# CVI and Other Visual Impairments in Students with Significant Cognitive Disabilities

NCDB/ ATLAS BRIEF #2

This brief, co-produced by the National Center on Deaf-Blindness (NCDB) and Accessible Teaching, Learning, and Assessment Systems (ATLAS), provides important information about the differences between students with significant cognitive disabilities who have cortical visual impairment (CVI) and those who have other types of visual impairment (VI). The information is drawn from a more extensive report, ***Students with Significant Cognitive Disabilities and Dual Sensory Loss***.

## KEY TAKEAWAYS

As compared to students with other types of VI, those with CVI

- May struggle more to access instruction and make progress in the general education curriculum
- Have fewer communication and academic skills
- Have more reports of suspected hearing loss
- Experience more health issues that interfere with instruction or assessment
- Are more likely to have a primary disability classification of "Multiple Disabilities"

## DATA SOURCES

- The First Contact (FC) survey is completed annually by teachers. It captures the characteristics and skills of students with significant cognitive disabilities who are enrolled to take the Dynamic Learning Maps® (DLM) alternate assessments.
- This brief is based on FC Survey data from more than 100,000 students in grade 3 through high school who were enrolled in DLM assessments in 17 states during the 2017–2018 school year.

## DEFINING VISUAL IMPAIRMENT GROUPS

The "Students with Significant Cognitive Disabilities and Dual Sensory Loss" report used teachers' FC responses to explore the differences in educational experiences of two groups of students with significant cognitive disabilities—those with CVI and those with other forms of VI. CVI is distinct from other forms because although the health of the eyes appears to be normal, the brain has difficulty processing information it receives from the eyes. CVI may be due to brain injury or malformation (either congenital or acquired).

Data indicated that 4,765 students had some form of VI. Of these,

- 1,510 (31.7%) had CVI (fewer than 10% also had additional forms of VI, including low vision [7.2%] and legal blindness [9.7%])
- 2,846 (59.7%) had VI other than CVI, including low vision (49.1%) and legal blindness (34.2%)

Teachers did not specify the type of VI for 409 (8.6%) students.

## HEALTH, SENSORY, AND PHYSICAL CHARACTERISTICS

The report found that health, sensory, and physical characteristics also varied among students with significant cognitive disabilities who had CVI versus other forms of VI:

- Fewer students with CVI had diagnosed hearing loss.
- Of those with diagnosed hearing loss, the degree of loss was more likely to be unknown in those with CVI (31%) as compared to those with other forms of VI (21%).
- Students with CVI had more limited use of their hands.
- Students with CVI experienced health issues that interfered with instruction or assessment at a much higher rate (73%) than those with other forms of VI (45%).

## DISABILITY CLASSIFICATION

Students with CVI were more likely to have a primary disability classification of “Multiple Disabilities” than those with other forms of VI.

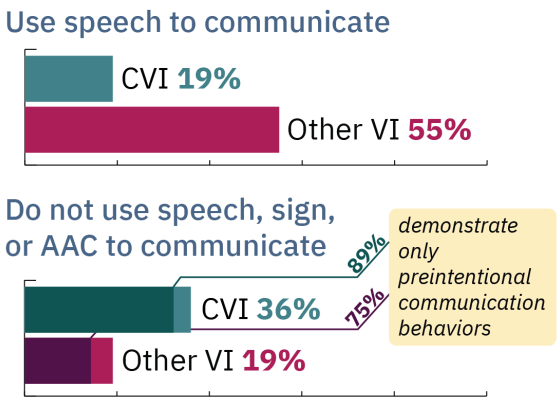
**Table 1.** ***Primary IDEA Classification Among Students with CVI and Other VI***

| Primary IDEA disability category | CVI (*N* = 1,495) | | Non-CVI (*N* = 2,820) | |
|---|---|---|---|---|
| | *n* | % | *n* | % |
| Autism | 29 | 1.9 | 130 | 4.6 |
| Deaf-blindness | 32 | 2.1 | 58 | 2.1 |
| Intellectual disability | 109 | 7.3 | 478 | 17.0 |
| Multiple disabilities | 1,074 | 71.8 | 1,526 | 54.1 |
| Visual impairment, including blindness | 38 | 2.5 | 265 | 9.4 |
| Other | 213 | 14.3 | 363 | 12.9 |

## COMMUNICATION

Students with CVI had more limited communication skills than those with other forms of VI.

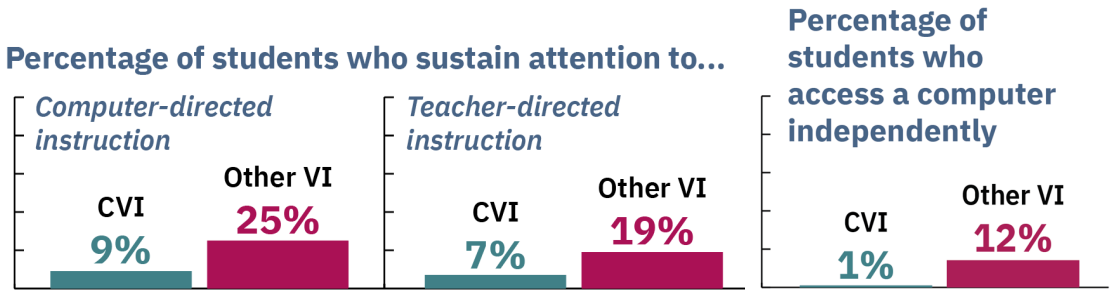
- Fewer students with CVI use speech to communicate, or do not use speech, sign, or AAC to communicate, than students with other VI.




- Students with CVI consistently used less complex communication skills. For example, only 14% regularly combined three or more spoken words, signs, or symbols as compared to 41% of students with other VIs.
- Fewer students with CVI consistently demonstrated language understanding. For example, only 10% could "point to, look at, or touch things in the immediate vicinity when asked" as compared to 34% of students with other VIs.
- Only 3% of students with CVI could follow "2-step directions presented verbally or through sign" as compared to 13% of students with other VIs.

# INSTRUCTION

Students with CVI were less able to follow instructions and independently access a computer than those with other forms of VI.




# ACADEMICS

Students with significant cognitive disabilities should be taught content that reflects high expectations and provides access to the general education curriculum. Across subjects, those with CVI less consistently demonstrated (i.e., demonstrated with less frequency) a variety of academic skills during instruction compared to students with other forms of VI. Students with CVI were less likely to consistently demonstrate mathematics, reading, and science skills during instruction than students with other forms of VI.

## Mathematics

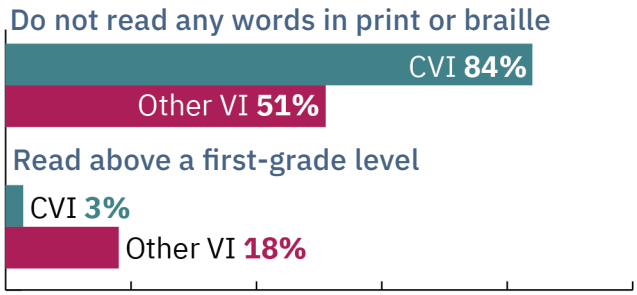
The mathematics skills with the largest gaps between CVI and other VI groups are shown in Table 2.

**Table 2.** ***Consistently Used Mathematics Skills Among Students in the CVI and Other VI Groups***

| Mathematics Skill | CVI | | Non-CVI | |
|---|---|---|---|---|
| | *n* | % | *n* | % |
| Identifies simple shapes in two or three dimensions | 78 | 5.4 | 596 | 21.4 |
| Sorts objects by common properties | 74 | 5.1 | 665 | 23.9 |
| Counts more than two objects | 105 | 7.3 | 947 | 34.0 |

## Reading

More students with CVI do not read any words in print or braille, and fewer read above a first-grade level, compared with students other VIs.




## Science

The gaps between students with CVI and other forms of VI were smaller for science skills than other subjects. Both groups demonstrated science skills less frequently. The largest gap was for "sorting objects by common properties," which only 4% of students with CVI demonstrated consistently (i.e., demonstrated more than 80% of the time) compared to 18% of students with other VIs.

## IMPLICATIONS

- Students who appear to have difficulty using their vision should be referred to a medical specialist (e.g., ophthalmologist) to determine if they have CVI or another type of VI. Some ophthalmologists may be unfamiliar with CVI. In these cases, a consult with a neurologist or neuro-ophthalmologist may be necessary.
- Teachers of the visually impaired (TVIs) can be helpful in navigating the diagnostic process (e.g., referral to specialists).
- A functional vision assessment is important for children with any type of VI to guide accommodations and instruction. These are typically conducted by TVIs.
- All children with known or suspected vision loss of any type should have their hearing evaluated on a regular basis.

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National Center on Deaf-Blindness

KU Achievement & Assessment Institute
The University of Kansas

Accessible Teaching, Learning, & Assessment Systems

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