974; VI = 353; DB=15).

These figures, like the prevalence figures, should be read as indicative, but

other reports are consistent with the overall numbers of graduates reported by Bowen and Stearns (see, e.g., Corn & Spungin, 2003; Dolman, 2010; Huebner & Strumwasser, 1987; Lenihan, 2010; Summers, Leigh, & Arnold, 2006): *but not in VI* (see below).

With respect to pathways, such figures suggest an important conclusion: The tendency of the LISD fields is *traditionally*—with the power of institutionalization behind it—much more focused on graduate instruction (see, e.g., Ludlow et al., 2005) than is traditional teacher education in general, a mostly undergraduate enterprise. In a national frame of reference, however, VI is the clear exception in the LISD domains, with many programs delivered at the undergraduate level.

What of the traditional programs producing such graduates? Here, too, reports of numbers of program vary, though the historic trend is clear: traditional LISD programs are closing, and the overall number of programs (all three fields together) nationally is argued, in fact, as being in long decline (e.g., for VI, see Corn & Spungin, 2003; for HI see Johnson, 2013 and Dolman, 2010). Discussion moves next to a field-by-field examination.

Visual impairment. Ambrose-Zaken and Bozeman (2010) provide a recent count of universities offering TVI programs: 41 in 2008. Bowen and Stearns (1992) had confirmed 36 VI programs existing in 1990-91, but their initial sources had identified 48. Of that initial 48, two had closed, and contacts at another 10 reported their programs actually did not prepare any TVIs. Corn and Spungin (2003) reported the existence of 36 VI programs in 1999, down, they reported, from 42 in 1987.

Reports differ, then, but the overall number of VI programs nationally is evidently not in decline. The rate at which new programs have emerged, however, has decreased to zero (Ambrose-Zaken & Bozeman, 2010; see Figure 1). According to Ambroze-Zaken and Bozeman, four programs began operation between 2003 and 2008 and 4 closed. Nineteen states (as of five years ago), however, had no TVI program. Ohio sustains a single traditional program in Columbus—delivered at the graduate level, contrary to the national trend of undergraduate preparation.

Hearing impairment. Johnson (2013) reported that 83 HI programs had existed in 1983, but only 66 in 2000, and 15 states reportedly had no HI program at all. Benedict, Johnson, and Anita (2011) located 68 programs, but only 60 were still operational and able to give interviews. The 2015 triannual census conducted by the GURI listed just 56 programs. Notably, the number of interpreter programs has increased; the number peaked in 2003 at 79 and was 72 in 2009 (Dolman, 2010).[23]

Müller (2005) reported four programs for Ohio, but in 2016 just two HI programs remain (Ohio State and Kent State universities). The GURI 2015 census listed three, which included the University of Cincinnati, whose program is now terminated. Clearly, HI programs have closed nationwide and in Ohio. If the reported numbers are correct, the national decline in HI programs since 1983 is about 33%.

Deafblindness. For deafblindness, Corn and Spungin (2003) reported that 10

_____

[23] Of note to both number of programs for hearing impairment and for interpreters was the 1963-1965 rubella epidemic, which increased incidence by three-fold (Dolman, 2010). Dolman's analysis concluded that the ratio of graduates to the school-aged hearing impaired population has remained comparatively steady since 1985 though the ratio has declined to 1:56 (2006) since 1976 (1:30). *In other words, teachers of students with hearing impairments are now about half as common, on this basis, as they were 40 years ago* (see Dolman, 2010, Table 5, p. 335).

programs had existed in 1994, but that six remained in 1999. The 2015 triennial

survey reported the existence of just four DB programs (University and College

Programs, 2015): a reduction of 60% since 1994. Ambrose-Zaken and Bozeman

(2010) also located four DB programs. Obviously, on this basis, most states have no

local access to qualified DB teachers. The programs nearest Ohio are those in New

York City (Hunter and Teachers College). The probability that a rural district

anywhere will secure the services of a qualified DB instructor must be low indeed.

Alternative LISD Pathways

Alternative pathways—primarily as creatures of institutions of higher

education—must justify themselves, especially in terms of program quality.

Rosenberg and Sindelar (2005) usefully suggest three features[24] for judging the

quality of alternative arrangements: (1) meaningful clinical experience, (2) adequate

program rigor, and (3) good supervision.

Despite the evidence about the quality of graduates (Boe, Shin, & Cook, 2007;

Boyd et al., 2006; National Center to Inform Policy, 2010; Rosenberg & Sindelar,

2005; Sass, 2011), alternative programs are often faulted by faculty in traditional

programs for inadequate rigor, largely, as suggested previously, because alternative

programming tends to require fewer courses of students. The claim may be specious,

but it does raise the question of what might appropriately distinguish less rigorous

from sufficiently rigorous preparation programs.

_____

[24] Such standards seem reasonable and feasible, overall. LISD fields, however, face some particular challenges
with faculty capacity: doctoral production is meager nationally (Ambrose-Zaken & Bozeman, 2010; Benedict,
Johnson, & Anita, 2011) and student recruitment is difficult (Ambrose-Zaken & Bozeman, 2010).

Many accounts conclude that the short-training, on-the-job model of TFA falls

on the disreputable side of alternative arrangements.[25] Certainly, in the case of

students with sensory impairments, one would expect that the radically nontraditional

provisions of TFA would run afoul of the provisions of both IDEA (Pogrund &

Wibbenmeyer, 2008) and the "Every Student Succeeds Act" (2015). Advocating and

facilitating the provision of services in the least restrictive environment (LRE) for

these most challenged and uncommon of students is a major task for LISD teachers,

and one not wisely delegated to untrained, uncertified, and inexperienced educators.

In fact, for those who are *fully prepared, qualified, and experienced*, the work

of facilitating placements for students with disabilities (e.g., learning disabilities) in

general education is reportedly very difficult, so it is especially difficult in the LISD

fields (e.g., Easterbrooks, 2001; Johnson, 2013; Kamenopoulu, 2012; MacGlaughlin

& Mertens, 2014; Silvia-Maria & Howell, 2004). Moreover, according to the

authorities just cited, altering traditional university LISD preparation for this work has

also proven remarkably difficult.

Universities with LISD programs, especially in Vermont and Hawaii, have

nonetheless clearly explored alternative programming. Recall, of course, that

alternative programming arrangements address (1) venue (e.g., online, off-campus); (2)

---

[25] Teach for America (TFA) addresses employment needs in impoverished and hard-to-staff schools by supplying partnering districts with uncertified liberal arts graduates who receive a five-to-seven-week summer preparation before assuming full classroom responsibility. TFA participants still need to secure licensure or certification (often via alternative pathways) to become fully qualified, however. Attrition is one major problem with TFA participants (Heilig & Jez, 2010). Other major concerns are the relationship between the TFA organization and support for the charter-school industry (Heilig & Jez, 2010; Mungal, 2016). Student outcomes, however, appear *not* to be a problem when students of TFA teachers are compared to similar students of other teachers (see, e.g., Penner, 2014).

target applicant pool (e.g., older, degreed); and (3) program design (e.g., shorter, more clinical). As noted previously, all such "alternatives" now have long usage in education.

Moreover, as the following discussion shows, the alternative pathway for LISD fields has established a tradition for itself. According to several accounts, alternatives have "proliferated" in programs preparing teachers for working with students with low-incidence disabilities (see, e.g., Ludlow et al., 2010; Rosenberg & Sindelar, 2005). Although the pattern of experimentation is clearly established, particular alternative *certification* pathways come and go (Ludlow et al., 2005; Rosenberg & Sindelar, 2005). That is, particular alternative-pathway programs to LISD *certification* are rarely institutionalized. (The relationship between LISD program and certification or licensure is considered in the next section).

Experimentation in program delivery, including the changes noted above, continues widely in general education, special education, and indeed in the LISD fields (Ambrose-Zaken & Bozeman, 2010; Ludlow et al., 2005; Rosenberg & Sindelar, 2005). The discussion next considers LISD alternative programming to characterize candidates, venues, and program length.

Candidates. The range of different participant groups addressed by the alternative pathway is suggested in the program evaluations described by Rosenberg and Sindelar (2005): students with AA degrees (e.g., well-trained paraprofessionals), general education teachers, substitute teachers, minority paraprofessionals, and special education teachers with temporary licenses (Table 1, p. 121). By contrast,

what makes the "traditional" undergraduate student traditional is young age and comparative lack of experience.

Venue. Ambrose-Zaken and Bozeman (2010) reported that 80% of responding TVI programs used distance-learning technologies in their delivery infrastructure. More significantly, only 50% of the programs reported that candidates needed to live locally to participate in their TVI course of study. Six years ago (i.e., in 2010), and unlike traditional programs of the past, most *traditional* LISD programs required at least some online activity. Just five years earlier than that, Ludlow and colleagues (2005), in a very thorough study, had described a minority of programs as using "some form" of distance delivery. It seems that, by 2016, Internet-based delivery has been widely embraced in LISD programs of all sorts.

Program length. As for length of program, alternative pathways make decisions (which vary by circumstance) about the relevance of coursework and experience already possessed by their "nontraditional" candidates, and they shorten the program on the basis of such decisions. In general, differences of the targeted applicants from "traditional" 18-year-olds have suggested to program planners (and funders—see Sindelar & Rosenberg, 2000) that previous coursework and (to a lesser extent) previous experience justify program differences, particularly reductions in number of courses required, as compared to traditional arrangements.

These adjustments of program content are perhaps the most variable and are those that tend to violate, or perhaps offend, the well-established local and state norms characterizing traditional programs. For instance, Rosenberg and Sindelar's Table 1

(Rosenberg & Sindelar, 2005, p. 121) lists an alternative program that required no clinical experience; it lists others that required 24 or 36 graduate credit hours (two years) and that included substantial clinical experience. The sole undergraduate program in that list (for AA degree holders) required 70 semester hours, instead of the usual 120+ that traditional BA programs require, presumably operating under the assumption that the AA degrees that candidates had completed had given them at least 50 hours of relevant course work. The "lightest" program required just 12 in-service credits and was the one without a clinical component: it would be considered *disreputable* based on the standards proposed by Rosenberg and Sindelar (2005).

Research-based Conclusions from the Literature Review

What conclusions can be drawn from the extensive literature review? Two lists follow: (1) preparation and certification in general and (2) preparation and certification in LISD fields.

Preparation and certification in general. Four notable conclusions about the overall literature on certification and preparation provide context for the LISD conclusions:

1. Certification regimes have changed nationally to accommodate (1) alleged teacher quality issues, (2) actual teacher shortages in fields and locales, and (3) preparation of adults with undergraduate degrees not in education (e.g., Feistritzer, 2009; National Center to Inform Policy, 2010; Rosenberg & Sindelar, 2005).

2. The four-year education baccalaureate that prepares 18-year-olds to become teachers remains the most common pathway to teaching; even in the specialized LISD fields it is common in VI, though no longer dominant (e.g., Angus, 2001; Bowen & Stearns, 1992; Feistritzer, 2009).

3. The distinction between "alternative" and "traditional" programs is becoming less and less clear (e.g., Feistritzer, 2009; Rosenberg & Sindelar, 2005); and perhaps especially in LISD fields since undergraduate programs are not, overall, the norm (common in VI, less common in HI).

4. Alternative programs (most often delivered as graduate-level coursework) require somewhat fewer pedagogy courses as compared to "traditional" undergraduate programs (e.g., Feitritzer, 2009; National Center to Inform Policy, 2010; Rosenberg & Sindelar, 2005). This difference is not typically understood or affirmed as a threat to quality. There seems little reason to doubt the relevance of this finding to LISD fields although no empirical study addresses the question.

Furthermore, Rosenberg and Sindelar's (2005) assertions about the features of program reputability *also* seem reasonable. For instance, a TFA-like approach to securing more teachers, and better statewide spread of teachers for students with LISD, would arguably *not* meet the requirements of FAPE or LRE. Nor would the meager 12-credit hour program (Rosenberg & Sindelar, 2005) that lacked any clinical component.

Preparation and certification in LISD fields. The literature review suggests

seven conclusions specific to the LISD fields (VI, HI and DB):

1. Funding for LISD preparation programs is inadequate and inconstant

    (Ambrose-Zaken & Bozeman, 2010; Dolman, 2010; Johnson, 2013; Linehan,

    2000; Ludlow et al., 2005).

2. LISD preparation programs nationally have *never* yielded the numbers of

    teachers required by FAPE or LRE provisions (e.g., Johnson, 2013; Ludlow et

    al., 2005).

3. LISD programs nationwide, and in all the states, lack the capacity to supply or

    spread teachers to rural areas (e.g., Johnson, 2013; Müller, 2005).

4. Alternative program arrangements (nontraditional candidates, venues, course

    requirements) in LISD fields are in widespread use, and they have so far

    proven insufficient to produce more teachers and to supply rural access (e.g.,

    Ludlow et al., 2005).

5. Remarkably few states have experimented with university consortia to deliver

    LISD programs (Ludlow et al., 2005).

6. About half of LISD programs (all fields) overall are conducted at the graduate

    level (e.g., Bowen & Stearns, 1992; Lenihan, 2010; Ludlow et al., 2005).

7. The relative merits of endorsement and full-licensure arrangements have not

    been examined empirically, but the endorsement approach seems, on face

    value, to favor the production of adequate numbers of teachers in LISD fields

    (see the discussion of endorsement in Kaye, 2013).

Implications for study design. The national circumstances of LISD

preparation and certification seem clear, as do the implications for suitable instruction

in districts and schools: much more needs to be done. The observation likely applies

to Ohio, as well. Two unanswered research questions seem significant, considering

the scope of, and gaps in, the extant literature:

1. *What exactly is the situation with regard to certification and preparation*

for the LISD fields in the 50 states? What do the SEA authorities disclose? The

literature review found no studies that addressed this issue specifically, though one

10-year old study provided relevant insights.

2. *What is the experience of Ohio districts in attempting to provide suitable*

instruction to LISD students in the least restrictive environment, delivered by highly

qualified teachers? Available research literature does not address the Ohio

circumstance specifically. Indeed, comprehensive statewide studies are rare.

Methods

This study originated in an invitation to WordFarmers Associates (WFA) from

the leadership of the Ohio Vision Project to consider the design of a policy study to

focus on low-incidence sensory disabilities (LISD). The context of the request was

ongoing policy discussions related to improving services to students with LISD.

These discussions were taking place, notably, in the Ohio Deans Compact for

Exceptional Children, which had previously (in 2012) established a Low-Incidence

Committee (principal members of the Compact are deans of the higher education units

that prepare teachers in the state). Other interested participants included the SEA

Office for Exceptional Children, the Ohio Department of Higher Education (formerly the Board of Regents), and the Ohio Center for Autism and Low Incidence (OCALI).

WFA researchers and Vision Project leaders met in January 2015 to discuss the need for empirical data specific to the Ohio context. Two concerns surfaced at that meeting.

First, as a policy study, it seemed—in view of shortages of professional educators and in the changed circumstances of schooling for special needs students (i.e., LRE re-affirmed as the general education classroom)— that the most relevant policies would be those dealing with certification ("licensure" in Ohio) and preparation of educators, including not only VI and HI teachers, but other professionals such as orientation and mobility (O&M) specialists. Certification and preparation provisions were known to vary widely among the states, but no detailed information, and no current information, was available on the specific situation for LISD fields across the 50 states. Further, participants at the meeting could not recall any LISD-focused analysis of such policies; certainly none could recall such an analysis ever having been conducted in order to inform policy development in Ohio. Subsequent systematic search of the literature confirmed that impression.[26]

Second, the experience of traditional districts and charter schools (also known in Ohio as "community schools") attempting to serve students with LISD was of even greater concern. The point of the policy discussions was to improve services to students, and, indeed, to increase the capacity of local districts to provide appropriate

---

[26] Ludlow and colleagues (2005) studied preparation, but not certification, in all low-incidence fields (e.g., including autism). The data were gathered in 2004-2005: more than 10 years ago.

services to students with LISD. So far as anyone present knew, no comprehensive

study had *ever* been conducted of the experience of local districts in this regard. The

study should, it seemed to the meeting participants, provide that information and, in

so doing, also establish a descriptive baseline against which future circumstances

might be compared. Accurately described circumstances, in other words, would

support the needs of ongoing policy discussions, now and in the future.

Shortly after the meeting, WFA drafted a conceptualization of the study, and,

following further consultation, finalized the conceptualization (see Appendix A). That

discussion and conceptualization comprised the origin of the present two-phase study.

The conceptualization was a beginning, and subsequently WFA extended the

initial conceptualization to include an overall empirical strategy and specific

procedures for conducting the two phases of the study. Description of the overall

empirical strategy appears next, followed by descriptions of the 50-state certification

and preparation effort, and then the district survey effort.

Overall Empirical Strategy

The study is a mixed-method effort in which quantitative data are assembled

and analyzed in each phase, but which also gathers and analyzes qualitative data in

the form of comments by interviewees (phase one) and respondents (phase two). This

design supports the development of both depth and breadth of information about state

and local (Ohio) responses to capacity issues implicated by the needs of students with

low-incidence sensory disabilities. Such a mixed-method approach is now often

known as "quantitatively-driven" (see, e.g., Johnson, Onwuegbuzie, & Turner, 2007).

The two phases of the study place emphasis on arriving at generalizable findings (applicable to an entire jurisdiction), but seek as well to add particularity via a subsidiary qualitative effort.

And at each phase, the researchers assembled a quantitative data set that they subjected to a variety of statistical analyses. Both phases, moreover, provide joint input to an interpretive synthesis that arrives at evidence-based conclusions and insights relevant to the ongoing policy discussions. This overall strategy, then, develops an empirical foundation adequate to the policy task facing stakeholders in Ohio.

The interweaving of qualitative and quantitative data gave the study access in both phases to multiple perspectives on reality. Quantitative data permit generalizability—to the nation in the first phase, and to the state in the second phase. Quantitative analysis uncovers patterns present within the data that characterize numerous cases (50 for the nation and 305 for the state, in this study). Such patterns disclose reality in its large structure. Qualitative data—comments from study participants—disclose, first, particularities of practice: unique dilemmas and situations that color the quantitative patterns existing at a larger, "macro" level. But content analysis of the qualitative data also shows macro patterns of a sort: domains of concern that those making comments share more widely. The two strands of data, together with the conclusions of the literature review, provide a robust system for constructing findings and deriving conclusions.

Although each phase gathers both qualitative and quantitative data, the two

phases differ somewhat in their approach to quantitative data. Phase one relies on documents (websites) and personal interaction with interviewees. Phase two was intended to gather data mostly via an online survey, but the plan provided for telephone data gathering, should it prove necessary. It did prove necessary, and, in fact, about half the respondents provided information in a telephone administration of the survey. Nonetheless, the two data-gathering protocols were very different. The phase-one protocol relied more on the interaction between researcher and informant; data gathering provided for open-ended responses and clarification of ambiguity. After data gathering, researchers created the quantitative data set from information acquired in a comparatively more discursive mode than was the case in the phase-two effort devoted to survey methods.

In both phases the comments led the interviewees (phase one) and respondents (phase two) back toward the "messiness" (or richness) of day-to-day experience. In general, the interplay of data strands strengthens studies, especially one such as this, where what districts decide, do, and struggle with are of primary concern. Experience, after all, is not a set of abstractions, even if patterns of reported experience can be deduced from quantitative data.

Fifty-state Certification and Preparation Phase

In order to provide a useful context for assessing policy options in Ohio, the study planners agreed that a national description of LISD certification and preparation arrangements was needed. This phase proceeded simultaneously along two trajectories: (1) inspection of all SEA websites for information relevant to the

preparation and certification of LISD teachers, and (2) interviews with all SEA special education directors (or designates).

Website data protocol. The research team developed procedures for gathering and maintaining data from SEA websites. First, we decided to gather the following data: (1) state, (2) URLs (for LISD-specific information), (3) contact (the most likely contact for interviews), (4) preparation summary information (researcher generated from website text), (5) certification summary information (researcher generated from website text), and (6) comments (for any reflections or questions evoked by website inspection). Then the team prepared a data sheet to record the specified data, and researchers subsequently completed one such protocol for each of the 50 SEA websites.

Second, after completing the data sheets for about 10 states, the team created a spreadsheet to display the most relevant data from all 50 states, with each row comprising the data for states. This spreadsheet displayed the following data by column (i.e., for each state): (1) state name; (2) interviewee name, title, length of tenure, and date interview was completed; (3) pathways to service (three categories: traditional, alternative, temporary); (4) types of license (name of license or certificate; availability of endorsement: yes or no); (5) alternative communication (Braille or sign required: yes or no); and (6) number of preparation programs (HI, VI, DB, O&M). When data collection was about two-thirds complete, we added two additional columns: (1) state percent rural population and (2) median family income for state (data from U.S. Census Bureau, 2016a; 2016b).

Maneuvering through the official SEA websites proved challenging. Some sites provided sufficient information about certification and preparation programming, but some did not. Interviewees, however, provided data to complete information for a state, and to confirm or modify information retrieved from SEA websites. Completion of the spreadsheet depended in part on completion of the interviews; procedures for conducting the interviews are described next.

Interview protocol. Interviews were necessary for several reasons: (1) website representations are variable, often insufficiently specific for the purposes of the study, and they are sometimes inaccurate (e.g., outdated); (2) the dynamics of state policy circumstances are not represented on websites; and (3) the study wanted information about preparation programs (e.g., numbers of programs as reported by state directors). Interviews were of course difficult to schedule: the target population is famously busy. Because the study wanted to make interviews short and at the same time design them to produce maximally useful information, we decided to conduct structured interviews. Questions were very specific but also permitted respondents to provide elaboration. The research team drafted questions and after several revisions, adopted the following interview protocol:

1. How many teacher preparation programs in your state offer VI licenses and endorsements? How many teacher preparation programs in your state offer HI licenses and endorsements? How many teacher preparation programs in your state offer DB licenses and endorsements?

2. Is the preparation a license or an endorsement? How do you define endorsement? How do you ensure equivalence of programming, preparation, and competence?

3. Do you offer a deafblind endorsement or license? Why or why not? If not, what licensures allow teachers to work with DB students?

4. What are the requirements to become a highly qualified teacher in VI? What are the requirements to become a highly qualified teacher in HI? What are the requirements to become a highly qualified teacher in DB?

5. Do you offer temporary or emergency licenses that allow instructors to teach VI? Do you offer temporary or emergency licenses that allow instructors to teach HI? Do you offer temporary or emergency licenses that allow instructors to teach DB?

6. To what extent are students served by teachers who are not fully credentialed in VI? To what extent are students served by teachers who are not fully credentialed in HI? To what extent are students served by teachers who are not fully credentialed in DB?

7. Can alternative routes lead to specialized licensure for HI? Can alternative routes lead to specialized licensure for VI? Can alternative routes lead to specialized licensure for DB?

8. Are teachers of the VI required to be trained in Braille? Are teachers of the HI required to be trained in sign language?

The study planned to interview all 50 state-level directors of special education,

but this intention—predictably—could not be fully implemented and the study asked

directors to nominate alternates. Since interviewees are known individuals, the study

could not offer interviewees confidentiality; but the identity of the individuals

providing information is not relevant, and the study report does not name them.

The interview data were recorded as notes on an interview document. These

documents, together with relevant artifacts, and the completed website data sheets,

were placed in a shared documents folder. Researchers completed the interviews in

December 2015. Data from the fifty-state phase of the study were prepared for

analysis in February 2016.

Ohio District and Charter Survey Phase

Once the phase-one work (just described) was well underway, the research

team turned attention to creating the phase-two survey to be administered to

traditional district and charter-school staff occupying the role of local education

agency (LEA) special education director (exact titles vary).[27] The survey was planned

for electronic administration via the SurveyMonkey utility (https://www.survey

monkey.com). Before designing the survey, however, the research team convened a

focus group to help surface issues important to local educators.

Focus group input. Although the study had planned to conduct a face-to-face

group meeting, such a gathering was too difficult because of the schedules of

participants. The "focus group" was therefore conducted as a series of individual

interviews between July 15 and August 4, 2015. Seven individuals with expertise

---

[27] This target population was specified by the focus group; the researchers had initially thought to survey superintendents.

were recommended by the Vision Project leadership as excellent sources of relevant information. The study team was able to secure interviews with six of the seven; repeated attempts to elicit participation from one nominee were not productive. Those interviewed responded to six questions intended to surface issues of pervasive concerns to districts, as follows:

1. In your experience, what are the most important concerns of districts with respect to teachers of and students with low-incidence sensory disabilities?

2. What specific questions should we be sure to include on the survey?

3. Considering these concerns and questions, now try to think of organizing categories for questions. What areas of districts' circumstances with respect to serving students' with low-incidence sensory disabilities should the survey address?

4. Initially we had planned to ask superintendents to complete the survey. But, in a recent similar study, the response rate from superintendents was very low—even after email reminders. This time, we have budgeted for reminders to be made via phone calls. But we are still worried about low response rates. Given that context, here's the question: Whom, at the district level, should the study survey?

5. How much time do you think is reasonable to ask of respondents in completing a survey of this sort? Is there a difference depending on the respondent group we choose, for instance, between superintendents and special education directors (or pupil personnel service directors)?

6. What do you think should be done to improve services to students with low-incidence sensory disabilities statewide? Again, we are interested in differences and variety here, not consensus!

7. Based on your experience and professional or personal understanding, would you propose any specific alterations to state policy or special education regulations? If none, why not?

Interviews took place by telephone; researchers took notes during the interviews, but also made backup recordings in case of a need to clarify points in the notes. Researchers combined responses under questions and produced a synthesis of suggestions: this synthesis was one source of input to the development of survey questions (this synthesis appears in Appendix B).

A second source of input was an initial review of the state-systemic literature on providing services to students with LISD. This step was important because it supplied a context for framing local issues in the survey; the focus group participants were notably more reluctant to engage question 7, above.[28] For the review, the team consulted 17 relevant sources and stopped adding sources when the appearance of new systemic issues became rare. The results of this synthesis appear in Appendix C.

Following these two efforts, the team drafted 10 questions and circulated drafts among team members and Vision Project leaders. Items were revised on this basis and became the second-draft items.

Before finalizing the survey items, the study team sought additional

_____

[28] The sole exception to this tendency was an informant with experience at both the SEA and in higher education. Another informant, in declining to offer any response, noted that policy changes always entailed wide ramifications that were difficult to judge.

suggestions from a large (n=28) stakeholder group: five from the Vision Project plus

23 others representing such organizations as the Ohio Center for Autism and Low

Incidence, preparation programs at the Ohio State University, local school districts,

the SEA, American Council of the Blind, the Ohio State School for the Blind, the

Ohio Center for DeafBlind Education. The stakeholder group met on October 14,

2015.

As a result of suggestions at this final review, *all* draft items received wording

changes, the Likert response scale anchors were changed, comment fields were added

to three items, and two completely new items were added (one related to professional

development and one related to the accessibility of specialized instructional materials).

Additionally, the final item, an open-ended one related to systemic issues, was

completely rewritten and the text shortened by half. The revision reoriented the

question away from explicit language about "systemic issues," instead eliciting "ideas

you may have for making qualified staff more accessible in your district or across all

districts statewide" (survey protocol, question 12). Additionally, several open-ended

comment fields were added to the protocol for survey items 6-11 (dealing with the

particulars of local service delivery). A copy of the final survey instrument, as

administered, appears in Appendix D.

Potential respondents, as suggested by the focus group and affirmed by the

stakeholder group, were district-level personnel exercising the functions —whatever

their actual title—of special education director for both traditional districts and charter

schools. For identifying these individuals exactly, the study received valuable

assistance from the Ohio Department of Education (ODE), which supplied a spreadsheet of districts and charter schools (n=745) and the associated personnel known to direct or supervise special education in them (n=595 individuals). The data set identified personnel working at a wide variety of organizations as well as school districts, including schools, Educational Service Centers (ESCs), county Boards of Developmental Disabilities, and other organizations. The study accepted the list as authoritative considering the source: the ODE would be the entity best positioned to track which local district or charter-school personnel exercised the role of special education director. These individuals, it seemed, were, probably those most likely, overall, to provide knowledgeable responses to the survey.

The researchers converted the ODE data layout to one better suited to the study's need to identify individuals (instead of organizations). We reorganized the data, therefore, by individual. If the data set identified an individual, in essence, he or she became a potential respondent. Because Ohio's district identifier (the IRN number) uniquely identifies organizational entities, the study was able to sort individuals by the IRN(s) for which they were responsible. Thirty-seven individuals supervised special education at multiple IRNs; four supervised more than 10 IRNs: one individual supervised 16 charter-school IRNs (operated by a single organization, in fact).

In this fashion, the study was able uniquely to identify 595 individuals embedded in the original data set. With the survey items finalized and the potential respondents identified, administration of the survey could begin. The survey items

were posted to the SurveyMonkey site on November 15, 2015. On that date, the 595 potential respondents received an initial invitation, followed over the next two weeks with four reminders, the last sent on December 1. Data collection via the online survey closed on December 15, with 131 responses received (a 22% response rate via that method of data collection). Anticipating a low response rate to an online survey, the study plan had provided for telephone follow-up calls to non-respondents.

Using options available through SurveyMonkey, the researchers identified non-respondents; then they developed procedures for contacting non-respondents, recording information about contact attempts, and administering the survey by telephone. Telephone follow-up calls began on January 8, 2016 and concluded June 2, 2016. The telephone procedures called for researchers to make five calls in the attempt to administer the survey on the phone to each non-responding local official. If no response was possible after five phone calls, attempts to secure a response ceased. In this manner the study gathered an additional 185 surveys. After inspecting the data set and eliminating cases empty of response, the final useful data set comprised 305 cases: a final response rate of 51.3%.

For a population of 595 to be represented at a 95% confidence level and a 5% margin of error (a typical standard in survey research), 234 cases are required. The study exceeded this standard, then, by 71 cases: effectively lowering the margin of error to 4.0% (300 cases required).

Data Analysis Plan

Analyses for the first phase summarize patterns in certification and preparation programming in four LISD fields (VI, HI, DB, O&M) across the nation (i.e., with data for the 50 states). These patterns are characterized by descriptive statistics: frequencies, means, and standard deviations. Additionally, the phase-one quantitative analysis explored relationships among variables, particularly for two key variables: one for certification and one for preparation programming.

For certification, the key variable was "certification regime." This variable was analyzed to disclose the characteristics of states (e.g., population) associated with choice of certification regime (endorsement vs. certification).

For programming, the key variable was "program intensity," a researcher-derived variable computed as the ratio of the total number of VI, HI, DB, and O&M programs to state population in millions. Program intensity served as an indicator of a state's capacity to supply LISD teachers to its residents. As with the analysis for certification regime, this analysis disclosed the characteristics of states associated with differences in program intensity.

The first-phase analysis concluded with a qualitative treatment of narrative data supplied by interviewees in response to questions about service to students with LISD from unqualified teachers (questions 7 and 8 in the interview protocol). The research team used simple content analysis to identify the major ideas provided through narrative responses. Remarks for these questions were the most interesting and fruitful for deriving policy insights because they came from policy makers and

those with special vantages on policy implementation; but they were still brief,

collected as they were in a structured interview. The comments were not sufficiently

lengthy, that is, to permit deep or "open" coding. Instead, we reviewed all the

comments (which were not numerous across 50 states) and induced three features of

the discourse to characterize what participants shared.

This analysis bears on states' approaches to *the service dilemma*: the mandate

to serve all students with HI, VI, and DB appropriately in the context of a durable

national lack of capacity to do so.

The second-phase analysis examined quantitative and qualitative data supplied

by the 305 respondents to the survey of Ohio districts' and charter schools' experience

providing services to students with VI, HI, and DB. On the basis of response rates, the

data are reasonably representative (95% confidence level, 4% margin of error) of

Ohio districts as a whole. In addition to variables produced from survey items, the

study also imported 94 contextual variables from national data sets describing districts:

such measures as percentage of children in poverty, percentage of children with IEPs,

median family income, ethnicity, and a range of fiscal variables (revenue and

expenditures calculated per pupil).

Quantitative analyses provided in the findings section include:

1. respondents compared to non-respondents,

2. descriptive statistics for individual survey items,

3. descriptive statistics for composite variables,

4. relationship of contextual to survey variables,

5. key variables describing district experience, and

6. comparison of struggling vs. confident districts.

The district survey also produced qualitative data from respondents, in the form of comments to the series of questions related to the following composite variables: (1) confidence in organizations providing support for LISD (20 comments), (2) LISD curricular domains addressed locally (17 comments), (3) access to training for groups of stakeholders (15 comments), (4) engagement of local educators with organizations providing support for LISD (12 comments), (5) quality of local provisions for students with LISD (11 comments),and (6) access to specialized instructional materials for LISD (6 comments). The survey also solicited a seventh series of comments (76 comments) via the final question on the survey, which focused on suggestions for improving access to qualified staff either in the district or statewide (see item 12 in Appendix D).

Researchers conducted a content analysis by reviewing all comments in each of the seven series and categorizing them by major themes. In the findings section, each series is characterized by an illustrative quote and a description of the themes evident in each series.

Both phases of data analysis contribute to an interpretive synthesis of findings focused on policy implications, which follows the discussion of findings. After the synthesis, the report concludes with policy-oriented recommendations for staffing and outreach.

<center>**Findings**</center>

This section presents findings from both phases of the study. Discussion

begins with the 50-state SEA policy phase, followed by findings from the survey of

Ohio districts. Both sections begin with caveats. The study was conducted to provide

information specifically to inform Ohio policy discussions, so these caveats caution

readers about limitations related to purposes, methods, and findings based on the

experience of conducting the study, not just those pertinent to design.

Fifty-State Policy Phase

The 50-state policy phase offers quantitative findings about (1) HI and VI

certification arrangements; (2) HI, VI, DB, and O&M preparation programs across the

50 states, including program intensity; and (3) insights from qualitative analysis of

interviewees' comments. The narrative in this subsection uses the standard two-letter

abbreviations instead of the full names of states.

Caveats. Quantitative (numerical) data for the following analyses of

certification and program preparation come principally from SEA websites and SEA

interviews, supplemented with online searches of programs for the five states (CT,

ME, NM, NY, and SC) in which the study was unable to obtain any interviews, even

after considerable effort.[29]

Qualitative data from interviewees obviously reflect only their own experience

---

[29] The information sought in these cases was whether or not the preparation programs in the state required coursework in alternative communication (i.e., Braille or ASL). Two of these states (CT, ME) offered no programs in HI or VI and were coded accordingly (i.e., nonexistent programs cannot impose requirements). Internet searches located courses of study for programs in the other three states (NM, NY, SC). HI and VI programs in those states did require the relevant alternative communication coursework (NM reportedly offered a program only in HI).

and knowledge. Interviewees' roles and experience varied widely, and this variety is surely the origin of error when interviewees were less familiar with circumstances bearing on some questions. The study did not attempt to fact-check the data supplied by interviewees (fact-checking interviewees is not typical in this type of inquiry).

The study had planned, in fact, to interview state special education directors (or designates) in all states, on the view that they were the officials best positioned to speak with authority. But in the event, the study was able to interview just five state special education directors (MA, MS, MO, ND, and OK), to judge from varied titles (e.g., director, assistant commissioner, or assistant superintendent: about 8% of all those participating in interviews).

The remaining interviewees[30] occupied other positions. Altogether about 40% of interviewees were certification experts; about 40% (including the five state directors) were substantive experts; and about 20% had more generic titles. In several states we interviewed two or even three experts. Interviewees in four states included experts in higher education or at state schools or projects outside the relevant state agency (e.g., certification in some states is granted by standards boards and not the SEA itself).

Because of the diversity of interviewees' positions and experiences, their remarks reflect a diversity of outlooks tied to scope of experience and position; remarks are not, therefore, equally authoritative or likely to be fully informed on all interview questions. In some states (n=7) interviews could not be conducted by

---

[30] Across the 45 states in which interviewees proved feasible, 66 people participated in interviews (a few states needed two interviews—but more often a single interview with multiple participants would involve two or three participants). Inferring expertise from titles, of course, is a question of judgment.

telephone, and the study accepted email responses to the 11 questions. In addition to answering factual questions, interviewees freely offered observations in response to some questions, particularly questions 7 and 8 (see full list above). The analysis of comments discloses approaches to the service dilemma experienced by all states, according to the review of relevant literature.

Findings about certification. Nearly all states reportedly offer certification in both HI and VI. The single reported exception is New Mexico, which reportedly does not provide certification in HI.

DB certification is reportedly offered in just 3 states: Illinois, Massachusetts, and Utah. The Texas interviewee claimed that the SEA was discussing *certification* (a DB *preparation* program reportedly exists in Texas). Pennsylvania had been exploring DB certification, but the plans have now reportedly been dropped.

All interviewees noted that O&M certification was national, through the Association for Certification of Vision Rehabilitation and Education Professionals (ACVREP). States authorize such professionals for work in schools on that basis.

Aside from such details, however, the most remarkable finding with respect to certification is the distinction between states that license LISD fields per se (i.e., as a stand-alone credential) and those that authorize LISD fields as endorsements (i.e., as add-on credentials to an existing primary license). Across all teaching fields, states may and do mix the licensing and endorsement models (Kaye, 2013), so that in some states (but not others) some licenses (but not others) may accumulate some endorsements (but not others). The range of possibilities is, in this manner, rather

complicated—and overall notably illogical. Each American state is the final authority

for such matters, and such variability resembles the variability found in other features

of American schooling that derive from this constitutionally "reserved right."

With respect to LISD fields, however, the separation of endorsement states

from licensing states is complete, based on the study's interview data. That is (with

the previously explained caveats in view), there are 29 endorsement states (i.e., AL,

AK, AR, CO, CT, DE, GA, HI, ID, IL, IA, KS, LA, ME, MI, MS, MT, NE, NV, NH,

ND, TN, UT, VT, WA, WV, WY) and 21 licensure states (AZ, CA, FL, IN, KY, MD,

MA, MN, MO, NM, NY, NC, OH, OK, OR, PA, RI, SC, SD, TX, WI). Licensure,

even in LISD fields, typically occurs at the undergraduate level, as a result of the

traditional certification regime (Bowen & Stearns, 1992).[31] Certification regimes that

widely deploy licensure and narrowly deploy endorsement are likely more traditional

(favoring lengthy undergraduate preparation as the main route to teaching in any

field).

By contrast, certification regimes that widely deploy endorsements apparently

presume that an existing licensure (of whatever sort a state may specify) qualifies a

teacher for a preparation program leading to endorsement, and such programs are (a)

by definition conducted at the "graduate" (i.e., post-baccalaureate) level even when

the specific content is identical to that required of undergraduates in a licensure

regime in another state; (b) typically of shorter duration (e.g., one to two years, as

---

[31] As noted in the review of the national research literature, 80% of VI programs take place at the
undergraduate level whereas about 50% of HI programs take place at the graduate level (Bowen &
Stearns, 1992). In other words, one can argue that that even today the traditional pathway remains
common for these fields.

opposed to four); and (c) often comprising fewer courses. These inferences point to strategic considerations (certification regime choices; pipeline tactics) useful for policy making.

Data analyses show that the prevailing certification regime (licensure or endorsement) is related to demographic context, most notably a state's total population. Table 2 contrasts the group of 21 licensure states (including Ohio) with the group of 29 endorsement states on three contextual features from the 2010 census: (1) total population, (2) percent rural population, and (3) median household income. Table 2 also compares Ohio to its five neighboring states on these contextual features. Three of the five are licensure states (IN, KY, PA) and two are endorsement states (MI, WV).

Endorsement states are smaller (if size is understood as population), somewhat more rural, and somewhat less affluent. Using pooled variance, the observed difference in population size is equal to about 0.80 standard deviations (r=.40). The equivalent estimates for magnitude of difference are .49 standard deviations (for percent rural, r=.25) and .15 standard deviations (for household income, r=.08). The relationship with population is moderate, weaker for rurality, and small for income. In short, endorsement states are overall substantially less populous, somewhat more rural, and a bit less affluent than licensure states.

Based on these relevant characteristics, Ohio's relatively large population—the most influential contextual variable—and its lower percentage of rural population mark it as a licensure state (which it is). As for median household

income, the weakest association of the three, Ohio more nearly resembles a typical endorsement state. The income difference between Ohio and other licensure states, moreover, is substantial: its median household income is nearly $7,000 less than the median of all the states that certify teachers in a licensing regime (or, using the pooled variance of all states, about .80 standard deviations less). Ohio ranks 13th from the bottom in median household income among states (cf. Louisiana, with the lowest median household income, at $39,622 and New Hampshire, with the highest, at $71,322).

Table 2

Certification Regimes in State Context

Regime/State	Population		% Rural		Income	
	mean	SD	mean	SD	Mean	SD
Licensure	9,381,105	8,991,229	22%	12%	$53,193	$9,209
Endorsement	3,832,434	3,306,808	29%	16%	$51,909	$7,017
Ohio[a]	11,536,504		22%		$46,398	
Pennsylvania[a]	12,702,379		21%		$53,952	
Kentucky[a]	4,339,367		42%		$42,158	
Indiana[a]	6,483,802		28%		$50,553	
Michigan[a]	9,883,640		25%		$48,801	
West Virginia[a]	1,852,994		51%		$40,241	

Note. Source: U.S. Census Bureau (2012, 2011b)

[a] Ohio is a licensure state. Of the five contiguous states, three maintain licensure regimes (PA, KY, IN) and two endorsement regimes (MI, WV).

Finally, one must stress that "endorsement state" in this study means with respect to LISD certification: most states use endorsements in some fashion, some

quite liberally and some quite sparingly. Usage in Ohio is sparing. In LISD fields, however, the separation between endorsement states and licensure states is mutually exclusive (according to interview data). In the context of such variability, it is worth nothing that the six most rural states (44% to 61% rural: AR, ME, MS, MT, VT, WV) use endorsements with LISD fields. By contrast, the six most urbanized states (5% to 9% rural) are equally split between endorsement regimes (NJ, HI, NV) and licensure regimes (CA, FL, RI).

The use of the endorsement option with any LISD teaching field is a policy alternative regardless of the prevailing tendency in a state, and arguably more so than usual because of prevalent staffing shortages in LISD fields. That is, one-size-fits-all certification policies seem to impose needless barriers to providing appropriate services to students with HI, VI, and DB. This view of the alternatives might be particularly germane in states like Ohio with relatively limited resources because the endorsement option offers efficiencies that are not available with the full-licensure option.

Findings about numbers of preparation programs. As revealed above, with New Mexico's exception on HI, all states offer HI and VI certification, and almost none offer DB certification. Findings about preparation programming, however, are much more complex. Table 3 provides a summary of the number of reported program offerings by state (i.e., as reported by interviewees).

About half the states (n=26) reportedly have institutions of higher education (IHEs) that provide *both* HI and VI programs (AL, AZ, CA, CO, FL, IL, IN, KY, MA,

MI, MO, NE, NH, NJ, NY, NC, ND, OH, PA, SC, TN, TX, UT, VA, WV, WI). About

one-quarter of the states (n=12) reportedly *lack IHEs that provide any LISD programs*

at all (AK, CT, DE, IA, KS, ME, MT, NV, RI, VT, WA, WY). About 15% of states

(n=7) reportedly have IHEs that provide only HI programs (GA, HI, ID, MD, MN,

MS, OK), and 8% (n=4) reportedly have only VI programs (LA, NM, OR, SD).

Table 3

LISD Programming by State

ST	N of programs	Population	HI	VI	DB	OM	BRL	ASL
AL	2	4,779,736	1	1	0	0	0	0
AK	0	710,231	0	0	0	0	0	0
AZ	2	6,392,017	1	1	0	0	0	0
AR	1	2,915,918	0	0	0	1	1	0
CA	10	37,253,956	5	3	0	2	0	0
CO	3	5,029,196	1	1	0	1	1	1
CT	0	3,574,097	0	0	0	0	0	0
DE	0	897,934	0	0	0	0	0	0
FL	6	18,801,310	3	1	1	1	1	1
GA	3	9,687,653	2	0	1	0	1	0
HI	1	1,360,301	1	0	0	0	0	0
ID	1	1,567,582	1	0	0	0	0	0
IL	5	12,830,632	2	2	0	1	1	1
IN	2	6,483,802	1	1	0	0	0	1
IA	0	3,046,355	0	0	0	0	0	0
KS	0	2,853,118	0	0	0	0	0	0
KY	2	4,339,367	1	1	0	0	0	0
LA	1	4,533,372	0	1	0	0	1	1
ME	0	1,328,361	0	0	0	0	0	0
MD	1	5,773,552	1	0	0	0	1	0
MA	3	6,547,629	1	1	0	1	1	1
MI	2	9,883,640	1	1	0	0	1	0
MN	1	5,303,925	1	0	0	0	1	1
MS	1	2,967,297	1	0	0	0	1	0
MO	4	5,988,927	2	1	0	1	1	0
MT	0	989,415	0	0	0	0	0	0
NE	4	1,826,341	2	1	0	1	1	1
NV	0	2,700,551	0	0	0	0	0	0
NH	2	1,31,6470	1	1	0	0	1	1
NJ	2	8,791,894	1	1	0	0	1	1
NM	1	2,059,179	0	1	0	0	1	0
NY	8	19,378,102	4	3	0	1	1	1
NC	6	9,535,483	3	1	1	1	0	0
ND	2	672,591	1	1	0	0	1	1
OH[a]	4	11,536,504	3	1	0	0	1	1
OK	2	3,751,351	2	0	0	0	1	1
OR	1	3,831,074	0	1	0	0	1	1
PA	7	12,702,379	3	3	0	1	0	0
RI	0	1,052,567	0	0	0	0	0	0

ST	N of programs	Population	HI	VI	DB	OM	BRL	ASL
SC	2	4,625,364	1	1	0	0	1	1
SD	1	814,180	0	1	0	0	1	0
TN	6	6,346,105	3	3	0	0	0	0
TX	12	25,145,561	7	2	1	2	1	1
UT	4	2,763,885	2	1	1	0	1	0
VT	0	625,741	0	0	0	0	0	0
VA	2	8,001,024	1	1	0	0	1	1
WA	0	6,724,540	0	0	0	0	0	0
WV	3	1,852,994	1	2	0	0	0	0
WI	3	5,686,986	1	2	0	0	1	0
WY	0	563,626	0	0	0	0	0	0
US total	123	306,827,345	123	62	42	5	14	27
US mean	2	6,261,783	2	1	1	0	0	1

Note. ST=state; N of programs=total number of programs; Population=total state population in 2010; HI=n of programs reported in hearing impairment; VI=n of programs reported in visual impairment; DB=n of programs reported in deafblindness; OM=n of programs reported in orientation and mobility; BRL=whether (1) or not (0) VI programs reportedly require braille coursework; ASL=whether (1) or not (0) HI programs require coursework in American Sign Language.

[a.] To keep data sources comparable, the study always uses the number of programs reported by interviewees. In OH, the interviewee was unaware that one HI program had recently closed, but also did not report OH's O&M program.

About one-quarter of the states (n=12) reportedly have IHEs that offer O&M programs (AR, CA, CO, FL, IL, MA, MO, NE, NY, NC, PA, TX): all but Arizona also offer both HI and VI programs. Interviewees reported that 5 states (FL, GA, NC, TX, UT) have IHEs with DB programs. This list differs from the 2015 list of 4 (AZ, CA, NY, TX) provided by the recent Gallaudet report (University and College Programs, 2015). The only states reported to offer at least one program each in HI, VI, DB, and O&M are Florida, North Carolina, and Texas. Nationwide, LISD programs are rare indeed compared to (high-incidence) special education preparation programs overall.

Even at a superficial level, the rarity is complicated. One quarter (n=12) of the states reportedly have IHEs that offer just one program in HI and one in VI across all

of their IHEs: AZ, AL, CO, IN, KY, MA, MI, NH, NJ, ND, SC, and VA. Surprisingly, *most states* in this group have a total 2010 population greater than the median for all states (4,533,372); only KY, NH, and ND have lower populations. One might have anticipated that a large population base would support more extensive programming, but it does not (Ohio is an example, as the discussion will show). Indeed, MI—reportedly with just one program each (and none in DB or O&M)—has a population greater than the median for all licensure states (see Table 3; recall that population is strongly related to certification regime—LISD endorsement states are smaller in general).

Almost one third of the states (n=16) have IHEs that reportedly offer more than two programs: CO, GA,[32] MA, OH, WV, WI (3 programs); MO, NE, UT (4 programs); IL (5 programs); FL, NC, TN (6 programs); PA (7 programs); NY (8 programs); and TX (12 programs).

Inspection of the data in Table 3, and the counts provided in the foregoing discussion suggest the possibility that total number of programs offered in a state is related to the total population of the state. The same contextual variables described in the previous subsection (on certification regimes) were available for exploration here. Table 4 presents only those with moderate-to-strong magnitude. In addition to those presented in the table, the study also examined population density, geographic area, and median household income. Those variables showed negligible relationship to the number of programs provided. The strongest of them all was geographic area (r=.12).

---

[32] GA reportedly offers 2 HI programs, none in VI, and one in DB (see Table 3).

Table 4

Moderate-to-Strong Bivariate Relationships

	Programs	Regime	Population
Regime	-.40		
Population	.84	-.40	
Rural	-.31	.25	-.45

The variables in Table 4, then, exhibit a notable relationship to the number of programs offered in a state. Of these, by far the strongest is total population (r = +.84). This magnitude means that total state population alone explains 71% of the variance in number of programs offered across the nation (the square of the correlation statistic): the larger the population, the more programs offered. At the same time, certification regime (licensure = 0, endorsement = 1) is negatively correlated at r = -.40: licensure regime is associated with fewer programs and endorsement with more programs (again, Ohio is a licensure state). Similarly, a higher proportion of rural population is associated with fewer programs, though to a modest degree.

Of greater interest than bivariate relationships is how these contextual influences operate *jointly*. The study conducted multiple regression analysis to see if the three variables together would predict number of programs. Only total population survived as a statistically significant predictor of total number of programs offered in a state: the more modest predictors (i.e., variance associated with percent rural population and certification regime was accounted for through their association with total population).

Although the number of programs reportedly offered within a state is strongly

related to population size, this relationship is a tendency (r = .84 or roughly 71% of

the variance). The unexplained variance (29%) means that the prediction is imperfect.

Additionally, none of the other contextual variables ("the usual suspects") available

for analysis exerts much additional influence *on number of programs*. Sheer number

of programs, though, is not a useful measure in itself. The capacity of whatever

number of programs exists in a state relates to the size of the population to be served.

Arguably, the number of students served by programs in a state would also have a

bearing, but we did not have access to that information.

Findings about state program capacity. Given the strong relationship of

population to number of programs, one might well wonder about the comparative

capacity of states to offer programs *sufficient to meet student needs*. Simply

inspecting the raw data in Table 3 suggests that population alone hardly explains such

capacity: population and number of programs vary imperfectly. So the unexplained

variance (see Table 4) is worth considering from a different vantage: *program*

intensity per population unit. Program intensity is an indicator of the capacity of a

state to serve the state's students with VI, HI, and DB, as we explain next.

The more programs per unit of population, the more educators a state's IHEs

will supply for schools and students, all else equal. Compare, for instance, a state with

a population of 10 million in which IHEs offer four programs to a state with a

population of 1 million in which IHEs offer two programs. Which of these states (all

else equal) exhibits the greater capacity to supply its schools and students with

qualified educators? The one with higher program intensity.

One can compute *program intensity* as a ratio: for instance, 4 programs/10

million as compared to two programs/1 million: 0.4 as compared to 2.0. The smaller

state has a program intensity five times that of the larger state. In this framework,

population functions quite differently, and more usefully—to indicate *capacity for*

providing adequate service (a free and appropriate public education for students with

HI, VI, and DB).

The hypothetical comparisons just given by way of illustrating the concept,

however, match almost exactly the program intensity levels in actual states: for

instance, Nebraska (four programs in a population of 1.8 million, = 2.19 program

intensity) and Texas (12 programs in a population of 25.1 million = 0.48 program

intensity). Many states are like Texas, and comparatively few like Nebraska.

The data in Table 5 show that, on the one hand, seven states (ND, NE, WV,

NH, UT, SD, TN) exhibit a program intensity of about 1 per million population. On

the other hand, 12 (those where IHEs reportedly offer no programs) exhibit a program

intensity of 0. For states with IHEs that reportedly offer one or more programs (n=38),

intensity ranges from a low of .17 (MD) to a high of 2.97 (ND). ND's 2.97 puts the

state more than four standard deviations above the mean for all 50 states; the states

with no reported programs are almost one standard deviation below the mean. Ohio,

at PI=.35, is one-fourth of a standard deviation below the mean for all 50 states (and

at the median of this positively skewed distribution, where 12 states have PI=0).

Table 5

Program Intensity by State (ranked from high to low intensity)

ST	PI	Regime	Rural	N prog
ND	2.97	1	40	2
NE	2.19	1	27	4
WV	1.62	1	51	3
NH	1.52	1	40	2
UT	1.45	1	9	4
SD	1.23	0	43	1
TN	0.95	1	34	6
HI	0.74	1	8	1
MO	0.67	0	30	4
ID	0.64	1	29	1
NC	0.63	0	34	6
CO	0.60	1	14	3
PA	0.55	0	21	7
OK	0.53	0	34	2
WI	0.53	0	30	3
NM	0.49	0	23	1
TX	0.48	0	15	12
KY	0.46	0	42	2
MA	0.46	0	8	3
SC	0.43	0	34	2
AL	0.42	1	41	2
NY	0.41	0	12	8
IL	0.39	1	12	5
OH	0.35	0	22	4
AR	0.34	1	44	1
MS	0.34	1	51	1
FL	0.32	0	9	6
AZ	0.31	0	10	2
GA	0.31	1	25	3
IN	0.31	0	28	2
CA	0.27	0	5	10
OR	0.26	0	19	1
VA	0.25	1	25	2
NJ	0.23	1	5	2
LA	0.22	1	27	1
MI	0.20	1	25	2
MN	0.19	0	27	1
MD	0.17	0	13	1
AK	0	1	34	0

ST	PI	Regime	Rural	N prog
CT	0	1	12	0
DE	0	1	17	0
IA	0	1	36	0
KS	0	1	26	0
ME	0	1	61	0
MT	0	1	44	0
NV	0	1	6	0
RI	0	0	9	0
VT	0	1	61	0
WA	0	1	16	0
WY	0	1	35	0
Mean	0.49	0.58[a]	26.46	2.46

Note. ST=State; PI=program intensity; Regime=certification regime (endorsement state = 1, licensure state = 0); Rural=proportion rural population; N prog=number of programs reportedly offered by IHEs in state. The mean for states with programs (n=38) is 0.64.

[a.] 58% of states are LISD endorsement states.

How does program intensity, measured with total population, translate to school-aged children (ages 5-18)? The translation is easily estimated. In 2010, approximately 18% of the total population was between the ages of 5 and 18 (U.S. Census Bureau, 2016c). North Dakota, with the highest PI (2.97), has a total population of 672,951, 18% of which is 121,131. If students with HI, VI, and DB comprise about 0.25% of that population (see discussion on p. 19 of this report, which considers such an estimate for Ohio), we might roughly estimate the North Dakota student population with HI, VI, and DB at about 300 students (more or less). Intensity is population per program. In other words, the North Dakota student-based program intensity (on this estimated basis) would translate to roughly 300 LISD students per preparation program. Maryland, with a PI of .17 and a total state population of 5,773,552 (about 80 times the size of North Dakota's population), would have an

estimated 2,600 students with HI, VI, or DB.[33] But Maryland reportedly has just one

HI program, so PI translates to 2,600 students per preparation program as compared to

ND's 300 per program. These figures are rough estimates, of course. But the

difference between roughly 2600 and roughly 300 in this context has practical

importance (even if the "true" figures were somewhat different from these rough

estimates).

What about Ohio? With a comparatively large 2010 population (11,536,504)

and four reported (and actually existing) programs, with an estimated 4,700 students

with LISD[34] (see pp. 19-20 in this report), the ratio would be 1175 per program

(4700/4). Ohio's student-based intensity, on this basis, would be four times weaker

than North Dakota's.

Thus, to exhibit program intensity equal to that of North Dakota, *Ohio*

institutions would need to operate about 16 HI, VI, DB, and O&M programs: more

than the most offered in any state (i.e., with Texas reportedly offering 12 programs,

which in a state so large, produces a PI of just 0.48, that is, close to the average). This

estimation does not mean that Ohio IHEs *should* add 12 programs to those currently

existing. But the shocking result does provide a real-world context (North Dakota

actually provides this programming in a small rural state) and a kind of high standard

(2.97 vs. 0.35). More reasonable estimations follow the presentation of regression

results: those estimates use the regression equation discussed next.

---

[33] 5,773,553 * .18 * .0025 = 2,598

[34] 5,000 by the estimates based on 18% and .0025% used with ND and MD.

The variability of program intensity (PI) across states is remarkable. Among the 38 states where IHEs reportedly offer at least one program, the ratio of smallest (MD) to largest (ND) PI is more than 17 to 1. *North Dakota's PI is more than eight times the PI for Ohio.* These differences in program intensity, whether measured directly or in standard-deviation units, are dramatically—even shockingly—large.

With so much variability, it is useful to see if we can identify practically and statistically significant influences on PI. What contextual features might be related to PI? What proportion of the variance in PI might be associated with such features?

The study assembled a range of possible influences and investigated their combined relationship to PI. The result is a prediction equation based on data for the 38 states with program intensity measures. (States without programs by definition lack data: a division by zero issue.) Table 6 provides descriptive statistics for the variables assembled by the study and used in the analysis.

The variables new to the discussion include 2010 per pupil expense (PPEXP), per pupil special education expense (2010 dollars for special education salaries divided by the number of special education students), the ratio of these two variables (a measure of the intensity of special education expenditures given overall expenditures), the state's Gini coefficient (based on the distribution of 2010 household incomes—*Gini* is a well-known measure of degree of income equality that varies in magnitude from 0, for complete equality, to 1, for complete inequality), average school size (2010 enrollment divided by number of schools), average district size (2010 enrollment divided by number of regular public school districts), and area

(geographic area of states in square kilometers). This array constitutes a collection of "usual suspects" in studies that attempt to account for contextual influences on a key policy variable (LISD program intensity, in the present case).

Features of the descriptive statistics given in Table 6 are worth highlighting, compared to those for Ohio (right-hand column). Program intensity for Ohio, compared to all 38 states that offer programs, falls *half a standard deviation below the mean.* OH's comparatively low level of program intensity should concern educators, families, and policy makers who care about services to students with HI, VI, and DB.

At the same time, the amount of funding devoted in Ohio to special education salaries per pupil (PPEXP-SE) is 0.42 standard-deviation units above the mean for the comparison states (n=38). And the ratio of per-pupil special education to per-pupil total expenditures is also above the mean for these states (equal to about 0.40 standard-deviation units). Income, however, is substantially lower than average for this group, as noted previously: about 0.64 standard-deviation units. District size is also about 0.27 standard-deviation units smaller than average. The remaining variables (i.e., per pupil expenditure, Gini, percent rural, school size, area) are similar to the average for the group of 38 states with at least one LISD program.

Table 6

Descriptive Statistics for Program Intensity and Selected Context Variables

Variable[a]	Mean	Median	SD	Min	Max	Ohio[b]
PI	.64	.45	.60	.17	2.97	.35
Regime	.47	.00	.51	0	1	0
PPEXP	$11,068	$10,724	$2,073	$7,042	$16,239	$11,719
PPEXP-SE	$4,622	$4,432	$1,938	$1,905	$12,198	$5,442
Sped ratio	.41	.42	.13	.19	.75	.46
Income	$52,029	$52,328	$8,744	$39,622	$71,322	$46,398
Gini coefficient	.46	.46	.017	.42	.50	.45
Rural	25.42	26.00	13.069	5	51	22
School size	474	473	118	178	685	467
District size	10,863	3,834	29,266	538	179,601	2,852
Area (in km^2)	160,640	136,850	120,867	16,630	676,600	105,800

Note. N=38 states with at least one LISD program. PI=program intensity (programs per one million total population); Regime=state certification regime (endorsement=1, licensure=0); PPEXP=total expenditures per pupil 2010; PPEXP(SE)=special education salary expenditures per special education student 2010; Sped ratio=PPEXP-SE divided by PPEXP; Income=median household income 2010; Gini coefficient=measure of household income inequality 2010; Rural=proportion rural population in 2010; School size=total enrollment 2010 divided by number of public schools 2010; District size=total enrollment 2010 divided by number of districts 2010; Area=geographic area in square kilometers; Area=geographic area of state in square kilometers.

[a.] Sources for variables (see reference list for full entries): Dependent variable: PI=interview data (n of programs), U.S. Census Bureau (2012); Independent variables: Regime=interview data; PPEXP=Kids Count (2016); PPRXP-SE=TA&D (2016), NCES (2016b); Sped Ratio=PPEXP-SE/PPEXP; Income=U.S. Census (2012); Gini coefficient=U.S. Census (2011b); Rural=U.S. Census (2011b); School size=NCES (2013b, 2013a); District size=NCES (2013a, 2014); Area=U.S. Census (2016a).

[b.] To keep data sources comparable, the study always uses the number of programs reported by interviewees; in fact, in OH, one of the 3 HI programs reported by the interviewee recently closed, but OH IHEs also offer one O&M program not reported by the interviewee.

Among this collection, as it turns out, the variables with the zero-order

correlations to program intensity greater than r = .10 among the 38 states where IHEs

reportedly offer at least one program appear in Table 7, listed in order of the absolute

value of magnitude:

Table 7

Bivariate Relationships Greater Than r = .10 with Program Intensity (PI)

Independent Variables	r (zero-order correlation)	p (significance level)
School size	-.55	.00
Gini coefficient	-.51	.00
Regime	+.34	.04
Rural	+.33	.04
PPEXP	+.23	.16
Sped-Ratio	-.19	.26

Note. N=38; correlations with PPEXP and Sped-Ratio are not statistically significant.

Table 7 shows the bivariate (or "zero-order") relationship between pairs of just

two variables—the respective independent (or predictor) variables and the dependent

(or predicted) variable—program intensity (PI) in this case. This relationship, though,

is not a unique influence. Why? The two variables (dependent variable and the

respective independent variable, e.g., "Rural") *also* share relationships with the other

variables in the list of independent variables (e.g., "School size" and "Rural" are also

related) and indeed, with still other unlisted variables.

Multiple regression analysis (the report of which follows directly) is needed to

disentangle these joint influences from one another, so that the unique influence of

each predictor variable (and, indeed, just which set of predictor variables) might

exhibit the strongest relationship with the predicted variable (program intensity).

Nonetheless, Table 7 harbors some apparent surprises. Why, among such key

contextual variables should *school size* (but not district size, listed in Table 5) exhibit

such a strong negative influence on program intensity? And wouldn't one anticipate a

positive, not a negative influence of *Sped ratio*? Why is household income weakly

related (r=.09, p=.60), but income inequality (*Gini*) so strongly related (-.51, p=.00)?

And why is being an "endorsement state" positively related to program intensity? We

don't know. The study was designed to discover such relationships (or lack of

relationships) rather than to account for them.

In any case, if one added together the proportions of variance indicated by the

zero-order relationships listed in Table 7 (i.e., added together the squares of all the

correlation coefficients [r^2]), the resulting sum would be misleading: about 75%. The

joint influence of bivariate relationships cannot be calculated so simply, however. One

must first calculate and remove the variance shared among independent ("predictor")

variables in order to discover the unique net relationship of each independent (or

predictor) variable to the dependent (predicted) variable. That is what multiple

regression analysis accomplishes.

Table 8 reports the final result of regression analysis designed to produce the

smallest set of predictor variables exercising the largest amount of influence on

program intensity. The analysis set p < .10 as the threshold for entry of variables in a

stepwise procedure; all predictor variables in Table 6 were available for use.[35]

Table 8

Significant Influences on Program Intensity (Hierarchical Linear Regression)

Variables	B	Β	t	p
(Constant)	5.961		2.725	.010
School size	-.002	-.411	-2.914	.006
Gini	-9.833	-.279	-1.948	.060
Regime	.298	.253	1.966	.057

Note. Significance levels for entry set at p<.10. N=38. B=unstandardized regression coefficient (units are those of the original variable); β=standardized regression coefficient (based on variables in standard-deviation units of the original variable); t=ratio of the coefficient to its standard error; p=significance level. Adjusted R^2=.43.

Table 8 shows that *school size, Gini*, and *regime* exert statistically significant

influences on program intensity, and that the directionality (positive or negative)

remains the same as in Table 7 (bivariate analysis). The larger the average school size,

the lower the program intensity in a state. The influence (-.411) can be translated as

follows: for every standard-deviation unit of change in school size (118 students),

program intensity (PI) decreases by .41 standard-deviation units (~.41 * .595 = -.24).

Table 9 provides the three "translations" into changes to PI.

---

[35] The procedure selects the strongest influence, and then the next strongest remaining, and so on until the remaining variables exhibit relationships that violate the threshold. In typical analyses, the threshold is set at p = .05, but for this analysis with just 38 cases, the study established a more relaxed standard (1 chance in 10 as opposed to 1 in 20 that the results are due to chance alone). Arguably, however, significance levels (p values) are irrelevant when an analysis uses data for an entire population (all relevant states). There are, indeed, no other states to which the data apply, and no inferences are to be made from this group of states to any other group of states. However, such procedures are necessary to avoid developing an equation so confounded by multiple collinearity that it cannot be relied upon. Variance inflation factors for the equation in Table 9 are all under 2.5.

Table 9

Changes to Program Intensity by Predictor Variable

Variable	B (SD units)	Δ PI (original units)
School size	-.411	-.24
Gini	-.279	-.17
Regime	.253	+.15

Table 9 shows the exact magnitude of change in program intensity predicted by changes in the variables shown to predict it. PI, we might recall, is the ratio of number of programs per million population (which, as demonstrated previously, translates to number of LISD students per preparation program). Column three translates the magnitude of influence reported in Table 9 into magnitude of change to program intensity. This translation demonstrates in practical terms the impact of such changes among all 38 states. *Across the nation, smaller schools, greater income equality, and fielding an endorsement regime are associated with predictably higher levels of program intensity.*

The statistics in Table 8 define a prediction equation that can be used with existing OH data. Values of the variables for OH are simply substituted in the equation. For this demonstration, it is more appropriate to use the unstandardized version of the equation with the unstandardized values given in Table 8 (i.e., instead of the standardized version based on a transformation of values into standard-deviation units). The resultant PI value—the one the equation predicts for Ohio based on the state's school size, degree of income equality, and certification regime—can be translated into predicted numbers of LISD programs for the state.

Here is the equation (see Table 8 B-coefficients, not β-coefficients) with the

94

values for OH substituted in it ($\hat{y}$ = predicted value of program intensity; see Table 7 for the OH values of independent variables):

$\hat{y}$ = -.002(school size) - 9.833(Gini) + .298(regime) + 5.961

$\hat{y}$ = -.002(467) - 9.833(.452) + .298(0) + 5.961

$\hat{y}$ = -0.934 - 4.445 + 0 + 5.961 = .582

One can contrast the predicted value for Ohio of PI = .58 with the actual value of .35. Based on its actual contextual features, then, Ohio exhibits a lower PI than predicted (based on characteristics derived from the values in all 38 states with reported LISD programs). What number of programs does the predicted value of .582 translate into? The calculation is simple: 11.54 * .582 = 6.72.

In other words, based on what is *normal* across the nation for the intensity of LISD programming *under the present inadequate provisions*, OH would operate seven LISD programs rather than the current four.[36] Observe that a very similar result would be obtained if one simply suggested that Ohio should achieve the average PI (0.64) for all 38 states (this is the simpler example used in the Executive Summary). Associations are not causal, but current "normal" conditions are clearly inadequate nationwide. Average effort among an overall inadequate effort is a low standard.

Findings from interviews. Although the policy-phase interview protocol (see methods section) used a structured format (asking for specific answers) rather than a semi-structured format (asking for rich descriptions of experience), many interviewees nonetheless offered observations more detailed than expected. Individual

---

[36] Based on the 38 states with programs, HI programs slightly outnumber VI programs (by a ratio of 1.21 to 1).

responses did not exceed 200 words. Many were about 100 words; and most were shorter: perhaps 30 words on average. These brief observations provide a somewhat unanticipated source of qualitative data.

Two related questions predictably elicited the most detailed disclosures: question 6 (*To what extent are students served by teachers who are not fully credentialed?*) and question 7 (*How does the state handle the placement of students with impairments in classrooms where they do not have a fully credentialed teacher?*). Question 6 elicited views more relevant to preparation and question 7 elicited views more relevant to certification. These questions specifically target state responses to the LISD service dilemma so clearly described in the national research literature: the mandate to serve all students with HI, VI, and DB appropriately in the context of the durable national lack of capacity to do so, in particular the reported lack of access to qualified LISD personnel reported in the research literature.

The brevity of remarks renders detailed analysis ("open coding") inappropriate. Instead, we characterize three features of the discourse across the observations: (1) degree of guardedness, (2) symbolic role of the IEP in handling the service dilemma, and (3) practices used to manage the service dilemma. These features are discussed in the following subsections.

Guardedness. Interviewees responded with more or less candor to these questions. Email responses were notable for guardedness: typical responses received by email involved excerpts from state regulations. Telephone interviews, by contrast, more often produced comments that acknowledged the existence of a service dilemma,

and these interviews sometimes described states' particular responses to the service

dilemma. Email responses, by sharp contrast, simply did not acknowledge the

existence of a service dilemma.

Many SEA interviewees, when asked how the state handled placement in

situations without "fully credentialed" LISD teachers, observed that such problems

were the purview of LEAs. A few of these interviewees added that the state had no

knowledge of local situations; more SEA interviewees (though still a minority)

described reports required of LEAs, provisions to assist LEAs, and plans required of

LEAs to resolve the problem. The most complete of these responses was offered by

the interviewee from Missouri:

> *Question 7 response*: The teacher certification process would pick up a teacher
>
> who is teaching out of field and we review that annually. Schools are notified
>
> almost immediately by the system if they enter a teacher who is not
>
> certificated in the appropriate area. We might also identify issues during an
>
> on-site review or through a child complaint. Districts have many options they
>
> may pursue including coops, sending students to other districts under
>
> contractual agreements, contracting for services, etc. We also have outreach
>
> supports for districts from the Missouri School for the Deaf and the Missouri
>
> School for the Blind. We also have several Blind Skills Specialists located
>
> around the state to support school districts (not to teach students). Interpreters
>
> for the deaf must be certified to interpret through the Missouri Commission for

Deaf and Hard of Hearing—a somewhat independent commission that falls

under our agency.

An example of a similar, but less complete, observation, is the one offered by the

interviewee from Idaho:

Question 7 response: Districts have to have someone on a plan, so if they don't

have the credentials or working toward them then a plan is in place, with

timelines. In terms of notifying the family, there is no process from [the] state.

Only at district level.

Symbolic role of the IEP. Everywhere in the nation IEPs govern the

educational program for students with LISD. If an IEP developed in view of often

inadequate local capacity does not specify services to these students from a LISD

professional, the official stance (via the IEP) is that these students do not require such

services. The locally developed IEP, in other words, serves symbolically as the

ultimate authority of appropriateness. Interviewees in some states therefore flatly

denied the existence of the familiar service dilemma, as with these two responses

from one state:

Question 6 response: We are unsure about this, but you could submit a public

records request to publicrecords@doe.in.gov.

Question 7 response: These decisions are made within local schools.

Other interviewees, however, freely admitted the problems associated with the service

dilemma, as in Texas and Wyoming:

Question 6 response: Rules don't allow for it, but it happens sometimes. With 1,200 districts and charter schools, it's hard to avoid. (TX)

Question 6 response: Certainly there are kids who are not receiving direct services based on the needs. (WY)

One interviewee in North Carolina precisely articulated the misuse of IEPs to warrant as appropriate whatever services were offered:

Question 7 response: We in education would argue that there is a tremendous difference in how students are served in affluent vs. rural counties. Nobody has the right to say we can't serve them, so they'll get lousy services. So in name only they may be being served, but maybe by someone who doesn't meet the needs of kids.

The symbolic misuse of the IEP for this purpose (a misuse arguably common across the nation) might be more trenchantly characterized as a "Catch-22"; if the service provided is inappropriate and a student has an IEP, then the service provided isn't inappropriate.[37]

Practices to deal with the service dilemma. The observations offered by interviewees in some states hint at an assortment of practices that SEAs anywhere might consider in addressing the service dilemma:

- having LEAs report about students with HI, VI, or DB who are served by incompletely qualified teachers (e.g., AK, ID);

---

[37] The term "Catch-22" comes from the 1961 novel of the same title by Joseph Heller. The novel is about flight crews in the Second World War, for whom the only disqualification from flight duty was insanity, but anyone who applied for disqualification on that basis was, ipso facto, confirmed as sane. The term represents an insoluble dilemma. Although the LISD service dilemma may be persistent, it cannot be insoluble.

- assigning fully qualified teachers to "mentor" incompletely qualified teachers (e.g., AK, WI);

- requiring unqualified teachers to become qualified in a specified timeframe (e.g., AZ, HI);

- building endorsements on BAs outside of education (e.g., MO);

- changing statewide salary scales (e.g., GA); and

- using Educational Service Agencies as part of program delivery (e.g., AK).

A few (states like MO) seem to have a strategically planned system. If conceptualizing strategic changes to preparation programs and certification regimes, states might consider designing such a system in order to help address the service dilemma more durably and completely.

Summary of phase-one findings. Findings for certification and for preparation programming distill the complex national practices into useful information for Ohio policy making in the LISD fields. Such practices are complex, but the study was able to clarify key features for its purposes. These include the concepts of *certification regime* and *program intensity.*

First, the summary considers certification. Nearly all states reportedly offer certification in both HI and VI. DB certification is reportedly offered in just three states. More important than which fields are certified, however, is the *certification regime* prevailing in states: endorsement versus licensure regimes.

These "regimes" are systems for handling the certification of teachers. Overall, certification regimes that widely deploy licensure and narrowly deploy endorsement

are likely more traditional (favoring lengthy undergraduate preparation as the main route to teaching in any field). A state may mix the two regimes, but it usually relies more on one regime than the other. With respect to LISD fields, however, the separation of "endorsement states" from "licensing states" is complete, according to information provided by study informants: there are 29 endorsement states and 21 licensure states (Ohio is a licensure state). The upshot is that endorsement regimes make adding certifications (e.g., in HI, VI, and DB) to existing fields easier, whereas licensure regimes make it more difficult to do so.

The choice of regime by a state is not accidental. Certification regime relates at a statistically significant level to contextual features of states, notably total population but also percent rural population and household income. Licensure states (like Ohio) have average larger population (9.4 million vs. 3.8 million), are more rural (29% vs. 22%), and have somewhat higher household income ($53,200 v. $51,900). Effect sizes vary from 0.80 for total population to .15 for income. In short, endorsement states are overall substantially less populous, somewhat more rural, and a bit less affluent than licensure states. Ohio's characteristics are those of a licensure state for two of the three features, but its household income is low: $46,200 vs. $53,200. Certification regime relates, as the study demonstrates, to program offerings.

Preparation programming. The relationship of program offerings to certification regime is not immediately obvious from the data because number of programs offered in HI, VI, DB, and O&M is strongly related (r=.84) to a state's population. On average, larger states offer more programs. Texas, for instance, offers

101

the most programs (a 25.1 million population with 12 programs). Remarkably, 12

states offer no programs at all, and some of these states are quite populous (e.g., at 6.7

million, Washington is the largest).

So population is not all one needs to know to derive useful insights. Now, a

correlation of r= .84 means that total population accounts for about 71% of the

variance in number of programs offered by states. In other words, about 29% of this

variation is explained by other things. Population alone, it seems, is not very useful.

But population and number of programs can be combined in a useful way. The

ratio of programs to population provides a measure related to the capacity of a state to

produce qualified professionals for students with HI, VI, and DB. The higher such a

ratio, the greater the capacity. A populous state might exhibit low program capacity,

even though it offers many programs. The study calculated the ratio as programs per

million total population and labeled it *program intensity*. Across the 38 states with at

least one program, program intensity varies from .17 (MD) to 2.97 (ND). Ohio's

program intensity (0.35) is below the average for these 38 states (mean=0.64), but

also below average even in comparison to all 50 states, including the 12 states with no

programs (mean=0.49).

How does endorsement regime relate to p*rogram intensity*? Being an

endorsement state correlates with program intensity at a statistically significant level

(r=0.34). Further, endorsement regime is one of three relevant features of states that

predict program intensity in multiple regression analysis: school size, income equality,

and certification regime. Thus, being an endorsement state (which Ohio is not) raises

program intensity and being a licensure state reduces program intensity, and likely

also in Ohio.

Using the equation, Ohio would, in fact, be predicted to offer *seven programs*

in LISD fields instead of the four programs that it now does. Additionally, setting the

standard at the national average for states that offer programs (.64 instead of

Ohio's .35) Ohio would *also* offer *seven programs* instead of four.

Interviewee comments illuminated the service dilemma: the mandate to

provide appropriate services to students with HI, VI, and DB without the resources

(preparation programming, in-service professional development, materials, technical

assistance) necessary. In particular, some interviewees reported steps taken in their

states (Missouri in particular) to deal with the dilemma. This insight figures in the

recommendations offered by the study.

Ohio District Survey Phase

This section reports findings from the survey of 595 officials identified as

occupying the role of district special education director in Ohio. Following

administration of the survey, the cleaned data set included responses from 305

respondents. The findings are, on the basis of response proportions, representative of

all Ohio districts (95% confidence level with a 4% margin of error).

The presentation of findings is organized as follows: (1) caveats, (2)

comparison of respondents to non-respondents, (3) findings for individual survey

items, (4) findings for composite variables produced from individual survey items, (5)

relationship of contextual variables to survey variables, (6) key variables that

characterize district experience, and (7) comparison of struggling vs. confident districts.

Caveats. The study aimed to characterize the patterns in the data for the state as a whole. As just noted, response rates warrant that claim. The same warrant cannot, however, be made for each individual district in the data set, since a single individual provided the data for each district. Other individuals would undoubtedly have provided responses that differed, but to an unknown degree.

For the state as a whole, then, the study assumes that errors in individual responses are randomly distributed and that the averages reported for the state are accurate within the limits stated. At the same time, however, readers are cautioned that the state averages are based, not on separate direct measurements for a wide range of phenomena (e.g., immediate responses to enrollment of a child, confidence to offer services in the least restrictive environment, quality of local provisions, access to training, and so forth as per the survey instrument in Appendix D), but on the opinions of those responding to the survey about those phenomena.

Furthermore, although the survey was directed to those in the role of special education director, there is variety in the actual positions occupied by respondents (e.g., in a few cases principals, teachers, or administrative assistants completed the survey). Again, the study assumes that such variation in role and outlook is random.

Finally, as the next subsection discloses, the districts of respondents and non-respondents exhibit some differences. The magnitude of these differences, however, is small and is not likely a serious threat to generalizability.

Comparison of respondents to non-respondents. Although respondents and

non-respondents obviously cannot be compared to one another based on survey

responses, they can be compared on contextual variables. The study conducted such a

comparison of 13 variables[38] found in the U.S. Department of Education's Common

Core of Data (National Center for Education Statistics, 2016a) and matched to

districts in the population (n=595). Given the inevitable slippage (e.g., personnel

changes, invalid email addresses, substitutions in respondents, lag time between the

collection of data by the National Center on Education Statistics and the collection of

data for this survey, and so on), the study was able to identify 285 of the 305

respondents for comparison to non-respondents.

Because of the way the SEA assigns district identifiers (used by both the state

and the federal governments to identify districts uniquely), not all the entities

identified as "districts" in Ohio (i.e., with IRNs) are recognized as districts by the

federal government. Matching federal data to the study population districts provided

390 cases that were available for this comparison (210 respondents and 180

non-respondents).

Small but statistically significant differences between respondents and

non-respondents' districts appeared as follows: in number of schools per district (4.63

v 3.63, $p = .048$); grade span of district (12.41 v. 11.12, $p = .000$); proportion African

American students (12.36 v. 19.10, $p = .017$); and proportion of special education

---

[38] Number of schools, grade span of district, total students, students per school, students per grade, percentage
African American students, percentage special education students, percentage Hispanic students, ratio of special
education students to teachers, ratio of district administrators to teachers, ratio of district administrators to students,
district locale, whether or not district is a charter school.

students (14.42 v. 12.37, p = .020). Additionally, there was just one difference in the

representation of districts by locale in respondent as compared to non-respondent

groups, the proportion of city districts (16.7% v 25.6%, p = .041).

One difference stands out as practically significant. Charter "districts" were

substantially underrepresented among respondent districts as compared to the

population (17.1% v 30.6%, p = .003). Charter districts are not, in fact, districts in a

traditional sense; they are actually individual schools. Nonetheless, 36 respondents

were employed in charter organizations. One respondent served in the role of special

education director for 14 such "districts" and one for 10. In total, these 36 respondents

served 67 charter "districts" (unique IRNs).

Results for individual survey items. Means and standard deviations for the

67 individual items appear in Table 9 (note that some items have values of 0 and 1

rather than 1-5; see Appendix D for exact item wording). In Table 10 items are

organized in the blocks that comprise the composite variables to be subsequently

reported in Table 11.

For all items anchored to 1-5 scales, the grand mean is 3.44.[39] For

dichotomous items (related to whether or not a district takes a listed action

immediately when a student enrolls) the grand mean is .78 (i.e., on average 78% of

respondents report their districts as performing the given actions immediately).

---

[39] This value is slightly above the midpoint on a five-point scale; interpreting it depends on a consideration of the anchor terms used on each scale: with respect to access a "3" indicated "unpredictable accessibility," with respect to confidence a "3" indicated "a medium level of confidence," with respect to awareness and familiarity a "3" indicated some awareness or familiarity, with respect to the likelihood of a particular response a "3" indicated "somewhat likely," with respect to the frequency of addressing an instructional practice a "3" indicated "sometimes addressed," and with respect to items that asked for a rating of quality a "3" indicated "average." See Appendix D for the precise wording and anchoring for each of the 67 items.

Table 10

Descriptive statistics for 67 individual items

Abbreviated item text	N	Min	Max	Mean	SD
capacity to offer LRE	275	1	5	3.52	1.09
access to licensed teachers of students with VI	269	1	5	3.23	1.48
access to licensed teachers of students with HI	264	1	5	3.16	1.47
access to experienced interpreters	265	1	5	3.14	1.38
access experienced DB teachers	257	1	5	2.41	1.43
access to nationally certified O&M specialists	263	1	5	3.06	1.46
access to experienced parapros aka interveners	267	1	5	2.93	1.60
access to Braille parapros	262	1	5	2.29	1.46
access to school psych prepared for LISD	270	1	5	3.43	1.44
access to speech-language therapists for LISD	271	1	5	3.94	1.13
district immediately meets family at home	258	0	1	.23	.42
district immediately meets family at school	256	0	1	.92	.28
district immediately meets with grade-level team	256	0	1	.87	.34
district immediately schedules IEP meeting	256	0	1	.88	.33
district immediately confers with ESC, SST, etc.	256	0	1	.81	.39
district immediately secures medical records	256	0	1	.86	.34
district immediately secures assessment	256	0	1	.92	.27
awareness in the public at large	275	1	5	3.01	1.18
awareness among parents of children in school	277	1	5	3.17	1.06
awareness in the local medical profession	275	1	5	3.15	1.15
awareness among local professional educators	275	1	5	3.74	1.10
familiar with resources: medical profession	271	1	5	3.03	1.08
familiar with resources: families	271	1	5	3.21	.98
familiar with resources; superintendent	265	1	5	3.39	1.20
familiar with resources: other central office staff	265	1	5	3.32	1.14
familiar with resources: gen education teachers	269	1	5	3.01	1.14
familiar with resources: special ed teachers	272	1	5	3.77	1.04
confidence in: ESCs district works with	273	1	5	3.75	1.00
confidence in: district's SST	251	1	5	3.79	.97
confidence in: SEA's Office for Excep Children	267	1	5	3.51	1.04
confidence in: university teacher ed programs	259	1	5	2.80	1.08
confidence in: state outreach providers	243	1	5	3.16	1.03
confidence in: medical agencies	265	1	5	3.08	1.02
engagement with: Ohio School for the Deaf	266	1	5	3.40	1.30
engagement with: SST	255	1	5	3.76	1.07
engagement with: OH Center for Deafblind Ed	269	1	5	3.22	1.27
engagement with: OH State School for the Blind	266	1	5	3.34	1.31
engagement with: CISAM (source for materials)	257	1	5	3.18	1.23
engagement with: communities of practice	265	1	5	2.93	1.11
engagement with: local ESC	267	1	5	3.82	1.14

Abbreviated item text	N	Min	Max	Mean	SD
engagement with: another ESC	253	1	5	3.07	1.29
domains addressed: academic subjects	241	1	5	4.53	.74
domains addressed: vocational subjects	236	1	5	3.87	1.04
domains addressed: orientation & mobility	239	1	5	3.92	1.19
domains addressed: assistive technology needs	240	1	5	4.26	.90
domains addressed: social interaction needs	239	1	5	3.97	1.03
domains addressed: language & literacy (HI/DB)	239	1	5	4.24	.98
domains addressed: communication alternatives	239	1	5	4.07	.96
domains addressed: self-determination	236	1	5	3.73	1.07
domains addressed: transition to indp adulthood	234	1	5	3.97	1.08
quality: child find and census (or "count")	252	1	5	3.87	1.05
quality: access to instructional resources	262	1	5	3.74	.98
quality: in-service professional development	257	1	5	3.46	1.15
quality: consultation with professional experts	261	1	5	3.64	1.01
quality: assessment services	258	1	5	3.64	1.06
quality: educational planning meetings	259	1	5	4.16	.92
quality: working conditions for itinerant teachers	244	1	5	3.50	1.12
training access for general education teachers	250	1	5	2.94	1.14
training access for special education teachers	252	1	5	3.64	1.14
training access for special education parapros	247	1	5	3.11	1.17
training access for principals and administrators	251	1	5	3.10	1.20
training access for speech & language specialists	254	1	5	3.74	1.09
training access for psychologists	245	1	5	3.65	1.14
training access for other related service providers	248	1	5	3.48	1.12
training access for families	248	1	5	3.13	1.03
accessibility of materials for students with HI	246	1	5	3.63	1.11
accessibility of materials for students with VI	247	1	5	3.68	1.12
accessibility of materials for students with DB	238	1	5	3.21	1.28
weighted grand mean[a] of items on 1-5 scales				3.44	
weighted grand mean of dichotomous items				.78	

[a]. the product of the mean for each item and the number of respondents, divided by the sum of respondents across items; the weighted grand mean gives a rough measure of the overall experience of Ohio districts in providing services to students with HI, VI, or DB.

Notable exceptions reported *above* these levels include three features of instruction

and the quality of planning meetings:

- addressing (in instruction) assistive technology needs (mean = 4.26),

- addressing (in instruction) language and literacy for HI and DB (4.24),

- the quality of educational planning meetings (4.16), and

- addressing (in instruction) communication alternatives (4.07).

By contrast, means for a number of items (three items related to access to staffing and four others) are notably lower than typical among the findings reported in Table 10:

- immediately visiting the family at home (mean = .23),

- access to training for gen ed teachers working with students with LISD (2.94),

- access to experienced parapros for students with LISD (2.93),

- engagement with communities of practice (i.e., professional networks) (2.93),

- confidence in university teacher ed programs for LISD (2.80),

- access to experienced teachers of students with DB (2.41), and

- access to Braille parapros (2.29).

Composite variables produced from survey items. The survey intentionally addressed 10 separate domains with multiple items, as follows: (1) access to professionals [9 items], (2) immediate response to enrollment of student with LISD [7 items], (3) awareness of LISD among local stakeholders [4 items], (4) familiarity of local groups with resources for students with LISD [6 items], (5) confidence in organizations providing support for LISD [6 items], (6) engagement of local educators with organizations providing support for LISD [8 items], (7) LISD curricular domains addressed locally [9 items], (8) quality of local provisions for students with LISD [7 items], (9) access to training for groups of stakeholders [8 items], and (10) access to specialized instructional materials for LISD [3 items].

The creation of composite variables seemed sensible as a way to develop a

more comprehensive understanding of participants' responses. The survey design, in fact, accommodated this possibility by constructing sets of items to sample particular domains, with each item in a domain-specific series sharing a common stem. The composite variables, then, provide more clearly interpretable findings about the variability of respondent ratings across domains.

The study produced 10 composite variables (see Table 11), each of which summed the values of the individual variables within one of the domain-specific series.[40] (Appendix D provides the item stem, constituent item text, and the anchors for each series.)

Because the means are difficult to compare when they are rendered as sums of differing numbers of the constituent items, Table 11 also provides a column (far right) that averages the constituent items for each domain; the array is arranged in descending order of values in this column. Coverage of relevant curriculum domains is rated highest (4.04 mean of constituent items: relevant domains are "usually" addressed on average across the state, in the view of respondents). The lowest rated domain is staff access, with a mean of 3.02 for its constituent items (representing access to 9 relevant staff members). The low rating shows that, in the estimation of respondents, staffing for LISD is "unpredictably accessible" *statewide*.

---

[40] Omitted from Table 11 are the statistics for the "immediate response" series of items, which dichotomous: 1 for yes, we take this action immediately and 0 for otherwise. The mean for the composite variable was 5.49 and the SD was 1.45; translated to the 0-1 values, the 5.49 total average equates to .78.

Table 11

Descriptive Statistics for Composite Variables

Variable	N	Min	Max	Mean	SD	Mean of constituent items[a]
Curriculum	227	16	45	36.39	6.64	4.04
Quality Local	232	7	35	26.02	5.51	3.72
Access Materials	236	3	15	10.49	3.20	3.50
Confidence Orgs	216	9	30	20.02	4.36	3.34
Access to Training	234	8	40	26.72	7.63	3.34
Engaging Orgs	230	8	40	26.55	6.38	3.32
Familiarity Res	255	6	30	19.67	5.12	3.28
Awareness	272	4	20	13.07	3.53	3.27
Staff Access	244	9	45	27.16	9.62	3.02

[a.] mean divided by N of constituent items as listed in Table 10

Note. Grand mean of the constituent means = 3.42 (compare with Table 11 finding)

To provide detail combining information from Tables 10 and 11, the following list summarizes findings narratively for each domain statewide. The point of the list is to organize and characterize narratively the takeaway points from Tables 10 and 11. The next paragraph explains the organization of the list, which is not a casual arrangement.

The list is constructed, first, to characterize the findings for composite variables ("overall statewide"), and second, to characterize particularly notable findings from among the composites' constituent items ("in particular statewide"). "Particularly notable" may mean notably positive or negative (e.g., "very difficult," "considerable familiarity," and so forth). For further detail about whatever particulars

are highlighted in the list, however, please consult Table 9, where the full information

is to be found.

- ***Staff access****:* (1) *unpredictable* overall statewide (3.02); (2) *very difficult* in

  particular statewide: Braille parapros (2.29), interveners for students with HI, VI,

  and DB (2.41).

- ***Immediate action upon enrollment of student with HI, VI, or DB:*** (1) *78% of*

  districts statewide take immediate action on multiple fronts when a child with HI,

  VI, or DB enrolls; (2) in particular statewide: *few districts* (23%) meet

  immediately with families at home.

- ***Awareness of procedures to identify and serve students:*** (1) *some awareness*

  statewide across stakeholder groups (3.27); (2) in particular statewide:

  considerable awareness among professional educators (3.74).

- ***Familiarity with national, state, regional resources:*** (1) *some familiarity*

  statewide among stakeholders (3.28); (2) in particular statewide: *considerable*

  familiarity among special education teachers working with HI, VI, or DB (3.77).

- ***Confidence in support organizations:*** (1) *medium level of confidence* in support

  organizations statewide (3.34); (2) in particular statewide: *high confidence* for

  SSTs and ESCs with which the district works (3.79 and 3.77, respectively).

- ***Engagement with specific organizations:*** (1) *somewhat likely* district

  engagement statewide with support organizations (3.32); (2) in particular

  statewide: *very likely* engagement with the local ESC (3.82) and SST (3.76).

- ***Quality of local practices related to serving students with LISD:*** (1) *good quality* reported on average statewide (3.72); (2) in particular statewide: *between average and good* in-service provision (3.46).

- ***Access to training relevant to HI, VI, or DB:*** (1) *average* access statewide for a variety of staff (3.34); (2) in particular statewide: *good* access to relevant PD for speech and language specialists (3.74), psychologists (3.65), and special education teachers (3.64).

- ***Access to specialized materials for HI, VI, and DB:*** (1) *good* access statewide in HI and VI (3.62 and 3.68, respectively); (2) in particular statewide: *average* access to DB materials (3.21).

Relationship of contextual variables to survey variables. The researchers devoted considerable effort to adding a wide range of contextual variables to the data set. Contextual variables are influential in a many studies in education. We wanted to know whether or not, and to what extent, measures related to district characteristics (enrollment and staffing), district finances (revenues and expenditures), local population demographics (ethnicity, income, and education level), and locale (rural, town, suburban, and city) could be systematically associated with survey data. The imported variables came from two sources: the U.S. Department of Education's Common Core of Data (NCES, 2016a) and the American Community Survey (NCES, 2016c).

Though the imported variables were moderately related to one another, only a few correlated even weakly with survey variables when all cases were used for

analysis. For instance, the only variable that proved related to districts' capacity to offer LRE in neighborhood schools was the percentage of the population with a bachelor's degree ($r = .21$, $p < .01$). This contextual variable also correlated weakly with the staff access composite variable ($r = .19$, $p < .05$), the curriculum composite variable ($r = .19$, $p < .05$), and the quality composite variable ($r = .21$, $p < .05$). Percentage of African American enrollment also correlated weakly with the curriculum composite variable ($r = -.18$, $p < .05$). Notably the percentage of special education students did not correlate with any of the composite variables.

Mean differences in composite variables by locale (rural, town, suburban, city) proved equally negligible. City districts (n=31), compared to other districts, were different (effect size = -.45, $p < .05$) only on the "confidence" composite. No other locale district group (rural, suburban, town) showed a statistically significant difference compared with other districts on *any* composite variable. Finally, comparison of mean responses by sector (charter vs. regular public school district) *also* showed no statistically significant differences in *any* of the composite variables.

Identification of key variables describing district experience. Based on the findings for composite variables, summarized in the bulleted list following Table 12, four composite variables seem antecedent to district capacity to serve students with HI, VI, or DB:

- a*ccess to staff to support students with HI, VI, and DB;*
- *stakeholder awareness of procedures for identifying and serving students with HI, VI, and DB;*

114

- *familiarity with national, state, and regional resources for serving students with HI, VI, and DB; and*

- *access to training for stakeholders to support students with HI, VI, and DB.*

These conditions are antecedent in a conceptual sense because they exist prior to serving students. Overall awareness, access to staff and training, and familiarity with resources prepare an organization to serve these students. The other composite variables (e.g., quality of local practice, immediate responses to enrollment of a student) better describe actual practices in trying to provide such services.

Empirically (based on analyses of all cases) these items correlate strongly with one another and with districts' reported level of confidence that they can "offer the least restrictive environment to students with HI, VI, or DB at those students' neighborhood schools"—arguably the single item that represents how well responding districts serve students. Hence, that single variable (i.e., LRE confidence) and the four composite variables (i.e., access to staff, stakeholder awareness, familiarity with resources, and access to training) suggest themselves logically and empirically as key variables. Table 12 presents frequencies for the "LRE at neighborhood schools" variable and Table 13 presents the bivariate correlations for the five key variables.

As seen in Table 12, almost half (48.4%) of respondents indicated a level of confidence no better than "medium." About 20% reported having "full confidence," whereas nearly 20% reported having a "low" level of confidence or none. Statewide confidence in offering the least restrictive alternative at students' neighborhood

Table 12

Confidence in capacity to offer LRE at students' neighborhood schools

Response	N	Percent
1	6	2.2
2	47	17.1
3	81	29.5
4	79	28.7
5	62	22.5
Valid cases	275	100.0
Missing	30	
Total	305	

Note. Mean = 3.52, SD = 1.09 (from Table 11)

schools is not high, and in particular one-fifth of respondents report it to be low. The

average rating of 3.52 (see Table 7) is 1.36 standard deviations below full confidence

[i.e., (5 - 3.52)/1.09].

The data in Table 13 show strong moderate-to-strong correlations between the

composite variables and the LRE variable and among the four composite variables.

Together Table 12 and 13 relate antecedent conditions (*staff access*, *awareness*,

resource, and *training*) to a consequent condition, *confidence* (i.e., confidence in

offering LRE service in neighborhood schools). The antecedent conditions separately

correlate with *confidence* on average at about r=.58. That is, the correlations are about

what one would expect for conditions that are prior to another.

These findings suggest a possible comparison analysis: examination of

districts that report overall difficulty securing antecedent conditions versus those who

believe they have secured the antecedent conditions (as this analysis defines them).

Are there systematic contextual differences that characterize districts struggling to

Table 13

Correlations among five key variables

	Staff access	Awareness	Resource	Training
Confidence	.591	.568	.606	.560
	(229)	(262)	(250)	(232)
Staff access		.627	.627	.549
		(223)	(219)	(208)
Awareness			.744	.628
			(252)	(232)
Resource				.699
				(227)

Note. For all rs, p < .01. Numerals in parentheses are pairwise Ns. (1) Confidence = LRE confidence variable; (2) Staff access = staffing composite variable; (3) Awareness = awareness composite variable; (4) Resource =familiarity with resources composite variable; (5) Training = access to training composite variable.

secure antecedent conditions versus those who report they have secured them? The

next section describes an approach to such an analysis.

Comparison of low-antecedent versus high-antecedent districts. A

comparatively robust way to analyze the data for this purpose is to produce scores for

each case from a factor analysis that combines the four composite variables

representing antecedent conditions, if the data prove sufficient for this purpose. Factor

analysis is a procedure that, in essence, projects existing correlations onto a central

vector that is (or may prove to be) strongly correlated with all the existing correlations.

Such a vector can strongly or weakly represent what the component variables have in

common.

To perform the factor analysis, we used principle components analysis without

rotation. Factor loadings[41] for the four key composite variables appear in Table 14.

----

[41] Factor loadings are the correlations of the composite variables with the new variable (i.e., the

Using the four key variables from the study, factor analysis extracted a single factor with an eigenvalue of 2.952 (viable factors typically exhibit eigenvalues of at least 1.0), explaining nearly three-quarters of the variance across the variables (73.8%). The factor strongly represents what its four component variables have in common. What might we call this new variable? Naming a factor is sometimes difficult, for this analysis the answer is straightforward: *antecedent conditions*.

The extracted factor is a strong factor, in other words, and not surprising given the strong correlations among the composite variables reported in Table 13. Each of the four composite variables correlates with the "new variable" *above* .80: that is, *each* composite variable shares at least 64% of its variance (r^2) with the new variable. In particular, *Resource* (which stands for "familiarity with resources for serving students with HI, VI, or DB") shares 82% of its variance with *antecedent conditions*. In a sense, *resource* (familiarity with resources) is a proxy (stand-in) for antecedent conditions as a whole.

Table 14

Factor loadings for key variables

Variable	Loading
Staff access	.805
Awareness	.882
Resource	.906
Training	.839

Note: principal component analysis yielding a single factor solution with an eigenvalue of 2.952, explaining 73.8% of variance; N = 202; Staff access = staff access composite variable, Awareness = awareness composite variables; Resource = familiarity with resources composite variable; Training = training access composite variable.

_____

factor).

Because the factor is itself a variable, values for *antecedent conditions* for each case are available for analysis. These values are called "factor scores" and they represent, in this case (and as computed from respondents' data) a synthesis of arguably relevant antecedent conditions into a single measure. The values represent the strength of antecedent conditions for particular districts. Table 15 provides the descriptive statistics for the cases, with scores for every applicable individual variable (n=202).

To answer the question about struggling versus confident districts, one can compare contextual variables for districts in the lowest quartile of *antecedent conditions* to those in the highest quartile. Even though, overall, contextual variables show little relationship to survey variables in the full data set, low-antecedent and high-antecedent districts might still differ in terms of context.

Table 15

Antecedent conditions (factor scores)

Mean		0
Median		-.013
Std. Deviation		1
Skewness		-.043
Minimum		-2.49
Maximum		2.05
Percentiles	25	-.70653
	50	-.01334
	75	.75869

Note. N = 202

With 202 cases having values for antecedent conditions, each quartile would comprise approximately 50 cases. Using the percentile values given in Table 15, we can produce a first quartile and fourth quartile with exactly 50 cases each. The small number of cases available for comparison limits the power of discovering real differences, but observable differences may still have relevance if they are sufficiently large.

This analysis used a set of demographic variables of typical interest in education studies: proportion of students in poverty, proportion of children in special education, proportion of the adult population with at least a bachelor's degree, proportion of African-American students, proportion of female-headed households, and proportion of local children enrolled in preschool. Table 16 reports the findings.

The quartiles differ to a statistically significant ($p < .05$) degree on (1) the proportion of children in poverty and (2) the proportion of the adult population with at least bachelor's degrees. Struggling districts are more impoverished (about half a standard deviation) and have proportionally fewer adults with college degrees (also about a half standard deviation difference).

Because of the small sample size, it seems worth noting other differences that do not rise to the level of statistical significance: struggling districts exhibit a smaller proportion of African American students (11% vs. 14%), a larger proportion of female-headed households (28% vs. 24%), and a smaller proportion of young children

in preschool (5.3% vs. 6.2%--a half-standard deviation difference, even though it does not rise to statistical significance).[42]

The findings in Table 16 shed limited light on contextual differences between districts that reportedly struggle to provide adequate services to students with HI, VI, or DB and those that are confident in providing those services. The two statistically significant variables are indicators of socioeconomic status, one negative and one positive; thus, we can conclude that low-antecedent districts exhibit somewhat lower SES levels as compared to high-antecedent districts.

Comparisons based on other differences (district size, locale, sector, remote location), however, exhibited no statistically significant relationships by quartile of *antecedent conditions*. Overall, context makes little more difference in this analysis than in the inspection of contextual differences across the entire data set. In fact, the difference in the confidence with which low-antecedent versus high-antecedent districts believe they can offer the LRE in students' neighborhood schools is substantial: 2.56 (low to medium) for low-antecedent districts versus 4.64 (full confidence) for high-antecedent districts. Conditions other than context (e.g., conditions related to local and regional service delivery and access to particular educational resources) are quite likely to play a more robust role in explaining these differences.

---

[42] Recall that respondents and non-respondents differ by city locale, with the sample slightly less urban. This difference may explain the observed (non-significant) differences.

Table 16

Struggling vs. confident districts: Contextual differences

Variable	quartile	N	Mean	SD
School size	first	36	441.24	245.88
	fourth	45	466.18	260.02
% African American	first	36	.107	.2145
	fourth	45	.142	.2623
% Special ed	first	36	.142	.1167
	fourth	45	.145	.0527
% Child poverty*	first	28	.228	.1049
	fourth	34	.171	.0929
% BA+*	first	28	.166	.0534
	fourth	34	.222	.1397
% Female head	first	28	.276	.1216
	fourth	34	.240	.1240
% in pre-school	first	28	.053	.0232
	fourth	34	.062	.0297

* = $p < .05$

Note. Ns are smaller than 50 due to missing data on contextual variables

Qualitative findings from comments of survey respondents. Seven

comment fields gathered a total of 161 comments, listed in order of number of

comments elicited by each:

comment field 7: general observations and suggestions to improve district or

statewide practice (80 comments);

comment field 1: confidence in organizations providing support for LISD (20

comments);

comment field 3: LISD curricular domains addressed locally (17 comments);

comment field 5: access to training for groups of stakeholders (15 comments);

comment field 2: engagement of local educators with organizations providing

support for LISD (12 comments);

comment field 4: quality of local provisions for students with LISD (11

comments); and

comment field 6: access to specialized instructional materials for LISD (6

comments).

The final comment field on the survey (field 7) elicited half the total number

of comments, and the related series of comments thus permits the finest-grain analysis

of any of the seven series of comments. Nonetheless, for each set of comments, the

content analysis extracted themes characterizing the comments. The narrative that

follows offers tentative themes for each of the first six series, but for the final series

(with its 80 comments overall) the discussion characterizes its eight relevant themes

more fully and also offers an illustrative quote for each theme. For the full set of

coded comments by series, see Appendix E.

- First comment series: confidence in organizations providing support for LISD

  Three themes emerged: (1) praise about particular organizations, (2) concerns

  about interactions with support organizations, and (3) general concerns about

  support issues.

- Second series: engagement of local educators with support organizations

  Themes: (1) general roadblocks to engagement and (2) concerns related to

  particular organizations.

- Third series: curricular domains addressed locally

  Themes: (1) IEP determines curriculum, (2) challenges of addressing curricular

  domains, and (3) curriculum concerns do not apply.

- Fourth series: quality of local provisions for students

  Themes: (1) specific concerns or assertions about practice and (2) practice is

  sporadic; cannot be judged.

- Fifth series: access to training for groups of stakeholders

  Two themes: (1) the particular and ad hoc nature of local training and (2) diverse

  challenges of access to training.

- Sixth series: access to specialized instructional materials

  Two themes: (1) specific organizations help districts access materials and (2)

  access not relevant in part [*i.e., no students = no concern*].

Findings for the seventh series of comments yielded eight themes; a more extended

discussion of that series and its themes follows.

- Seventh series: general comments and suggestions for making qualified staff

  more accessible in your district or across all districts statewide

  Eight themes: (1) issues and suggestions about access to, and preparation of,

  qualified staff (32 excerpts); (2) specific suggestions for changed support system

  (outreach, awareness, dissemination, resource access, networking, and

  communities of practice) (22 excerpts); (3) in-service professional development

  (14 excepts); (4) appreciation (explicit or implied) (14 excerpts); (5) local

  circumstances: regional, rural, remote, or small (12 excerpts); (6) specific

observations or issues: without suggestions for change (12 excerpts); (7) few or no students with needs at this time (7 excerpts); (8) observations relevant to completing the survey (4 excerpts).

To characterize each of these themes, the narrative next provides a short summary and a characteristic quote:

(1)   issues and suggestions about access to, and preparation of, qualified staff

summary: Qualified teachers and other professionals are in very short supply. Access is especially difficult in some districts. Additional training programs are needed.

quote: "There must be a review of certification for VI and DB teachers. Very few colleges even offer the certificate for VI and DB students."

(2) specific suggestions for changed support system (outreach, awareness, dissemination, resource access, networking and communities of practice)

summary: "Low incidence" means that networks, resources, expertise, and funding are distributed thinly and perhaps worse, very unevenly. But what's needed is a central support system that is equally accessible to all districts.

*quote: "*There needs to be a good central resource for materials and coordination in communication, as well as more supportive professional development."

(3)   in-service professional development

summary: In-service training is inconsistent but needed by all involved in serving students with HI, VI, and DB: paraprofessionals, general educators, intervention specialists, and administrators in particular.

125

quote: "There is a significant need for professional development for all individuals involved in working with this disability. Limited information is available to districts."

(4)   appreciation (explicit or implied)

summary: Named organizations and individuals do excellent work; there is evident capacity in some organizations; I trust that I can find what I need.

quote: "We rely heavily on our regional centers. If they disappeared, we would be left in a precarious position. They train our people. There is a great support for us."

(5)   local circumstances: regional, rural, remote, or small

summary: Uneven access and resources sometimes relate to local circumstances, particularly impoverishment, small size, and remote location from the professional infrastructure of metropolitan areas.

quote: "Rural district far removed from resources. We rely on our state support team for economical and accessible services."

(6)   Specific observations or issues: without suggestions for changes

summary: Thin resources, inaccessible services, and unreasonable expectations (given the forgoing) make this work exhausting to those actually doing it.

quote: "Accessibility to materials is big also. When a student comes in they never have any materials. It's left up to the teacher. They also have to find it, and get it into the classroom. If it takes six weeks, that is not fair. It's always up to the teachers."

(7)   few or no students with needs at this time

summary: The implication of these comments: "Confronted with few such students or none, our district does not direct resources at planning for an unlikely event. Out of sight, out of mind."

quote: "There is a low incidence in our district. Their knowledge is probably not the best, but we have good psychologists."

(8)   observations relevant to completing the survey

summary: The survey lumped HI, VI, and DB together and did not distinguish between severity levels, making answers difficult to give.

quote: "The questions on this survey were vague and difficult to answer. They need to be more specific."

In addition to themes related to specific concerns, respondents with comments in the seventh series offered synoptic comments that relate to the system of serving students with HI, VI, and DB overall. These comments might be expected in the flow of commentary related to the prompt. The comments point to endemic problems, but notably also included two observations relevant to the spirit of serving these students:

Make sure that all students have equal access. It is the right of the child.

When we come to a point where we need it, we don't sit by. We look for the help we need.

The three other synoptic comments characterize the more abstract issues related to theme 7.2 (i.e., specific suggestions for changed support system: outreach, awareness, dissemination, resource access, networking and communities of practice). They lack

specifics, but offer a view of the service dilemma sufficiently broad to qualify as "synoptic":

There are bits and pieces but it is not a fluid system.

It varies by school system.

Services are dependent upon the level of need of each individual child.

The comments indicate a cascade from overall system, to school district, to an endpoint in care and support for particular children in particular classrooms.

Overall, the qualitative findings reinforce and amplify the quantitative findings, but they also provide access to the specificity and verve of professional commitments and challenges not accessed by the focus needed to secure (quantitative) generalizability.

Summary of survey findings. *Statewide*, in the view of respondents, access to staffing to support students with HI, VI, and DB is *unpredictable*. Within the staffing domain (Table 10), speech-language therapists are on average statewide *usually accessible* (3.94). By contrast, access to Braille paraprofessionals and experienced teachers of DB is *very difficul*t (2.29 and 2.41, respectively).

Antecedent conditions underlie, by definition, the capacity of districts to provide decent schooling provisions to students with HI, VI, and DB. These conditions appear to be seriously compromised in at least 25% of Ohio districts (see Tables 10 and 15). Indeed, the factor, *antecedent conditions* (the factor variable described previously) correlates strongly with two variables that represent districts' assessment of their delivery of such services: LRE confidence ($r = .72$, $p < .01$) and

128

the composite variable measuring the quality of practices related to serving students with HI, VI, or DB (r = .73, p < .01).

The importance of antecedents to decent service is corroborated by the findings about the confidence level of districts to offer suitable programming for students with HI, VI, and DB in those students' neighborhood schools. Indeed, respondents' 3.52 overall statewide rating on this variable (see row 1 in Table 10) translates—*statewide*—to 1.36 standard deviations below the "full confidence" level surely intended by IDEA. In Ohio some districts (22.5%) are fully confident, but the overwhelming majority (77.5%) are not (see Table 12).

Qualitative findings derived from 161 comments provided by respondents clearly show the primacy of the supply chain for qualified professionals to serve students with HI, VI, and DB. Equally important in the minds of respondents is a statewide system of access to information, support, and expertise. This issue seems especially important to commenters located in small and remotely located districts.

This theme (specific suggestions for changed support system: outreach, awareness, dissemination, resource access, networking and communities of practice) connects significantly to a finding indicated in Table 14. In that Table, *familiarity with resources* is the composite variable that loads most strongly (r=.91) on *antecedent conditions*. In other words, if districts are unaware of the resources and supports available to them, they will be more likely to be unprepared in other ways to meet the needs of students with LISD.

Synthesis of All Findings for Policy Implications

Findings from this study demonstrate that access to qualified staff to support a free and appropriate public education for children with HI, VI, or DB is challenging nationwide and statewide. Nearly as important is the strong finding that, in the experience of Ohio districts, uneven knowledge of and access to resources and training militates against providing decent service to students with HI, VI, or DB.

Nationwide, many states are unable to supply numbers of education professionals in LISD fields sufficient to staff schools and districts reasonably well (Table 5). The experience of Ohio districts is that most are not fully confident they can offer adequate services, and the antecedent conditions supporting such service appear to be especially meager in about 25% of Ohio districts (Tables 10 and 15). Narrative comments strongly suggest this insight, as well.

Addressing the staffing issue is theoretically simple but, practically, it has proven immensely challenging. Ohio needs to produce or secure more education professionals (particularly qualified teachers and trained paraprofessionals) and to ensure dramatically improved accessibility to them statewide. How this "simple" task might be addressed will be considered in the recommendations section. The conditions supportive of the task, though, seem clear for policy making: leadership, coalition-building, and funding. These are in play and need to be sustained.

Addressing districts' needs for information and resources is seemingly less simple; in fact, it is devilishly challenging. Why?

What many districts seem to lack and to need desperately (based on survey

responses) is a deep connection to a multilevel, statewide system of access, support, and professional community. Adequate expert staffing is, in fact, part of this need (Tables 5, 11, and 15, plus the themes for the seventh comment series): the first complication for addressing this need. Another, perhaps more daunting, complication is the multilevel character of the desired system: central, regional, local. And the local system must include general education teachers and principals in all neighborhood schools in the state.

The final level of this complex system, moreover, is the one where the idealized least restrictive environment exists—or fails to materialize. It's the most important part of the system, the "environment" where the now-so-often inadequate and inaccessible resources would otherwise (i.e., by federal and state law) be brought to bear.

At present steps are underway, in fact, to address both the staff issue and the outreach issues in Ohio. The next section addresses longer-term issues and possible organizational strategies for improving staffing and resource access for the long term based on insights from study findings. The study offers the recommendations, moreover, fully aware of the consistent historical inadequacy of provision for students with HI, VI, and DB nationwide.

Recommendations

At the time of this writing (late July 2016), Ohio policy actors have already taken the first steps to address the main findings of this study to this extent: (1) they have selected and provided support to a new consolidated outreach organization for

131

students with sensory disabilities and those serving them, and (2) they have

undertaken operational planning for a multi-institutional consortium of higher

education institutions to deliver a degree program to prepare TVIs statewide. The

outreach center is a going concern under the sponsorship of the Ohio Center for

Autism and Low Incidence (OCALI); planning by higher education consortium

members continues under the auspices of the Ohio Deans Compact on Exceptional

Children.

These are momentous steps, and in terms of issues surfaced by this study, they

are momentous *first* steps. Not only does all of the work that each recent action entails

in its own right remain to be done, but the related chain of events needed for

subsequent steps remains little considered and understandably so. The complexities

are daunting, but they do not need to be addressed all at once.

Two sets of recommendations follow. The first concerns staffing preparation

and licensure. The second concerns evolution of a statewide multilevel outreach effort

that must orient robustly to the classrooms of neighborhood schools in which most

students with HI, VI, and DB are to be taught *in the least restrictive environment*.

Staffing Preparation and Licensure

Based on the findings of this study, the launch of the preparation effort for

TVIs across Ohio *deserves* the support of policy makers and advocates, as well as that

of the Ohio Deans Compact on Exceptional Children. The effort is unusual

nationwide, and meets a clearly established need. It seems a very promising first step.

Additional efforts are needed for other classes of personnel, particularly THIs

and paraprofessionals. Ohio currently operates four professional training programs: two for THIs, one for TVIs, and one for O&M specialists. The first phase of the study suggests that, just to be at the average of states nationwide (based on per capita proportions), Ohio needs to add three programs. To rise above mediocre attention to the field, more (perhaps four to six new programs) would *clearly* be required.

Spread of new teachers is crucial. Added programs should be accessible statewide, particularly in regions now poorly served by the metro-centric history of preparation programs: accessibility must be excellent in remote areas. Regional universities and community colleges are logical focal points for facilitating such access.

The following recommendations are framed for policy leaders (officials, university faculty, and policy advocates). The imperative voice used applies to them.

Recommendation 1.1. Complete the establishment of the multi-institutional licensure program now being planned under the aegis of the Deans Compact.

Recommendation 1.2. To increase the availability of teachers for students with HI, VI, and DB, permanently change the policy model from licensure to endorsement for these fields. The worth of this policy change is a fundamental finding in this study, and one of the easier recommendations to implement, as well.

Recommendation 1.3. Immediately begin planning establishment of an additional program for THIs, starting with similar principles (multi-institutional organization, regional service focus, "alternative" provisions, endorsement model).

Recommendation 1.4. For longer-term attention to preparation, licensure, and spread of qualified staff, plan additional programs for professional educators (e.g., additional programs for THIs, TVIs, and O&M specialists) to yield a total of 7-10 programs statewide. Plan programs so as to supply staffing ("staffing access") statewide. Logical organizational participants in a near-term discussion include ODE's Office for Exceptional Children, the Deans Compact, the newly established CSD at OCALI, and the design team proposed to oversee the continuing evolution of a multi-level support system for low-incidence sensory disabilities.

Multi-level Support and Resource System

"Outreach" is an unfortunate notion because it implies that a center exists and that the center is somehow prior in power, status, and knowledge (see, e.g., Scott, 1998). Too often, and because of the elevated position of any center, "outreach" is a sort of afterthought to another, more important mission. This sort of thinking is an impediment for supporting Ohio students with HI, VI, and DB; and their communities, families, educational organizations, and individual educators. All of them need much more than afterthought; that is, they need, and their representatives statewide say they need, much more than limited "outreach" from a center located at great distance from their world of struggle and practice (the comments in both phases of the study convey this view).

Low-incidence sensory conditions are rare in the population, and reportedly are not present in some districts. Individual general education teachers will rarely, and

in some cases never, teach students with HI, VI, or DB. When they do, however, they

need a *rare level of support.* A comment from a survey respondent is germane:

> Accessibility to materials is big also. When a student comes in they never have
>
> any materials. It's left up to the teacher. They also have to find it, and get it
>
> into the classroom. If it takes six weeks, that is not fair. It's always up to the
>
> teachers.

The classroom, most often the general education classroom, is the place where

whatever ("outreached") support is given needs to manifest itself most robustly and

most generously: indeed, to manifest there, in the classroom, as a fully confident,

appropriate service. Much that does not now reportedly happen systemically *needs to*

start happening systemically in order to realize this level of support to

general-education classrooms in neighborhood schools (in the view of Ohio educators

responsible at the district level for students with HI, VI, or DB and not only in the

view of the study team).

  Recommendation 2.1. Immediately develop and quickly implement a system

that monitors the service dilemma (see p. 95 for a list of some components named by

interviewees) so as to identify students with HI, VI, and DB who are not being served

by qualified educators. The point of the system must be (1) to deliver high-quality

training for inadequately trained or untrained educators who are providing such

services and (2) to begin developing a statewide understanding of the service dilemma

and the impact of efforts to address it. The monitoring system should be subsequently

redesigned to become part of the statewide outreach system in recommendation 2.2

Recommendation 2.2. Evolve the outreach system on the current base over a time span of many years: perhaps a decade. The work of the design team is long term and cyclical. The design team (recommendation 2.1) should be institutionalized and should include diverse interested parties, notably including the leadership of the center at OCALI.

Recommendation 2.3. For the long term, create and institutionalize a team to conceptualize, design, and modify the statewide outreach system that routes and delivers information and resources to regions, districts, schools, and teachers. The new center at OCALI is a key participant, and, as the center's leaders doubtless understand, the effort requires representation from a range of stakeholder organizations. Ongoing development, monitoring, and improvement of the state system of outreach will depend on the ability of the center to build consensus among these stakeholders, so they function in league to support the extensive and complex outreach needed to operationalize LRE for students with sensory impairments as the general education classroom in the child's neighborhood school.

Recommendation 2.4. Include in the scope of the system key domains implicated in this study: the spread of qualified professionals, in-service professional development, and access to instructional materials.

Recommendation 2.5. Ensure that the design team has access to the sort of information it needs to track the ongoing evolution of the support system and to inform the ongoing decision making of the team.

References

Allen, T. (2011). *Selected characteristics: Elementary school-aged deaf kids*. Washington, DC: Gallaudet University. Retrieved from https://research.gallaudet.edu/AnnualSurvey/elem.php

Ambrose-Zaken, G., & Bozeman, L. (2010). Profile of personnel preparation programs in visual impairment and their faculty. *Journal of Visual Impairment and Blindness, 104*(3), 148–168.

American Foundation for the Blind. (2016). Learning about blindness [webpage]. Retrieved from http://www.afb.org/info/living-with-vision-loss/ for-job-seekers/for-employers/visual-impairment-and-your-current-workforce/ learning-about-blindness/12345

American Printing House for the Blind. (2013). *Annual report 2013*. Louisville, KY: Author. Retrieved from http://www.aph.org/files/annual-reports/APH-Annual-Report-FY13.pdf

Angus, D. L. (2001). *Professionalism and the public good: A brief history of teacher certification*. (J. Mirel, Ed.). Washington DC: Thomas B. Fordham Foundation. Retrieved from http://files.eric.ed.gov/fulltext/ED449149.pdf

Bales, B. (2006). Teacher education policies in the United States: The accountability shift since 1980. *Teaching and Teacher Education, 22*(4), 395–407.

Barzun, J. (1968). *The American university: How it runs and where it is going*. New York: Harper & Row.

Belasco, A. S., & Trivette, M. J. (2015). Aiming low: Estimating the scope and predictors of postsecondary match. *Journal of Higher Education, 86*(2), 233–263.

Benedict, K. M., Johnson, H., & Anita, S. D. (2011). Faculty needs, doctoral preparation, and the future of teacher preparation programs in the education of deaf and hard of hearing students. *American Annals of the Deaf, 156*(1), 35–46.

Blanchfield, B. B., Dunbar, J., Feldman, J. J., & Gardner, E. N. (1999, August). *The severely to profoundly hearing impaired population in the United States: Prevalence and demographics*. Bethesda, MD: Project HOPE Center for Health Affairs. (A shorter *Policy Analysis Brief* [Series H, Volume 1, Number 1, October 1999] was published as well.)

Blazer, C. (2012). *What the research says about alternative teacher certification programs*. Miami FL: Research Services, Miami-Dade County Public Schools.

Retrieved from http://files.eric.ed.gov/fulltext/ED536506.pdf

Boe, E. E., Shin, S., & Cook, L. H. (2007). Does teacher preparation matter for beginning teachers in either special or general education? *The Journal of Special Education, 41*(3), 158–170.

Bowen, M. L., & Stearns, K. E. (1992). *Low-incidence special education teacher preparation: A supply and capacity pilot study*. Normal, IL: Illinois State University. Retrieved from http://files.eric.ed.gov/fulltext/ED355706.pdf

Boyd, D., Grossman, P., Hamilton, L., & Wyckoff, J. (2006). How changes in entry requirements alter the teacher workforce and affect student achievement. *Education Finance and Policy, 1*(2), 176–216.

Browne, L., & Reid, J. (2012). Changing localities for teacher training: the potential impact n professional formation and the university sector response. *Journal of Education for Teaching, 38*(4), 497–508.

Bruce, S. (2007). Teacher preparation for the education of students who are deafblind: A retrospective and prospective view. *Deaf-Blind Perspectives, 14*(2), 9–12. Retrieved from http://documents.nationaldb.org/dbp/apr2007.htm#prep

Clarke, B. R. (1985). The training of teachers for low-incidence handicaps. *B.C. Journal of Special Education*, *9*(2), 105–110.

Collins, R. (1979). *The credential society: An historical sociology of education and stratification*. New York: Academic Press.

Consolidated Federal Regulations. (2016, January 7). 34 CFR § 300.8(c). Retrieved from http://www.ecfr.gov/

Corn, A., & Spungin, S. (2003). *Free and appropriate public education and the personnel crisis for students with visual impairment and blindness*. Gainesville, FL: University of Florida, Center on Personnel Studies in Special Education. Retrieved from http://copsse.education.ufl.edu/copsse/docs/IB-10E/1/ IB-10E.pdf

Daley, S. (2014, August 23). A driving school in France hits a wall of regulations. *New York Times*, p. A6. Retrieved from http://www.nytimes.com/2014/ 08/24/world/europe/a-driving-school-in-france-hits-a-wall-of-regulations.html? _r=0

Darling-Hammond, L., Holtzman, D., Gatlin, S. J., & Vasquez, J. (2005). Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness. *Education Policy Analysis Archives, 13*(42). Retrieved from http://files.eric.ed.gov/fulltext/EJ846746.pdf

DeMarrais, K., Horne, A., Watkins, K., Suggs, C., Kronley, R., & Swett, K. S. (2011). *Critical contributions: Philanthropic investment in teachers and teaching*. Athens GA: University of Georgia. Retrieved from

http://www.kronley.com/documents/CriticalContributions.pdf

Dolman, D. (2010). Enrollment trends in deaf education teacher preparation programs, 1973-2009. *American Annals of the Deaf, 155*(3), 353–359.

Easterbrooks, S. R. (2001). Veteran teachers of children who are deaf/hard of hearing describe language instructional practices: Implications for teacher preparation. *Teacher Education and Special Education, 24*(2), 116–127.

Easterbrooks, S. R. (2008). Knowledge and skills for teachers of individuals who are deaf and hard of hearing: Advanced set development. *Communication Disorders Quarterly, 30*(1), 37–48. http://doi.org/10.1177/1525740108324042

Eckel, P. D., & King, J. E. (2004). *An overview of higher education in the United States: Diversity, access, and the role of the marketplace*. Washington DC: American Council on Higher Education.

Ernst, D. (1990). *The context of policy and policy making in teacher education* (Occasional Paper No. 11). Seattle, WA: Center for Educational Renewal.

Every Student Succeeds Act, P.L. 114-95. (2015). 20 USC§6301.

Faulk, N. (2010). Online teacher education: What are the results? *Contemporary Issues in Education Research*, 11(3), 21-28.

Feistritzer, E. C. (2009). *Teaching while learning: Alternate routes fill the gap*. Bloomington IN: Phi Delta Kappan International. Retrieved from http://www.cateachercorps.org/downloads/teaching_while_learning_alternate_routes_fill_the_gap.pdf

Fonseca, J. W., & Bird, C. (2007). Under the radar: Branch campuses take off. *University Business*, October. Retrieved from http://www.universitybusiness.com/article/under-radar-branch-campuses-take

Fullan, M., Galluzzo, G., Morris, P., & Watson, N. (1998). *The rise and stall of teacher education reform*. Washington DC: American Association of Colleges for Teacher Education. Retrieved from http://files.eric.ed.gov/fulltext/ED415201.pdf

Gallagher, J. J. (2006). *Driving change in special education*. Baltimore, MD: Brookes Publishing Company.

Gallaudet University Research Institute. (2010). *Annual survey of deaf and hard of hearing children and youth: 2009-2010*. Washington, DC: Gallaudet University. Retrieved from https://research.gallaudet.edu/Demographics/

Hawley, W. (1986). A critical analysis of the Holmes Group's proposals for reforming teacher education. *Educational Leadership, 37*(4), 47–51.

Heilig, J. V., & Jez, S. J. (2010). *Teach for America: A review of the evidence*. Boulder CO: Education and the Public Interest Center. Retrieved from

http://files.eric.ed.gov/fulltext/ED510247.pdf

Holmes Partnership. (2016). *Origins of the Holmes Partnership 1987-1997* (webpage). Retrieved from http://www.udel.edu/holmes/origins.html

Howley, A., & Hartnett, R. (1997). Columbia's grand narrative of Contemporary Civilization. *Journal of General Education, 46*(1), 18–39.

H. R. 3535 (2016). *The Alice Cogswell and Ann Sullivan Macy Act*. Retrieved from https://www.congress.gov/bill/114th-congress/house-bill/3535

Huebner, K., & Strumwasser, K. P. (1987). State certification of teachers of blind and visually impaired students: Report of a national study. *Journal of Visual Impairment and Blindness, 81*(6), 244–250.

Individuals with Disabilities Education Improvement Act, P.L. 108-476. (2004). 20 USC §1400 et seq.

Jackson, E., Snell, A. C., & Gradle, H. (1934). Report of the committee on definition of blindness. *Journal of the American Medical Association*, *103*(19), 1445–1446.

Johnson, H. (2013). Initial and ongoing teacher preparation and support: Current problems and possible solutions. *American Annals of the Deaf*, *157*(5), 439–449.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research, 1*(2), 112-133.

Kamenopoulou, L. (2012). A study on the inclusion of deafblind young people in mainstream schools: Key findings and implications for research and practice. *British Journal of Special Education, 39*(2), 137–145.

Kaye, E. A. (2013). *Requirement for certification: For teacher, counselors, librarians, administrators* (78th ed.). Chicago IL: University of Chicago Press.

Kelly, S., & Northrup, L. (2015). Early career outcomes for the "best and the brightest": Selectivity, satisfaction, and attrition in the beginning teacher longitudinal survey. *American Educational Research Journal, 52*(4), 624–656.

Kids Count Data Center. (2015). *Per-pupil educational expenditures adjusted for regional cost differences: 2010* [web page]. Retrieved from http://www.datacenter.kidscount.org/data/tables/5199-per-pupil-educational-expenditures-adjusted-for-regional-cost-differences#detailed/2/2-52/false/133/any/11678

Labaree, D. F. (1992). Doing good, doing science: The Holmes Group reports and the rhetorics of educational reform. *Teachers College Record, 93*(4), 628–640.

Labaree, D. (2008). An uneasy relationship: The history of teacher education in the university. In M. Cochran-Smith, S. Feinman Nemser, & J. McIntyre (Eds.),

Handbook of research on teacher education (pp. 290-306). Washington DC: Association of Teacher Educators. Retrieved from http://web.stanford.edu/ ~dlabaree/publications/An_Uneasy_Relationship_Proofs.pdf

Lenihan, S. (2010). Trends and challenges in teacher preparation in deaf education. *The Volta Review, 110*(2), 117–128.

Linehan, P. (2000). *Selected state strategies for addressing personnel shortages in the area of VI* (Quick Turnaround Report). Alexandria, VA: Project FORUM at the National Association of State Directors of Special Education.

Lorain County Community College. (2016). Welcome to the university partnership (webpage). Retrieved from http://www.lorainccc.edu/up

Louisiana's Teacher Quality Initiative. (2005). *Guidelines for the redesign of special education programs*. Baton Rouge, LA: Louisiana Board of Regents & Louisiana Department of Education. Retrieved from http://files.eric.ed.gov/ fulltext/ED492990.pdf

Ludlow, B., Conner, D., & Schechter, J. (2005). Low incidence disabilities and personnel preparation for rural areas: Current status and future trends. *Rural Special Education Quarterly*, *24*(3), 15–24.

MacGlauglin, H. M., & Mertens, D. (2014). Educating the school community. *Odyssey: New Directions in Deaf Education, 15*, 46–49.

Mason, C. (2000). Shortages of personnel in the low incidence area of blindness: Working and planning together. *Teaching Exceptional Children*, *32*(5), 91–94.

Mintrom, M., & Vergari, S. (1996). Advocacy coalitions, policy entrepreneurs, and policy change. *Policy Studies Journal, 24*(3), 420–434.

Miles, B. (2008). *Overview on deaf-blindness*. National Information Clearinghouse on Children Who Are Deaf-Blind. Retrieved from http://documents.nationaldb.org/products/Overview.pdf

Mish, F. (Ed.). (2002). *Merriam-Webster's collegiate dictionary*. Springfield, MA: Merriam-Webster, Inc.

Mitchell, R. (1979). *Less than words can say*. Boston: Little, Brown. Retrieved from www.sourcetext.com/sharetext/ug/less.pdf

Müller, E. (2005). *Deaf and hard of hearing: State infrastructures and programs*. Alexandria, VA: Project FORUM at the National Association of State Directors of Special Education.

Mungal, A. S. (2016). Teach for America, Reality Graduate School, and charter school networks: The making of a parallel education structure. *Education Policy Analysis Archives, 24*(17), 1–26. Retrieved from http://epaa.asu.edu/ojs/article/ download/2037/1725

NASDTEC. (2016a). *Broad requirements for initial teacher certificate* (Table 3). National Association of State Directors of Teacher Education and Certification. Retrieved from http://www.nasdtec.net/resource/collection/ 25B0DB08-EEEC-4850-8879-A470CAEC94B4/Table_3_Broad_Requirement s_for_Initial_Teaching_Certificate.xlsx

NASDTEC. (2016b). Education program finder: Ohio (online utility). National Association of State Directors of Teacher Education and Certification. Retrieved from https://www.ohiohighered.org/education-programs/ program-finder?field_inst_name_value=&field_lic_type_value=Dual+License &field_prog_level_value=&field_tfn_value=&field_online_option_val=All&s ort_by=field_inst_name_value&sort_order=ASC

NASDTEC. (2016c). *Multiple pathways to certification* (Table 2). National Association of State Directors of Teacher Education and Certification. Retrieved from http://www.nasdtec.net/resource/collection/ 25B0DB08-EEEC-4850-8879-A470CAEC94B4/Table_2_Multiple_Pathways _to_Certification.xlsx

National Center on Deaf-Blindness. (2015). *The 2014 national child count of children and youth who are deaf-blind*. Monmouth, OR: Author.

National Center for Education Statistics. (2013a). *Enrollment in public elementary and secondary schools, by region, state, and jurisdiction: Selected years, fall 1990 through 2023* [Table 203.20]. U.S. Department of Education, National Center for Education Statistics. Retrieved from https://nces.ed.gov/programs/ digest/d13/tables/xls/tabn203.20.xls

National Center for Education Statistics. (2013b). *Public elementary and secondary schools, by level, type, and state or jurisdiction: 1990-91, 2010-11, and 2011-12* [Table 216.70]. U.S. Department of Education, National Center for Education Statistics. Retrieved from https://nces.ed.gov/programs/digest/d13/ tables/xls/tabn216.70.xls

National Center for Education Statistics. (2014). *Table 214.30, number of public elementary and secondary education agencies, by type of agency and state or jurisdiction: 2010-11 and 2011-12*. U.S. Department of Education, National Center for Education Statistics. Retrieved from https://nces.ed.gov/programs/ digest/d13/tables/xls/tabn214.30.xls

National Center for Education Statistics. (2016a). *Common core of data* [2013-2014 data set]. Retrieved from https://nces.ed.gov/ccd/pubschuniv.asp

National Center for Education Statistics. (2016b). *Instruction expenditures: Special education salaries (E11B), state finance: 2010-11* [user-generated table]. U.S. Department of Education, National Center for Education Statistics. Retrieved

from https://nces.ed.gov/ccd/elsi/tableGenerator.aspx?savedTableID=16593

National Center for Education Statistics. (2016c). *School district demographics system*. Retrieved from https://nces.ed.gov/surveys/sdds/datatools.asp

National Center for Health Statistics. (2012). *Health, United States, 2001: With special feature on socioeconomic status and health*. Hyattsville, MD: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. Retrieved from http://www.cdc.gov/nchs/data/hus/hus11.pdf

National Center to Inform Policy and Practice in Special Education. (2010). *Alternative route special education certification program: An opportunity for school-university partnerships*. Gainesville, FL: Author. Retrieved from http://ncipp.education.ufl.edu/files_9/teachereducators/TEII-4%20Alternative%20Route%20Special%20Ed%20Cert%20Progs.pdf

No Child Left Behind Act of 2001, 6319 20 U.S.C (2008).

Office of Special Education and Rehabilitative Services. (2015a). *36th report to Congress on the implementation of the Individuals with Disabilities Education Act, 2014*. Washington, DC: United States Department of Education. Retrieved from http://www2.ed.gov/about/reports/annual/osep/index.html

Office of Special Education Programs. (2015b). *Number of students ages 6 through 21 served under IDEA, Part B, by disability and state, 2014-2015*. Washington, DC: U. S. Department of Education, Office of Educational Research and Improvement. Retrieved from http://www2.ed.gov/programs/osepidea/618-data/static-tables/2014-2015/part-b/child-count-and-educational-environment/1415-bchildcountandedenvironment-2.xlsx

Ohio Department of Education. (2015). *Enrollment data [web page]*. Columbus, OH: Author. Retrieved from http://education.ohio.gov/getattachment/Topics/Data/Frequently-Requested-Data/Enrollment-Data/oct_hdcnt_fy15.xls.aspx

Ohio Department of Education. (2016). *Enrollment data [web page]*. Columbus, OH: Author. Retrieved from https://education.ohio.gov/Topics/Data/Frequently-Requested-Data/Enrollment-Data

Ohio Department of Higher Education. (2016). *Educator preparation programs in Ohio* [web page]. Retrieved from https://www.ohiohighered.org/education-programs

Oxford English Dictionary (online version), 2016. Oxford, UK: Oxford University Press. Retrieved from www.oed.com

Pastor, P., Reuben, C., & Loeb, M. (2009). *Functional difficulties among school-aged children: United States, 2001-2007*. National Center for Health Statistics, Centers for Disease Control and Prevention, U.S. Department of Health and

Human Services. Retrieved from
http://www.cdc.gov/nchs/data/nhsr/nhsr019.pdf

Penner, E. K. (2014, March). *Does teach for America have long-term impacts?*
Presented at the annual conference of the Society for Research on Educational
Effectiveness, Washington, DC. Retrieved from http://files.eric.ed.gov/
fulltext/ED562691.pdf

PennState. (2016). *Our history* (webpage). Retrieved from http://www.psu.edu/
this-is-penn-state/our-history

Pogrund, R., & Wibbenmeyer, K. (2008). Interpreting the meaning of the terms
"certified" and "highly qualified" for teachers of students with visual
impairments. *Journal of Visual Impairment and Blindness, 102*(1), 5–15.

Pugach, M. C., Blanton, L. P., & Correa, V. I. (2011). A historical perspective on the
role of collaboration in teacher education reform: Making good on the promise
of teaching all students. *Teacher Education and Special Education, 34*(3),
183–200.

Reininger, M. (2012). Hometown disadvantage? It depends on where you're from:
Teachers' location preferences and the implications for staffing schools.
Educational Evaluation & Policy Analysis, 34(2), 127–145.

Riggio, M., McLetchie, B., McGinnity, B., Gompels, E., & Toney, C. (1997).
Competencies for teachers of learners who are deafblind. Watertown, MA:
Perkins National Deafblind Training Project. Retrieved from
www.perkinsproducts.org/sites/default/files/.../desg_appendix_a.pdf

Rosenberg, S., & Sindelar, P. (2005). The proliferation of alternative routes to
certification in special education: A critical review of the literature. *The
Journal of Special Education, 39*(2), 117–127.

Sabatier, P. A. (1988). An advocacy coalition framework of policy change and the role
of policy-oriented learning therein. *Policy Sciences, 21*, 129—168.

Sass, T. R. (2011). *Certification requirements and teacher quality: A comparison of
alternative routes to teaching*. Washington DC: National Center for Analysis
of Longitudinal Data in Education Research. Retrieved from
http://files.eric.ed.gov/fulltext/ED529179.pdf

Scott, J. (1998). *Seeing like a state*. New Haven: Yale University Press.

Scott, W. R., & Davis, G. F. (2007). *Organizations and organizing: Rational, natural,
and open systems perspectives*. New York, NY: Routledge.

Sindelar, P. T., & Rosenberg, M. S. (2000). Serving too many masters: The
proliferation of ill-conceived and contradictory policies and practices in
teacher education. *Journal of Teacher Education, 51*(3), 188–193.

Silvia Maria, C. T., & Howell, J. J. (2004). Facing the challenges of itinerant teaching: Perspectives and suggestions from the field. *Journal of Visual Impairment and Blindness, 98*(7), 420–433.

Slater, A. E. (2014, March 6). LEAs won't get to challenge order regarding CART services. *Education Daily*, p. 3.

Smith, D., & Wild, T. (2006). Least restrictive environment for students with visual impairments. *Journal of Visual Impairment and Blindness*, 99(10), 592–593.

Smith, R. J. H., Shearer, A. E., Hildebrand, M. S., & Van Camp, G. (2014). GeneReviews (online only; not paginated). In R. A. Pagon (Ed.), *Deafness and hereditary hearing loss overview*. Seattle, WA: University of Washington. Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK1434/

Speece, D. L. (2015). A professor goes to Washington: An open letter to colleagues. *Remedial and Special Education, 36(*2), 112–115.

Stremel, K. (2002). *National Technical Assistance Consortium for Children and Young Adults Who Are Deaf-Blind* [Final Report]. Monmouth, OR: Author. Retrieved http://files.eric.ed.gov/fulltext/ED475570.pdf

Summers, S., Leigh, L., & Arnold, J. (2006). Personnel shortage and caseload management of students with visual impairments: Children at risk. *Journal of Visual Impairment and Blindness, 99*(10), 593–594.

TA&D Network. (2016). *Part B child count, 2010*. Retrieved from http://uploads.tadnet.org/centers/97/assets/2422/download

U.S. Census Bureau. (2011a). *Age and sex composition: 2010* [2010 Census Brief]. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf

U.S. Census Bureau. (2011). *Educational attainment by state: 2009* [Table 233[. Retrieved from http://www2.census.gov/library/publications/2011/compendia/statab/131ed/tables/12s0233.xls

U.S. Census Bureau. (2011b). *Household income for states: 2009 and 2010* [American Community Survey Briefs]. Retrieved from https://www.census.gov/ prod/2011pubs/acsbr10-02.pdf

U.S. Census Bureau. (2011c). *Reported voting and registration, for States: November 2010* [Table 4a]. Retrieved from http://www.census.gov/hhes/www/socdemo/voting/publications/p20/2010/Table4a_2010.xls

U.S. Census Bureau. (2012). Percent urban and rural in 2010 by state [data file]. Retrieved from http://www2.census.gov/geo/docs/reference/ua/PctUrbanRural_State.xls

U.S. Census Bureau. (2016a). *2010 Census urban and rural classification and urban area criteria* (webpage). Retrieved from http://www2.census.gov/geo/docs/

reference/ua/PctUrbanRural_State.xls

U.S. Census Bureau. (2016b). *Historical income tables: Households* (webpage). Retrieved from: https://www.census.gov/hhes/www/income/data/historical/household/2014/h08.xls

U.S. Census Bureau. (2016c). *Quick facts United States: People*. Retrieved from http://www.census.gov/quickfacts/table/PST045215/00

University and college programs for personnel in deafness. (2015). *American Annals of the Deaf, 160*(2), 180–198. http://doi.org/10.1353/aad.2015.0016

University of Minnesota Duluth. (2016). *UMD facts* (webpage). Retrieved from http://www.d.umn.edu/facts/

Wall-Emerson, R., & Anderson, D. (2014). Michigan severity rating scales: Usage and validity. *Journal of Visual Impairment and Blindness*, *108*(2), 151–156.

Watson, D. (1992, December). *Adult services: Presentation*. Presented at the National Symposium on Children and Youth who Are Deaf-Blind, Reston, VA. Retrieved from http://documents.nationaldb.org/products/symp92/ADULT-SERVICES- Watson-Perreault.pdf

Wiggins, S. P. (1986). Revolution in the teaching profession: A comparative review of two reform reports. *Educational Leadership, 44*(2), 56–59.

Winzer, M. A. (2012). *The history of special education: From isolation to integration.* Washington DC: Gallaudet University Press.

WordFarmers Associates. (2014). *Students with deafblindness: Implications from the 2013 preliminary child count data*. Dublin, OH: Ohio Center for Deafblind Education. Retrieved from https://ohiodeafblind.org/images/pdfs/AAA_OCDBE_Census_Report_Draft_final_w_TOC_6-15-14.pdf

World Health Organization. (2015). *Deafness and hearing loss* (Fact Sheet No. 300). Retrieved from http://www.who.int/mediacentre/factsheets/fs300/en/

Low-incidence Sensory Disability Study Conceptualization

The prevailing view is that preparation of professionals providing services to students with LISD is problematic in Ohio.

Nature of Issue

Students with low-incidence sensory disabilities exist in all school districts in Ohio, so that a continuing need for services exists statewide. The problematic circumstance, then, is providing services when needed in all 613 Ohio districts [and charter school organizations]. Preparation of professionals to serve these students appropriately is inaccessible statewide; across Ohio three programs exist for hearing impairment, one program for visual impairment, one program for orientation and mobility, and no program exists for deafblindness. Except for Columbus, access to training is limited in metropolitan areas and nonexistent elsewhere.

Under IDEA and NCLB districts must nonetheless provide services with qualified professionals for students with low-incidence sensory disabilities. Of course, "low-incidence" means that (1) overall, comparatively few such students exist statewide and (2) outside larger metropolitan areas (Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Toledo, Youngstown) the concentration of such students is predictably thin. Moreover, districts in non-metro areas may enroll students with low-incidence sensory disabilities irregularly because they appear irregularly in the smaller populations served. Such circumstances do not relieve these districts from the obligation to provide appropriate services. With these low-incidence conditions, many districts seemingly find it difficult to organize a continuum of appropriate services (i.e., from more to less restrictive). Part of this difficulty may relate to the availability of adequately prepared educational personnel.

First, under Ohio regulations, districts can think they are serving some students with sensory disabilities appropriately when they provide instructional support from intervention specialists who have no preparation at all for working with students with sensory difficulties. Second, they can also reach a similar conclusion when they provide services from itinerating teachers with relevant licensure, but who are able to meet with individual students infrequently and inconsistently. Finally, they can conclude that a third group is appropriately served in the least restrictive environment when those children and youth attend special schools as day students or on a residential basis.

The situation in Ohio is far from unique. In fact, the obligation to provide appropriate services to students with low-incidence sensory disabilities is not being met nationally (Corn & Spungin, 2003; Smith & Wild, 2006; Summers, Leigh, & Arnold, 2006). The comparative rarity, the varied circumstances of districts, and the system for developing and supplying qualified professionals present difficult

organizational and policy challenges that need attention nationally and from all states (Smith & Wild, 2006).

Proposed Inquiry

The major aspects of this "problematic circumstance" are (1) professional preparation for low-incidence sensory disabilities overall and (2) provision of qualified professionals to provide appropriate services to all students with low-incidence sensory disabilities (wherever located). The two aspects comprise the single issue described initially ("preparation is problematic").In order to address the issue in a statewide frame of reference, a research team will survey the superintendents of all regular districts in Ohio (n=613) and community school organizations (n=111) about their experience and views of (1) professional preparation for low-incidence sensory disabilities, (2) the provision of qualified services to such students, and (3) serving such students appropriately.

Overview of proposed procedures. The research team will confer with experts on low-incidence disabilities to help team members develop a survey design, propose survey domains, and draft sample survey items. In consultation with the experts, the research team will invite a wider group of stakeholders (experts, teachers, parents) to offer comments on the design. The team will use the comments to improve the design and will then finalize the survey design and instrument, create and administer the survey, analyze results, and develop a report. To maximize survey response rate, the research team will allocate resources to telephone follow-up contact with potential respondents.

The research team will also make contact with staff members from the state education agencies in the 49 other states to determine how those states handle the preparation of teachers to work with students with visual and hearing impairments and dual sensory loss, as well as the practices their districts use to address the needs of such students through the employment of appropriately trained personnel. Telephone interviews will probably be the best approach for gathering these data. The study will also meet three times at key junctures with a Research Advisory Group composed of stakeholders (membership to be chosen in consultation with UD Grant Center leaders).

Products. The study will create two products. The first, for a wide audience, is a detailed report that describes findings and synthesizes policy options based on the findings. Discussion of such policy options will draw on the separate investigation of the experience of the other 49 states in dealing with the issue under investigation in the survey. The second product is a journal article manuscript for a scholarly (peer-reviewed) venue.

APPENDIX B

Focus Group Interviewee Suggestions for Survey Content

LOCAL PROGRAMMING CAPACITY (more evident strategic implications)
1. sources of qualified staff
2. administrative role and budgeting related to LISD (interviewees: need support at top)
3. local approach to inclusion (interviewees)
4. facilitating teamwork—includes teacher-parapro teaming (interviewees: silo mentality is prevalent, disabling)
5. identification (interviewees: inadequate in many places)
6. quality of experience with local, state, regional agencies (e.g., OCDBE, OCALI)

LOCAL SERVICE AND DELIVERY PARTICULARS (more evident tactical implications)
1. access to excellent inservice training (including parapros, and training for inclusion of LISD)
2. criteria for assigning parapros and teachers to work with LISD
3. transition planning (interviewees: often haphazard, inadequate, not early enough)
4. quality of O&M instruction (emphasis on functionality in transportation, work, etc.)
5. role definition for related service personnel

LOCAL AWARENESS & SUPPORT
1. provision of family support and training
2. access to resources for families and teachers (interviewees: what is used now, who identifies for parents and teachers?)

POLICY (state systemic issues)
1. flexibility of licensure provisions (interviewees: licensure provisions metro-centric and inflexible)
2. content standards for LISD (interviewees: insufficient emphasis on communication in actual instruction)
3. adequacy of funding (interviewees: haphazard, unsustainable, inappropriately constrained)
4. inappropriateness of state testing (interviewees: focus on alternative assessment not helpful)

APPENDIX C

Implications from the Research Literature* for Survey Content

Statewide Systemic Issues

1. nurture of statewide teacher and support-specialist pool (preparation, inservice, recruitment and retention, registries that specify the extant LISD talent pool)

2. licensure restrictiveness (i.e., flexibility and orientation to need—aka "demand-side articulation")

3. overall funding stability (IHE faculty positions, tuition support for pre-service preparation; local school positions; inservice provision)

4. rural sector challenges (personnel, LRE options, particularity of in-service needs)

5. pre-service program characteristics and content (e.g., online, accessibility statewide, funding support; parsimony, practicality emphasis; communication fluency—Braille, ASL, etc.)

Local Systemic Issues

1. programming capacity (e.g., actual range of LRE options locally available; employment opportunities for teachers and specialists; programming models)

2. local service and service delivery particulars (e.g., child find, assessment, curriculum, instructional materials including assistive technology, working conditions of itinerating teachers)

The review of the literature focused on systemic issues.

APPENDIX D

Finalized Survey Instrument

Ohio Districts' Experiences Serving Students with Low-Incidence Sensory Disabilities

Thanks for agreeing to participate in this study.

The Vision Project at the University of Dayton's School of Education and Health Sciences Grant Center is gathering data about districts' experiences serving students with hearing impairments (HI), visual impairments (VI), and deaf-blindness (DB). Across the nation, serving these students in local schools has been difficult for many decades. But in order to address the difficulties in Ohio, Ohio stakeholders (policy makers, educators, the public) need evidence. Your responses are part of that evidence.

There are 12 questions and responding to them may take 5 to 15 minutes of your time.

Please provide your honest assessment of your local situation. We will report only aggregate data and we will not disclose data about any single district.

HI = Hearing Impairments; VI = Visual Impairments; DB = Deaf-blindness.

1

PROGRAMMING CAPACITY

1. Please rate your district's access to these professionals on the following scale:

	almost none	very difficult	unpredictably accessible	usually accessible	always accessible
licensed teachers of students with VI	◯	◯	◯	◯	◯
licensed teachers of students with HI	◯	◯	◯	◯	◯
experienced interpreters (for students with HI)	◯	◯	◯	◯	◯
experienced teachers of students with DB	◯	◯	◯	◯	◯
nationally certified orientation and mobility specialists for students with VI or DB	◯	◯	◯	◯	◯
paraprofessionals experienced and prepared to assist students with HI, VI, or DB (sometimes called interveners)	◯	◯	◯	◯	◯
Braille paraeducators for students with VI or DB	◯	◯	◯	◯	◯
school psychologists prepared to assess students with VI, HI, or DB	◯	◯	◯	◯	◯
speech & language therapists prepared to support students with sensory disabilities	◯	◯	◯	◯	◯

PROGRAMMING CAPACITY

2. When a student with HI, VI, or DB enrolls (or is discovered locally via child find activities) our district immediately (check all that apply)...

☐ meets with the student's family at home

☐ meets with the student's family at school

☐ meets with grade-level team to review supports and arrange services for student's arrival

☐ schedules an IEP meeting

☐ confers with ESC, SST, State Residential School, or other knowledgeable organization

☐ secures medical records relevant to the VI, HI, or DB condition

☐ secures current assessment data and conducts additional assessment if advisable

3. How confident are you that your district can offer the "least restrictive environment" to students with HI, VI, or DB at those students' neighborhood schools?

○ no confidence

○ low level of confidence

○ medium level of confidence

○ high level of confidence

○ full confidence

3

LOCAL AWARENESS & SUPPORT

4. Please rate the overall awareness in your district of procedures to identify and serve students with HI, VI, or DB:

	no awareness	very limited awareness	some awareness	considerable awareness	widespread awareness
in the public at large	○	○	○	○	○
among parents of children in school	○	○	○	○	○
in the local medical profession	○	○	○	○	○
among the district's professional educators	○	○	○	○	○

5. Please rate the extent of familiarity of the following groups in your district with national, state, and regional resources for serving students with HI, VI, or DB:

	no familiarity	very limited familiarity	some familiarity	considerable familiarity	very widespread familiarity
the medical profession	○	○	○	○	○
families of students with HI, VI, or DB	○	○	○	○	○
superintendent	○	○	○	○	○
other central office professionals	○	○	○	○	○
general education teachers assigned to work with students with HI, VI, or DB	○	○	○	○	○
special education teachers assigned to work with students with HI, VI, or DB	○	○	○	○	○

LOCAL SERVICE PARTICULARS

6. Please rate the level of confidence you have in the support provided by the following organizations for your district's efforts to address the needs of students with HI, VI, or DB:

	no confidence	low level of confidence	medium level of confidence	high level of confidence	full confidence
Educational Service Centers (any with which your district collaborates)	○	○	○	○	○
your regional State Support Team (if you work with one: otherwise, leave blank)	○	○	○	○	○
the Ohio Department of Education's Office of Exceptional Children	○	○	○	○	○
university teacher education programs	○	○	○	○	○
state outreach providers (i.e., for HI, VI, & DB)	○	○	○	○	○
medical agencies	○	○	○	○	○

Please share any details you think relevant:

LOCAL SERVICE PARTICULARS

7. When serving a student with HI, VI, or DB, how likely are your district's professionals as a group to engage the following organizations in Ohio?

	extremely unlikely	somewhat unlikely	somewhat likely	very likely	absolutely certain
Ohio School for the Deaf	○	○	○	○	○
your regional State Support Team (if you work with one; otherwise leave blank)	○	○	○	○	○
Ohio Center for Deafblind Education (OCDBE)	○	○	○	○	○
Ohio State School for the Blind	○	○	○	○	○
Center for Instructional Supports and Accessible Materials (CISAM)	○	○	○	○	○
communities of practice (i.e., networks of HI, VI, and/or DB practitioners)	○	○	○	○	○
your local Educational Service Center	○	○	○	○	○
another Educational Service Center	○	○	○	○	○

Please share any details you think relevant:

LOCAL SERVICE PARTICULARS

8. For students with HI, VI, or DB in your district, please rate the extent to which the following domains are addressed in actual instructional practice with these students:

	never addressed	seldom addressed	sometimes addressed	usually addressed	always addressed
academic subjects	◯	◯	◯	◯	◯
vocational subject	◯	◯	◯	◯	◯
orientation & mobility training (for VI and DB in particular)	◯	◯	◯	◯	◯
assistive technology needs	◯	◯	◯	◯	◯
social interaction needs	◯	◯	◯	◯	◯
language and literacy development for students with HI or DB	◯	◯	◯	◯	◯
communication alternatives and needs	◯	◯	◯	◯	◯
self-determination	◯	◯	◯	◯	◯
transition to independent adulthood	◯	◯	◯	◯	◯

Please share any details you think relevant:

7

157

LOCAL SERVICE PARTICULARS

9. Please rate the quality (in your opinion) of the following practices relevant to serving students with HI, VI, or DB in your district:

	very poor	below average	average	good	excellent
child find and census (or "count")	○	○	○	○	○
access to instructional resources (e.g., Braille materials, audio files, assistive technology)	○	○	○	○	○
in-service professional development	○	○	○	○	○
consultation with professional experts	○	○	○	○	○
assessment services	○	○	○	○	○
educational planning (e.g., IEP meetings, team planning)	○	○	○	○	○
working conditions for itinerant HI, VI, or DB teachers	○	○	○	○	○

Please share any details you think relevant:

158

LOCAL SERVICE PARTICULARS

10. Please rate the accessibility of training relevant to students with HI, VI, or DB among the following groups in your district:

	very poor	below average	average	good	excellent
general education teachers	○	○	○	○	○
special education teachers	○	○	○	○	○
special education paraprofessionals	○	○	○	○	○
principals and administrators	○	○	○	○	○
speech and language pathologists	○	○	○	○	○
psychologists	○	○	○	○	○
other related service providers	○	○	○	○	○
families of students with HI, VI, or DB	○	○	○	○	○

Please share any details you think relevant.

9

159

11. Please rate the accessibility of specialized instructional materials (e.g., assistive technology, Braille materials, recorded materials, tactile graphics, large print, digital text) for the following groups of students:

	very poor	below average	average	good	excellent
students with HI	○	○	○	○	○
students with VI	○	○	○	○	○
students with DB	○	○	○	○	○

Please share any details you think relevant.

10

ADDRESSING SYSTEMIC ISSUES

12. Please share any other observations about the availability of supports and services for students with HI, VI, or DB in your district. In particular, please try to suggest any ideas you may have for making qualified staff more accessible to your district or across all districts statewide.

APPENDIX E

Comments by Series (1-7) by Theme

Comment Series 1 (confidence in organizations providing support for LISD)
20 comments overall; phrases within comments assigned to themes

Theme 1.1: praise about particular organizations
- If they are tagged with University they get a 4 otherwise a 3 cbh: inspection of case record suggests comment means that entities with a university relationship are rated 4 (OEC, UNI, OUTRCH)
- The head of the audiology program at OSU is incredibly knowledgeable and was fantastic as a contracted service.
- no affiliation with local universities.
- Our hearing impaired program was impressive due to the SST and services contracted through OSU. A coordinator with the SST also was extremely helpful in locating interpreters and explaining how HI effects a student in the classroom and school environment.
- Cleveland sight center is terrific.
- In Cincinnati, we have a well renowned school for students who have a hearing impairment. We also have a few centers for the blind and visually impaired (Clovernook and Cincinnati Center for the Blind and Visually Impaired.
- We have also have access to OSD and OSSB since we are in central Ohio.
- Cleveland Sight Center is helpful
- Specifically mentioned how great the Ohio State School for the Blind is to work with.
- Rehabilitation centers have been a great help.
- We contact SST 10 for any services we need and we take care of things. It is a little expensive, but the people are wonderful and we have not had any issues.

Theme 1.2: concerns about interactions with support organizations.
- We receive vision support from the ESC but the quality of services has been a struggle.
- A big decline in ESC in the last two years. The focus of the ESC has changed. They are in the business of contracting out services.
- For ESC-The transition services are not adequate.
- Finding services for a single student (VI) in a rural areas is very difficult.
- A lot of times you call and talk to two different people; you get two different answers with the Ohio Dept. Education's office of Exceptional Children.
- Sometimes med agencies request things they don't need.
- Sometimes I don't see enough of the University educators staying in touch.

- Medical agencies simply believe the IEP addresses all issues; they essentially wash their hands and have zero involvement with the IEP team. My confidence ratings may actually be too high.
- I find the last four options really irrelevant—or not applicable [*i.e., all but ESCs*]

Theme 1.3: General concerns about support issues
- If either of these professionals left, I would have very serious concerns regarding the accessibility of professionals that are experts (or even semi-experts) in their field. Most questions above were based upon VI and DB.
- The people in the schools, if they don't know, they know who to refer them to. If there is a need, they can get them help.
- Depending on the level of severity there are good services. The higher-functioning children do not get the better services. There is a gap. Parents have to do a lot of advocating.
- Our school has experience working with speech and hearing issues on an intervention level dealing with articulation and language processing issues. We do not service HI, VI, and DB students.
- More services need to be provided for parents an schools that are not near the major cities where more services are offered.
- I have had to beat the bushes to find people, and then I have to pay them.
- Many of the supports listed above refer individuals to websites and other providers and to group training, but are unable to assist with direct services to meet the needs of the child. The HI/VI/DB population is at a disadvantage when receiving services, and many times the supports don't meet or even address the sensory need but accommodate/retrofit services similar to other children of comparable cognitive levels (SLD to Multiple disabilities). Finding individuals with the skills to address the needs is difficult, and a general intervention specialist is typically providing the services. [*Note: remark expresses low level of confidence overall: composite confidence score for this case was 15 (10th percentile—very low in the distribution)*]
- We have a very small percentage of students who have this level of need.   We are lucky to have a HI teacher living in the district so those needs are better met by our teams.
- My experience has been that everybody knows what should happen and that's the support and information that is shared; having the resources— the teachers, parapros, and training— to carry out "what we should do" is where we struggle as a rural area.
- This was difficult for me due to lack of experience with VI and DB. In ten years I have not encountered any students with these disability categories. I have had four HI students in that time.
- I would like to know more about the Workload/Caseload Calculator for Related Services Staff, and its benefits for service providers

- This is my first year in this district. As the director of special education, I am earnestly working to make changes to our district's ability to meet the needs of these identified students.

Comment Series 2 (local educators engaged with organizations supporting LISD)
12 comments overall; phrases within comments assigned to themes

Theme 2.1: general roadblocks to engagement
- If they are on their own time they might reach out if they are lost. They don't get paid for it.
- If someone doesn't push to get materials, lighting, etc. into the school, for those students, nothing gets done. There are a lot of good resources out there, but I have no idea if the schools use them.
- Dearth of local community resources for school aged students. O & M services had to be contracted through an individual with WV Educational Service Center. That individual had to go through so much background work (fingerprinting, application, etc) just to provide a few hours of service. It has turned out that it is not worth her time any more.
- The contact with the state schools is dependent upon the willingness of the parents.
- In several cases in the district the parents have refused to access the services from the state schools.

Theme 2.2: concerns related to particular organizations.
- There is no ESC located near them, but you would be likely to work with one.
- Use the sight center in Cleveland
- We contract services with another ESC. We have students who do very well with the teacher. We have another family that uses the School for the Blind so we have conversations with them every year.
- The School for the Blind is 3 hours away and not a viable option for us.
- The Ohio State School for the Blind does their assessments.
- SST 10 always solves any problems we have, so we haven't needed to access any other services.

Comment Series 3 (LISD curricular domains addressed locally)
17 comments overall; phrases within comments assigned to themes

Theme 3.1: IEP determines curriculum
- All is according to their IEPs
- Responses to these items depends upon the age of a student and the extent of the disability (ies).

- Three of my HI students are in high school or almost there. Two of them manage hearing concerns on their own - refuse any accommodations. The third recently asked for and received a personal FM system. Transition will be managed for all 3 just like typical students.
- Not sure what you mean by vocational subjects, as this would be incorporated as appropriate in the transition plans in the IEPs.

Theme 3.2: challenges of addressing curricular domains.
- When a vision deficit can be broken down into difficulty seeing or processing what is seen, and schools are not good at it or remedying visual processing deficits. Visual memory, visual figure ground, eye tracking, etc.
- 1 out of 4 has vision problems that affect learning and 80% go through the visual system. 95% of juvenile delinquents have a vision problem affecting learning.
- Sponsor social activities, small group activities.
- Many of our students with these needs are young in our district. Recently, we had a student that was highly involved in our school playing sports, clubs, and involved in activities.
- Our next oldest student is a freshman at the high school. Vocational needs and social interactions are addressed but not to the extent a Junior in high school is addressed.
- Just beginning to work with OOD in providing transitional services and assistive tech.
- Even though these issues are always addressed this does not mean that we do not have a lot of difficulty finding someone in our local area who can meet the needs of the child in terms of teachers for the visually impaired, orientation and mobility teachers, and other personnel to support the needs of the child.

Theme 3.3: curriculum concerns do not apply
- This is a music therapy school.
- Cannot answer these
- I do not have any students with any of these disabilities at this time. Our school serves students with Autism spectrum disorders.
- We do not have any students at this time with VI, HI, DB.
- not applicable
- Our district currently does not serve any students needing these or many other services. We have no students with hearing impairments. We do have students who are identified as visually impaired, but can function independently

Comment Series 4 (quality of local provisions for students with LISD)
11 comments overall; phrases within comments assigned to themes

Theme 4.1: specific concerns or assertions about practices
- TVI, THI are a very valuable resource but they are stretched too thin.

- The schools do not inform parents of assessment services because they don't want to pay for them and they are not informed about them either.
- Instructional materials are there but I don't know if they have access to it.
- Working conditions vary.
- IEPs are phenomenal.
- Accessing textbooks on CD has been my biggest issue. I just can't seem to figure out how to do it.
- We utilize our ESC for these services. [Note: quality composite for this case is 31—80th percentile, indicating confidence in services provided is high]
- These responses reflect what is just now happening. We're working to get better.

Theme 4.2: practice is sporadic; cannot be judged.
- We do not have enough students to hire our own teacher. Therefore, we will have a teacher on staff so many days a week for our diverse needs in each area.
- At this time, we do not have any students who have these disabilities.
- No students with these special needs in this district.

Comment Series 5 (access to training for groups of stakeholders)
15 comments overall; phrases within comments assigned to themes

Theme 5.1: the particular and ad hoc nature of local training
- Nobody is interested in absorbing the training unless they need it in a functional way right now. It's all transmitted through word-of-mouth and is all networking.
- Audiologist-2, OT-2 [*Respondent is located at a speech-language center and therefore concerned only with these staff, for whom training opportunities are rated as below average.*]
- Our teacher for Vision is unbelievable. We are very fortunate to have her.
- I'm not sure what training we need. I set up contact with the audiologist. I let people know what they need to know.
- I provide this type of training.
- This is a hard one to answer. We do a good job but are not perfect.
- I think we do well, but we can always do better.
- We are in the process of contracting with a sign language/reading teacher for one of the hearing-impaired students. She will also be teaching general ed, special ed, support personnel and paraprofessionals.
- We work closely with the Ohio School for the Deaf or the Ohio School for the Blind and rely on our State Support Team and ODE for direction.
- We have St. Rita's school for the Deaf in our community, which provides a lot of support and services as well as the ESC services.

Theme 5.2: specific challenges for training
- I think the information is around; it's just a matter of accessing it. If people need it and want it, they can get it.
- They work more with special ed teachers but not as much as general ed.

166

- The low incidence rates of these disabilities make it challenging to find proactive, high-quality professional development opportunities for the range of staff listed above.
- It depends on the family
- It's about the money. Who ever has the money to get continuing ed on their topic.
- We offer a lot more training than the families take advantage of.
- Gen Ed teachers and administrators must get more involved to set the tone and expectations. The "gap" still exists between gen ed and special educators— that gap that says "those are your kids— these are our kids." It will only change when the leadership communicates different expectations.
- Although they are accessible, they are not requested. They would have to pay for that and so they don't see it as a pressing need.

Comment Series 6 (access to specialized instructional materials for LISD)
6 comments overall; phrases within comments assigned to themes

Theme 6.1: specific organizations help districts access materials.
- We have good accessibility through the Cleveland Sight Center.
- We contract out through the ESC and everything we need we get.
- We work closely with the Ohio School for the Deaf or the Ohio School for the Blind and rely on our State Support Team and ODE for direction.

Theme 6.2: access not relevant in part
- They have one VI student and someone comes to the building to help that child.
- Second two groups are not relevant at this time.
- We do not have any students with DB

Comment Series 7 (suggestions for improving services in district or statewide)
Statements below are extracted from the text of 80 comments; many comments addressed multiple issues:

Theme 7.1: Issues and suggestions about access to, and preparation of, qualified staff (32 excerpts)
- Districts are in dire need of qualified staff, universities need to get programs in place and assist districts that need staff locate those who need a job.
- Access teachers who are actually trained.
- It's almost like the state doesn't guide their [LISD] teachers into being teachers.
- There must be a review of certification for VI and DB teachers. Very few colleges even offer the certificate for VI and DB students.
- We need to do something to increase the number of staff to support the HI, VI and DB, as well as school psychologists in Ohio.
- Rarely do the colleges prepare teachers for where they end up working, like in an urban setting. They don't help them identify either.

- Helpful if each ESC had that staff member on staff. You can't even turn to them. So we have to go around and get people to come to the building. *I would like to see more of this at university programs for these high-needs areas.* [emphasis indicates connection to category]
- In some areas there are a lot of candidates, but others are having to settle. The pool of applicants is getting sparser. I think it's due to some of the state rhetoric that we don't have much say in. The colleges are engaged in their campus but not so much in the classrooms.
- We have had a significant increase in students with VI and HI. Qualified Support staff for these students are limited and provide itinerant and consultative services only. Finding the qualified staff with understanding of educational settings is costly and difficult. Because of the limited staffing # [sic: likely typo; seems "$" was intended, next key to the right], we are unable to provide enough services to meet child needs.
- It wasn't easy to find a deaf educator. We were lucky to have someone come into our area for VI. We have services, but it wasn't easy to find them.
- We are in need of more deaf educators. We need students who are certified in deaf education. There is one school that serves them and it's in another county.
- We just needed trained personnel. Can't know it all with these low-incidence groups. The district I came from had an actual program for these people but we still relied upon our trained personnel.
- We have recruited in past years with few results. We need incentives to attract people to an area that offers little. Could salaries be supplemented? Could access to resources and programs be more accessible and less expensive?
- There is a shortage of school psychologists across the state, and often slow response times overall for special needs students exists. More qualified staff needs to be available
- There is a shortage of qualified persons to provide services.
- I think accessibility starts with the university education programs and incentives to entice people to do that. They need to fund that so more people are available.
- Our future success is being hinged on having a special teacher who signs and teaches reading to the HI. We have also found a sub parapro who has a hearing impairment and cochlear implant. His ability to relate to our student with a HI is exceptional. It helps when you have people the student can identify with.
- There is a shortage of TVI's and it is of great concern. They used to have their own and are trying to get one again, but have had to go through the ESC and that has caused scheduling issues.
- It seems that highly qualified teachers in either of the fields are almost nonexistent. The one or two HI teachers who are available do not have sufficient sign language background to move students with HI forward in their language development. Currently, we do not have any DB students. We are "finding our way" with the two VI students, but the challenges have been great.

- The Sight Center in Cleveland is wonderful. This is based on my experience in Cleveland. There should be more collaboration with these centers who provide real-world training and help these students get jobs.
- It's hard for us because of the number of prof available as we are so rural. Most have to seek those services at a distance, and travel and availability are limiting factors.
- Teacher education needs to be enhanced at the university level.
- Limited availability of any trained professionals and paraprofessionals involved with HI, VI, and/or DB.
- The students I serve get quality service, but the quantity is limited by the availability of professionals and that is limited by the budget.
- Within the public school system they just need to have more staff for educational audiology, teachers of the deaf, and interpreting services.
- We employ a VI, HI, and an Assistive Technologist. Our service delivery would be compromised without any of these positions.
- We have a great OM/TVI teacher accessible to us for our small number of students with VI. If she relocated, we would be in a terrible trouble.
- We are lucky to have a TVI on staff and she is a hot commodity. ESC has several on staff, but if you are not already working with them, it's hard to get in.
- When our VI teacher in a neighboring district retires (which I expect to be soon), I hope we can attract replacements.
- We used to be able to go to the ODE and they would tell us exactly what we needed to do. Now, they have shifted the burden to schools to tell us what we need to do to get licensure.
- We have managed in recent years due to having a couple of teachers move into our area —one HI and the other VI.
- We had another girl who was HI and we had an interpreter but we had to hire them from Youngstown speech and hearing.

Theme 7.2: Specific suggestions for changed support system (outreach, awareness, dissemination, resource access, networking & communities of practice) (22 excerpts)
- We have a lot of resources; it's just a matter of putting them to use in Cincinnati. Allowing for specialized services to parents that are not just state funded. Not just Ed. service centers. but being able to contract with other groups that have more specialized services.
- There should be networking with universities who are teaching braille etc. so if they have a student who has the condition, they could find a student to help.
- More time for consultation from professionals with reg. ed teachers about how to help.
- Having some clearly identified staff with people who can respond to those questions and issue.
- Most important thing is knowing that there are VI and orientation and mobility specialists that the districts can bring in to instruct the local staff and they can tell

169

them what they should be doing. I recently asked a parent if there was a specialist in school, and they were not aware that there could be a specialist in the school. Who is the head of the team that is responsible for pulling in outside referrals? That needs to be made known.

- Special education and general education teachers should not have to go through administrative "gatekeepers" to contact agencies such as SST or Educ Service Ctrs.
- The following have been very helpful: 1. Training for early intervention 2. Awareness of places/resources.
- The ODE website can do a better job of linking users to accessing agencies and services.
- The dissemination of the resources is very poor. Many of these agencies that can help should make a presentation at every college/university on the unique needs of these students.
- I would like clarification on the school district's obligation to address independent living skills and functionality for students with visual or hearing impairments. Typically, our services relate to educational impact, but where do we draw the line in supporting independent functioning yet not becoming solely responsible for activities within the home?
- Ohio School for the Blind has reached out to several of the clients that I work with and the parents have raved about what they provide. I would suggest more organizations reach out like they do.
- Parents need to be aware of the orgs that are there to help them. Parent support groups etc. A lot of times parents don't know where to go for help. There should be someone they can call to find out what services are available to them.
- Awareness of places/resources. She wants to see more sent out by those who offer services so people are aware of what is available.
- we need more online support and constructive feedback
- I think that there are resources that I haven't looked into because the need is not there. But if I needed it I think I can find it. I have been pleased with the ESC and State Regional Teams. There needs to be more that reach out and make contact with the school and let us know they are there.
- There is a need to have a unified location for all agencies (for materials, training, etc.).
- There needs to be a good central resource for materials and coordination in communication, as well as more supportive professional development.
- People need to know how to access the materials—better awareness about who provides what and how to get on those lists.
- There needs to be more effort in letting people know how to connect the dots for those resources for families, teachers, and professionals.
- We need more information about what services are available.
- Changing of focus of area ESC. Accessibility to parents of a timely referral to parents into the schools with children at a preschool level. Once we educate the

parents with the 0-3 population they get in, but the timeliness is very poor with all districts. We work with 15 districts.

- The federal government needs to better allocate money for resources.

Theme 7.3: In-service professional development (14 excerpts)

- Training paraprofessionals is not good. Normally they just send an aid and often they are unprepared and don't understand how to work with these students. There needs to be more training and understanding of what a child is like and what are the needs.
- District never had a superintendent or principal who knew anything about it. In all my years I only had one principal come in and ask how my students were.
- More training opportunities.
- More in-service instruction for gen. ed teachers. Professionals coming onsite to a workshop. That would be really helpful to us.
- General educators and, even more importantly, intervention specialists should be taking classes that indicate some of the unique learning issues for these individuals.
- I would like to see more conferences and other continuing education opportunities in this area. We are so focused on autism—there is not a lot of training.
- In my experience, teachers don't go to training unless they are paid. If it's free, people will go. For practitioners, if it's available for continuing education, they would go, if not, they won't.
- Training for early intervention.
- Professional development training seems to be feast or famine.
- For our district, keep us informed of upcoming workshops. I like to pass that on.
- There is a significant need for professional development for all individuals involved in working with this disability. Limited information is available to districts.
- I think that general intervention specialists need more training in HI and VI. Oftentimes they have never, ever, worked with these kids and don't know where to begin.
- The number of good school psychologists available to work in central Ohio is completely nonexistent.
- Support services for more professional development activities is very important, and more is needed.

Theme 7.4: Appreciation (explicit or implied) (14 excerpts)

- I'm a behavior specialist and my experience is that people do use resources. State support teams are helpful. These kids are hooked up. The materials etc. I have seen it in motion.
- I know there are resources available, but without the need I haven't researched them.
- We have some good private schools that support students' needs.

- OCALI is a fantastic program, but they are only one of the multitude of agencies that have services to offer (and for free).
- We've got descent resources; it's just making them aware that they are available.
- We rely on ESC, which has supported us greatly in our efforts.
- We rely heavily on our regional centers. If they disappeared, we would be left in a precarious position. They train our people. There is a great support for us.
- She [our TVI] has done a lot of homework and digging to find resources for VI, brought trainings to us from the Cleveland Sight Center, gone to the Ohio State School for the Blind.
- I have faith in my local ESC and SST team to help support my needs.
- OCALI does a wonderful job as well as the SSTs at helping with the planning for these students.
- we have a bunch of good people and we reach out where we can.
- More for HI students. I would need to go to the ESC and access services.
- [One of our students] took building maintenance. He learned about electricity and he is working fulltime with benefits. He is wiring panels for the federal gov.
- When the HI teacher retired and moved, our student went to OSD—for a variety of reasons.   In retrospect, this was best for him, and he and has family believe he has had numerous ultimate opportunities w/ the deaf community & culture that he would not have had here.

Theme 7.5: Local circumstances: regional, rural, remote, or small (12 excerpts)
- Most of what we see is in Columbus. More local presentations might be helpful. Updates on assistive technology.
- In our region we have better accessibility than other regions. ESC provides teachers, access to interpreters. Cleveland Sight Center is a great resource.
- In my experience, where I was, in a rural district I often had to voluntarily drive students into the city for resources. It's so difficult for families, and districts don't make it easy. I think their hope is that they just move out of the district.
- Difficult survey for a smaller district with a low-incidence of these conditions.
- It's hard for us because of the number of prof available as we are so rural. Most have to seek those services at a distance and travel and availability are limiting factors.
- Biggest problem is as a little school, but the state forgets about us. I have to fight to be on mailing lists and we have to scramble to find things.
- We are in a rural area. There is a low-incidence so we have to pool our resources. Students usually have to go to another district. We don't have the need here. If we had a larger need, it would be easier for us to have better access. It is largely a distance issue for us.
- All services to allow the child to remain in home school are through itinerant services with providers servicing many school districts across large sections of the state. When that cannot be provided we consider OSD or OSB. Our county does not have school-age programs available within reasonable drive of the home school district for students needing the higher level of services.

- They have 51 schools located throughout the state all in urban areas. She assumes the availability of services and supports would be much lower than in the suburbs.
- Professional development for the administrators and other relevant personnel should be a requirement, especially in a school that has students with VI, HI or DB.
- Rural district far removed from resources. We rely on our state support team for economical and accessible services.
- Our staff has dealt significantly with HI, but no current VI or DB. We are a smaller district.

Theme 7.6: Specific observations (without suggestions for change) (12 excerpts)
- The problem we have is when we have HI and we are trying to obtain assistive devices the principals and superintendent are very reluctant to get those devices into the hands of students.
- Accessibility to materials is big also. When a student comes in they never have any materials. It's left up to the teacher. They also have to find it, and get it into the classroom. If it takes six weeks, that is not fair. It's always up to the teachers.
- I am leaving the profession. The Ohio general assembly creating all these tests that teachers have to pass or they are going to get fired. It leaves us without being able to fill a position.
- Everyone is an "expert," but nobody wants to give teachers any credit. Now, we're not allowed to use the same wording in an IEP. Before, we had word and statement banks we could use, but now if they're seen being used, they have to do them over again. Teachers and intervention specialists give their hearts and souls to what they do, with little recognition. This really needs to change.
- There are limited services and fewer placement options available for students that are HI and with significant intellectual disabilities. Students with multiple disabilities, autism and HI, or CD and HI, require uniquely tailored specialized services.
- In other regions their caseloads are completely unmanageable. Service in one district might be vastly different in the level of service and it is based on funding not need.
- Our ESC provides excellent support through their audiologist and teacher for the deaf for students with HI. VI supports are less evident. AT support is lacking in all areas.   Collaboration and connection with community resources and resources for families is lacking for HI, VI, and DB.
- There are very few young people going into special ed.
- [With LISD] it's really "out of sight they are out of mind."
- Youngstown Hearing and Speech used to be the clinic where people could go, but they are not functioning in that way anymore and we (Kid's Choice Therapy) are now more of the clinic.
- Biggest thing is that right now those students are together with other students that are like them, so sending them out is an opportunity for them. If they want to stay,

usually the proper supports are brought in. [*note: comment may address LRE in neighborhood schools as compared to special school*]

- We have more students and therefore more experience with students with HI when compared to students with VI.

Theme 7.7: Few or no students with needs at this time (n=7)
- I am dealing with private schools. I am only dealing with the IEP population in Cleveland. We have one child with a student with a HI.
- There is a low incidence in our district. Their knowledge is probably not the best, but we have good psychologists.
- At this time our school does not serve any students with the disabilities in question.
- We don't have any of these students. I mainly deal with hearing and vision screeners.
- We have a few students with hearing impairments and visual impairments and no deaf-blind.
- Our district has a very low number of students who are VI or HI. There are 0 DB students in our district.
- They are a small district, but have 3 or 4 students with sensory disabilities. Do not have students with significant needs in these areas in the district at this time.

Theme 7.8: Observations relevant to completing the survey (n=4)
- The questions on this survey were vague and difficult to answer. They need to be more specific.
- A lot of the questions on the survey depend on how restrictive the disability is and it needs to be specified in order to answer the question.
- The survey (really much more than 11 questions) is difficult to answer due to including HI, DB, VI collectively for each question. The resources vary drastically between each disability category, making responses less valid for each.
- I have based my answers upon previous experience (fourteen years) where I was in a district that had students we served with these identified needs.