Telepractice: Using Distance Technology to Connect, Communicate, & Enhance Language Learning in Children with Hearing Loss

K. Todd Houston, PhD, CCC-SLP, LSLS Cert. AVT
The University of Akron

Disclaimers

Dr. Houston is currently the author or co-author/editor of three books published by Plural Publishing:

- Telepractice in Speech-Language Pathology (2014)
- Assessing Listening and Spoken Language in Children with Hearing Loss (2015) – with co-author/editor, Tamala S. Bradham, PhD, CCC-A
- Telepractice in Audiology (2016) – with co-author/editor Emma Rushbrooke, MA, AuD

Dr. Houston does not receive any monetary compensation from any of the manufacturers/companies of the technology discussed during this presentation.

Learning Objectives

At the end of this presentation, participants will be able to:

- Identify current distance technology that is impacting early intervention and the education of children with hearing loss;
- Discuss the role of parent coaching in telepractice; and
- Define the use of telepractice as a service delivery model for children with hearing loss and their families.

Dylan & Dad…and Butterflies!

Terminology

- American Speech-Language-Hearing Association
- Telehealth
- Telepractice
- Telemedicine
- Tele-Audiology
- Tele-rehabilitation
- Tele-Therapy
- Tele-Speech
- Tele-intervention

Defining Telepractice

- The application of telecommunications technology at a distance by linking a clinician to client or clinician to clinician for assessment, intervention, and/or consultation.

- Telepractice is an appropriate model of service delivery for the professions of Speech-Language Pathology & Audiology.

- The quality of services delivered via telepractice must be consistent with the quality of services delivered face-to-face.
History of Telehealth

The times...They are a-changin'

- Virtual Reality = Immersive Computing
- Artificial Intelligence (AI) / Robotics
- 3-D Printing
- Internet of Things / Internet of Everything / Smart Homes
- 5G connections = 10K faster, 10 Gbits per second
- Everything On Demand = Uber, Lyft, etc.
- Quantified Self / Mobile Health
- Self-Driving cars

Evolution Leading to Revolution

5 Mb of Storage Being Loaded: 1956

Convergence of Technology, Healthcare, & Education

- Technology: Smartphones, Tablets, Notebooks
- Broadband Internet
- Social Media/Networks: Connections
- Increased Demand for Telehealth
- Any Service, Any Place, Any Time “On Demand”
- Lowering Costs: ACA, Market Pressures

Healthcare Access of the Future

According to the American Medical Association, 70% of doctors visits and 40% of ER visits could be avoided through telemedicine.

Increasingly, speech-language pathologists, audiologists, and other educators are adopting models of telehealth & telepractice to serve more children with hearing loss and their families.

...so what about early interventionists, audiologists, and speech-language pathologists?
An Audiologist's Perspective

“Telehealth has taken many years to become an “overnight” sensation…and now we have…a convergence of telecommunications and health care finally becoming a reality.”

--David Fabry, PHD

Telepractice & Speech-Language Pathology

- Assessments
- Speech and language delays
- Articulation & phonological disorders
- Voice & fluency
- Non-verbal/ASD
- Traumatic brain injury
- Aphasia/Stroke
- Auditory-Verbal Therapy/Parent Coaching
- Adult Aural Rehabilitation
- Supervision, mentoring, & consultation

Boisvert, M. (2014)

Telepractice & Audiology

- Patient Counseling
- Hearing Screenings
- Audiological Diagnostics
- Hearing Aid Fittings
- Cochlear Implant Mapping
- Teleintervention for children & Adult Aural Rehabilitation

Telepractice is not a different service but rather a different method of service delivery.

-- Janet Brown, 2010

The Need for Telehealth/Telepractice

- Clinician/specialist shortages
- Misdistribution of providers
- Rural/urban underserved
- Travel time, cost & hardship
- Delayed treatment, intervention or rehabilitation

Boisvert, M. (2014)
Telepractice Benefits
- Reduces barriers to access
- Reduces travel, time constraints
- Reduces overall healthcare costs
- Reduces delays in care
- Improves quality of care, collaboration, & coordination

More consistent therapy & intervention leads to improved speech, language, and learning outcomes for the children and families served.

The Question for the Day
With the convergence of communication technology and healthcare, how will telepractice service delivery models impact the provision speech-language intervention to children with hearing loss & their families?

What is the Technology
Principal components
- Equipment (dedicated & software)
- Connectivity

Two Technology Approaches
- Live Interactive
  - Audio/Video
  - mHealth
- Store and Forward
  - Audio/Video
  - mHealth

Technology & Service Delivery Models

ASHA’s Position on Equipment
- Telepractice application and desired intervention outcomes cause variances in equipment specifications.
- Image and sound quality must be sufficient for the clinical application.
- Important factors:
  - Network availability and reliability
  - Equipment maintenance and upgrades
  - Training of professionals and clients

(ASHA, 2005)

Determining Technology & Equipment Needs

Successful Program

Security Requirements

Resources Available

Boisvert, M. (2014)
Determining Technology & Equipment Needs

- Key Questions:
  - What is to be accomplished? (direct service, supervision, mentoring, etc.)
  - What is the clinical population? (e.g., speech/language delay, voice, fluency, articulation/phonology, AAC)
  - What is the setting of the services? (e.g., 1:1, small group, classroom based, training)
  - What is the delivery model? (e.g., direct F2F, Store/Forward, hybrid)
  - What are the security requirements?
  - What are the resources that are available? (i.e., existing equipment, budget, IT support, administrative support, bandwidth)

Boisvert, M. (2014)

Technology: Things to Consider

- Transmission methods and speeds
- Types of technology
- Uses of technology
- Technical support
- Privacy/Security
- Funding Issues
- Applications

Transmission Methods

- ISDN (Integrated Services Digital Network)
- T1-T4 lines
- Broadband/IP (Internet Protocol)
- Mobile/Cellular
- DSL (Digital Subscriber Line)
- Cable
- Satellite

Bandwidth is the KEY Technological Issue

- All technology systems, regardless of cost, are effected by bandwidth
- Bandwidth is an issue in all geographical locations (urban and rural)
- Bandwidth is traffic dependent
- Traffic is dependent on time of day, weather, location
- Bandwidth is increasing dramatically nation-wide, but so is traffic (thanks, Netflix and youtube!)
+ Web-based systems

<table>
<thead>
<tr>
<th>Basic equipment</th>
<th>Looks like....</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware/software</td>
<td>Skype, facetime, etc.</td>
</tr>
<tr>
<td>Camera</td>
<td>Internal or external webcam</td>
</tr>
<tr>
<td>Monitor</td>
<td>Computer screen/tablet</td>
</tr>
<tr>
<td>Microphone</td>
<td>Headset or built-in</td>
</tr>
<tr>
<td>Speakers</td>
<td>Headset, built-in or external</td>
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</tbody>
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+ Types of equipment

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+ Web Based Systems

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick and easy to set up</td>
<td>Limited camera angle</td>
</tr>
<tr>
<td>Can be accessed from any computer with internet</td>
<td>Teacher can’t control the family's camera</td>
</tr>
<tr>
<td>Inexpensive</td>
<td>Relies on family’s/school’s internet connection</td>
</tr>
<tr>
<td>May have screen sharing</td>
<td>Family must provide own IT support</td>
</tr>
<tr>
<td>Could be portable</td>
<td></td>
</tr>
</tbody>
</table>

+ Web-Based Telepractice Platforms

- SKYPE (Free… No!)            - Microsoft Office 365
- SKYPE for Business           - Cisco WebEx
- Infinite Conferencing        - iLinc
- AdobeConnect                 - Blackboard Collaborate
- Megameeting                  - Zoom
- GoToMeeting                  -

+ WEBEX

- Document Sharing
- Application Sharing
Technology Considerations

- Up-front Costs
- Ongoing Service Fees
- Bandwidth & Reliability

Support
- Quality of Equipment (video, image size, camera pan, & zoom)
- Recording telepractice session
- Security, Firewalls
- Ease of Use

Telepractice & eLearning Laboratory (TeLL)

Telepractice & eLearning Lab (TeLL)
School of Speech-Language Pathology & Audiology

- The University of Akron serves children with hearing loss and their families as well as adults with hearing loss
- Pediatric therapy focuses primarily on listening and spoken language & Auditory-Verbal Therapy
- Adult aural rehabilitation with a direct, patient-centered focus
- Training of future SLPs in telepractice service delivery models

Adult Learning Theory:

- Adults like to...
  - bring knowledge, skills, attitudes
  - bring experience
  - like to solve problems
  - like to apply what they learn to real situations
  - like to have choices
  - like to share in the setting learning objectives
  - have variety of learning styles/preferences
  - do best in an environment where they feel safe, accepted, and respected
  - want and need feedback
  - need to have their abilities and achievements honored

Coaching and Adult Learning Theory

Joint Planning
Observation
Action
Reflection
Feedback

Generalizing knowledge and applying to other situations

Sequence Of Therapy Preparation

1. Referral to clinic
2. In-person visit for full evaluation
3. Completion of home inventories
4. Technology test session
5. Lesson plans emailed at least 48 hours prior to session
6. Parent gathers materials and prepares by collaborating with clinicians by email or phone
7. Session begins
Conducting A Session

1. Reviewing goals and activities
   - Reviewing goals from previous week, new updates, review goals for current session, check hearing devices
2. Conducting the lesson/activity
   - Demonstration of new strategies/techniques, coaching the parent or adult, discuss integration of goals into daily home routines, strategies for improving/controlling communication opportunities (adults)
3. Debriefing
   - Allow questions from parents, discuss continuation or selection of new goals, summarize session and goals for the coming week

Nancy & Alex

Alex – the Super HEAR-O
Technology continues to evolve; professionals must do the same. New service delivery models and the technological tools to support them are inevitable.

Telepractice is a viable solution to meet the increased demand for listening & spoken language services for children with hearing loss & their families.

Telepractice service delivery models will continue to expand & will be regular fixtures in healthcare, early intervention services, and educational settings.

References


+ **Resources**

- American Telemedicine Association
  
  www.americantelemed.org

- American Speech-Language-Hearing Association
  
  www.asha.org/telepractice

- SIG 18: Telepractice
  
  http://www2.ntia.doc.gov/iowa

- BroadbandUSA
  
  http://www2.ntia.doc.gov/iowa

- Check with your professional organization for additional white papers, position statements, & preferred practices

+ **Resources**

- National Center for Hearing Assessment and Management (NCHAM). A Practical Guide to the Use of Tele-Intervention in Providing Listening and Spoken Language Services to Infants and Toddlers Who are Deaf or Hard of Hearing. Available from:  
  

- American Telemedicine Association’s A Blueprint for Telerehabilitation Guideline. Available from:  
  

- Center for Telehealth and E-Health Law (Ctel):  
  
  http://www.telehealthlawcenter.org/

- International Journal of Telerehabilitation:  
  
  http://telerehab.pitt.edu/ojs/index.php/telerehab

- Journal of Telemedicine and Telecare:  
  
  http://jtt.rsmjournals.com/

+ **Telepractice & Listening & Spoken Language**

Monograph available from the Alexander Graham Bell Association for the Deaf & Hard of Hearing

+ **Assistance Is Available!**

Federally Designated Telehealth Resource Centers

- CTeL
- NETRL
- Telehealth Resource Center
- CTEC
- GREAT PLAINS
- TRAC
Thank You for Listening!

K. Todd Houston, PhD, CCC-SLP,
LSLS Cert. AVT

Email: houston@uakron.edu
Office: (330) 972-6141
Facebook: K Todd Houston
Twitter: ktoddhouston
LinkedIn: www.linkedin.com/in/toddhouston
LinkedIn Groups: 6 Sound-Off
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