Pepnet 2, a project dedicated to the advancement of deaf and hard of hearing students, was funded by the U.S. Department of Education, Office of Special Education Programs (OSEP) from 2011-2016. With the intent of improving outcomes for individuals who are deaf or hard of hearing, including those with co-occurring disabilities, pepnet 2’s overarching goal has been to build the capacity of professionals, institutions and organizations, and the systems supporting them.

While no longer federally funded and not currently active, many of pepnet 2’s materials and resources are available through the National Center on Deafness at the California State University, Northridge.

**Pepnet 2 Vision**
Pepnet 2 envisions a postsecondary environment that enables all individuals, regardless of their communication modes, to achieve their education, employment and life goals.

**Pepnet 2 Mission**
To increase the educational, career and lifetime choices available to individuals who are deaf and hard of hearing.
Connecting Research to Practice: Strategies for Deaf Learners

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Acknowledgments

Throughout the course of the 2011-2016 pepnet 2 grant funding, unique opportunities arose that required the time and effort of several colleagues:

- **2011-2016 pepnet 2 Funding Cycle**
  Thank you to the Office of Special Education programs and Dr. Louise Tripoli for providing funding for this project. We also wish to thank Cathy McLeod, Director of the National Center on Deafness at California State University, Northridge, for her leadership and advocacy in the area of postsecondary outcomes for all students who are deaf and hard of hearing.

- **2014 Deaf Learner Symposium**
  Thank you to representatives of the following institutions for sharing your knowledge and expertise with us on the provision of direct instruction to postsecondary students who are deaf or hard of hearing:
  - Austin Community College
  - Deaf Community Services – San Diego
  - Edmonds Community College
  - LaGuardia Community College
  - Ohlone College
  - Ozarks Technical Community College
  - Southwest Collegiate Institute for the Deaf
  - Vector Transition Program – Minnesota
  - Whatcom Community College

- **2015-2016 Research to Practice virtual communities**
  Our gratitude goes to Marc Marschark of the National Technical Institute for the Deaf for his guidance and support in developing the 14-month community of practice and for helping to obtain article and facilitator access.
  Thank you to the twelve renowned researchers who took their time to facilitate the communities of practice and to the over 400 registrants who participated in the discussions.

- **2015-2016 Virginia intensive statewide professional development**
  Thank you to the Virginia State Department of Education for supporting this unique online learning venture for teachers and professionals who work with students who are deaf or hard of hearing. Over 70 participants earned professional development CEUs in the area of understanding the deaf learner and built a virtual network of support in the state. Your enthusiasm for this topic helped to keep the momentum going and the ideas flowing!

Thank you to Melanie Thornton for her assistance with editing this publication. Your tireless support of this and other pepnet 2 endeavors is greatly appreciated.

The documents contained in *Paradigm Shift: Connecting Research to Practice – Strategies for Deaf Learners* are representative of several collaborations – all of which were critical to its completion. The research articles referenced within span decades as the quest for evidence-based practices to support individuals who are deaf or hard of hearing seems timeless. We thank the hundreds of researchers and practitioners who have devoted their time and attention to the topic of advancing postsecondary outcomes for deaf learners.
The Department of Education, Office of Special Education Programs charged pepnet 2 during the 2011-2016 funding cycle to increase the education, career, and lifetime choices available to individuals who are deaf or hard of hearing. Pepnet 2 recognized that the Americans with Disabilities Act (1990) opened many doors to postsecondary opportunities for young adults who were deaf or hard of hearing across the country. However, for some individuals, having an “open door” or access to existing paradigms, programs and services was not effective.

In 2004, the mandated use of evidence-based practices when teaching students was initiated. However, in the field of education, these evidence-based practices have been slow to get into the hands of practitioners because of a lack of channels to convey these strategies (Loughran, 1999). Additionally, Swanwick and Marschark (2010) explain that researchers have not been getting information regarding priorities in education from teachers. Nor have teachers been getting access to the evidence-based practices that have been shown to be effective and useful in classrooms. In a field such as deaf education, working with traditionally underserved populations, this disconnect is more pronounced (Swanwick & Marschark, 2010).

To answer the federal charge, in 2011, pepnet 2 launched the Deaf Learner Initiative (DLI). The goals of this initiative were to examine the existing paradigms, programs, pedagogy and relevant research related to the educational and vocational needs of deaf learners. It was our belief that an investigation of these components could provide strategic insights that could help all students who were deaf and hard of hearing access, persist and succeed in postsecondary settings. The DLI was comprised of a variety of activities including:

- **2011** Identification of direct instruction programs
- **2013 – 2014** Creation of the State of the Nation
- **2014** Deaf Learner Symposium
- **2014 – 2015** Creation of three white papers:
  - Introduction to the Deaf Learner
  - Historical Foundations
  - Maximizing the Return on the Investment
- **2015 – 2016** Research to Practice virtual communities
- **2015 – 2016** Virginia intensive statewide professional development
- **2012 – 2016** Presentations and poster sessions
- **2016 – 2017** Creation of Paradigm Shift: Connecting Research to Practice – Strategies for Deaf Learners

This collection of information grew and proved to be a critical link for pedagogy and program development relying on evidence-based practices.
Paradigm Shift: Connecting Research to Practice – Strategies for Deaf Learners is a compilation of those materials and research. The DLI white papers and the State of the Nation from the DLI work are included to provide a framework for the Connecting Research to Practice (CRP) briefs that drive the rest of this publication. The design of the CRPs is to provide the reader with a description of the domain (derived from the DLI initiative), the relevance of this domain and how it relates to young adults who are deaf or hard of hearing, and practices that stakeholders can implement immediately. It is meant to be a tool that can provide a base of understanding in each domain, evidence-based practices (when available) and vital strategies for administrators, educators, parents, interpreters, and other service providers who work directly with students who are deaf or hard of hearing.

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Connecting Research to Practice: Strategies for Deaf Learners

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Deaf Learner Initiative

State of the Nation

The Americans with Disabilities Act firmly opened the doors to postsecondary opportunities for individuals who were deaf or hard of hearing across the country. For many, that “open door” is an effective means to achieve their goals. However, there are some individuals for whom the “open door” is not effective – they have difficulty accessing, persisting and succeeding in traditional postsecondary environments. The term deaf learner (dl) will refer to this second group of learners.

Out of the population of individuals who are deaf or hard of hearing between the ages of 21 to 64, over 700,000 (17.6%) lack the high school diploma or equivalent GED required to enter a postsecondary program (Erickson, W., Lee, C., & von Schrader, S., 2014). Ability to persist in a program may be related to the fact that 79% of students who are deaf or hard of hearing begin their post-secondary programs taking developmental courses (Bochner & Walter, 2005). Seventy to seventy-five percent of students who begin a program do not persist and successfully obtain a degree (Newman, 2011).

These deaf learners may require special services and supports to build the foundations they need to successfully complete postsecondary programs. However, the availability of these programs nationally is limited and may be threatened. A closer examination of the issues and challenges facing the deaf learner may provide a shared understanding of the unique needs of these students.

Availability of specialized programs

- There is little research or empirical evidence to guide the pedagogy required to meet the needs of deaf learners.
- No specific entity is charged with offering basic education. Rather the U.S. Department of Education gives grants to each state to provide Adult Basic Education. These programs are required to be accessible, but this is usually interpreted to mean that they provide interpreters as an accommodation. This may be effective for some deaf learners but is not likely effective for all.
- The availability of developmental education courses offered nationally has declined, supporting the prevailing philosophy that students should arrive at institutions with those skills in place.
- A few scattered programs do exist and recognize the need to be linguistically and culturally affirmative for deaf learners. However, there is no coordinated effort to establish, maintain or fund such programs.
- There is no open source (or commercially available) curriculum for providing basic education to deaf learners. Most existing programs report creating their own curriculum.
Personnel

- There is little research or empirical evidence to guide the pedagogy and/or the qualifications of staff needed to meet the needs of deaf learners.
- Many geographic areas lack professionals qualified to develop and deliver basic education, ESL curriculum or developmental education courses in ASL. An additional factor is that students needing basic education and/or developmental courses are geographically dispersed (across each state and nationally) and the numbers of students requesting basic education/developmental courses in any given region fluctuates.
- It can be difficult to maintain qualified staff and courses offered due to fluctuating enrollment.
- Existing program structures vary widely, making it difficult for professionals to establish and share ‘best practices’.

Related barriers

- Philosophical shift has impacted the overall number of universities and colleges nationally that offer developmental courses.
- Many postsecondary institutions require completion of writing proficiency exams to graduate. Some students take all of their required courses but are unable to pass the writing proficiency exam.
- While the number of colleges enrolling deaf student has increased, the types and quality of accommodations and services provided can vary dramatically, thus impacting the deaf learners’ ability to engage in the college community.

Funding and costs

- There is no public funding for basic education programs geared to deaf learners.
- Funding and support of developmental courses offered at universities and colleges is decreasing.
- The cost of tuition at postsecondary institutions can be prohibitive to individual students.

References


Deaf Learner Initiative: White Paper No. 1

Historical Foundations

Higher levels of education have been linked with increased income (US Bureau of Labor Statistics, 2012), better quality of life (Calderon & Sorenson, 2014), and even improved health and longevity (Cutler & Lleras-Muney, 2006). Recent studies indicate that the correlation between educational attainment and income levels also holds true among people with disabilities (NCD, 2008), which include individuals who are deaf or hard of hearing. The return on the investment (ROI) has been high for those obtaining post-high school training.

Federal legislation has played an important role in paving the way for access to postsecondary education and, thus, higher quality of life for students who are deaf or hard of hearing. In 1864, President Abraham Lincoln signed a charter establishing what would later become Gallaudet College (now University) in Washington, D.C. and authorized the college to confer degrees (Gallaudet University, n.d.). For over 100 years Gallaudet filled a specific niche providing strong liberal arts postsecondary education to students who were deaf or hard of hearing. In the late 1950’s and early 1960’s the nation’s educational needs were changing and vocational training programs were experiencing rapid growth. In 1965, Public Law 89-36 was signed into law, establishing the National Technical Institute for the Deaf in Rochester, New York. In 1969, NTID began to offer its first programs (National Technical Institute for the Deaf, n.d.). This gave individuals who were deaf and hard of hearing two options for advancing their education, two distinct pathways to postsecondary degrees and gainful employment.

Shortly after the establishment of the National Technical Institute for the Deaf, federal monies were appropriated to partially fund four Regional Postsecondary Educational Programs for the Deaf (RPEPDs) charged with serving deaf students pursuing liberal arts and vocational technical degrees (COED, 1986). The original programs were housed at California State University - Northridge, Delgado Community College in New Orleans, Saint Paul Technical Institute, and Seattle Community College (COED, 1986). These regional programs provided more options and greater geographic access to postsecondary educational programs for students who were deaf or hard of hearing.

During this same period, momentum was building that would ultimately have a major impact on postsecondary education for individuals who were deaf and hard of hearing. On the heels of the passage of the Civil Rights Act of 1964, disability advocates were organizing on local and national levels. Their advocacy resulted in the passage of the Rehabilitation Act of 1973 and the Section 504 regulations which prohibited discrimination on the basis of disability by any public or private program receiving federal funds. This, in essence, began opening doors of all postsecondary options to students who were deaf or hard of hearing, rather than only those established to serve those students. Many students did enter those doors. In fact, the number of programs reporting the provision of support services for deaf students increased from 6 programs in 1964 to 145 programs in 1985 (COED, 1986). Sixty-one percent of those programs enrolled fewer than 20 students who were deaf (COED, 1986). The dispersion of students who were deaf or hard of hearing increased even further by the passage of the Americans with Disabilities Act in the 1990’s. According to a 1994 report by the National Center for Education Statistics, 2350 postsecondary
institutions reported enrolling at least one student who identified as deaf or hard of hearing (https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=94394).

Clearly the intention of these pieces of civil rights legislation was equality for people with disabilities and for most students with disabilities the changes have resulted in more equitable educational experiences. For students who are deaf, having the same opportunities to attend any postsecondary program certainly meets that standard. However, the quality of services being provided was called into question by the 1986 report by the Committee on Education of the Deaf. Reports cited high attrition rates and failure to meet the criteria recommended by the Conference on Educational Administrators Serving the Deaf (CEASD). Likewise, the 1994 NCES report revealed that a large number of the institutions surveyed reported the inability to respond adequately to requests for accommodations and indicated a need for more information about serving students who are deaf or hard of hearing.

Tinto (1993) proposed using retention and graduation rates for students in postsecondary programs as measurements of success. In examining these rates through The National Longitudinal Study 2, conducted by the National Center for Special Education Research, one observes that although 75% of students who were deaf or hard of hearing enrolled in some type of postsecondary education; 20-25% completed degrees at 2- and 4-year institutions (Newman, 2011). A factor potentially impacting retention and graduation rates may lay in the fact that 79% of students who are deaf or hard of hearing begin their postsecondary programs taking developmental courses (Bochner & Walter, 2005).

Overall, these numbers indicate that many students who are deaf or hard of hearing have difficulty persisting and succeeding in traditional postsecondary classroom environments and that, for some, the current system is simply not working. A closer look at the factors that impact retention and graduation could provide important information about how to meet the needs of all students who are deaf or hard of hearing.

References


**Deaf Learner Initiative: White Paper No. 2**

**Identifying the Deaf Learner**

Access to postsecondary education and training increases vocational and social opportunities for all individuals, including those who are deaf or hard of hearing. Traditional post-secondary settings provide an important gateway for some learners who are deaf or hard of hearing in that students are able to access, persist and be successful. However, there are students for whom the traditional setting is ineffective. Current data (see Table 1) allows us to recognize the needs of these students and the barriers presented by the traditional model. Understanding is key to opening the doors of opportunity to the postsecondary experience.

**Table 1. Percentages of access, persistence and success for students in postsecondary settings**

<table>
<thead>
<tr>
<th>Deaf Learner Groups</th>
<th>Deaf or Hard of Hearing (%)</th>
<th>Without Disabilities (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1: Access to postsecondary programs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Individuals, age 21-64, do not have diploma or equivalent GED to enroll in postsecondary program</td>
<td>18.5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Group 2: Persistence in postsecondary programs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Individuals begin postsecondary academic careers placing into developmental courses</td>
<td>79</td>
<td>60</td>
</tr>
<tr>
<td>• 60% of these individuals do not begin, or complete their developmental coursework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Individuals who enroll in postsecondary programs do not complete a two to four year degree</td>
<td>70-75</td>
<td>52</td>
</tr>
<tr>
<td><strong>Group 3: Do not succeed in postsecondary programs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Individuals, age 21-64, do not have a Bachelor’s degree or higher</td>
<td>84.2</td>
<td>69.3</td>
</tr>
</tbody>
</table>

When one reviews the literature to better understand why this group has difficulty accessing, persisting and succeeding in postsecondary environments, common themes emerge in the areas of individual readiness (academically and socially) and institutional readiness (personnel and programmatic structures).

---


Individual readiness

- Positive precollege schooling experiences and successful academic achievement are two of many factors impacting students’ persistence rates (Tinto, 1993). Many children who are deaf or hard of hearing begin school with language levels lower than hearing peers (Knoors & Marschark, 2012). Since language development is cumulative, as these children progress through school, the gap widens (Knoors & Marschark, 2014).

- Students who are successful in postsecondary environments have a demonstrated attachment to the institution on a social/emotional level (Tinto, 1993). To obtain that attachment, full language access is necessary. When full language access is not provided, students who are deaf or hard of hearing do not have the same opportunities to obtain incidental information from their surroundings as hearing students do, resulting in gaps in messages of social behavior and expectations (Calderon & Greenberg, 2003). Boutin (2008) and Stinson, Scherer and Walter (1987) link difficulty with postsecondary persistence for students who are deaf or hard of hearing directly to an absence of a perceived social connection to the environment—resulting in issues with motivation, commitment and a positive attitude.

- Albertini (2011) found that although students who were deaf or hard of hearing knew how to access support services, the students “expressed concern about their study habits, verbal confidence and motivation to finish college” (p. 99).

Institutional readiness

- Postsecondary programs, even those who serve “remedial” students, see greater retention and persistence rates if they find ways to actively engage students in peer groups and collaborative learning opportunities (Tinto, 1993)

- Institutions that retain students with disabilities understand the impact of the student-instructor relationship and have developed the capacity of staff to meet the unique educational needs of these students (Brand, 2013).

- Although 73% of all postsecondary institutions surveyed reported enrolling at least one student with a hearing loss (NCES, 2011), it is documented in the literature that there is a severe shortage of qualified professionals to support these unique learners (AAEE 2008, Pakulski, 2011).

Rates of student success documented in the literature coupled with individual and institutional readiness indicate some deaf learners may need different types of support networks and pedagogy. Achieving a shared understanding of the supports needed by deaf learners could pave the way for opening a range of options for all.
References


Deaf Learner Initiative: White Paper No. 3

Maximizing the Return on the Investment

Investments in the members of society through education are considered by policy analysts to be the most significant and impactful investments a society can make (Williams & Swail, 2005). The Institute for Higher Education Policy (1998) has demonstrated that investments in higher education yield a better-educated, more employable society that generates increased tax revenues, has increased workforce flexibility, greater productivity and decreased reliance on government assistance. Non-economic returns on the investment include higher voter participation, greater participation in community activities, volunteerism and lower incarceration rates. Those same benefits (see Table 2) hold true among people with disabilities (NCD, 2008) and there is no reason to expect these effects would be any different among people who are deaf or hard of hearing (deaf/hh).

Table 2. Comparison of postsecondary outcomes for deaf or hard of hearing individuals and individuals without disabilities

<table>
<thead>
<tr>
<th></th>
<th>Taken postsecondary coursework or earned an AA degree</th>
<th>Postsecondary education level attained –BA or higher</th>
<th>Employed (full or part-time) regardless of education level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals ages 21-64 who are deaf or hard of hearing</td>
<td>32.4%</td>
<td>15.8%</td>
<td>50%</td>
</tr>
<tr>
<td>Individuals ages 21-64 without a disability</td>
<td>32.6%</td>
<td>31.7%</td>
<td>76%</td>
</tr>
</tbody>
</table>


A considerable amount of money and time is invested in postsecondary education and training opportunities for deaf learners. However, as evident above, the current paradigm yields returns on these investments below those for students who are not deaf or hard of hearing. There is no significant difference in enrollment at the community college level. However, the rates of access to “four-year” colleges or universities, persistence and completion of postsecondary programs for students who are deaf or hard of hearing lag behind their hearing peers. In light of this information, consideration should be given to the capital currently being invested in postsecondary education and training of the deaf learner and strategies developed to yield higher returns on these investments.

For students who are first generation, low-income, of-color or who have a disability, the type and quality of education they receive could be “severely handicapping” and could limit their ability to have a “[full] life of work and enjoyment” (Williams & Swail, 2005 p.vii). Thompson and Cuseo
(2012) identified these same young adults as “at risk” and demonstrated that strong support from the family, community and institution can increase their likelihood of postsecondary academic and vocational success (Thompson & Cuseo, 2012). Students who are deaf or hard of hearing also fall into the category of ‘at risk’ (Karchmer & Mitchell, 2003; Powers, 2003) and it is reasonable to consider that with strong supports in the areas mentioned above, the deaf learner could be more supported and the likelihood of academic and vocational success could be increased.

Belief systems shared among family members have a direct impact on an individual’s emotional, moral, educational and occupational awareness (Yosso, 2005). Therefore, how a family chooses to invest in education “plays a central role in constructing a positive learning environment” (Listman, 2010). For deaf learners, parental expectations are an important contributor to long-term outcomes such as living independently, obtaining employment and attending college (Cawthon, 2014). Because of the critical role the family plays in the life of the deaf learner, it is reasonable to assert that strengthening the family’s investment will in turn strengthen the learner’s post-school success.

Wood (2012) defines community as a group of people who share common beliefs, values, ethnicity, education and/or social class. The community can provide a “structural bubble in which a supportive, culturally affirmative environment could be created to begin nurturing the growth and resilience of young adults.” (Lytle, 2011) Community supports geared specifically toward individuals who are deaf or hard of hearing are not as prevalent given the relative infrequency of hearing loss in a community. In this case, Wood writes, the other support areas and in particular education, play a larger role in the development of a young adult (Wood, 2012).

How ready and able postsecondary institutions are to provide that additional support to deaf learners potentially impacts retention and graduation rates (Cawthon, 2014). Deaf learners may better meet academic and vocational goals by attending institutions who invest in supportive staff and accessible programs such as developmental coursework taught by qualified individuals, extensive academic and vocational advising as well as promotion of inclusion in all facets of the institution (Cawthon, 2014).

Fostering support for the deaf learner—through the community, the family and the institution—could yield greater positive post-school outcomes. The group of deaf learners who has traditionally struggled with accessing, persisting and completing post-secondary programs may be better able to overcome the barriers that have previously existed. Completion of higher education programs could lead to greater return on the investment—including employment opportunities, a more prosperous society and more self-actualized citizens.
References


Wood, April Cherisha, “A Multiple Case Study of Teacher Perspective on Effective Interventions Used by Family Resource Centers in Elementary Schools to Improve Parental Involvement of Students At Risk” (2012). Online Theses and Dissertations. Paper 59.

Connecting Research to Practice No. 1
Evidence and Evidence-based Practices

No Child Left Behind (NCLB) legislation (2001) and the 2004 reauthorization of the Individuals with Disabilities Education Act (IDEA) called for data to support the effectiveness of teaching strategies. As a result of this legislation, the terms “evidence” and “evidence-based practices” have become commonplace in the field of education. Teaching methods, strategies, and educational programs now must be evidence-based. This call for evidence is a paradigm shift, and mandates that administrators and educators address the relationship between how students are taught and academic outcomes.

Evidence should be an integral piece of information that is utilized when making decisions or forming opinions. We use evidence to determine if a solution to a problem worked or if we can identify what variables caused a difference in a behavior. Evidence determines if a teaching strategy is working or if a curriculum is producing positive or negative outcomes.

In order for data to be considered evidence, it must be systematically gathered, non-biased, and collected in a variety of ways (e.g., observing and recording behavior, counting the number of actions taken). Examples of evidence can include:

- recording how many times a student gets out of his/her seat in a 30-minute timeframe and
- recording how many times a student uses a checklist to problem solve issues with their assistive listening device(s).

Historically, research on special populations, like students with disabilities, has been conducted in large groups with some students receiving an intervention while others did not. Factors such as type of disability and randomly selected students (e.g., students selected from a variety of cultural backgrounds, or abilities, or gender) were not always factored into the results. There is a national push to identify high quality and evidence-based research. The What Works Clearinghouse (WWC) reviews the existing research on different programs, products, practices, and policies in education. WWC’s goal is to provide educators with the information they need to make evidence-based decisions (http://ies.ed.gov/ncee/wwc/). The WWC rates research as high quality if: a) the groups of participants have been randomly selected, b) there is little attrition or drop out of participants from the study, and c) there are no confounding issues or challenges with the outcomes of the study (e.g., there is only one disability group in the sample). However, with students who are deaf or hard of hearing, this type of study design does not work due to low numbers and diversity within the population.

Recently, several groups of researchers (Cannon et al., 2016; Horner et al., 2005; Kazdin, 2011; Kennedy, 2005) have been advocating for the use of single case design (SCD) research to identify evidence-based practices to use with students who are deaf or hard of hearing. SCD research must meet a set of “quality indicators” (identified by the Institute of Educational Sciences) to be considered an evidence-based practice. Examples of quality indicators (QI) for single case design
research are thorough descriptions of participants, setting, and baseline data (Horner et al., 2005; Kratochwill et al., 2013).

SCD research is effective in identifying evidence-based practices (EBPs) in deaf education due to these factors:

- EBPs can be identified by using a small number of students (3 – 10).
- Interventions are not withheld from anyone.
- Teachers can initiate research in schools and use it to guide the development of EBPs.
- Modifications to interventions can occur to take into account of individual and student differences.

**Relevance**

There are several reasons to turn to the use of evidence in the field of deaf education. EBPs are mandated by the NCLB legislation (2001), the IDEA (2004), and the Every Student Succeeds Act (2015). While EBPs are hard to establish for students who are deaf or hard of hearing due to low incidence and heterogeneity of the population, the use of single case design research now offers other options for evidence. Finally, and most compellingly, students and young adults who are deaf or hard of hearing continue to experience poor outcomes due to the lack of appropriate education needed for access, persistence, and success in postsecondary settings (Newman, Wagner, Cameto, & Knokey, 2009).

**Voices from the field**

*From the Deaf Learner Community of Practice, May/June 2015*

“I remain hopeful that future research will allow us to have a better understanding of the cognitive processes of a Deaf Adult Learner, which in turn would assist VR Central Office staff like myself with writing better internal policies and guidance for field VR staff based on that research. Interpreters or signing college professors alone are not always enough to educate Deaf Adult Learners in a postsecondary education setting; there has to be something else in play as well, and some of us within VR may know or think they know what that something is, but without research to test our personal hypotheses, we just don’t really know.”

– Vocational Rehabilitation Specialist

“Studies that test outcomes from specific interventions can be especially helpful to practitioners (e.g., teachers, interpreters, social workers, etc.). We should be mindful of what kind of training and support was provided to the professionals who implemented the intervention or program that was studied and if researchers checked if the planned intervention was consistently implemented across groups, etc.”

– Community of Practice moderator

“Research reports are often difficult reading for people who are not researchers. To assist the research-to-practice transition, videos or other media could be designed for specialists (e.g., teachers, interpreters, etc.) who will use the research findings.”

– Community of Practice moderator
Practice

Throughout the course of time, the educational community (i.e., teachers, administrators, parents, and students) has been charged with producing positive outcomes for students and have done so using a variety of teaching methods and curricula. However, the strategies and teaching methods utilized were not always based in research or evidence based. The term “evidence-based practices” refers to educational programs, instructional procedures, and strategies that have been proven to produce positive results in schools. These practices originate from meaningful and relevant research supporting their effectiveness. Evidence-based practices must always have research supporting them.

However, research does not always lead to evidence-based practices. It is imperative that the educational community understand what evidence is and is not. The CRPs in this series will identify what paradigms, programs and pedagogy currently exist in deaf education. They will articulate the research that has been conducted to date as well as identify practices that are frequently utilized. When available, we will highlight the relationship between research and effective practices. It is our hope that through these documents, we build a foundation of shared understanding that can, in turn, bring together evidence-based research and practice.

In Table 3, Cannon et al. (2016) identify the quality indicators that must be included in studies in order for a particular material or intervention to be evidence-based.
Table 3. Identifying Quality Indicators

<table>
<thead>
<tr>
<th>Quality Indicator</th>
<th>Definition</th>
</tr>
</thead>
</table>
| **Dependent variable (i.e., participants and setting)** | • Described with substantial detail for replication\(^a\)  
• Dependent variable  
• Operationally defined, enabling replication  
• Measured across repeated data points  
• Interrater reliability reported using percent agreement or reliability coefficients |
| **Independent variable (i.e., the intervention)** | • Accurately defined for replication  
• Manipulated and measured with fidelity |
| **Baseline** | • Repeated measure of dependent variable  
• Clearly defined, making replication possible  
• Five or more data points showing treatment effect |
| **Internal validity (i.e., control)** | • Design meets SCD standard if it contains at least 5 data points in each phase showing experimental effect across phases. (The number of phases depends on the design.)  
• Control for internal validity by randomizing participants and/or intervention start times\(^b\)  
• Results show experimental control |
| **External validity** | • Intervention repeated across the dependent variable to show experimental effects  
• Replication to increase generalizability and further control of population and ecological validity |
| **Social validity** | • Intervention has a great impact on the dependent variable, demonstrating social importance  
• Practicality and cost efficiency of intervention also considered |
| **Causal relationship** | • Data are analyzed by level, trend, variability, immediacy of effect, overlap of data, and consistency of data patterns within and between phases  
• Data demonstrate strong evidence of a causal relation after review by two trained visual analysts who determine that the data show a functional relation |

\(^a\) Participant descriptions include age, degree of hearing loss, grade level, presence of a disability, and/or mode of communication sufficient for replication.

\(^b\) Randomization, though controversial, is recommended for future studies to increase internal validity by Kratochwill et al. (2013).
Closing thoughts

Evidence-based practices are legally mandated. Although few exist in the field of deaf education, the use of single case design offers a new mechanism by which the educational community can establish those practices and move forward collectively.

References


Language is a system of relatively arbitrary symbols and grammatical signals that change across time and that members of a community share and use for several purposes: to interact with each other, to communicate their ideas, emotions, and intentions, and to transmit their culture from generation to generation. (Dennis Cokely and Charlotte Baker-Shenk, 1980, p.1)

To say that language is complex is an understatement. However, whether a person uses a signed language or a spoken one, language originates in the same place in the brain and carries common linguistic features (Stokoe, 1960; Stokoe, Casterline & Croneberg, 1965). In addition, Marschark, Jackson-Machmer, and Convertino (2015) concluded that although there is not one exact way to teach all students who are deaf or hard of hearing, exposure to early social-cognitive language is critical.

At birth, all babies are wired for the task of acquiring language. Harvey Daniels (1998) in Nine Ideas About Language says, “Children learn their native language swiftly, efficiently, and largely without instruction.” Babies and toddlers generally acquire their first language (L1) naturally, through a subconscious process that results from the modeling and interaction they have with parents, families, communities and professionals. Children who acquire their first language in this manner enter the educational system with the prerequisite language for academic and social learning to begin. Children who do not have access to the modeling and interaction needed to acquire a first language may enter the educational system with different needs and readiness skills than those with strong L1s (Marschark & Spencer, 2010).

Ninety-five percent of children who are deaf or hard of hearing are born into primarily auditory environments (Marschark, Shaver, Nagle, & Newman, 2015). Parents and professionals must come to terms with the implications and options, and develop strategies quickly to meet the needs of children primed to acquire a language. In these situations, a hearing loss can impact access to modeling and interactions needed to acquire a language (Cormier, Schembri, Vinson, & Orfanidou, 2012). Integrated bi-modal input (SimCom) and cochlear implants have a greater impact on academic success than using spoken English and sign language separately (Lederberg, 2013).

The distinction between acquiring versus learning a language is an important one for children who are deaf or hard of hearing. When acquiring a language, the learner utilizes natural communication opportunities to tune in to what “feels” correct. There is not a focus on grammatical rules, but on the meaning of what is communicated. They practice and hone their skills for several years before they enter school. Children who do not have access to the modeling and interactions needed to acquire language are oftentimes entering school without a strong foundation (Fappoli, nd). The focus and process of learning a language is quite different. Language learning occurs in formal settings and not in communicative settings. Instruction focuses on rules, not meaning. In language learning, students have conscious knowledge of the new language and can talk about that knowledge (Fappoli, nd.).
Relevance

Language performs a number of functions throughout an individual’s life. It sets the stage and is necessary for academic and social learning to occur. Understanding its various forms and functions allows educators to better support the needs of deaf and hard of hearing learners, their families and communities. The shift to evidence-based practices and research is a call for educators to incorporate what is known so that students who are deaf and hard of hearing no longer lag behind their peers in linguistic, cognitive, and academic domains (Swanwick & Marschark, 2010).

Marschark and Spencer (2010) note that, historically, there have been few studies that evaluate how students are taught. To achieve communicative proficiency, learners need to be skilled in four aspects: linguistic, sociolinguistic, discourse, and strategic competence (Canale, 1983; Canale & Swain, 1980; Swain, 1985). The majority of research looks at what language and communication mode in which students receive instruction. There have been positive results in a few studies utilizing specific methodologies at the postsecondary level with students who are deaf or hard of hearing.

Experts in the area of spoken second language (L2) acquisition believe that a pivotal first step to acquiring a language (either an L1 or L2) is cognitively noticing the language. To that end, Focus-on-Form instruction is intended to facilitate that first step so that the other steps in the process (comprehension, processing, assimilation, integration and output) can occur (Berent et al., 2007). In fact, researchers of the Focus-on-Form approach suggest that due to its success with college-age students, the methodology should be applied to students who are younger to determine efficacy at that level (Berent, 2006). Research indicates that practitioners who understand language acquisition and teaching are better able to use language expansion and language scaffolding techniques in order to remediate any gaps that may occur (Swanwick & Marschark, 2010).
Voices from the field
From the Deaf Learner Community of Practice, July 2015

“I agree completely about the benefits of sentence diagramming. It’s a lost art! And [Focus-on-Form] being a visual representation of how words/phrases fit together and relate, it’s great for D/HH students.”

— Deaf Educator

“By the time students reach the postsecondary level, the capacity for students’ ‘neural plasticity’ is diminished – thus supporting the idea that Focus-on-Form techniques should be utilized: a) at an earlier age and b) for a longer period of time than ten weeks.”

— Session Facilitator

From the Deaf Learner Symposium, 2014

“On the need to understand the rules of a language in order to learn it – “Even for those students who have college level English [and are learning ASL], they still need awareness of ASL grammar. It is important to have that first language foundation and language awareness and then fluency... We tell them ASL has rules and we have them practice those rules. English has rules. Without an understanding of the rules of ASL then they have no understanding of the rules of English.”

— Representative from Austin Community College

Practice

Research demonstrates that Focus-on-Form teaching methods have been successful with college students who are deaf or hard of hearing (Berent et al., 2007). This teaching method raises the consciousness of the student regarding the targeted form of communication in passive activities (such as reading), but also active activities such as writing or communicating with another person (Berent et al., 2007). Ellis (2003, 2010) states that a task that raises consciousness can both provide examples containing the target feature and/or deliver instructions requiring the learners to study the data in some way. These tasks can appear in many formats including but not limited to authentic or contrived writing, oral versus written interaction, single sentences or paragraphs, and complete or incomplete sentences. Sample tasks and their descriptions are in Table 4.
Table 4. Tasks to improve Focus-on-Form instruction

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>Learners underline the target structure in the data.</td>
</tr>
<tr>
<td>Judgment</td>
<td>They respond to the correctness or appropriateness of the data.</td>
</tr>
<tr>
<td>Completion</td>
<td>They are invited to complete a text.</td>
</tr>
<tr>
<td>Modification</td>
<td>They are invited to modify a text in some way, for example, by replacing</td>
</tr>
<tr>
<td></td>
<td>one item with another.</td>
</tr>
<tr>
<td>Sorting</td>
<td>They classify the data by sorting it into defined categories.</td>
</tr>
<tr>
<td>Matching</td>
<td>They are invited to match two sets of data in accordance with a stated</td>
</tr>
<tr>
<td></td>
<td>principle.</td>
</tr>
<tr>
<td>Rule provision</td>
<td>They may be asked to state the rule they have discovered.</td>
</tr>
</tbody>
</table>

**Closing thoughts**

There are significantly different processes utilized when acquiring and learning a language. The nuances and impact of having to learn a language can be overlooked and at times, can require specific interventions. The Focus-on-Form instruction has shown success with young adults who are deaf and may be something to utilize with younger students.

**References**


Stokoe, W. C. (1960). *Sign language structure: An outline of the visual communication systems*
of the American deaf, studies in linguistics: Occasional papers (No. 8). Buffalo, NY: Dept. of Anthropology and Linguistics, University at Buffalo.


The terms learning and cognition are often used interchangeably, but they carry very different meanings. Cognitive processes include thinking, knowing, remembering, forming mental representations and problem solving (Wood, Wood, & Boyd, 2011) and support ongoing learning. Research in the field of deaf education has turned toward the “intersectionality” between language, cognition and learning (Knoors & Marschark, 2015; Marschark & Hauser, 2008). Learning and cognition are intertwined. They allow learners to integrate new information. They are essential for academic and social learning to occur. For example, when learning to read, a student needs to employ several cognitive processes – remembering, memorizing and problem solving. Learning to read requires strong cognitive processes, which in turn facilitates ongoing learning.

Most children enter the academic arena having acquired a first language (L1) and ready to learn. If students do not have an L1, they may need additional supports for academic and social learning to occur. Explicit instruction, otherwise known as cognitive interventions, can assist students in noticing patterns, remembering, organizing, helping them determine what they think and feel, and solving problems (Martin, 2014).

Relevance

Research has demonstrated that children who are deaf or hard of hearing have the same cognitive potential as children who can hear (Martin, 2014). In addition, we know that there is a degree of “cognitive modifiability” for individuals, no matter where they are performing at the time. It is never too late to enable a learner to improve in cognitive strategies (Martin, 2014). Detterman and Thompson (1997) note that special educators must understand the unique learning needs of the population they teach. “Lack of understanding of the cognitive skills underlying educational interventions is the fundamental problem in the development of special education. Without understanding the full complexity of cognitive abilities, special education methods can never be special” (Detterman and Thompson, 1997).

Specialists in cognitive interventions encourage continued, in-depth professional development that focuses on guiding the learner, rather than just providing information. Metacognition is the reflection on the mental processes used in problem-solving that allow learners to apply the thinking strategies to their school work as well as their social and the work life (Martin, 2014). Professionals may need access to specially-developed materials that support the development of metacognition in deaf learners.

For example, the Feuerstein Method, which was developed at the Feuerstein Institute (http://www.icelp.info), is used to help people (regardless of age, etiology or disability) to unearth their abilities. This method involves the use of a specially designed educational tool that improves thinking, learning, and analysis skills. In addition, the Institute uses a set of non-curricular tasks and various cognitive exercises, called the Instrumental Enrichment program, to improve and strengthen learning skills.
When teachers of the Deaf employed this method and training, interesting results were identified. Tzuriel & Klein (1985) found that deaf students demonstrate “cognitive modifiability” after being exposed to the Feuerstein Instrumental Enrichment despite home language use and early language exposure. Also, Martin and Jonas (1986) found that students who have participated in Feuerstein Instrumental Enrichment trainings have demonstrated a growth in related skills: a) a tendency to move directly to expected tasks, b) giving relevant and complete answers, c) increased willingness to help others in class, d) an increase in working well with others in a group, e) an increase in “consideration of others’ feelings” and “listening” behavior, f) a decrease in impulsivity, and g) a reduction in involvement in non-productive arguments. Martin (2014) noted that:

...studies with [Feuerstein Instrumental Enrichment]...demonstrate that such explicit classroom intervention with appropriately retrained teachers, use of appropriate methodology, and use of specially designed materials, result in measurable positive effects on specific cognitive skills in deaf learners when compared to deaf students who do not have this classroom experience (p. 188.).

Voices from the field
Deaf Learner Community of Practice, April 2016

“Providing cognitive strategies for deaf learners should be a foundation building block, and I think the earlier the better. I have been in kindergarten general education classes where the teachers have provided specific instruction in this area, providing strategies of ‘how to think’ However, I do not see this presently as much as in the past due to the pressures teachers in the classroom are faced with due to extra subject matter in the curriculum they are required to teach, as well as other factors.”

— Teacher of the DHH

“I was very interested in the article on verbal aptitude, especially in terms of achieving results that help us determine if a child has developed ‘literate discourse.’ Can they ‘do school?’”

— Teacher of the DHH

Practice
The University of Kansas has an informational website that includes many ideas for including cognitive strategies that may be applied in itinerant situations as well as classroom settings. Each strategy links to examples and websites that can be referenced.

- Orienting Strategies direct a student’s learning to a task through cues, material that is highlighted, and/or student self-regulation.
- Specific Attentional Aids direct a student’s learning to a task by connecting that information to something highly accessible, such as an object, language, or part of the body.
- Specific Aids for Problem-Solving or Memorization enhances problem solving or memorization by connecting a concrete object or other cue to the task. Counters and other concrete objects used in mathematics are examples of specific aids.
- Rehearsal Strategies use repeated practice of information to learn it. For example, memorizing a list by repeating it over and over.
• Elaboration Strategies help the student expands the target information by relating other information to it, for example, making an analogy.

• Transformation Strategies are utilized when a learner begins with another person’s information, and transforms that information into something else without losing the concept of the original (i.e., paraphrasing).

• Imagery Strategies involve activating the memory by taking what is to be learned and creating meaningful visual, auditory, or kinesthetic images of the information.

• Mnemonics Strategies helps a student confer difficult or unfamiliar information into more manageable information by connecting the information to be learned with key words or letters.

• Organization Strategies allow the learner to manipulate, integrate, and/or otherwise interact with the information so that it is more easily learned and remembered (i.e., prioritizing, clustering, and categorization).

Closing thoughts
Students who are deaf or hard of hearing benefit from cognitive interventions, such as explicit instruction.

References


Theory of mind refers to our understanding of people as individual mental beings, different from oneself. Each individual has his or her own thoughts, wants, motives and feelings (Astington & Edward, 2010). Executive function refers to the mental processes (e.g., emotional control, flexible thinking, self-monitoring, etc.) needed to self-regulate one’s behavior. Theory of mind and executive function fall within social cognition, which is also referred to as the social intelligence domain.

The development of social intelligence is a critical component in the maturation process (Ten Dam & Volman, 2007). Not only are human beings naturally “social,” but those skills have also been found to lead to positive mental health, employment success and citizenship (Huitt & Dawson, 2011). Therefore, it is critical that youth are guided in successful social interactions (Bandura, 1986; Dewey, 1916; Vygotsky, 1978).

Astington & Edward (2010) identify social cognition and the ability to see things from another’s perspective as a developmental milestone for a child. Russell (1996) and Carlson & Moses (2001) discuss the interwoven relationship between theory of mind and executive function. Specifically, they see language as playing a causal role in the development of these skills. Stages of theory of mind progress from one to the next: Understanding “wanting,” Understanding “thinking,” Understanding that “seeing leads to knowing,” “Understanding “false beliefs,” and “Understanding “hidden feelings”. Lauren Lowry of the Hanen Center (2015) describes these stages of the development of theory of mind in the following order:

- Understanding “wanting” – Different people want different things, and to get what they want, people act in different ways.
- Understanding “thinking” – Different people have different, but potentially true, beliefs about the same thing. People’s actions are based on what they think is going to happen.
- Understanding that “seeing leads to knowing” – If you haven’t seen something, you don’t necessarily know about it. If someone hasn’t seen something, they will need extra information to understand.
- Understanding “false beliefs” – Sometimes people believe things that are not true, and they act according to their beliefs, not according to what is true.
- Understanding “hidden feelings” – People can feel a different emotion from the one they display (How Theory of Mind Develops in Typical Children section, para 2).
Typical development of theory of mind is observed at somewhat predictable ages in children. Developing interactive skills is a prerequisite to developing social skills. One of the very first skills of interaction is eye gaze. Children who have developed eye gaze behavior “know where to look for essential information” and are “more attuned to the timing patterns in shifts of eye gaze” in conversations (Hauser, Lukomski & Hillman, 2008, p. 295).

During infancy and early childhood, children learn the foundational skills to develop theory of mind. Lowry (2015) states that “the ability to pay attention to people and copy them” is a skill that is acquired very early on. Toddlers may recognize others’ emotions and use words to express them (“happy,” “sad,” “mad”). For example, if they see someone is hurt, they may say, “Mommy is sad, she has a boo-boo.” A third skill developing at this age is the ability to understand the causes and consequences of emotions: “If I throw my toy, Mom will be mad.” Lowry goes on to say, “between ages 4-5, children really start to think about others’ thoughts and feelings, and this is when true theory of mind emerges” (How Theory of Mind Develops in Typical Children section, para 2).

The development of these skills relies heavily on language. Given the pivotal function of language, understanding research leading to evidence-based practices in this area is critical. Hall, Eigsti, Bortfeld and Lillo-Martin (2016) have demonstrated that language deprivation (signed or spoken) has a significant impact on the development of executive function, the effect of which is lifelong (Aastington & Martin, 2010). In the workplace, adults with underdeveloped theory of mind skills are perceived as missing social cues and lacking the ability to empathize, the ability to develop reciprocal friendships and self-awareness. Any or all of these perceptions can impact the ability to obtain a position, advance in a position, or take on a managerial or leadership role (Ylvisaker, Hibbard & Feeney, 2006).

Relevance

Research shows that language provides a great deal of raw material for the development of social cognition and theory of mind (Schick, n.d.). For example, a hearing child benefits from listening to their parent as they are looking for their keys, “Did I put them in my coat? Are they in my bag?” This “thinking aloud” provides an insight into what their parents are thinking. This kind of language exposure creates more advanced skills in hearing children.

For students who are deaf or who have a cochlear implant, exposure to language can be minimal. Hearing a parent think through a recipe or a math problem is important. However, it has been noted that when parents and families use ASL, it has a predictive effect on theory of mind and social cognition. According to Schick (2014), children who have parents who sign words like “think,” “know,” and “pretend” are more likely to have increased social cognition skills. Through modeling, consistent language use, and intentional signing, students who are deaf or hard of hearing can have the same social cognition and theory of mind as their hearing peers (Schick, 2014).

Skills in social cognition can affect academic learning. Hauser, Lukomski and Hillman (2008) state that a lack of theory of mind and executive function can lead to insufficiencies in nonverbal working memory, intrinsic motivation, hypothesis testing and verbal working memory. There are many academic areas where skills in social cognition are essential to learning.
For example, when reading, skills in social cognition allow a child to understand the perspective of different characters, such as distinguishing the perspectives of Little Red Riding Hood and the wolf. The earliest picture storybooks contain many references to how people feel, what they believe, and their misunderstandings and deceptions. Without understanding these notions, stories are often a boring sequence of physical events.

Skills in social cognition also play an important role academically. These skills are instrumental in understanding all subject matters. For example, when learning about civil disobedience, the foundation for the Deaf President Now movement, one needs an understanding of oppression and equality.

Voices from the field

From the Deaf Learner Symposium, July 2014

“Students greatly benefit, and when our students are more successful in those developmental courses, then they are empowered to move to the next level, and what we want to see is a greater percentage of students not only to be successful in just completing their courses but to take those skills into the workplace or to the next level of education. It’s not just about passing a class, it’s about life skills and employment, ultimately.”

- Representative from Ozarks Community College

From the Community of Practice, February 2016

“One of the chief means of enhancing self-awareness of one’s thought processes, as a critically important executive function, is the explicit practice of metacognitive activities on a regular basis.”

- Higher Education Professional

“Visual attention getting, turn taking, checking for understanding, clarification/repetition are so crucial for our students’ success in the classroom. These are the building blocks for executive functioning for them.”

- Teacher of the DHH

Practice

Tucci, Easterbrooks, and Lederberg (2016) utilized the standards of rigor for single-case design established by Cannon, Guardino, Antia, and Luckner (2016) to design a single-case, multiple baseline, multiple probe study. At its conclusion, the data demonstrated that utilizing a “thought bubble intervention” with thirteen deaf or hard of hearing students had a positive impact on their understanding of the “false belief” task as well as other untaught aspects of theory of mind. This study was doubly impactful as it demonstrated educational placement, level of hearing, and communication modalities were irrelevant in the success of the intervention.

While access to theory of mind assessments is limited, Tucci, Easterbrooks, and Lederberg (2016) provide a developmental scale for assessing theory of mind, presented in Table 5. Teachers and interpreters can use this scale when considering student development.
Table 5. Theory of mind developmental scale

<table>
<thead>
<tr>
<th>Stage</th>
<th>Age of Mastery</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverse desires</td>
<td>3.0 - 4.0</td>
<td>Child is given a choice of two snacks (e.g., carrots and cookies). Child picks favorite snack. Another character (e.g., doll) chooses the opposing snack as her favorite. Child is asked what the character will choose to eat. Child must inhibit his desire and choose the opposing snack to score correctly.</td>
</tr>
<tr>
<td>Diverse beliefs</td>
<td>3.0 - 4.0</td>
<td>Child is given a choice of two locations for a missing cat. Child picks the location where he thinks the cat is hiding. Another character chooses the opposing location. Child is asked where the character will look for the cat. Child must inhibit his desire and choose the opposing location to score correctly.</td>
</tr>
<tr>
<td>Social pretend</td>
<td>4.0 - 4.5</td>
<td>Child and assessor pretend to paint a blue cup green. Another character not involved in the pretend play enters the situation. Child is asked what color the character thinks the cup is. Child should say the initial color of the cup (i.e., blue) to score correctly.</td>
</tr>
<tr>
<td>Knowledge access</td>
<td>4.6</td>
<td>Child is shown a non-descript box with a random object inside (e.g., toy dog). Toy is concealed inside the box and another character (who has not seen inside the box) enters the situation. Child is asked what the character thinks is inside the box. Child must say the character does not know to score correctly.</td>
</tr>
<tr>
<td>Unexpected contents</td>
<td>5.0</td>
<td>Child is shown recognizable box (e.g., M&amp;M box) and asked what they think is inside. Child should say candy. Contents of the box are revealed. It is something other than what the outside of the box would suggest (e.g., toy fish). Object is placed into the box and another character enters the situation. Child is asked what the character thinks is inside the box. Child should say candy to score correctly.</td>
</tr>
</tbody>
</table>
Hauser, Lukomski and Hillman (2008) shared classroom activities that support the development of executive function and theory of mind.

- Develop visual skills by modeling and expecting appropriate eye-gaze behavior – requiring students to watch one another when talking, or modeling how to look at the interpreter or to the classroom teacher, etc.
- Avoid exerting too much control over a conversation – instead encourage more turn taking, asking the student to elaborate on a topic, etc.
- Avoid asking questions that require yes/no answers. Instead, ask open-ended questions that require students to think actively.
- If a question is asked that students are not able to answer, modify questions using different language structures, perhaps even breaking down the larger question into pieces the student can answer. Then, when the student is able to answer one piece, add in the other questions until you get back to the original question.
- Use self-talk with students. As a professional, “self-talk” through a problem, showing students how you are able to work out the issue.
- If a student shows an interest in something, narrate the situation and role play what occurred.

Closing thoughts

Theory of mind and executive function are vital to one’s mental health, employment success and interpersonal relationships. Their effect is long term and profound. Understanding how these functions are embedded in language will assist professionals and families in providing these foundational skills to students who are deaf and hard of hearing.

References


Intelligence, the ability to reason, and working memory, the capacity to hold ideas, are highly correlated although their precise relationship is still being debated (Ackerman, Beier, & Boyle, 2005). The relationship between intelligence and working memory is a relatively new area of study. Historically, the focus has been on measuring intelligence. Therefore, a clear understanding of this history provides an important context.

Quantifying and understanding intelligence has captivated humankind for over a century. The first intelligence test was developed in the early 1900s by Alfred Binet and Theodore Simon with the intent of identifying students who needed special educational services. It is interesting to note that Binet:

- stressed the limitations of the test, suggesting that intelligence is far too broad a concept to quantify with a single number. He insisted that intelligence is influenced by a number of factors, changes over time, and can only be compared among children with similar backgrounds (Cherry, 2017, para. 6).

In that same vein, Benson (2003) states that intelligence testing has also been accused of:

- unfairly stratifying test-takers by race, gender, class and culture; minimizing the importance of creativity, character and practical know-how; and of propagating the idea that people are born with an unchangeable endowment of intellectual potential that determines their success in life (para. 3).

These charges and issues appear to hold true for individuals who are deaf or hard of hearing. Historically, assessment of students who are deaf has been fraught with challenges. The heterogeneity that exists among people who are deaf or hard of hearing, the difficulty in obtaining sufficient sample sizes, the cost and skills required to conduct assessments, the lack of standardized procedures for administering assessments, and the scoring of student responses has made assessments challenging (Maller, 2003; Mason, 2005; Pollard, 2002). Additional issues related to formalized assessments include the unnecessary introduction of confusing terminology that may require specialized knowledge, resulting in differential item functioning, and inappropriate application of normative comparisons (Stewart & Ritter, 2001). These factors have frequently lead to ineffective and inaccurate assessment practices within the educational
setting (Flanagan & Ortiz, 2005; Maller, 2003; Marschark, 2003; Pollard, 2002). In fact, the literature abounds with studies identifying validity concerns of intelligence testing, bias of questions and background knowledge for individuals who are deaf or hard of hearing (Akamatsu, Mayer & Hardy-Brasz, 2008; Hall & Bevalier, 2010).

The lack of a valid and reliable measure of intelligence in the field of deaf education persists and there is no consensus on solutions. Some experts recommend the development of special subgroup norms (Anderson & Sisco, 1977; Hiskey, 1966; Sullivan & Vernon, 1979; Vernon & Brown, 1964; Vonderhaar & Chambers, 1975), such as were developed for the WISC-R Performance Scale (Anderson & Sisco, 1977). Other experts argue that special norms may create validity problems (Braden, 1990; Maller, 1996).

There currently are no available intelligence tests that provide strong evidence in the five domains needed to establish validity for deaf (or, for that matter, hearing) examinees (Braden & Niebling, 2005). The most popular tests of intelligence used for assessment of deaf people (e.g., the Wechsler Performance Scale) are typically normed on normal-hearing people using spoken direction for administration (Braden, 2013). The issues related to fair, valid and reliable tests abound and leave practitioners and educators without solid tools for measurement. However, understanding the limitations of testing tools is important. It provides an opportunity for educators, administrators and families to choose carefully and to question how those tests are used.

Relevance

There are numerous limitations to quantifying intelligence for individuals who are deaf or hearing but it is well established that working memory is called upon during general intelligence testing. It could be concluded then, if working memory is improved, overall general intelligence will be impacted (Conway, Kane, and Engle, 2003). Improving working memory affects how students learn. Working memory is needed for language comprehension, problem solving, and learning, and has been found to be a significant predictor of reading ability (Garrison, Long, & Dowaliby, 1997; Geers, 2003) and mathematics achievement (Gottardis, Nunes, & Lunt, 2011; Lang & Pagliaro, 2007). Working memory performance is not dependent on language modality, hearing status, or the presence of cochlear implants (Marschark, Sarchet, & Trani, 2016). Current research in the field of deafness is focusing on the role of working memory and how working memory relates to generalized intelligence (Spencer & Marschark, 2010).

Voices from the field

Deaf Learner Community of Practice, October 2015

“Intelligence is dynamic, not fixed, and that regardless of any individual’s (deaf or hearing) current functioning, if we carry out the right activities with the right materials and an appropriately prepared teacher, it has been shown over and over that the individual increases his or her capacity for learning.”

– Session facilitator
“Based on what we know about cognitive functioning of individuals who are deaf or hard of hearing – it would be wise to employ multiple cognitive assessments that are geared toward that population. These could be augmented by individual one-on-one assessments by deaf assessors. The product would be a somewhat credible assessment and a fair statement of that individual’s current cognitive functioning.”

– Higher education professional

“Using the term ‘Capacity for learning’ (taking into account with whom, where, what content, with what motivation, and so forth) is probably a better phrase to use instead of the word intelligence.”

– Higher education professionals

“How can an interpreter/educator get all this information to the student (get the student to use the vocabulary and move it to WM) in such a short amount of time...? Folks who are not deaf or hard of hearing hear words and can figure out what they mean over time and usage, but unless the student is using these words/signs they will not be able to recall them during testing.”

– Deaf services professional

**Practice**

Harley Hamilton (2016) compiled these strategies for improving memory skills of deaf or hard of hearing learners.

- Combining compensatory and remedial interventions have the most success for learners who are deaf or hard of hearing.

- Expose children who sign to as much fluent signing as possible, preferably live, or if needed, on video.

- Placing a static image behind the signer is recommended to compensate for peripheral distractions.

- If actions are being described, sequential information should come first, followed by the action.

- Recitation (rehearsal) of nursery rhymes, songs (both orally and in sign) help young deaf children improve working memory skills.

- Utilizing the non-dominant hand to keep a “list” may assist in recall for the student.

- Creating sentences with familiar words/signs/pictures assist with sequencing skill development. **Items in sentences that are easily confused (similar handshape, formation, etc.) should be avoided to lessen the confusion**

- Short, frequent exposure to target words will increase automaticity in students, which will decrease memory load.

- For some students, phonological encoding can be developed through specific activities that increase speechreading and articulation skills. For example, the target sign can be paired with the word, and slowly faded as the student becomes more comfortable. **In this regard, the use of Simultaneous Communication may be beneficial.**
• Building schemas through visual scaffolding may improve writing skills of learners who are deaf or hard of hearing. Build a schema through “chunking” sentences or developing pieces of a sentence that are interchangeable with other sentences.

• The recitation and rehearsal of math facts is a key activity to increase working memory. Providing students with dictated math problems may increase working memory.

• Working memory load capabilities will be exercised if students need to solve dictated math problems without writing them down.

• In other content areas, rehearsal activities such as memorizing the 50 states may also enhance the learning of content.

• The use of graphic organizers that consistently represent the same type of relationships between information will assist in the construction of schema.

• In older students, presenting information more slowly or in a static fashion, like text on a page gives the person time to process the information at their own rate.

• Using a tool such as the SMART Sign Dictionary (www.cats.gatech.edu) could provide real-time vocabulary support when the person needs it.

**Closing thoughts**

The initial limitations of intelligence tests cautioned by Binet in the early 1900s are still plaguing the process of intelligence testing in students who are deaf or hard of hearing. With this understanding, intelligence testing should only be one small piece of an assessment protocol.

**References**

Ackerman, P. L., Beier, M. E., & Boyle, M. O. (2005.) Working memory and intelligence: The same or different constructs? *Psychological Bulletin*, 131(1), 72-75. [http://dx.doi.org/10.1037/0033-2909.131.1.72](http://dx.doi.org/10.1037/0033-2909.131.1.72)


Critical thinking and problem solving skills are used in every facet of daily life. We use them daily to interact with family, friends and colleagues. They are needed in everyday settings as well as difficult situations. For example, a caregiver may open the refrigerator door and consider available options to prepare for dinner. A plumber could look at a leaky faucet and determine what tools would be necessary to fix the problem. A student will go through a mental checklist of homework in order to pack up books to bring home. Employees, when asking for time off, may to consider the impact on their work team and place of employment.

Critical thinking includes analyzing and evaluating information regardless of its source (e.g., observation, experiences or communication) and questioning. Teaching and encouraging students to ask good questions leads to the ability to think critically (Brookfield, 1987). Critical thinking is a process and requires not only emotional and rational components, but highlights the importance of culture and context (Brookfield, 1987). Since sharing a common language is how a great deal of abstract concepts and cultural norms are transferred (Garberoglio, Cawthon & Bond, 2013), it is reasonable to conclude that where there are barriers to common language, there are barriers to the transfer of abstract concepts and cultural norms – which in turn impacts the fluid development of critical thinking skills.

**Relevance**

As with many other cognitive activities, there is a correlation between skills in critical thinking, problem solving and fluency in language. Vygotsky highlighted the importance of past experiences, prior knowledge, society, and culture in promoting cognitive growth (Dahms et al., 2007). He also identified the import of the child development process, that knowledge is developed through social interaction, that learning occurs through language and shared experiences, and adults “foster children’s learning and development in an intentional and somewhat systematic manner” (Ormrod, 2004). Essentially, language becomes a tool of thought (Luckner & McNeill, 1994). For a population of students who are deaf or hard of hearing and have restricted access to language during the pivotal developmental years, there are observable limitations in critical thinking (Luckner & McNeill, 1994). Using language as a tool, so to speak, during the process of inner speech has incredible positive effect on problem-solving skill development. Similarly, it is reported that weak language skills lead to issues with critical thinking (Luckner & McNeill, 1994).

In general, students need to:

...develop and effectively apply critical thinking skills to their academic studies, to the complex problems that they will face, and to the critical choices they will be forced to make as a result of the information explosion and other rapid technological changes (Oliver & Utermohlen, 1995, p. 2).
Children who are deaf or hard of hearing and have an unrealized linguistic ability are likely to have difficulty in mentally manipulating variables when trying to solve multi-element problems due to a diminished ability to communicate internally about those problems (Luckner & McNeil, 1994). Sternberg (2003) states, “Rote memorization requires recital and repetition. Critical thinking requires skillful analysis, evaluation, and interpretation” (p. 68). He goes on to encourage educators to teach information that students can transfer to their lives (Sternberg, 2003).

Multiple research studies have demonstrated that deaf youth perform as well as hearing youth in a wide variety of tasks that measure thinking (Martin, 2001). However, the manner in which deaf children learn is unique. Knoors & Marschark (2014) state, “Deaf children are not hearing children who can’t hear” (p. 232). They must be taught differently because they learn differently. Direct instruction in thinking skills has been one way deaf educators have tried to overcome the false belief that providing language access will mitigate all other prerequisite skills for critical thinking (Martin, 2014).

Critical thinking doesn’t just happen; students must be taught how to think critically. Educators can develop instructional strategies that support the development of critical thinking abilities. Students need to be given opportunities for consistent, repeated practice over an extended period of time to develop these skills (Ormrod, 2004). Classrooms that encourage collaboration, open dialogue, and an acceptance of diverse values, beliefs, and perspectives will assist in the development of critical thinking skills (Oliver & Utermohlen, 1995).

**Voices from the field**

**From the Deaf Learner Symposium, 2014**

“The fourth thing [that we focus on in our program] that has made a difference is developing that background knowledge, giving extra time to the background knowledge so students could really expand on that story, and use critical thinking skills to discuss what we were reading...So, not only did our students increase the reading scores, but they became active learners. Empowered and determined to hold themselves accountable, to a higher standard.”

Representative from Austin Community College

**From the Community of Practice, April 2016**

“Providing cognitive strategies for deaf learners should be a foundation building block, and I think the earlier the better. I have been in kindergarten general education classes where the teachers have provided specific instruction in this area, providing strategies of “how to think”. However, I do not see this presently as much as in the past due to the pressures teachers in the classroom are faced with due to extra subject matter in the curriculum they are required to teach, as well as other factors.”

Teacher of the DHH
Practice

Teaching students how to think rather than what to think is key to developing critical thinking. There are a number of models for teaching these important skills and educators are encouraged to develop a systematic approach for students. Establishing a systematic approach that cuts across curriculums enables students to incorporate the thinking process into their lives beyond the educational setting (Paul, 2004).

Benjamin Bloom (with other collaborators) developed a framework for educators to follow when creating educational curriculums and goals in an attempt to ensure that complex thinking skills are consistently being developed. Critical thinking consists of two components: (1) skills to generate information (lower order thinking) and (2) using those skills to guide behavior (higher order thinking). When making a decision, a person incorporates six levels of “thinking.” See Bloom’s Taxonomy for a description of those six levels in Figure 1.

**Figure 1. Bloom’s Taxonomy**

Studies show that students become better learners when they are encouraged to explain how they solve problems. Some students may discover and apply principles of logic independently, but others may require support to do so. Research supports the idea that the most effective way to foster critical thinking skills is to explicitly teach those skills (Abrami et al., 2008).

The following tips are adapted from the American Philosophical Association’s tips for teaching critical thinking (retrieved May 2017 from [http://www.parentingscience.com/teaching-critical-thinking.html](http://www.parentingscience.com/teaching-critical-thinking.html))

- Start early. Young children might not be ready for lessons in formal logic. But they can be taught to observe, compare and contrast and to give reasons for their conclusions. And they can be taught to evaluate the reasons given by others.
• Encourage kids to ask questions. Parents and teachers should foster curiosity in children. If a rationale doesn’t make sense to a child, she should be encouraged to voice her objection or difficulty.

• Ask kids to consider alternative explanations and solutions. It’s nice to get the right answer. But many problems yield themselves to more than one solution. When kids consider multiple solutions, they may become more flexible thinkers.

• Get kids to clarify meaning. Kids should practice putting things in their own words (while keeping the meaning intact). Kids should be encouraged to make meaningful distinctions.

• Talk about biases. Even grade school students can understand how emotions, motives—even our cravings—can influence our judgments.

• Get kids to write. The process of writing helps students clarify their explanations and sharpen their arguments.

**Closing thoughts**

Thinking critically is an important lifelong skill. Helping a student become a critical thinker takes careful planning and support from educators and family.

**References**


Connecting Research to Practice No. 7

**Academic Rigor**

In theory, students who obtain a high school diploma or equivalent certificate are considered eligible for college. However, they may not be ready. The college and career readiness of high school graduates in the United States has been a concern for quite some time (Colvin & Jacobs, 2010). Marzano and Toth (2014) identify that the main purpose of Common Core State Standards (CCSS) was to address readiness levels.

Higher order thinking skills, an intent of the CCSS, are critical to success in postsecondary education and employment. Getting to a place where higher order thinking skills are utilized requires academic rigor (Marzano & Toth, 2014). There are three fundamental pieces to creating an academically rigorous educational environment. Regardless of the age or ability level of the students, or even the task at hand, academic rigor is achieved through three phases: 1) educators have high expectations, 2) students are properly supported, and 3) students have an opportunity to demonstrate what they have learned (Blackburn, 2012).

Creating an environment of academic rigor asks teachers to examine student data, look ahead, and proactively address potential problem areas to thwart the need for remediation later (Allen, 2012). This is a shift in pedagogy and how we approach the teaching and learning process (Marzano & Toth, 2014). Robyn Jackson echoes this thought, “When classroom teachers know each of their students and can analyze relevant data, they’ll be better able to meet the various needs of struggling students” (Allen, 2012, para. 7).

While the teacher sets the stage for academic rigor, students need to learn their roles. That is, students may need to learn what it means to push themselves academically (Ungemah, 2012). In addition, Ungemah (2012) writes:

> Every minute of every class cannot and should not be rigorous. Learning can’t be all rigor, all the time. There has to be time to step back, pause, reflect on learning, have some fun, gather strength, and then — BAM! — another rigorous text, task, or class. Too much rigor will stifle the learning process (para. 11).

Increasing higher order thinking skills and therefore, college and career readiness, is a multi-phase process. The process is theoretically the same for students who do and do not have an IEP (Blackburn, 2012). However, for students receiving special education services, including those who are deaf or hard of hearing, there is an identified tendency for educational staff to drop the levels of academic rigor (McNulty & Gloeckler, 2014; Nagle, Shaver, Newman & Marschark, 2016).

In addition, at the slightest hint of a struggle, there is a tendency to over-support and in effect, enable students who receive special education services (DeWitt, 2012). Educators need to remember that struggling is part of the learning process. Table 6 illustrates the differences between productive struggles and destructive struggles. According to Allen (2012), the key for teachers is knowing the difference between the two.
Table 6. Productive and destructive struggles

<table>
<thead>
<tr>
<th>A productive struggle</th>
<th>A destructive struggle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leads to understanding</td>
<td>Leads to frustration</td>
</tr>
<tr>
<td>Makes learning goals feel attainable and effort seem worthwhile</td>
<td>Makes learning goals feel hazy and out of reach</td>
</tr>
<tr>
<td>Yields results</td>
<td>Feels fruitless</td>
</tr>
<tr>
<td>Leads students to feelings of empowerment and efficacy</td>
<td>Leaves students feeling abandoned and on their own</td>
</tr>
<tr>
<td>Creates a sense of hope</td>
<td>Creates a sense of inadequacy</td>
</tr>
</tbody>
</table>

(Adapted from Jackson, 2010, p.54)

Students who have been given tools to problem solve (including knowing how, when and where to seek guidance) often experience productive struggles. Students who have been enabled instead of educated often run out of problem solving strategies and experience destructive struggles more quickly (Allen, 2012). Independent thinking is a hallmark of academic rigor. To bring students to a point where they think independently, there often needs to be teachers who are more rigorous in their teaching (Allen, 2012).

Relevance

The three phases of academic rigor (high expectations, student support, and opportunities) manifest very differently for students who are deaf or hard of hearing. The first phase, maintaining high expectations while meeting the diverse learning needs, may not be straightforward. As discussed in previous CRPs, students who are deaf or hard of hearing may not have had access to robust language models needed to acquire a strong first language (L1). As a result, they enter academic settings needing to learn a language. This may create a domino effect and impact other areas of learning.

Secondly, providing appropriate supports to students who are deaf or hard of hearing has a significant impact on overall academic status (Reed, Antia & Kreimeyer, 2008). Factors that detract from overall success, such as inadequate accommodations, impede the development of academic rigor. Students who are deaf or hard of hearing are often in educational environments that do not meet their needs and therefore are already at a deficit learning level.

Third, students who are deaf or hard of hearing in the public education classroom tend to be passive learners. Due to language access or the presence of an interpreter, students may not feel comfortable demonstrating knowledge in front of peers (Richardson, 2010). Creating a learning environment that supports academic rigor for all students, and includes opportunities for teamwork and sharing results, can prove to be difficult when students are not at ease communicating in large groups or rely on a third person to communicate.
The lack of academic rigor could have long-reaching effects on employment. It can also impact access to and success with postsecondary options for students who are deaf or hard of hearing. For example, students who are deaf or hard of hearing have higher unemployment rates than the general population, are over-represented in the fastest declining occupations, and earn less than hearing adults with comparable educational attainment (Nagle, Shaver, Newman, & Marschark, 2016).

**Voices from the field**  
*Deaf Learner Community of Practice, August 2015*

“It is impossible for teachers alone to take on the responsibility of preparing D/HH youth (or any youth for that matter) to be college and career ready.”

— Discussion facilitator

**Practice**

Below are ideas from Ungemah (2012) to increase academic rigor in a classroom or academic setting:

- To push students beyond what is easy:
  - Communicate high expectations for learning (e.g. Using the phrase “I believe you can” with positive affect does not allow for excuses).
  - Use Bloom’s taxonomy, Depth of Knowledge, and Webb’s Four Levels of Cognitive Complexity to build rigorous learning opportunities.

- To teach students how to become “unstuck” by learning modifications and strategies to use when it gets hard:
  - Support and scaffolding (e.g., clearly articulated learning objectives, graphic organizers, chunking information)
  - Demonstration of learning (e.g., interactive responses, creative projects vs. tests, multiple opportunities to demonstrate knowledge)
  - Student engagement (e.g., games, cues and questioning, cooperative learning structures)

Jacqui Murray has a wonderful post of “22 ways to add rigor to your classroom”, below are five that are easily adaptable in a classroom or itinerant setting.

1. Make it easy to decode words by adding an online dictionary or a backchannel that students can access with unknown words.
2. Expect inquiry. Be prepared. Make time for it.
3. When you ask a question, pause. Let students think before answering. This wait time isn’t delaying your lesson. In a rigorous classroom, it is the lesson.
4. Expect rigor. Don’t allow students to be satisfied with a superficial answer. Build habits that look for understanding.
5. As students participate in class conversations, expect them to use academic and domain-specific vocabulary. If they use words like “something,” “you know,” “that,” or “like,” prod them to come up with specifics. Like what? “No, I don’t know.” This immerses them in learning, discovering, and thinking critically.
**Closing thoughts**

Creating academic rigor requires a concerted effort on the part of the teacher and the student. Struggling is integral to this rigorous process, but needs to be done in a productive and intentional manner.

**References**


Connecting Research to Practice No. 8

Literacy and Academic Outcomes

The National Assessment of Adult Literacy (NAAL) asserts that “literacy is not a single ability that one either possesses or lacks” (“Literacy tasks,” n.d.). The NAAL describes types, levels and corresponding abilities of literacy as:

- **Prose tasks** - includes understanding, synthesizing information, inferring information from newspapers, educational materials and books
- **Document tasks** - involves understanding and assimilating information from job applications, maps, food labels
- **Quantitative tasks** - involves understanding balancing a check book and calculating the interest of a loan

A common thread among the literacy tasks above is that each has a purpose. That purpose could be to pay the telephone bill, read job announcements, or understand a character’s intention in a novel. The NAAL identifies tasks and skill-based components necessary for literacy. The task-based component is “the ability to use printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential” (“Definition of literacy,” n.d.). The skills-based component of literacy focuses on the knowledge and skills an adult must possess in order to perform these tasks. Skills range from basic, word-level skills, word recognition, to higher level skills, critical thinking (White & McCloskey, 2003).

Becoming literate begins in childhood but is a lifelong journey. Lederberg, Schick, and Spencer (2012) report that individual trajectories to literacy vary greatly for students who are deaf or hard of hearing. These trajectories reflect the child’s access to early identification, intervention, advanced technologies (e.g., cochlear implants), and perceptually accessible language models. Lederberg, Schick, and Spencer (2012) go on to say that:

> Although developmental trajectories of deaf or hard of hearing children with hearing parents have improved with early identification and appropriate interventions, the majority of children are still delayed compared with hearing children. These deaf or hard of hearing children show particular weaknesses in the development of grammar. Language deficits and differences have cascading effects in language-related areas of development, such as theory of mind and literacy development (p. 15).
Literacy is not an independent skill and cannot be taught in isolation. It is dependent on topics addressed in earlier CRPs (e.g., language, critical thinking, and executive function) and is tightly tied to subsequent CRPs (e.g., self-determination, resilience, social maturity). An understanding of the interconnectedness of the themes addressed in the CRPs allows educators to understand and address issues of literacy comprehensively.

Relevance

Literacy is a strong predictor of academic outcomes and has a long-term impact on one’s lifelong competencies and opportunities. Garberoglio, Cawthon, & Bond (2014) found that literacy skills may “open the doors of opportunity, particularly in that of independent living, higher paying entry level employment and postsecondary enrollment” (p. 65). The Center on Literacy and Deafness (CLAD) at Georgia State University, led by Principal Investigator Lederberg, reports “the focus on DHH children is important given that poor literacy outcomes have long characterized the DHH population, despite the fact that most of these students have normal intellectual potential” (“What is CLAD,” n.d.).

Historically, many deaf or hard of hearing children graduated from high school with reading skills insufficient to access many post-secondary opportunities (Easterbrooks, Lederberg, Miller, Bergeron, & Connor, 2008). Seventy-nine percent of students who are deaf or hard of hearing begin their postsecondary careers taking English courses that are at a “developmental” level (Bochner & Walter, 2005). Because the deaf or hard of hearing population is diverse, researchers are now investigating different ways to meet the needs of a range of children learning to read. It is recognized that alternative strategies are needed for the majority of deaf and hard of hearing students and that access to studies and evidence-based practices for students with who are deaf or hard of hearing is limited (Easterbrooks, Lederberg, Miller, Bergeron, & Connor, 2008).

Voices from the field

From the Deaf Learner Community of Practice, September 2015

“Services the student is able to access during their education and other experiences may enhance their future success. However, how an individual is able to meld their experiences - employment, economics, emotional and physical health and community participation and knowledge of legal rights with their attitude, resilience and outlook on life is a better predictor of success than test scores alone.”

— Disability Services Professional

“The actions K-12 educators of deaf students [take] to increase their commitment to reading and language instruction are not very different from the actions K-12 educators in the mainstream need to take. We have a growing population of students and adults who do not read, do not like to read and do not take the time to read. As educators and parents, we need to model reading in our classes and our homes, to make meaningful assignments requiring reading, including discussions of pre-knowledge of the subject, providing previewing questions that encourage reading and activities which provoke all to look for more information. There is truth to the phrase practice makes perfect, but we need to develop the love of the game too!”

— Disability Services Professional
**Practice**

Evidence-based practices that relate specifically to students who are deaf or hard of hearing, literacy, and their academic outcomes are beginning to emerge.

CLAD at Georgia State University was funded to identify child and instructional factors that affect reading growth and to develop individualized interventions specifically designed for deaf or hard of hearing (DHH) readers in grades K-2. *Foundations of Literacy and Fingerspelling Our Way to Reading* will be available for distribution in 2017-18. Once published, they can be found at [http://clad.education.gsu.edu/curriculum/](http://clad.education.gsu.edu/curriculum/).

The Laurent Clerc National Deaf Education Center published *Strategies and Tips to Support the Development of Literacy* (2014). This publication lists suggestions to develop a print-based visual environment, and utilize auditory and visual phonics in the classroom. In addition, the document provides the following advice for reading aloud using ASL or English that practitioners can utilize in the classroom:

- Use a large print book. Project the book on an overhead or display text on an electronic whiteboard or a projection device.
- Arrange seating in a circle or semi-circle.
- Prop books on an easel during reading.
- For younger children, use props to provide context to a story.
- Dramatize/act out parts of the story to support comprehension.

For students using an interpreter, the interpreter can sign the story while the teacher reads the story aloud. Some considerations for interpreted stories include:

- Use appropriate pausing and allow the students to take in the book visually so they can see the English text and illustrations on the pages.
- Highlight key vocabulary or phrases within the story visually on the blackboard, overhead, or laptop connected to a projector or television.
- Give the student a copy of the book for reference during the read-aloud.
- For read-aloud time with student participation, have the interpreter confirm where the group is within the text to assure the student who is deaf or hard of hearing is in the appropriate place (“Reading aloud...”, 2014).

In addition, Dr. John Luckner from Northern Colorado University provided the following advice to participants in the Deaf Learner Community of Practice:

- Be enthusiastic about reading;
- Model reading, discuss books and stories and promote interaction among students about literature;
- Be knowledgeable of students’ current level of functioning and help students choose materials they can read;
- Provide opportunities for choices about what to read; and
- Understand and respect students’ interests and provide appropriate selections.
**Closing thoughts**

Literacy plays an essential role in all domains of life. The consequence of weak literacy skills is far reaching. It is imperative that professionals who work with deaf and hard of hearing communities follow emerging research and evidence-based practices so that this important skill can be afforded by all.

**References**


Center on Literacy and Deafness. (n.d.). *What is CLAD?* Retrieved from [http://clad.education.gsu.edu/](http://clad.education.gsu.edu/)


Self-determination is defined as “the process of taking control and making decisions that affect one’s life” (Project 10: Transition Education Network). In a study of successful people, Garfield (1986) found prevalent characteristics for successful people were they excelled at making decisions, self-managing their behaviors and adapting to new environments. Self-determination requires skills and abilities in the following areas: making choices and decisions, problem solving, setting and attaining goals, self-advocating and independently performing.

If a person wants to experience self-determination, they will have to self-advocate for their needs. We often hear the term “self-advocacy” in relation to educational and vocational environments. Friend and Bursuck (2009) define self-advocacy as “an individual’s ability to identify the supports needed to succeed and to communicate that information effectively to others, including teachers and employers.” There is research that supports the relationship between self-determination and post-school outcomes. However, that relationship is multidimensional. There may be stronger links between self-determination and initial employment than there are between self-determination, independent living, and financial autonomy (Shogren, 2015).

Skills of self-advocacy are introduced formally in transition planning. However, professionals believe that students need to learn to self-advocate in formal and informal settings long before the age of 14 (Luft, 2011). These critical skills of self-advocacy and self-determination are prerequisites for students with disabilities. The presence or lack of can directly impact their postsecondary success.

Relevance
Students with a wide range of disabilities can learn skills of self-advocacy (Wu & Chu, 2012). According to Luft (2011), deaf adolescents, regardless of their cognitive and academic standing, have an ability to learn skills that affect how they interact with their environment. Therefore, it is imperative that practitioners have a clear understanding of how to build an environment conducive to developing skills of self-advocacy and one that encourages students to become more self-determined. Luckner and Becker (2013) identify explicit instruction, role-playing opportunities, and practice opportunities as methods to increase self-advocacy skills.

Self-advocacy is especially important when students transfer from an IEP environment (school-initiated services) to an ADA environment (student-initiated services) (Garfield, 1986). In fact, research has demonstrated that not only are self-advocacy and self-determination critical factors in transition outcomes, but they have led to higher levels of employment, independent living, community participation and success in postsecondary education (Algozine, Browder, Karvonen, Test, & Wood, 2001).
It is a commonly held belief that for children who are deaf or hard of hearing, learning self-advocacy skills early is critical (Bullard, 2003). There are a number of factors impacting the development of self-advocacy. Most parents of children who are deaf or hard of hearing lack experience with hearing loss, and therefore may not be as knowledgeable about methods to nurture self-advocacy skills. In addition, language delays impact a child’s ability to express needs and may inhibit development of skills. Also, deafness is such a low incidence disability, that professionals who work with these students may not hold reasonable expectations for self-determination (Hendrix, 2015).

Proper services may be essential to success, but when needs are anticipated and met by service providers, children do not learn how to solve problems or develop a sense of independence, resulting in issues with autonomy (Valentine & Skelton, 2007). As emerging adults, deaf individuals who do not have the necessary life skills, such as self-efficacy and problem-solving knowledge, experience “transition shock” when leaving supportive school environments and entering the adult hearing world (Valentine & Skelton, 2007). Instruction using picture based forms for identifying work preferences and decisions can improve self-determination skills, such as choice, decision-making, problem solving, and self-instruction (Luft, 2016).

**Voices from the field**

**From the Deaf Learner Symposium, 2014**

“Part of the problem was that many deaf youth, across the board, don’t have practice in self-advocacy. They have no experience in standing up for their rights as a deaf person—as a consumer, how to get access to information, how to get resources, how to really seek out support. Often someone has provided an interpreter for them, and they just accept the level of quality they’re provided. They just accept that this is what they get. Even though the interpreter might not be clear and may be difficult to follow, the student will just accept that this is what they have and they must take it, but in reality, [he/she] can advocate for him/herself. The same thing is true in the workplace or school.”

- Representative from Ohlone College

“I think it’s also important that students have strong self-advocacy skills. They need to be taught that. It’s not something that they know innately. They have to be taught. They need to get it either in high school, or from their parents, to learn how to advocate for themselves. How to ask for what you need. The only way to succeed in college or the workplace is to advocate for your needs.”

- Representative from Austin Community College

**From the Deaf Learner Community of Practice, December, 2015**

“Attitudinal barriers are as real (if not more so) than physical barriers, and are usually overlooked.”

— Disability Student Services Provider

“I think true self advocacy can’t really happen until a student is able to accept and understand their deafness. I wish I had more time to work with attitudinal barriers, but we are so busy just trying to help students set up their actual accommodations
that we don’t have much time to help them with self-advocacy and identity development.”

– Disability Student Services Provider

“My biggest takeaway is if we begin educating our students regarding self-advocacy at a young age, then they have ample opportunity to further develop and build on these skills.”

– Teacher of the DHH

“If students completely understand their own situation and choose not to disclose because they truly believe that is the best choice for them personally, that’s one thing. This would seem to be a clear act of self-determination. If students do not disclose because they don’t actually know they have an issue for which they might receive some sort of accommodation or don’t know the benefits of disclosing or they believe there is a stigma attached to such a disclosure, that seems like another thing entirely.”

– Disability Service Professional

**Practice**

Below is a list of strategies compiled from the references utilized in this brief:

- Meet with students and parents to discuss career options and or allow them to shadow a professional for an hour to see if they would like that career.

- Student participation in IEP meetings helps participants see that the student has a voice and opinion about what they want to do.

- Make sure a VP (videophone) in the conference room is available for deaf or hard of hearing students to use if their cell phone is not available.

- At a local secondary program, requesting interpreters for after school activities are the responsibility of the deaf students.

- Karen Anderson’s program, Building Skills for Success in the Fast-paced Classroom, has a multitude of useful tools like student-driven assessments, lesson plans and games.

- Steps to Success is a scope and sequence for self-advocacy skills acquisition at all school levels. For example, having the ability to put on and take off amplification equipment and explain the need, at a basic level, for that equipment.

- The Tri-State Transition Slide Guide is an excellent informational tool with goals to achieve self-determination starting at 10-12 years to 18-21 years of age for students.

- Check out pn2’s Fast Fact: Self Advocacy - The Basics http://www.pepnet.org/sites/default/files/Self-Advocacy.pdf. This is a straightforward resource to share with parents or other professionals who may need some introductory information.

- Look up the Zarrow Center at Oklahoma University. This site has a variety of self-determination assessments, planning guides, and curricula for improving self-determination and self-advocacy skills.
Closing thoughts

Self-advocacy and self-determination are critical to the success of students who are deaf or hard of hearing. It is incumbent upon all stakeholders (e.g., educators, family, community) to maximize opportunities to learn and practice these vital skills.

References


There is a symbiotic relationship between social maturity and responsibility. As students mature, they tend to be given (or take on) more responsibility. The more responsible students become, the greater amount of maturity they exhibit. The Collaborative for Academic Social and Emotional Learning (2017) states that developing an awareness of those expectations of maturity and responsibility occurs naturally in a process called “social emotional learning” (SEL). The natural acquisition of competencies of SEL such as self-awareness, emotional regulation, and responsible decision-making are critical for success in life. These expectations are taught explicitly to children in the general education curriculum (CASEL, 2017).

It is commonly held in the literature that hearing loss may prevent students from acquiring knowledge incidentally (De Raeve, 2016; Holcomb, 2013; Marschark & Hauser, 2012). As explained in previous CRPs, natural development of language and executive function may be delayed for students who are deaf or hard of hearing. Therefore, given the close alignment of SEL skills with executive function, it would be reasonable to conclude that this skill acquisition may also be affected in children who are deaf or hard of hearing. “Deaf children who lack effective communication skills have difficulty controlling their behavior and regulating their reactions to stressful situations, and they have less knowledge about social rules. In addition, their self-esteem and independence are less well developed” (Lytle and Oliva, 2016, p.3). This makes explicit instruction of SEL skills to children who are deaf or hard of hearing all the more critical.

SEL instruction for students provides short-term and long-term benefits in school and daily life. In the short term, students who know what their strengths and needs are, know how to make decisions about social and personal issues, and have awareness of others’ opinions and perspectives tend to be more successful (Weissberg, Durlak, Domitrovich & Gullota, 2016). Weissburg et al. (2016) identify five key skills (see Figure 2) for developing effective social and emotional learning opportunities for students: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. “In the long run, greater social and emotional competence can increase the likelihood of high school graduation, readiness for postsecondary education, career success, positive family and work relationships, better mental health, reduced criminal behavior, and engaged citizenship” (Weissburg et al., 2016, p. 8).

**Self Awareness**
A strong understanding of one’s own feelings, goals and personal values. Recognizing strengths and challenges but also possessing a positive outlook are necessary for self-awareness.

**Self-Management**
An ability to regulate one’s own emotions and behaviors -- including the ability to control stress, impulsive behavior and demonstrate perseverance.

**Social Awareness**
The ability to understand social norms for those with varying backgrounds or cultures.

**Relationship Skills**
Skills in maintaining healthy relationships, and to act within social norms. such as clear communication, active listening, and negotiating conflict.

**Responsible Decision Making**
An ability to make healthy choices about personal behavior and social interactions across diverse settings.

*Figure 2. Key skills for developing effective social and emotional learning opportunities*
Relevance

Arnett (2000) describes individuals between the ages of 18 to 25 who are experimenting with diverse educational and employment opportunities and living arrangements as emerging adults. Typically, during these years, these individuals obtain employment, take on the responsibility for food and shelter, and gain greater financial independence. All individuals in this age range, not only those who are deaf or hard of hearing, experience varied success (Cohen, Kasen, Chen, Hartmark, & Gordon, 2003).

Research has focused heavily on social maturity when discussing educational placement (Moores and Kluwin, 1986) and encouraged practitioners to look at skillsets of social maturity when planning a student’s program (Antia, Stinson & Gaustad, 2002, Gaustad, 1999, Kluwin & Stinson, 1993). In recent decades, researchers have argued a need to consider more than just communication or academic achievement when looking at educational placement or programs for students who are deaf or hard of hearing. It is found that children who are deaf or hard of hearing tend to overestimate their social maturity levels as they are unable to appreciate social situations from the points of view of others (Peterson, Slaughter, Moore, & Wellman, 2016).

Research has indicated that emerging adults who are deaf from low socioeconomic status have greater challenges with regard to psychological well-being, self-esteem and life satisfaction (Meyer & Kashubeck-West, 2011). Antia and Kreimeyer (2015) state that communication challenges inside and outside the home may cause parents and teachers to intervene to solve social problems, rather than encouraging children who are deaf or hard of hearing to confront challenges themselves. Successful transition for students who are deaf or hard of hearing requires the support of social emotional learning.

Voices from the field

From the Deaf Learner Community of Practice, January 2016

“As a HoH adult in her 50s, I have realized over the past ten years or so that I really did miss out on a lot of information growing up. I am reading different sources of materials and coming across vocabulary that I have never seen before.”

— Teacher of the DHH

“Although I had not heard the term ‘emerging adulthood’ before, extending it to the age of 30 made a lot of sense to me. Adolescence is considered to extend until age 25. This gives an additional five years’ time for a person to grow out of adolescence and into adulthood level of maturity (however that is being defined). Since language is found to be so closely tied to development, any Deaf/HoH person whose language is still developing may need that additional time to reach social maturity.”

— Teacher of the DHH

Deaf Learner Symposium, July 2014

“Suppose you calculate the costs of a deaf person graduating college and earning a degree, and working, versus the cost of a deaf person with no degree, constantly seeking employment, or bouncing around from one short-term job to another and ending up
on government assistance. Compare the cost of the federal government. A recent report calculated that the average SSDI payment in 2014 was $1,148 a month. So, if you add all that up throughout a person’s lifetime, say, to age 80, the cost approaches close to a million dollars each. Each deaf person. And they’re also consuming other services, not just SSI. They’re also dependent on welfare and other services. That adds even more. So they’re constantly dependent rather than contributing and being productive. There are other impacts, as well. The person who gets a degree and is employed becomes a productive taxpayer throughout their life. Instead of drawing resources from the government, they’re paying into the government. Really, this is a complete win-win-win situation. There are only wins with education.

The first win is with the deaf person’s self-esteem. They feel good about themselves, their livelihood, and ability to provide for themselves. Everything. Right, quality of life is greatly enhanced compared to those without a degree. So, that’s one win. Another is that the community wins by having a productive citizen. And a third is that the state wins, because this person will be paying taxes throughout their life. And, of course, the U.S. Federal Government wins as well with more people paying taxes and supporting government. So really, there are wins all around.”

– Representative from Southwest Collegiate Institute for the Deaf

**Practice**

Although current evidence-based practices related to increasing maturity and responsibility in deaf or hard of hearing students are scant, perhaps identifying elements of psychological well-being can help practitioners recognize areas on which to focus.

CASEL, the Collaborative for Academic, Social and Emotional Learning (www.casel.org), has long been involved in research and supports for social and emotional learning. They list the following techniques for adults to help children develop in these areas:

- Children can be taught through modeling and coaching to recognize how they feel or how someone else might be feeling.
- Prompting the use of a conflict-resolution skill and using dialoguing to guide students through the steps can be an effective approach to helping them apply a skill in a new situation.
- Through class meetings students can practice group decision-making and setting classroom rules.
- Students can learn cooperation and teamwork through participation in team sports and games.
- Students can deepen their understanding of a current or historical event by analyzing it through a set of questions based on a problem-solving model.
- Cross-age mentoring, in which a younger student is paired with an older one, can be effective in building self-confidence, a sense of belonging, and enhancing academic skills.
- Having one member of a pair describe a situation to his partner and having the partner repeat what he or she heard is an effective tool in teaching reflective listening.

(Collaborative for Academic, Social and Emotional Learning, 2017)
Visual Language and Visual Learning Science of Learning Center (2016) also has suggestions geared toward students who are deaf or hard of hearing and who use American Sign Language:

• Educate yourself about deaf and hard of hearing people from a cultural viewpoint.

• View the deaf or hard of hearing child as part of the rich diversity within your school and classroom.

• Consider new knowledge, skills, and awareness that will result from having this child in your class and school community and infuse these into your curriculum and/or classroom activities.

• Make a point to regularly communicate directly with deaf and hard of hearing students, whether through spoken language in conducive spaces (not noisy or visually distracting), sign language, or print media/text/notepads.

• Keep interactions positive so deaf and hard of hearing students can gain skills and confidence in their ability to interact with peers and adults.

• Be alert to the child’s accessibility needs. Turn on captioning for TV, videos, and movies, each and every time. Consider how physical aspects of your classroom—noise levels, seating configurations—affect the deaf or hard of hearing child.

• If the student, on their own or through an interpreter, says something unclear, give the student a chance to express it again, including through different means.

• Be aware that confusion or lack of clarity may be due to an interpreter’s inadequate skills.

• If there are two or more deaf and hard of hearing students in the school, create ways for these students to meet and interact in meaningful ways, even if they use different languages or modalities. What is important is that they meet others like themselves.

• Provide for ASL classes and/or an ASL Club and empower the deaf child to lead this club. At the high school level, offer ASL for World Language credit.

• Engage the deaf student(s) in creating activities or course content to educate classmates about Deaf Culture, famous Deaf individuals (past and present), and contemporary Deaf adults who have successful careers in various fields.

• Engage the deaf student in creating activities or course content focused on the Deaf experience and signed languages in the visual and performing arts.

(Visual Language and Visual Learning Science of Learning Center, 2016, April, p. 6)

Closing thoughts

Stakeholders who keep in mind the end goal of social maturity and responsibility are more apt to support and cultivate autonomy and independence in students who are deaf and hard of hearing.
References


Flowers, trees, animals, humans and even virus strains can be described as resilient. How an entity reacts or even thrives in the face of an adversarial situation or disadvantage is resilience. In education, we define children who are resilient as being “social, optimistic, energetic, cooperative, inquisitive, attentive, helpful, punctual, and on task” (Sagor, 1996; Young, Rogers, Green, & Daniels, 2008). The Center on the Developing Child at Harvard University (n.d.) explains that although there are elements of biological predispositions to being resilient, there are common environmental factors present in resilient individuals. These environmental elements include:

- supportive adult-child relationships
- sense of self-efficacy and perceived control
- opportunities to strengthen adaptive skills and self-regulatory capacities
- sources of faith, hope, and cultural traditions

In fact, the Center describes these four elements as counterbalancing and, while not contingent upon one another, working together to oppose negative forces. Along that same plane, Sheridan (2011) asserts that internal protective factors (i.e., autonomy, resourcefulness, attachment and belonging) as well as external protective factors (i.e., family relationships, clear communication, messages of high expectations) are directly linked to a child’s overall resilience skills.

Research has identified that successful individuals share similar traits. Duckworth, Peterson, Matthews, and Kelly (2007) used the term grit to describe these traits that address how a person persists through and manages goals and challenges. They have also established that cognitive skills or academic performance do not necessarily translate to success in post-secondary education or careers, but that grit does. Similar observations have been made when considering adults who are deaf or hard of hearing (Rogers, Muir & Evanson, 2003). The presence of traits of resilience and persistence has been correlated with postsecondary success of adults who are deaf or hard of hearing (Cawthon, Schoffstall, & Garberoglio, 2014; Luft, 2011).
As previously stated, the development of resiliency can be traced to the mindset of a young child and begins with how a child responds to challenging situations (Yeager & Dweck, 2012). In all children, but especially for those who are deaf or hard of hearing, social-emotional development is impacted by the presence of supportive adult-child relationships (Garberoglio, Cawthon & Bond, 2013). Use of a common language is key to forming these relationships (Marschark, 2010) as is how spiritual beliefs and cultural traditions are transferred (Garberoglio, Cawthon & Bond, 2013).

The absence of a shared language can pose a challenge for children who are deaf or hard of hearing. In addition, access to language has at times proven to be a hurdle in the development of cognition, theory of mind and social maturity, presenting issues in the development of resiliency skills. In fact, Steinberg (2000) stated:

> If shared communication between child and caregiver is poor and inconsistent, and the world is one where information is difficult to share/obtain, and knowledge/experience through language hard to acquire, then I argue deaf children are potentially faced with few internal resources to make sense of the world around them (p. 14).

Bandura (1977) explains that self-efficacy is comprised of several variables: performance accomplishments, experiences, physiological state and verbal persuasion. Succeeding with a task increases self-efficacy; repeatedly failing a task decreases it. Research indicates that providing opportunities to practice and develop self-advocacy skills, study skills, and communication skills increases the adaptation and success of students who are deaf or hard of hearing in the general education setting (Antia, Jones, Reed, & Kreimeyer, 2008). Resiliency in deaf children is not attributable to one factor, but rather a convergence of many environmental factors, conditions and personality traits. Therefore, developing skills of resiliency cannot be focused on one area, but must be transferrable to several (Luft, 2011).

**Relevance**

Bandura (2001) has stated that self-regulatory efficacy and social emotional development has a clear link to future career trajectories. Postsecondary outcomes for students who are deaf or hard of hearing has been an area of concern for many years. While postsecondary enrollment rates for students who are deaf or hard of hearing are higher than many other disability groups (Raue & Lewis, 2011), individuals who are deaf or hard of hearing complete their postsecondary education with estimates as low as 25 to 30% graduating with either a 2- or 4-year degree (Newman, Wagner, Cameto, Knokey, & Shaver, 2011). In the workforce, adults who are hearing are twice as likely to be employed than deaf or hard of hearing adults (72%: 47% respectively). Furthermore, adults who are deaf or hard of hearing are twice as likely to be out of the workforce entirely (unemployed, but also not actively looking for work) (Garberoglio, Cawthon & Bond, 2016). A closer look at the factors that impact resilience could provide important information about how to meet the needs of all students who are deaf or hard of hearing.

One factor impacting resilience may be in the educational environment a student experiences. According to the Office of Special Education Programs (2015), over 87% of all children who are deaf or hard of hearing are educated in regular education classrooms and therefore may not have access to appropriate services. The expert knowledge of the professional staff regarding the needs of students who are deaf or hard of hearing varies greatly from state to state and even from district to district (Knoors & Marschark, 2014).
**Voices from the field**

*Deaf Learner Community of Practice, March 2016*

“We can never under estimate the power of home environment. It can either create wonderfully positive outcomes or negative outcomes.”

– *Teacher of the DHH*

“It’s not just home life but also the culture the student has grown up in. I am fortunate to have colleagues from various cultures I can ask questions of when a situation comes up that is puzzling to me. We need to remind ourselves that not all families who move here necessarily embrace the American way of life of self-sufficiency and independence.”

– *Teacher of the DHH*

**Practice**

Strategies to increase resilience are broad and generalized and adaptable to a variety of educational environments. There is no particular “list” of failsafe ways to improve students’ resilience and persistence skills. The Compass Advantage, a “model designed for engaging families, schools and communities in the principles of positive youth development,” lists five ways to cultivate resilience:

- **Promote self-reflection through literary essays or small group discussions.** Identify “heroic” characters and ask students to identify strengths the character possesses, what challenges they faced, and who they have for support.

- **Encourage reflection through personal essays.** Write about a friend that you supported as he or she went through a stressful event. What did you do that most helped your friend? What did you learn about yourself?

- **Help children (and their parents) learn from student failures.** Create a learning environment where failure, setbacks, and disappointment are an expected and honored part of learning.

- **Bring discussion about human resilience into the classroom.** When discussing current events, expand discussions past a particular accomplishment of an individual, and look at what the person had to overcome to reach their goals.

- **Build supportive relationships with students.** Tune in to students’ needs, even if they go beyond the academic. Good student-teacher relationships are those where students feel seen, felt, and understood by teachers.

(Adapted from Marilyn Price-Mitchell, Rootsofaction.com)

**Closing thoughts**

Developing skills of resilience and grit in students who are deaf or hard of hearing benefits everyone, especially the student. These skills, introduced at a young age, can support the student regardless of their educational and career choices.
References


“Family participation is an empirically supported practice that helps ensure quality transition plans” (Test, Fowler, White, Richter & Walker, 2009, p.6). The role of the parent or family member in special education has evolved. Initially, options for children with disabilities were limited to institutions which inhibited family involvement in decisions. As options broadened, the role of the parent also expanded to being invited to their child’s Individualized Education Plan (IEP) meetings but with minimal input. In the 1990s, through the use of the Taxonomy for Transition Programming, Kohler (1996), highlighted the role of parents and family as essential and critical pieces to the provision of quality special education services and the transition from high school to postsecondary life. Parents were identified as responsible parties for carrying out pieces of a transition IEP through IDEA 2004, whereas before, they were mostly just attendants at an IEP meeting that had already been planned and written without familial input.

In the last couple of years, there continues to be a shift in how parents and families are perceived when planning a student’s transition. For example, the National Secondary Transition Technical Assistance Center (NSTTAC) and the National Technical Assistance Center on Transition (NTACT) use the Taxonomy to build capacity in states. In their work with the states and at a national level, the use of the words “family training” or “family preparation” have slowly begun to change to an empowerment or engagement model. Instead of spending time trying to entice parents to a training event, schools are empowering parents by seeking out their expertise with their student, and inviting them to the IEP table as a stakeholder.

When looking at low-income and minority families who speak limited English, their lack of engagement is often the result of differing needs, values, and levels of trust rather than lack of interest or willingness to get involved (Brewster & Railsback, 2003). Family engagement that is more directly related to student learning is more likely to have a positive impact on student achievement and can take place at home or in the community (Westmoreland, 2011). Calderon & Greenberg (2011) state:

> The impact of deafness on the child’s overall development is influenced by several factors, including the quality of the family environment, parental adaptation to deafness, family coping, the nature of school and community resources and the child’s characteristics and transactions with his or her ecology (p. 178).

**Relevance**

The concept of social capital is a framework through which to consider the impact parent and family involvement has on the postsecondary success in education and employment of the deaf or hard of hearing child. Condelucci (2008) described social capital as “the support offered from
an array of family, friends, and acquaintances” (p. 133). Five of the six elements of social capital: a) cultural identity, b) role models, c) parents, d) family support, and e) direct communication are linked directly to the external environment of the family and community. Understanding the impact that family and community have on outcomes as well as strategies to increase family involvement will provide the practitioner with tools to strengthen this very important influence on outcomes of students who are deaf or hard of hearing.

Schlesinger (1987) identifies that hearing parents often worry about being misunderstood by their deaf child, resulting in “linguistic overprotection” or “talking down” to the child and reducing linguistic complexity. Consequently, opportunities for children to develop language skills limits growth in social and emotional states, theory of mind and executive function. However, Antia (2015) found that families who have resources (time and money) are generally in a better position to offer social-emotional and academic support for their child. Nonetheless, Antia (2015) found specific situations where families that “lacked transportation and material goods” were still able to develop close, supportive relationships.

Antia (2015) states, “Researchers have shown that there is a relationship between the number of assets and risks encountered and the behavioral and academic outcomes of children” (p. 532). Of these assets and risks, close relationships with at least one family member is crucial. Close family relationships, such as including the child in all aspects of the family life, direct communication with the child, and conveying messages of family values and high expectations promote self-confidence and autonomy. In addition, Calderon and Greenberg (2011) note that “both one’s intimate attachment to parents and peers as well as a feeling of belonging to a social network are important in healthy identity development in adolescence” (p. 192).

Voices from the field

Deaf Learner Community of Practice, March 2016

“Her [the student’s] assets span from her inner strength and pride, to family who attends silent suppers and sign classes with her, to her teachers who are learning sign.”

—Teacher of the DHH

“How discouraging for anyone to always be focusing on the problem areas and not looking at the whole picture. Certainly our students feel this at times.”

—Teacher of the DHH
Practice

Calderon and Greenberg (2011) identify four components that should be included in family intervention programs to increase family involvement:

- Services that will teach, encourage, and expand parents’ knowledge and use of good problem solving skills - that will empower parents and increase feelings of control.
- Services that facilitate the development of strong support networks for parents – especially mothers.
- Services that develop specialized intervention programs for fathers of deaf children.
- Services that support parents throughout childhood.

Deaf Child Worldwide has produced a manual for service providers to assist them in empowering families. Using case study information from several countries, DCW has created a list of “basic principles” of family services (DCW, 2008). You can download the entire publication here.

- Service providers should acknowledge that deaf children and their families have the same basic needs as other families. For many families, their immediate needs are clean water, sanitation and basic health services. These should be considered alongside those needs relating to deafness.
- Families should be continuously and sensitively consulted about what they want from services and whether those services are meeting their needs. Consultation should lead to action.
- Families have a right to clear and balanced information in a language they can understand.
- Families have a right to make their own decisions about how best to support their child.
- Families should be given the opportunity to come together with other families who have deaf children.
- Service providers should listen to families, and their attitude should be characterized by listening.
- Families should have the opportunity to actively influence the services which affect their child.
- Service providers should actively encourage partnerships between parents, professionals and deaf people. Partnership calls for mutual respect and understanding and involves making decisions together.

Pleet-Odle et al. (2016), in a Powerpoint presentation titled “An Informed Family Engagement Plan (IFEP)”, suggest these strategies for increasing family engagement:

- Identify the barriers to engaging specific groups of families
- Create unique strategies and tools to address these barriers
- Develop relationships with community partners and mentors
• Support families in helping their students
• INSTRUCTION versus INSTRUCTIONS
• Foster relationships between families and educators….not with BUILDING
• Ask families “what works” and LISTEN
• Use technology when appropriate
• Reinforce engagement at home and school and make sure “home” is recognized and supported as much as “school”
• Support families in moving from “home” to “school” participation and leadership.

Closing thoughts
Parents understand and know their student better than anyone. However, the knowledge a parent has is often undervalued. A shift in how we authentically engage parents is necessary and essential to the success of students who are deaf or hard of hearing.

References


Effective transition programming that produces successful postsecondary outcomes has taken on many iterations over time. The Individuals with Disabilities Education Act (IDEA) guarantees a free and appropriate education for all students with disabilities. Since the inception of IDEA, it has been changed and modified as research continues to show poor outcomes for students. Transition planning has moved to the forefront to ensuring students with disabilities have the skills, opportunities, and experiences to stay employed, attend a college or university, and live independently, if those are their goals.

Young adults with disabilities, educators, families, and other service providers all play integral roles in transition planning and are mandated members of a transition team as designated by IDEA. Young adults who are moving from their secondary setting to a postsecondary setting are the drivers of the plan through the identification of their post school goals. Educators, families, and other service providers support, assist, and guide the young adult as they determine their strengths and needs through transition assessments, identify their postsecondary goals (i.e., employment, further education or training, living independently), and as they begin the process of gaining the skills needed to achieve these goals.

For young adults who are deaf or hard of hearing, there are additional or heightened challenges due to “the nature and or severity of hearing loss, communication methods and identity, the school setting, family environment and support, and the presence of co-occurring disabilities” (Luft, 2016). The complexity of these challenges coupled with educators who may not be well-versed in transition and or deafness can mean that these young adults are not acquiring the skills needed to be successful in postsecondary settings (Luft, 2012; Luft et. al, 2009; Luft & Huff, 2011).
**Relevance**

Historically, young adults who are deaf or hard of hearing have been under-represented and unprepared in secondary settings for several reasons (Luft, 2016). Students who are deaf and hard of hearing make up less than two percent of the total population (U.S. Department of Education, 2015). This presents challenges for educators and school placements that tend to be based on availability of resources and not need (IDEA, 1997). Transition-focused planning requires educators who are proficient in the mandated components of a transition IEP and the day-to-day school practices that support successful transition planning. Couple that with a gap in educational professionals who are savvy with strategies and knowledge for supporting students who are deaf or hard of hearing and there is a systemic issue that can prevent post-school success.

There is a sense of urgency when thinking about students who are deaf or hard of hearing and transition. Regardless of one’s status with regard to disability, most everyone dreams about what they are going to do after they leave high school. But, there is a limited time to learn the skills, to practice those skills, and to put those skills to use in a postsecondary education setting or in a job. Transition planning must start by age 16 (IDEA, 1997), and some states choose to start their planning at age 14. Best practice demonstrates starting even earlier than age 14. However, students who are deaf or hard of hearing have additional challenges that compound the urgency for intentional transition planning. For example, there are different stages of maturation for students who are deaf or hard of hearing than there are for other students (Marschark et al., 2017). It has been noted that students who are deaf or hard of hearing are becoming more aware in college or after high school. In other words, their theory of mind, social maturity, and executive function are really being accessed appropriately when they are in the 20s (Luft, 2016), whereas these connections are happening earlier for students who have had consistent access to language and the developmental components that are inherent with that exposure.

**Voices from the field**

*Deaf Learner Symposium, July 2014*

“We started the literacy program because many deaf people in San Diego were graduating from high school but then falling through the cracks, not making it into college, losing employment, and continuing to live with their parents into their 30s, 40s, and 50s. They were struggling with English and math and especially needed basic living skills. Because this group was getting larger, we decided to set up a program to help them be more successful. Our program is funded 100% from the Department of Rehabilitation. If a parent wants to pay to enroll their children in the program, the fee could cost anywhere between $40 to $75 an hour. But so far, that’s not been necessary. The program has been funded completely by the Department of Rehab. Students wanting to enroll in our program must first be clients of the Department of Rehab. They have to set up a file and go through the assessment process.”

— Deaf Literacy Coordinator, San Diego Deaf Center

“Our VECTOR or Transition Program is a K-12 program in Brooklyn Park, Minnesota, and we work with students who are 18 to 21 who have just finished high school.
The diploma is being held by their home school district, and the home school actually sends students to our program. Each year we have about 80 to 90 [dhh] students in our program. Our student base is typically an underserved population, so that includes things like immigrants or refugees, students who have lower socioeconomic status, students who are lower achieving academically who have a secondary disability or who have a parent at home who either does not sign, signs in a very limited fashion, or does not speak English as a first language.- So really a lot of our students when they finish high school are just not ready to go on with the rest of their adult life. They need usually the one to three years that they get with our program to be ready to be as competitively employed as possible, to live as independently as possible, and for those post-secondary readiness skills. And so really those are the three areas, depending on a student’s IEPs that we serve. So employment training, independent living, and post-secondary readiness.”

– VECTOR Transition Program Coordinator

**Practice**

*Transition Assessment Goal Generator (TAGG)*

The TAGG is a new on-line transition assessment for secondary-aged youth with disabilities, their families, and professionals. TAGG items derive from research-identified student behaviors associated with post high school employment and education. The TAGG provides a norm-based graphic profile, present level of performance statement, lists of strengths and needs, and suggested IEP annual transition goals. Numerous studies demonstrated that the TAGG produces valid and reliable results. A grant from the U.S. Dept. of Education’s National Center for Special Education Research supported TAGG development. The TAGG has been translated into many languages, and is also available in American Sign Language.  [https://tagg.ou.edu/tagg/](https://tagg.ou.edu/tagg/)

*Map It!*

Pn2 created Map It! [http://www.pepnet.org/map-it](http://www.pepnet.org/map-it) as a free, online, interactive training designed for transition-aged students who are deaf or hard of hearing. The training utilizes three questions to help students explore their goals and to help them create a plan.

1. Who am I?
2. What do I want?
3. How do I get there?

Video vignettes signed in ASL with spoken English and written transcription, self-assessments, and a series of interactive questions guide students as they identify their goals and develop strategies to achieve them. All interactive materials are saved and compiled in an electronic portfolio.
**Transition Competence Battery**

The Transition Competence Battery (TCB) is one of the few assessment tools designed specifically to measure the transition skills of non-college bound deaf adolescents. The TCB is made up of six subtests, all presented on video in conceptually accurate Pidgin Sign English, addressing both independent living and employment content areas. Each subtest contains 20-33 items. The TCB has been field tested with over 300 deaf adolescents and young adults representing sites across the country. Reliability of each subtest has been established, and preliminary validity studies have been conducted. [https://marketplace.unl.edu/buros/transition-competence-battery-for-deaf-and-hard-of-hearing-adolescents-and-young-adults.html](https://marketplace.unl.edu/buros/transition-competence-battery-for-deaf-and-hard-of-hearing-adolescents-and-young-adults.html)

**Closing thoughts**

Transition planning for students who are deaf or hard of hearing needs to be intentional, consistent, and should start as early as possible.

**References**


Connecting Research to Practice No. 14

Postsecondary Education and Employment

The K-12 education system is intended to prepare all students for life. The structure of the K-12 educational system is designed to provide students with opportunities to learn and practice skills in academics, social, and extracurricular areas. As identified throughout the CRPs in this series, there are additional accommodations, supports and programs that are critical to the success of students who are deaf or hard of hearing in their pursuit of positive postsecondary education and employment outcomes. For example, as noted in CRP 9, education regarding self-advocacy and self-determination is essential to the success of students who are deaf or hard of hearing and must be provided consistently. This intentional learning helps young adults gain the needed skills to advocate for accommodations in a college classroom or to let an employer know what accommodations are needed to perform the essential duties of the job.

To ensure positive postsecondary outcomes for all students with disabilities, the Office of Special Education Programs made post-school outcomes a national priority through legislative efforts, beginning in the 1990s. When the idea of transition-focused education was introduced (Kohler, 1997), the first group of students with disabilities that started school with the induction of the Individuals with Disabilities Education Act (IDEA) in 1976 was graduating from high school. Research on the outcomes of students with disabilities started in the late 1980s and early 1990s (Affleck, Edgar, Levine, & Kortering, 1990; Hasazi, Gordon, & Roe, 1985; Hasazi, Johnson, Hasazi, Gordon, & Hull, 1989; Mithaug, Horiuchi, & Fanning, 1985), but it was not until the late 1990s that the employment and education outcomes of students with disabilities was really explored.

With the passage of IDEA 2004, the federal government began collecting data on compliance indicators from states through annual performance reports. One of the indicators focuses on the number of students with disabilities who are employed, enrolled in a postsecondary education setting, or both, one year after leaving high school. A second indicator requires individualized education plans (IEP) to have postsecondary goals in employment, education and independent living, if appropriate. States, in conjunction with their school districts, are held accountable to collect data on post-school outcomes and create transition-focused IEPs and programs that will improve postsecondary outcomes of young adults with disabilities.
Relevance

Higher levels of education have been linked with increased income (U.S. Bureau of Labor Statistics, 2014), better quality of life (Calderon & Sorenson, 2014), and even improved health and longevity (Cutler & Lleras-Muney, 2006). Recent studies indicate the correlation between educational attainment and income levels also holds true among people with disabilities (NCD, 2008), which includes individuals who are deaf or hard of hearing. When compared to peers with other disabilities, young adults who are deaf or hard of hearing show better outcomes in initial employment and enrollment in postsecondary settings (Luft, 2016). However, research shows that these young adults are not persisting or staying in their job or in a postsecondary education setting. Postsecondary education and employment are inter-related. However, to understand the complexities of that relationship and how it affects students who are deaf or hard of hearing, it is important to unpack each outcome separately.

Postsecondary education

Young adults with disabilities continue to increase their attendance in various postsecondary settings when compared to their non-disabled peers (Cawthon, Schoffstall, & Garberoglio, 2014). However, Newman et al. (2011) found that among students who are deaf or hard of hearing, there continues to be low program completion rates. This may be due to inadequate preparation by the K-12 system, as well as the ineffective infrastructure of postsecondary institutions.

For example, Bochner and Walter (2005) found that 79% of students who are deaf or hard of hearing begin their postsecondary academic careers testing into developmental courses. Luft (2014) notes that students who are deaf or hard of hearing may have had a bigger focus on getting into a postsecondary setting as opposed to what will be needed to complete their post-school program. Additionally, it can be challenging for students transferring from an IEP environment (school-initiated services) to an ADA environment (student-initiated services) without the prerequisite skills of self-advocacy (Project 10: Transition Education Network).

Also, attrition from postsecondary education settings may be attributed to a lack of access to support services (Lewis, Farris, and Green, 1994; Cawthon, Schoffstall & Garberoglio, 2014). Moreover, Cawthon, Schoffstall & Garberoglio (2014) identified the types of accommodations provided, institutional capacity and the opportunity of students to become involved in their communities as potential reasons for lack of student attrition.

Postsecondary employment

Research shows that young adults who are deaf or hard of hearing are getting jobs after leaving high school (Luft, 2016). However, research also demonstrates ongoing challenges once employed. Students who are deaf or hard of hearing who have limited writing abilities are more likely to miss out on promotion opportunities in their workplace (Wells, 2008) and are shown to have worse overall employment outcomes (Belknap et al., 1995). For example, when compared to their peers with disabilities who change their employment up to four times in two years, young adults who are deaf or hard of hearing are averaging 3.3 jobs in a 24-month period (Luft, 2015).

Although this seems encouraging, Johnson (1993) and Luft (2010) suggest this might be due to difficulty in changing jobs or in worksite communications, which would cause an employee to stay in a less desirable position rather than start all over with a new job and new challenges.
Additional research also shows that young adults who are deaf or hard of hearing are staying with the same job, but are not experiencing upward mobility (Welsh & Walter, 1988; Kelly, Quagliata, DeMartino, & Perotti, 2015; 2016), possibly due to the same issues. Scherich (1996) also notes six situations that occur in the workplace that impact the ability of an adult who is deaf or hard of hearing to participate and that can create an isolated work environment: a) work-related social functions, b) meetings, c) trainings, d) socializing with co-workers, e) receiving instructions, and f) supervision.

**Voices from the field**

**Deaf Learner Symposium**

“Students greatly benefit, and when our students are more successful in those Developmental courses, then they are empowered to move to the next level, and what. We want to see is a greater percentage of students not only to be successful in just completing their courses but to take those skills into the workplace or to the next level of education. It’s not just about passing a class, it’s about life skills and employment, ultimately.”

*— Representative from Ozarks Community College*

“Oftentimes, members of the legislature and other hearing people complain to me about the high cost of deaf education. And to be honest, the cost is high. It’s expensive. But compare that to the cost of not providing education. Pepnet has a fantastic website where you can get all kinds of statistics showing the average salaries of deaf people with degrees compared to those without degrees.”

*— Representative from Southwest Collegiate Institute for the Deaf*

**Practice**

Finding a postsecondary program that is a good fit leads to better postsecondary outcomes. Therefore, considering factors unique to their individual needs is a necessary step in the process for students who are deaf or hard of hearing.

This college guide was developed by pepnet 2 as a tool for prospective students to use to identify what they need in the postsecondary education setting to be successful and has been adapted in Table 7.
### Table 7. Guiding questions for picking a college to meet your needs

Rate the following questions using the scale provided  

<table>
<thead>
<tr>
<th>A large college or university with many majors to choose from.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
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<tbody>
<tr>
<td>A smaller college or training program closer to my home town.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<td>9</td>
<td>10</td>
</tr>
<tr>
<td>A smaller college or training program that has other students who are deaf/hh.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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<td>10</td>
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<tr>
<td>A college that offers special classes to improve math skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
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<td>10</td>
</tr>
<tr>
<td>A college that has advisors who can sign.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
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<tr>
<td>A college that has lots of experience working with students who are deaf/hard of hearing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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Pn2 also developed resources for students going directly into the workforce from high school. These materials can be found at: [https://dcmp.org/learning-center](https://dcmp.org/learning-center). Below is an activity that could be used with students to help them become actively involved in their transition planning for postsecondary employment goals.

Begin by asking these questions to students:

1. What is your plan for the future?
2. What do you think your journey will look like?
3. What do you think you want to do with your life?
4. What do you think you need to do to achieve that future?
5. What dreams, ideas, desires, and passions do you have for your future?
6. How can you turn these into a meaningful career?
7. What should you always be doing to ensure the best chance that your dreams come true?
8. What is happening or has happened in the past with local industry and other segments of the workforce in difficult times?
9. How have people dealt with these uncertain times?

10. How have they found work?

11. Where do people turn for help and how do they get back on their feet?

12. What do you do if you want a different job or want to do something new?

13. How do you go about learning new skills if you wish to change careers?

14. How do you plan a career change? Quitting without a plan is not a good idea, so how do you plan for this sort of change?

Follow up the conversation above with these activities:

1. Make a list of your dreams, ideas, desires, and passions. What sort of careers these might lead to?

2. Write down the path you think you could follow to achieve your goals and dreams.

3. In small groups, discuss your dream for the future and what you see yourself doing once you are successful and established.

4. Share individual plans with each other in your small groups, discuss what each person thinks he or she will have to do to be successful and achieve his or her dreams.

Closing thoughts

Transition to postsecondary opportunities requires careful planning encompassing not only the individual’s level of preparation but the environmental readiness of the educational or vocational setting.

References


Connecting Research to Practice: Strategies for Deaf Learners

Conclusion

There is much to be learned about evidence-based practices when it comes to the education and postsecondary outcomes of students who are deaf or hard of hearing. The Connecting Research to Practice (CRP) briefs have articulated the most relevant information we know regarding the cognitive, social, and emotional development of students who are deaf or hard of hearing. There are obvious pockets of research-based practice, as well as pockets of those interventions we utilize based on our intuition rather than scientific validation (Marschark, Spencer, Adams, and Sapere, 2011). One thing is for certain, language is the central figure to each of these CRPs. Signed or spoken, fluent or not, language exposure is the essential element to the development of the deaf learner.

It has been said that evidence-based practices and the consistent implementation of these strategies can be viewed either as a hindrance or a help. Do they stifle the ability to individualize instruction? Do they bog us down in the minutiae or are we overwhelmed by yet another law or policy change.

Or, could we use this mandate as a guide? Students who are deaf or hard of hearing have a challenging journey as they navigate school and postsecondary life. The growing awareness and the implementation of evidence-based practices is a way to light the path, to advocate for quality programs, and to establish rigorous expectations and environments. Knoors and Marschark (2015) are encouraged that scholars and practitioners see themselves as part of the same community—a community of practice that improves education for children who are deaf and hard of hearing. In this community, topics are digested, evidence-based practices are derived, and the connection between research and practice is strengthened. With this publication, we want to contribute to those conversations by providing a structure and knowledge base to work from. We hope that this publication is a call to action to come together as an educational and research community so that all students, including those who are deaf or hard of hearing, have the same opportunities in education, employment, and in life.

References


References


Center on Literacy and Deafness. (n.d.) *What is CLAD?* Retrieved from http://clad.education.gsu.edu/


# Deaf Learner Initiative

## Voices from the Field Guided Discussion

Below is the list of topics, resources and facilitators utilized during the Guided Community of Practice Discussions 5/2015 to 7/2016

<table>
<thead>
<tr>
<th>Month</th>
<th>Topic</th>
<th>Facilitator</th>
<th>Primary Reading</th>
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