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# The effectiveness of phonics instruction for children with hearing impairments

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**THE EFFECTIVENESS OF PHONICS  
INSTRUCTION FOR CHILDREN WITH  
HEARING IMPAIRMENTS**

**by**

**Tara Beck**

**An Independent Study  
submitted in partial fulfillment of the  
requirements for the degree of:**

**Master of Science in Deaf Education**

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Program in Audiology and Communication Sciences**

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**Approved by:  
Lynda Berkowitz, MS, CED, Independent Study Advisor**

*Abstract: This study reports the findings of a reading instruction survey of forty-five schools for the deaf across the United States.*

**Table of Contents**

Introduction	3
Purpose	6
Survey of Reading Instruction for Children with Hearing Impairments	8
Method	10
Participants	11
Findings	13
Hearing Loss	13
First Language	13
Other Disabilities	13
Instructional Methods	13
Contributors to Success	15
Progress	15
Grade Level Attained	17
Factors Affecting Reading Level	18
Implications of Reading Level	19
Conclusion	20
Questions Answered	20
Additional Findings and Concerns	20
References	23
Appendix	24

## Introduction

In 1965, the Babbidge Report was released stating that the average deaf or hard-of-hearing eighteen-year old student had a reading level between third and fourth grade. Despite the passage of time, the statistic has remained almost the same (LaSasso & Mobley, 1997). Why are these levels consistently low? What has caused these difficulties?

Research suggests that literacy problems stem primarily from general language deficiencies, (Wilbur 2000; Goldin-Meadow & Mayberry, 2001). Tenure (2001) proposes that the reason students plateau at around a fourth grade reading level is that they “cannot proceed due to the difficulties mastering the high level comprehension skills which are much more abstract and dependent on language.” Children need access to a full, complete language as soon as possible to facilitate normal development and reduce language delays (Easterbrooks & Baker, 2002). However, because children with hearing impairments have incomplete access to sound, they have difficulty learning spoken language naturally. Thus, only deaf children born into families that use a native sign language will develop language naturally. Children with hearing loss born to hearing parents will likely struggle to learn language, whether that language is spoken or visual. For general language acquisition, the completeness of the first language is more important than which language is learned (Musselman, 2000). Furthermore, this language cannot be taught through print; a conversational language must be learned first (Goldin-Meadow & Mayberry, 2001).

Another possible cause of low reading ability, at least among learners of American Sign Language (ASL), is limited knowledge of the language in print. Individuals with hearing loss often have a limited vocabulary and difficulty understanding multiple meanings of words. They are also delayed in their knowledge of grammatical rules (Musselman, 2000).

A third cause of low reading ability could stem from the method of encoding employed by the reader. A child with hearing loss can learn to code print either auditorally or visually. Auditory coding involves transferring the print into phonology. Visual coding may be done in many ways. One way is to recode the printed English into sign (Wilbur, 2000). Three alternate types of visual encoding systems were investigated by Musselman (2000), who looked at studies surrounding the use of fingerspelling, orthography, and articulation to encode print. She found that while fingerspelling was related to comprehension, it was not used as a coding system. She also found that an orthographic code was possible, but less useful than a phonological code, and that an articulatory code was possible, but not proven to be used.

Goldin-Meadow and Mayberry (2001) have made points against the teaching of phonological coding. They cite research that asserts that deaf students can be good readers without phonological skills. They argue that students may not find phonology useful because they may not know the word once they have decoded it. They also say that readers with hearing loss may not need a phonological code because they may map visually.

However, the body of research contains much compelling evidence promoting the teaching of phonological coding. Much of the evidence shows that successful deaf readers use phonology, despite the fact that they use a visual communication system (Paul, 1994). Studies have also shown that phonology aids working memory, a critical component of reading comprehension. In addition, auditory memory, which is accessed when using a phonological code, is better at preserving sequential information than is visual memory (Musselman, 2000).

Perhaps surprisingly, the best readers with hearing loss are not necessarily orally educated (Goldin-Meadow & Mayberry, 2001). The use of phonology does not have to be dependent on speech because readers only need to understand the connection between phonemes

and graphemes. Even though some would advocate that students figure out the phonological rules on their own, high reading levels will not be obtained without explicit instruction (Paul, 1994). Leybaert even suggests that the cause of reading problems for students with hearing impairment is the lack of appropriate phonological instruction (as cited in Trazek & Malmgren, 2005).

This research does not aim to dismiss completely the usefulness of visual coding systems. Techniques such as “chaining”<sup>1</sup> may be used with success to help bridge the gap between sign and printed English. In fact, teaching only one method may hinder students’ progress (Musselman, 2000) and research shows that readers with hearing loss often use more than one coding system (Wilbur, 2000). However, the majority of the research indicates that readers with hearing loss who read well use phonology, and therefore, phonological rules should be taught to students with hearing loss.

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<sup>1</sup> Chaining involves making a relationship between the printed English word and the ASL sign. It often involves initializing the sign, which means to perform it with the handshape of the first letter of the English word rather than the normal handshape.

## Purpose

The road to this research has been a process that probably began with my early desire to read. I was taught to read at a young age, and since that time the written word has provided me with countless hours of pleasure and learning experience. Because I have congenital mild-to-moderate hearing loss, I often miss information presented to me auditorily. Many times the written word has helped to fill in the informational gaps. It is possible that my early desire to read stemmed from my hearing loss. Since I love reading, I have always felt that everyone should have the opportunity to learn to read and to love reading as well.

In an undergraduate reading course, the “whole language” method of teaching literacy was discussed. Since I was taught to read using the phonics method, my only prior knowledge of whole language, or “sight reading,” was that those who were taught this way had difficulty reading when they encountered novel words. I did not think that I would ever use the method myself until I began to think about the deaf children I wanted to teach someday. Most of the children I had seen in the school for the deaf in my hometown were signers who voiced as they could. I began to wonder how a person could “sound out” words when they could not hear themselves say the sounds.

Later that semester I was required to complete an inquiry project relating to reading. Since this problem had preyed heavily on my mind, I chose it as the focus of my questioning. I surveyed the teachers at the school in my hometown and discovered that the school’s program was indeed more whole language than phonics. However, some students were able to sound out words and some teachers incorporated some phonics into their curriculum.

This current research is a continuation of that project. In addition to the fact that the answers provided did not satisfy me, the choice to continue this line of research was motivated

by the fact that I had read in many sources that people with hearing impairments often do not achieve beyond a fourth grade reading level. This disturbed me since reading has been such a help to me as a person with a hearing impairment. Since most of the papers I read were not particularly current, I decided to find out if such low reading levels were still prevalent. In particular, this research is concerned with the methods of reading instruction currently used in schools for children with hearing loss and whether phonics is being used successfully in any of these programs. In order to get the most current data, I sent out a survey to as many schools and programs for the deaf as possible. I obtained the names of these schools from the listings of deaf schools on [www.deafconnect.com](http://www.deafconnect.com) and [oraldeafed.com](http://oraldeafed.com).

### **Survey of Reading Instruction for Children with Hearing Impairments**

Thank you for taking the time to complete this survey! Most of the questions only require a short answer or the check of a box. However, please feel free to elaborate or provide additional information on any of your answers.

1. Demographics of the hearing impaired students at your school:

- a. Ages:
- b. Ranges of hearing loss:
- c. First language:
- d. Percentage of students with involvements in addition to their deafness:

2. How would you classify the communication system at your school?

- |                                        |                                               |                                              |
|----------------------------------------|-----------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> ASL only      | <input type="checkbox"/> Bilingual-Bicultural | <input type="checkbox"/> Total Communication |
| <input type="checkbox"/> Auditory-Oral | <input type="checkbox"/> Auditory-Verbal      | <input type="checkbox"/> Combination/Other   |

If Total Communication or Combination/Other, please describe:

NOTE: If your school uses more than one communication system, please answer the following questions for each system used.

3. How would you classify the reading curriculum and/or instructional methods you use at your school?

- |                                                                  |                                           |                                              |
|------------------------------------------------------------------|-------------------------------------------|----------------------------------------------|
| <input type="checkbox"/> Basal Reading Series                    | <input type="checkbox"/> Literature-based | <input type="checkbox"/> Language-experience |
| <input type="checkbox"/> Individualized Reading/Reading Workshop | <input type="checkbox"/> Other            |                                              |

Is your reading program primarily phonics or whole-language based?

Do you use a specific commercial reading program? If so, which one? If not, please attach an overview of your program's scope and sequence.

What is your rationale for using this particular method for teaching reading?

4. How long has the school used this type of program?

5. Which of the following do you feel are crucial to success in this program?

- Teacher enthusiasm and support                       Family support  
 Increased interest in recreational reading                       Other (please explain)

6. How much progress would you say the majority of your students make in a year?

- Less than 1 year                       About 1 year                       More than 1 year

How do you remediate students who are not progressing?

7. What grade level of reading proficiency do your students usually attain? If they leave your school before completing their education, are they on grade level?

Do you find that the following factors affect this level?

- a. Child's first language                       Yes                       No  
 b. Level of hearing loss                       Yes                       No

Please explain.

8. When students leave or graduate from your school, where do they go? Check all that apply.

- Mainstream school                       Special education school                       University/college  
 Trade school                       Employment                       Other

Does the student's reading proficiency influence this decision? Please explain.

## Method

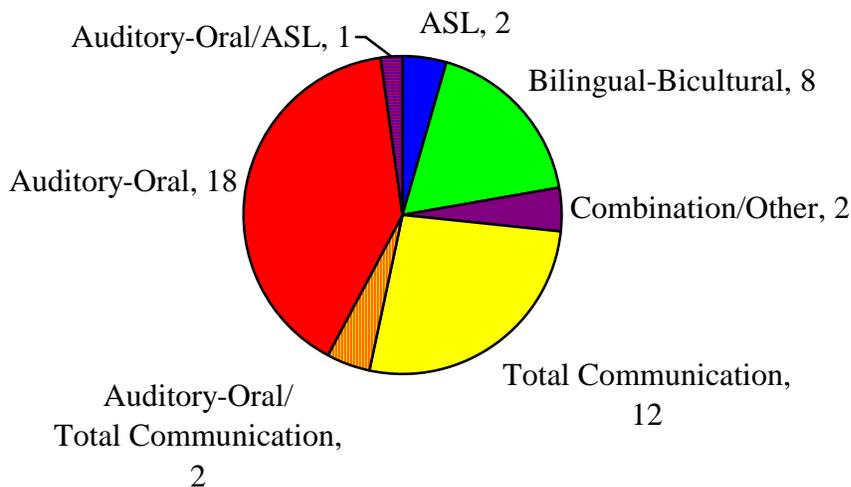
In the survey, each of the eight questions was asked with a specific purpose in mind. The first two questions concerned demographics and were used to help classify the results. The third question concerned instructional methods and was split into four parts. The first three parts of this question were also used to classify the results, but the last part was designed to provide information on why the schools were teaching as they were. The fourth question concerned the length of time the school had used the reading program. It was included because the validity of the results might have been in question if the school had not been using the program for very long. The fifth question, involving factors crucial to the success of a reading program, was an attempt to uncover any factors that may have been overlooked that would also influence reading ability.

Question six and the first half of question seven were the focus of the survey. They contained the main information this research sought to obtain: the progress the students are making and the level of proficiency they eventually achieve. The second half of question seven concerned first language and level of hearing loss and was an attempt to show whether a child's reading level is affected by either of these factors. Question eight identified where students go when they leave the school and whether literacy level influences this decision. It was an attempt to discover the implications of the schools' reading programs on future academic and career success.

## Participants

The survey was sent to 116 schools and programs for the hearing impaired across the United States. Forty-five were returned. Of the forty-five schools responding, two schools classified themselves as ASL only, and eight schools classified themselves as bilingual-bicultural. Twelve schools classified themselves as Total Communication (TC) and eighteen schools classified themselves as Auditory-Oral. One school reported a program split between Auditory-Oral and ASL. Two schools classified themselves as Auditory-Oral and TC, with one of those schools designating that its Auditory-Oral program was in the preschool only. One school classified itself as using a combination of approaches to meet the needs of individual students and one school used Cued Speech and marked itself as “other.”

**Figure 1: Communication Methods**



For the purpose of this study, the schools were placed in four groups based on the ages served. Twenty-one of the schools (46%) were put into Group A, which consisted of the schools that served children from preschool to high school graduation. Two of these schools began services at Kindergarten but were placed in this group because it is where they fit best. Ten of the schools (22%) were placed in Group B. This group consisted of those schools that began services at preschool age and ended before graduation (ages eleven to sixteen). Group C consisted of the seven schools (16%) that began services at preschool and ended them between ages seven and ten. Group D consisted of the remaining seven schools (16%) that began services at preschool and ended services at or before first grade.

**Table 1: Classification of Schools Based on Ages Served**

<b>Group</b>	<b>Age Range</b>
Group A	Preschool - high school graduation
Group B	Preschool - (age 11-16)
Group C	Preschool - (age 7-10)
Group D	Preschool – 1 <sup>st</sup> grade

## **Findings**

### **Hearing loss**

The students at the reporting schools represented a wide range of hearing loss. Eight of the schools served only students with severe to profound losses. Seventeen of the schools served students with losses from moderate to severe/profound. Nineteen schools served students with losses ranging from mild/mild-moderate to severe/profound. One school did not provide hearing loss data.

### **First Language**

Thirty-three of the schools reported English as one of the first languages of their students. Twenty-one schools reported ASL or some form of sign as one of the first languages. Twelve schools reported that Spanish was one of the first languages. Other first languages reported were Colombian, French, Haitian Creole, Polish, Portuguese, Russian, a Somali language, Sudanese, Telegu, and Vietnamese.

### **Other disabilities**

Twenty-six of the schools reported that less than 50% of their students had other disabilities. Five of the schools reported that about 50% of their students had other disabilities. Five schools reported that more than 50% of their students had other disabilities. Eleven schools did not provide this data.

### **Instructional Methods**

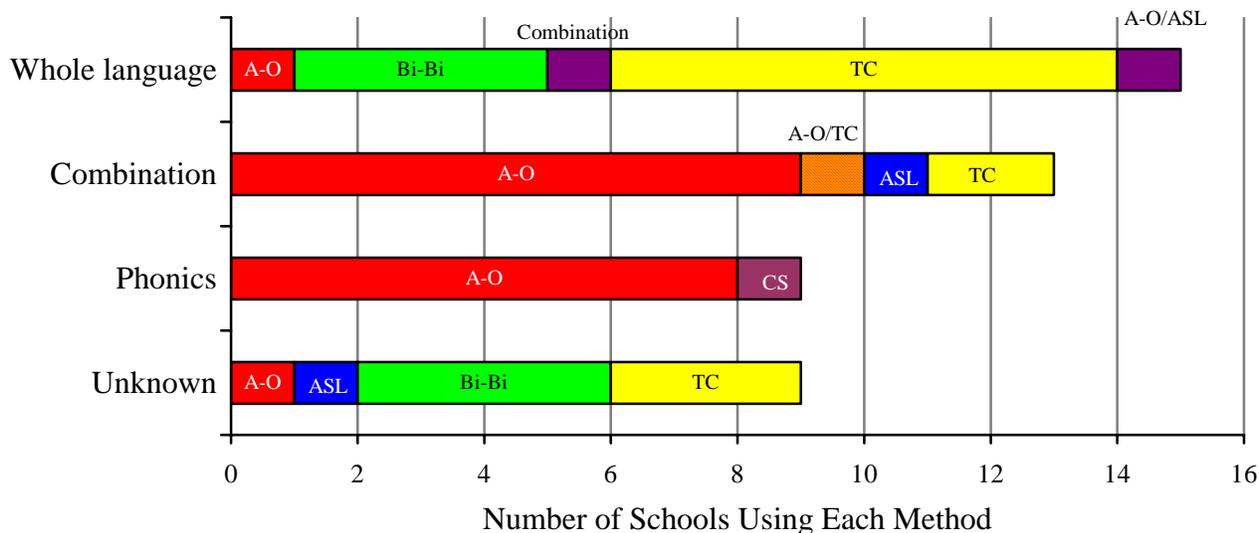
The schools reported varied use of instructional methods. In fact, seventy-six percent of the schools used more than one instructional method. Language-experience and literature-based methods were the most widely used at sixty-nine and fifty-six percent respectively. Basal

reading series and individualized reading/reading workshops were each used by forty percent of the respondents. Twenty-seven percent reported that they used a method other than what was listed. Two curricula that were each reported by almost a fifth of the respondents were the Fairview curriculum and Reading Milestones. Both of these reading curricula were developed for use by hearing impaired children.

Thirty-three percent of the schools reported that they used the whole language instructional approach. Of this thirty-three percent, one was an Auditory-Oral preschool. Eight of the other schools were TC, four were Bilingual-Bicultural, one was an Auditory-Oral/TC split, and one used a combination of communication methods. Twenty percent of the schools reported that they used a phonics approach. All of these schools were Auditory-Oral except for the school that used Cued Speech (CS). Twenty-nine percent reported that they used a combination of both approaches. Nine of these were Auditory-Oral schools, one was an Auditory-Oral/ASL split, two were TC, and one was ASL. Eighteen percent did not provide data for this section or reported that they used neither phonics nor whole language.

**Figure 2: Approaches to reading instruction**

This chart shows the prevalence of each approach to reading instruction and what communication methods make up that number.



### Contributors to Success

Ninety-one percent of the schools reported that they felt that teacher enthusiasm and support was crucial to success in their reading program. Eighty percent reported that family support was crucial and sixty-four percent felt that increased interest in recreational reading was crucial. Thirteen percent wrote in that they felt that teacher/staff competence was also crucial to success in their program.

### Progress

At this point in the analysis, the validity of using the scores of preschools came in to question. Thus, this section is reported with and without the preschools (Group D). Of all the schools reporting, six said that most of their students made more than one year of progress in a one year, twenty-two reported about a year of progress, and eighteen reported less than a year of progress in a year. These numbers reflect that four schools reported a fifty percent split in the progress of their students and three schools did not provide data for this section. When the Group D was removed, there were five schools reporting more than a year of progress, eighteen schools reporting about a year of progress, seventeen schools reporting less than a year of progress, and two schools not providing data. These numbers also reflect the four schools that reported a fifty percent split in progress.

**Table 2: Student Progress**

<b>Amount of Progress</b>	<b>Number of Schools (number when excluding preschools)</b>
More than one year	6 (5)
About a year	22 (18)
Less than one year	18 (17)
No data	3 (2)

Further analysis of this section revealed that all of the schools using phonics methods made a year or more of progress in one year except for half of one school. Of these schools, eight were not preschools. In six of these schools, the students were on grade level when they left, and in one of the schools, the students averaged above a sixth grade reading level. Of the schools that used both phonics and whole language methods, two reported more than one year of progress, seven (including three preschools) reported about a year of progress, and four (including one preschool) reported less than a year of progress in a year. These numbers reflect the fact that one school reported a fifty percent split in progress. Of the schools that used whole language methods only, one school reported more than one year of progress, five schools (including one preschool) reported about a year of progress, and ten schools reported less than one year of progress in one year. These numbers also reflect the fact that one school reported a fifty percent split in progress.

**Table 3: Progress in One Year by Approach**

<b>Approach</b>	<b>Amount of Progress</b>	<b>Number of Schools (number when excluding preschools)</b>
Phonics	More than a year	2 (1)
	About a year	7 (7)
	Less than a year	1 (1)
Combination	More than a year	2 (2)
	About a year	7 (4)
	Less than a year	4 (3)
Whole Language	More than a year	1 (1)
	About a year	5 (4)
	Less than a year	10 (10)

## **Grade Level Attained**

Nearly a third of the schools did not provide data for this section, and sixteen percent replied that the grade level varied. In Group A, fourteen percent reported greater than or equal to fourth grade reading level, twenty-nine percent reported about a fourth grade reading level, and fourteen percent reported that they had students leaving at either about a second grade reading level or upper high school reading level. Only one of these schools reported that students were on grade level when they left the school. In Group B, twenty percent reported greater than or equal to fourth grade reading level and twenty percent reported less than or equal to a fourth grade reading level. However, sixty percent reported that their students were on grade level when they left the school. The results for Groups C and D were not analyzed because the students in these groups were too young.

Further analysis of the schools in Groups A and B who provided useable data revealed that in both of the schools that used phonics methods, the students left with a reading level at or above the fourth grade. Of the schools that used both methods, three had students leave with a reading level at or above fourth grade, one had students leave with about a fourth grade reading level, and one had students leave with reading levels below fourth grade. Of the schools that used whole language methods, four had students leaving at about fourth grade reading level, one had students leaving at less than fourth grade reading level, and two had students leaving with either about a second grade reading level or an upper high school reading level.

**Table 4: Grade Level Attained by Approach (Groups A & B)**

<b>Approach</b>	<b>Grade Level Attained</b>	<b>Number of Schools</b>
Phonics	At or above 4 <sup>th</sup> grade	2
	Around 4 <sup>th</sup> grade	--
	Below 4 <sup>th</sup> grade	--
	Either 2 <sup>nd</sup> grade or upper high school	--
Combination	At or above 4 <sup>th</sup> grade	2
	Around 4 <sup>th</sup> grade	1
	Below 4 <sup>th</sup> grade	1
	Either 2 <sup>nd</sup> grade or upper high school	--
Whole Language	At or above 4 <sup>th</sup> grade	--
	Around 4 <sup>th</sup> grade	4
	Below 4 <sup>th</sup> grade	1
	Either 2 <sup>nd</sup> grade or upper high school	2

### **Factors Affecting Reading Level**

Seventy-six percent of the schools responding said that they felt that a child's first language influences his reading ability. Most of the remaining schools did not give a reason as to why they felt that first language was not a factor, but a few mentioned that they felt that language level was more important than first language. Fifty-six percent said they felt that a child's hearing loss influences his reading ability. Most of the remaining schools did not give a reason why they felt that hearing loss was not a factor, either. However, some of the responses received were that Cued Speech or cochlear implants/hearing aids negated the effects of the hearing loss and that cognitive abilities and/or the existence of other disabilities were bigger factors.

## **Implications of Reading Level**

Sixty-four percent of the schools reported that some of their students go to mainstream schools when they leave. Although this statistic may seem low, it bears noting that all but one of the schools in the remaining thirty-six percent were schools who provide services for students until high school graduation. Forty percent reported that students went to special education schools, and thirty-one percent reported that students went to trade schools. Forty-two percent reported that their students entered into employment, forty-nine percent reported that students went to colleges or universities, and sixteen percent reported that students went to a placement other than those listed. Fifty-three percent of the schools felt that reading level influenced these placements. However, seven percent wrote in that they felt that language level was more likely to influence placement.

Schools also provided what they felt were the implications of low reading levels. According to respondents, reading level affects the students' general success in school. It affects when they will be mainstreamed. It also affects their choice of placement and their grade placement at receiving schools. In many states, students must pass proficiency exams to receive a regular diploma, and low reading levels can prevent them from doing so. Low reading levels also affect scores on college entrance exams. Most colleges and universities require a regular diploma and a certain score on an entrance exam for admission. Thus, reading levels affect the students' post-secondary career choices.

## **Conclusion**

### **Questions Answered**

The first question posed was whether schools were producing students who surpass a fourth grade reading level. Only half of the schools with students higher than fourth grade provided reading level information, but of these schools, just over one third said the students left their school with an average reading level above fourth grade. In addition, just over one third of all schools reported that students left their school reading on grade level. Thus, most schools have shown that they are not surpassing this long-standing statistic.

The second question posed concerned the methods of reading instruction used by the schools. Eighty percent of the schools provided useable information about their instructional methods. Within this eighty percent, over one third of the schools reported using the whole language approach. Nearly as many reported using a combination, or a “balance,” of phonics and whole language. Only one fourth reported using phonics exclusively.

The third question posed was whether schools were using phonics effectively. The responses reveal that schools that are using phonics are doing so effectively. Eight of the nine schools that use phonics exclusively report average yearly reading progress of a year or more. Their students also leave with an average reading level of fourth grade or higher. In addition, eight of the twelve schools using a combination of phonics and whole language report an average yearly reading progress of a year or more, and most of those who reported this data reported that their students leave with an average reading level of fourth grade or higher. This is good news.

### **Additional Findings and Concerns**

Although it is encouraging that some schools for children with hearing loss are using phonics effectively, the largest number of schools still uses the whole language approach. Few

of the schools that use exclusively this approach report that their students are surpassing the fourth grade reading level. Although some might question whether this could be a factor of bilingualism in those schools that teach ASL, it is left to other research to prove or disprove this point.

A point that may be raised is that all of the schools that used phonics were Auditory-Oral or Cued Speech. While it may be tempting to conclude that students who do not use speech or speechreading to communicate cannot benefit from phonics, research says otherwise. Even the Fairview curriculum, written for students in a bilingual-bicultural program, includes a phonemic awareness component because “skilled deaf readers make use of phonological information” (“Program,” 2003).

If this is the case, why are so many schools not teaching phonemic awareness? Range of hearing loss and percentage of students with other involvements varied among schools that taught phonics and among schools that did not teach phonics. Other than communication method, the only difference between phonics schools and other schools was that at phonics schools, most of the students’ first language was English. Even so, one school that uses ASL responded on the survey, “We tried the Whole Language program when it came out, but without the structured reading program to supplement, our students did not progress like we wanted.” This school now uses an assortment of commercial and teacher-made materials to meet the needs of their students, including phonics materials. Their students make an average of one-year of progress per year and usually reach a sixth grade reading level or higher.

An important caution is that while some schools may have exceeded the average for deaf students, the students are still reading below a high school level. For schools that provide services until high school graduation, the previously mentioned implications of low reading

levels still apply. For this reason, even those schools who are doing relatively well should continue to work to improve the reading proficiency of their students.

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## Appendix

In his article, Paul (1997) states that students with hearing impairment usually progress at less than half a grade per year and usually do not get higher than a third- or fourth-grade reading level. For the purposes of this research, criteria for successful schools were set out based on this information. Successful schools would be those whose students met two of the three of the following criteria: achieved a fourth grade reading level or higher, made a year or more of progress, or were on level when they left. When all of the schools were analyzed, seventeen schools were found who were deemed to be successful by these standards. The following chart delineates their characteristics and the basis on which they were deemed successful. School R was placed on the bottom of this list because it only met the progress criterion. However, this school is only three-years-old and has not had any students leave yet. This school would be a good one to take note of as their students progress through the years.

**Table 5: Successful Schools**

<b>School</b>	<b>Success Indicators</b>	<b>Instructional Approach</b>	<b>Communication System</b>	<b>Ages Served</b>
A	A year or more of progress 6 <sup>th</sup> grade RL or higher On level when they leave	Phonics	Cued Speech	3-12
B	A year or more of progress On level when they leave	Both	Auditory-Oral	1-11
C	About a year of progress, On level when they leave	Phonics	Auditory-Oral	0-9
D	About a year of progress On level when they leave	Both	Auditory-Oral	0-8
E	About a year of progress On level when they leave	Whole Language	Auditory-Oral	1.5-5
F	More than a year of progress On level when they leave	Phonics	Auditory-Oral	0-8
G	About a year of progress On level when they leave	Both	Auditory-Oral	5-15
H	About a year of progress On level when they leave	Both	Auditory-Oral	3-6
I	About a year of progress 6 <sup>th</sup> grade RL	Depends	ASL	3-21
J	About a year of progress On level when they leave	Phonics	Auditory-Oral	0-7
K	About a year of progress On or above level when they leave	Both	Auditory-Oral	14 mo - 11
L	About a year of progress On level when they leave	Phonics	Auditory-Oral	1-16
M	About a year of progress On or above level when they leave	Phonics	Auditory-Oral	3-7
N	About a year of progress On level when they leave	Neither	Total Communication	2.5-21
O	About a year of progress On level when they leave	Both (lower) Phonics (upper)	Auditory-Oral	1-15
P	About a year of progress On level when they leave	Both	Auditory-Oral	0-1 <sup>st</sup> grade
Q	More than a year of progress On level when they leave	Both	Auditory-Oral	Preschool - 5 <sup>th</sup> grade
R	More than a year of progress	Whole Language	Combination	3-15